Milliman
111 SW Fifth Avenue, Suite 3700
Portland, OR 97204-3654
503 227 0634

November 2017

City of Gearhart/2309
Oregon Public Employees Retirement System

Dear Sir or Madam:

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

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

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

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

Contents of Report

The executive summary provides the basic information you need including:

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

The remainder of the report provides additional information including:

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

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

This work product was prepared solely for Oregon Public Employees Retirement System for the purposes stated herein, and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work. Milliman recommends that third parties be aided by their own actuary or other qualified professional when reviewing the Milliman work product.

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November 2017
City of Gearhart/2309

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

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

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

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

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

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November 2017
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.

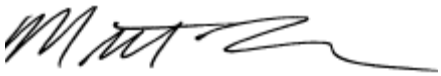
The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

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

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ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

City of Gearhart -- #2309

November 2017

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Executive Summary

Milliman has prepared this report for City of Gearhart to:

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

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

Employer Contribution Rates

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

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

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	19.12%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	(1.41%)	(1.41%)	(1.41%)
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**19.27%**	**8.64%**	**13.37%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**19.76%**	**9.06%**	**13.79%**

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.*

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Executive Summary

Employer Contribution Rates (continued)

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

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

For comparison, the funded status as of December 31, 2016 is 78%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	14.71%	14.71%
Minimum 2019-2021 Rate	11.71%	8.71%
Maximum 2019-2021 Rate	17.71%	20.71%

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Executive Summary

Accounting Information

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

Pension

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

Schedule of Funding Progress

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

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$1,434,130	$1,606,043	$171,913	89%	$386,443	44%
12/31/2012	1,613,357	1,749,495	136,138	92%	519,547	26%
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%

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Executive Summary

Accounting Information (continued)

Retiree Healthcare

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

Contractually Required Contribution Rate

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

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

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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, 2016	**December 31, 2015**
T1/T2 UAL	$582,589	$489,854
Allocated pooled OPSRP UAL	100,413	81,710
Side account	0	0
Net unfunded pension actuarial accrued liability	683,002	571,564
Combined valuation payroll	583,245	574,759
Net pension UAL as a percentage of payroll	117%	99%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($79)	$2,791

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

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Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$66,376	$62,100
Tier 1/Tier 2 valuation payroll	347,227	342,894
Tier 1/Tier 2 pension normal cost rate	19.12%	18.11%
Tier 1/ Tier 2 Actuarial accrued liability	$2,654,179	$2,437,415
Actuarial asset value	2,071,590	1,947,561
Tier 1/Tier 2 Unfunded actuarial accrued liability	582,589	489,854
Tier 1/ Tier 2 Funded status	78%	80%
Combined valuation payroll	$583,245	$574,759
Tier 1/Tier 2 UAL as a percentage of payroll	100%	85%
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	(1.41%)	(3.40%)
Tier 1/Tier 2 active members [1]	4	4
Tier 1/Tier 2 dormant members	0	0
Tier 1/Tier 2 retirees and beneficiaries	2	2

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

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Executive Summary

Principal Valuation Results (continued)

OPSRP

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

Retiree Healthcare

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

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Side Account Information

Reconciliation of Side Accounts

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

All information in this table has been provided by PERS.

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

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Side Account Information

Side Account Balances

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

Development of Side Account Rate

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

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	583,245	574,759
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

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

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Tier 1/Tier 2 Valuation Results

Assets

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

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

	December 31, 2016	December 31, 2015
1. Member reserves	$147,035	$139,101
2. Employer reserves	1,609,183	1,474,595
3. Benefits in force reserve	315,371	333,866
4. Total market value of assets *(1. + 2. + 3.)*	**$2,071,590**	**$1,947,561**

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

Reconciliation of Tier 1/Tier 2 Pension Assets

	December 31, 2015 to December 31, 2016
1. Market value of assets at beginning of year	$1,947,561
2. Regular employer contributions	27,903
3. Benefit payments and expenses	(61,748)
4. Adjustments [1]	18,532
5. Interest credited	139,341
6. Total transferred from side accounts	0
7. Market value of assets at end of year *(1. + 2. + 3. + 4. + 5. + 6.)*	**$2,071,590**

[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.*

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Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

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

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$38,789	$35,848
Tier 1 General Service	0	0
Tier 2 Police & Fire	19,839	18,672
Tier 2 General Service	7,748	7,580
Total	**$66,376**	**$62,100**

Change in Tier 1/Tier 2 Normal Cost

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

	Before Changes	After Changes	Net Change
Normal Cost	$64,327	$66,376	$2,049

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Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

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

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$1,349,620	$1,214,471
▪ Tier 1 General Service	0	0
▪ Tier 2 Police & Fire	362,856	322,988
▪ Tier 2 General Service	196,907	179,076
▪ **Total Active Members**	**$1,909,383**	**$1,716,535**
Dormant Members	0	0
Retired Members and Beneficiaries	744,796	720,880
Total Actuarial Accrued Liability	**$2,654,179**	**$2,437,415**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

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

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$2,567,985	$2,654,179	$86,194

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Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

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

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$2,654,179	$2,437,415
2. Actuarial value of assets	2,071,590	1,947,561
3. Unfunded accrued liability *(1. – 2.)*	582,589	489,854
4. Funded percentage *(2. ÷ 1.)*	78%	80%
5. Combined valuation payroll	$583,245	$574,759
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	100%	85%

Reconciliation of UAL Bases

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

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	$6,294	$489	$453	$6,258	$496
December 31, 2015	$483,560	$34,990	$34,869	$483,439	$35,375
December 31, 2016	N/A	N/A	N/A	$92,892	$6,559
Total				**$582,589**	**$42,430**

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Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

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

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$2,437,415
b. Normal cost at December 31, 2015 (excluding assumed expenses)	59,226
c. Benefit payments during 2016	(61,229)
d. Interest at 7.50% to December 31, 2016	182,731
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	2,618,143
f. Change in actuarial accrued liability due to assumption, method, and plan changes	86,194
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	2,704,337
2. Actuarial accrued liability at December 31, 2016	2,654,179
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	50,158
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	1,947,561
b. Contributions for 2016[1]	27,903
c. Benefit payments and expenses during 2016	(61,748)
d. Interest at 7.50% to December 31, 2016	144,798
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	2,058,515
5. Actuarial value of assets at December 31, 2016	2,071,590
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	13,075
7. Total actuarial gain/(loss) *(3. + 6.)*	**$63,233**

Unfunded Accrued Liability Reconciliation

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

1. UAL at December 31, 2015	**$489,854**
2. Expected increase	69,774
3. Liability (gain)/loss	(50,158)
4. Asset (gain)/loss	(13,075)
5. Change due to changes in assumptions, methods, and plan provisions	86,194
6. UAL at December 31, 2016 *(1. + 2. + 3. + 4. + 5.)*	**$582,589**

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

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

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

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	Employer Tier 1/Tier 2 Valuation Payroll	Normal Cost Rate	Normal Cost	Employer Tier 1/Tier 2 Valuation Payroll	Normal Cost Rate
Tier 1 Police & Fire	$38,789	$182,405	21.27%	$35,848	$178,748	20.06%
Tier 1 General Service	0	0	0.00%	0	0	0.00%
Tier 2 Police & Fire	19,839	88,282	22.47%	18,672	87,522	21.33%
Tier 2 General Service	7,748	76,540	10.12%	7,580	76,624	9.89%
Total	**$66,376**	**$347,227**	**19.12%**	**$62,100**	**$342,894**	**18.11%**

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

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

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

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$582,589	$489,854
2. Next year's Tier 1/Tier 2 UAL payment	42,430	35,479
3. Combined valuation payroll	583,245	574,759
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	7.27%	6.17%

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

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

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

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	19.12%	18.11%
b. Tier 1/Tier 2 UAL rate	7.27%	6.17%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	26.53%	24.43%

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

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

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

1.	Current net Tier 1/Tier 2 pension contribution rate	14.71%
2.	Employer contribution rate attributable to side accounts	0.00%
3.	Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	14.71%
4.	Size of rate collar	
	a. 20% of current employer contribution rate *(20% x 3.)*	2.94%
	b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.00%
	c. Funded percentage	78%
	d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	3.00%
5.	Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	11.71%
6.	Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	17.71%
7.	Advisory July 1, 2019 total pension rate, before adjustment	26.53%
8.	Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(8.82%)
9.	Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	7.27%
10.	Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	(1.55%)
11.	Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	17.71%
12.	Tier 1/Tier 2 retiree healthcare rate	0.49%
13.	Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14.	Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	19.12%
15.	Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	19.12%
16.	Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	17.71%

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

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

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

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	19.12%	18.11%
b. Tier 1/Tier 2 UAL rate	(1.55%)	(3.55%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	17.71%	14.71%

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Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$0	$182,405	$182,405
Tier 2	76,540	88,282	164,822
Tier 1/Tier 2 valuation payroll	76,540	270,687	347,227
OPSRP valuation payroll	180,135	55,883	236,018
Combined valuation payroll	**$256,675**	**$326,570**	**$583,245**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	0	1	3	4	0	1	3	4
Police & Fire	2	1	1	4	2	1	1	4
Total	2	2	4	8	2	2	4	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	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0
Retired Members and Beneficiaries								
General Service	2	0	0	2	2	0	0	2
Police & Fire	0	0	0	0	0	0	0	0
Total	2	0	0	2	2	0	0	2
Grand Total Number of Members	**4**	**2**	**4**	**10**	**4**	**2**	**4**	**10**

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

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Data

Demographic Information (continued)

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

	Years of Service									
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40+**	**Total**
<20										
20-24										
25-29										
30-34										
35-39										
40-44				1						**1**
45-49					1					**1**
50-54										
55-59							1			**1**
60-64				1						**1**
65-69										
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, 2016

Dormant Members

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

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59		
60-64		
65-69	2	2,130
70-74		
75-79		
80-84		
85-89		
90-94		
95-99		
100+		
Total	2	2,130

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Brief Summary of Actuarial Methods and Assumptions

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

Actuarial Methods and Valuation Procedures

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

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

Economic Assumptions

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

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

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Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

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

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

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

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

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

- **Administrative Expenses**

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

Changes in Demographic Assumptions

- **Mortality**

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

- **Disability, Retirement, and Termination**

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

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

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Brief Summary of Changes in Plan Provisions

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

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Glossary

Actuarial Accrued Liability

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

Actuarial Asset Value

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

Actuarial Assumptions

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

Actuarial Cost Method

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

Actuarial Gain or (Loss)

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

Combined Valuation Payroll

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

Cost Sharing Multiple-Employer Plan

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

Employer Contribution Rate

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

Funded Status

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

Normal Cost

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

OPSRP Valuation Payroll

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

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Glossary

Pre-SLGRP Liability

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

Pre-SLGRP Pooled Liability

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

Present Value

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

Rate Collar

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

Required Supplementary Information (RSI)

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

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

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

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

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

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

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

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

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

Tier 1/Tier 2 Valuation Payroll

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

Transition Liability

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

Unfunded Accrued Liability (UAL)

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

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Milliman
111 SW Fifth Avenue, Suite 3700
Portland, OR 97204-3654
503 227 0634

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Milliman
111 SW Fifth Avenue, Suite 3700
Portland, OR 97204-3654
503 227 0634

November 2017

City of Gervais/2264
Oregon Public Employees Retirement System

Dear Sir or Madam:

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

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

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

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

Contents of Report

The executive summary provides the basic information you need including:

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

The remainder of the report provides additional information including:

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

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

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Milliman

November 2017
City of Gervais/2264

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

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

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

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

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

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Milliman

November 2017
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.

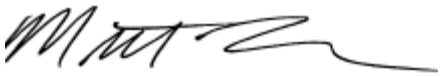
The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

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

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ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

City of Gervais -- #2264

November 2017

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This work product was prepared solely for Oregon Public Employees Retirement System for the purposes stated herein, and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work. Milliman recommends that third parties be aided by their own actuary or other qualified professional when reviewing the Milliman work product.

Executive Summary

Milliman has prepared this report for City of Gervais to:

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

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

Employer Contribution Rates

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

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

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	12.39%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	3.72%	3.72%	3.72%
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**17.67%**	**13.77%**	**18.50%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**18.16%**	**14.19%**	**18.92%**

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.*

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Executive Summary

Employer Contribution Rates (continued)

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

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

For comparison, the funded status as of December 31, 2016 is 81%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	13.37%	13.37%
Minimum 2019-2021 Rate	10.37%	7.37%
Maximum 2019-2021 Rate	16.37%	19.37%

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Executive Summary

Accounting Information

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

Pension

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

Schedule of Funding Progress

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

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$925,700	$1,131,043	$205,343	82%	$365,206	56%
12/31/2012	1,033,510	1,188,572	155,062	87%	548,250	28%
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%

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Executive Summary

Accounting Information (continued)

Retiree Healthcare

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

Contractually Required Contribution Rate

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

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

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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, 2016	**December 31, 2015**
T1/T2 UAL	$301,857	$255,192
Allocated pooled OPSRP UAL	105,366	82,140
Side account	0	0
Net unfunded pension actuarial accrued liability	407,223	337,332
Combined valuation payroll	612,018	577,782
Net pension UAL as a percentage of payroll	67%	58%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($83)	$2,806

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 that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

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Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$24,501	$22,611
Tier 1/Tier 2 valuation payroll	197,676	190,419
Tier 1/Tier 2 pension normal cost rate	12.39%	11.87%
Tier 1/ Tier 2 Actuarial accrued liability	$1,554,289	$1,454,329
Actuarial asset value	1,252,432	1,199,137
Tier 1/Tier 2 Unfunded actuarial accrued liability	301,857	255,192
Tier 1/ Tier 2 Funded status	81%	82%
Combined valuation payroll	$612,018	$577,782
Tier 1/Tier 2 UAL as a percentage of payroll	49%	44%
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	3.72%	1.50%
Tier 1/Tier 2 active members [1]	3	3
Tier 1/Tier 2 dormant members	1	1
Tier 1/Tier 2 retirees and beneficiaries	4	5

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

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Executive Summary

Principal Valuation Results (continued)

OPSRP

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

Retiree Healthcare

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

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Side Account Information

Reconciliation of Side Accounts

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

All information in this table has been provided by PERS.

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

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Side Account Information

Side Account Balances

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

Development of Side Account Rate

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

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	612,018	577,782
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

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

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Tier 1/Tier 2 Valuation Results

Assets

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

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

	December 31, 2016	December 31, 2015
1. Member reserves	$235,575	$223,083
2. Employer reserves	926,607	845,832
3. Benefits in force reserve	90,250	130,222
4. Total market value of assets *(1. + 2. + 3.)*	**$1,252,432**	**$1,199,137**

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

Reconciliation of Tier 1/Tier 2 Pension Assets

	December 31, 2015 to December 31, 2016
1. Market value of assets at beginning of year	$1,199,137
2. Regular employer contributions	19,648
3. Benefit payments and expenses	(17,670)
4. Adjustments [1]	(33,134)
5. Interest credited	84,452
6. Total transferred from side accounts	0
7. Market value of assets at end of year *(1. + 2. + 3. + 4. + 5. + 6.)*	**$1,252,432**

[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.*

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Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

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

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	0	0
Tier 2 Police & Fire	0	0
Tier 2 General Service	24,501	22,611
Total	**$24,501**	**$22,611**

Change in Tier 1/Tier 2 Normal Cost

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

	Before Changes	After Changes	Net Change
Normal Cost	$23,656	$24,501	$845

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Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

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

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$713,521	$639,660
▪ Tier 1 General Service	0	0
▪ Tier 2 Police & Fire	91,789	73,183
▪ Tier 2 General Service	417,809	348,115
▪ **Total Active Members**	**$1,223,119**	**$1,060,958**
Dormant Members	118,032	112,197
Retired Members and Beneficiaries	213,138	281,174
Total Actuarial Accrued Liability	**$1,554,289**	**$1,454,329**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

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

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$1,509,262	$1,554,289	$45,027

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Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

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

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$1,554,289	$1,454,329
2. Actuarial value of assets	1,252,432	1,199,137
3. Unfunded accrued liability *(1. – 2.)*	301,857	255,192
4. Funded percentage *(2. ÷ 1.)*	81%	82%
5. Combined valuation payroll	$612,018	$577,782
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	49%	44%

Reconciliation of UAL Bases

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

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	($10,302)	($801)	($741)	($10,242)	($812)
December 31, 2015	$265,494	$19,211	$19,145	$265,428	$19,423
December 31, 2016	N/A	N/A	N/A	$46,671	$3,295
Total				**$301,857**	**$21,906**

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Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

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

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$1,454,329
b. Normal cost at December 31, 2015 (excluding assumed expenses)	21,565
c. Benefit payments during 2016	(17,522)
d. Interest at 7.50% to December 31, 2016	109,226
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	1,567,598
f. Change in actuarial accrued liability due to assumption, method, and plan changes	45,027
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	1,612,625
2. Actuarial accrued liability at December 31, 2016	1,554,289
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	58,336
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	1,199,137
b. Contributions for 2016[1]	19,648
c. Benefit payments and expenses during 2016	(17,670)
d. Interest at 7.50% to December 31, 2016	90,009
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	1,291,124
5. Actuarial value of assets at December 31, 2016	1,252,432
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(38,692)
7. Total actuarial gain/(loss) *(3. + 6.)*	**$19,644**

Unfunded Accrued Liability Reconciliation

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

1. UAL at December 31, 2015	**$255,192**
2. Expected increase	21,282
3. Liability (gain)/loss	(58,336)
4. Asset (gain)/loss	38,692
5. Change due to changes in assumptions, methods, and plan provisions	45,027
6. UAL at December 31, 2016 *(1. + 2. + 3. + 4. + 5.)*	**$301,857**

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

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

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

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	Employer Tier 1/Tier 2 Valuation Payroll	Normal Cost Rate	Normal Cost	Employer Tier 1/Tier 2 Valuation Payroll	Normal Cost Rate
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	0	0	0.00%	0	0	0.00%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	24,501	197,676	12.39%	22,611	190,419	11.87%
Total	**$24,501**	**$197,676**	**12.39%**	**$22,611**	**$190,419**	**11.87%**

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

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

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

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$301,857	$255,192
2. Next year's Tier 1/Tier 2 UAL payment	21,906	18,410
3. Combined valuation payroll	612,018	577,782
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	3.58%	3.19%

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

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

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

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	12.39%	11.87%
b. Tier 1/Tier 2 UAL rate	3.58%	3.19%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	16.11%	15.21%

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

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

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

1.	Current net Tier 1/Tier 2 pension contribution rate	13.37%
2.	Employer contribution rate attributable to side accounts	0.00%
3.	Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	13.37%
4.	Size of rate collar	
	a. 20% of current employer contribution rate *(20% x 3.)*	2.67%
	b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.00%
	c. Funded percentage	81%
	d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	3.00%
5.	Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	10.37%
6.	Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	16.37%
7.	Advisory July 1, 2019 total pension rate, before adjustment	16.11%
8.	Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	0.00%
9.	Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	3.58%
10.	Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	3.58%
11.	Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	16.11%
12.	Tier 1/Tier 2 retiree healthcare rate	0.49%
13.	Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14.	Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	12.39%
15.	Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	12.39%
16.	Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	16.11%

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

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

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

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	12.39%	11.87%
b. Tier 1/Tier 2 UAL rate	3.58%	1.35%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	16.11%	13.37%

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Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$0	$0	$0
Tier 2	197,676	0	197,676
Tier 1/Tier 2 valuation payroll	197,676	0	197,676
OPSRP valuation payroll	210,584	203,758	414,342
Combined valuation payroll	**$408,260**	**$203,758**	**$612,018**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	0	3	4	7	0	3	3	6
Police & Fire	0	0	3	3	0	0	4	4
Total	0	3	7	10	0	3	7	10
Active Members with previous service segments with the employer								
General Service	0	0	N/A	0	0	0	N/A	0
Police & Fire	7	1	N/A	8	7	1	N/A	8
Total	7	1	N/A	8	7	1	N/A	8
Dormant Members								
General Service	0	0	1	1	0	0	1	1
Police & Fire	1	0	0	1	1	0	0	1
Total	1	0	1	2	1	0	1	2
Retired Members and Beneficiaries								
General Service	3	0	0	3	4	0	0	4
Police & Fire	1	0	0	1	1	0	0	1
Total	4	0	0	4	5	0	0	5
Grand Total Number of Members	**12**	**4**	**8**	**24**	**13**	**4**	**8**	**25**

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

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Data

Demographic Information (continued)

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

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

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

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49		
50-54		
55-59		
60-64	1	692
65-69		
70-74		
75+		
Total	1	692

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59		
60-64	2	530
65-69		
70-74	1	190
75-79		
80-84	1	108
85-89		
90-94		
95-99		
100+		
Total	4	340

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Brief Summary of Actuarial Methods and Assumptions

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

Actuarial Methods and Valuation Procedures

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

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

Economic Assumptions

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

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

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Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

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

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

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

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

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

- **Administrative Expenses**

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

Changes in Demographic Assumptions

- **Mortality**

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

- **Disability, Retirement, and Termination**

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

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

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Brief Summary of Changes in Plan Provisions

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

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Glossary

Actuarial Accrued Liability

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

Actuarial Asset Value

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

Actuarial Assumptions

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

Actuarial Cost Method

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

Actuarial Gain or (Loss)

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

Combined Valuation Payroll

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

Cost Sharing Multiple-Employer Plan

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

Employer Contribution Rate

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

Funded Status

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

Normal Cost

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

OPSRP Valuation Payroll

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

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Glossary

Pre-SLGRP Liability

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

Pre-SLGRP Pooled Liability

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

Present Value

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

Rate Collar

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

Required Supplementary Information (RSI)

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

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

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

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

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

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

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

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

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

Tier 1/Tier 2 Valuation Payroll

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

Transition Liability

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

Unfunded Accrued Liability (UAL)

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

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Milliman
111 SW Fifth Avenue, Suite 3700
Portland, OR 97204-3654
503 227 0634

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Milliman
111 SW Fifth Avenue, Suite 3700
Portland, OR 97204-3654
503 227 0634

November 2017

City of Gold Beach/2250
Oregon Public Employees Retirement System

Dear Sir or Madam:

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

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

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

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

Contents of Report

The executive summary provides the basic information you need including:

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

The remainder of the report provides additional information including:

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

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

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Milliman

November 2017
City of Gold Beach/2250

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

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

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

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

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

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Milliman

November 2017
City of Gold Beach/2250

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.

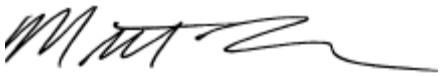
The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

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

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ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

City of Gold Beach -- #2250

November 2017

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Executive Summary

Milliman has prepared this report for City of Gold Beach to:

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

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

Employer Contribution Rates

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

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

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	15.37%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	2.84%	2.84%	2.84%
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**19.77%**	**12.89%**	**17.62%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**20.26%**	**13.31%**	**18.04%**

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

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

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Executive Summary

Employer Contribution Rates (continued)

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

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

For comparison, the funded status as of December 31, 2016 is 92%.

Funded Status as of December 31, 2017	**70% to 130%**	**Under 60% or Over 140%**
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	15.98%	15.98%
Minimum 2019-2021 Rate	12.78%	9.58%
Maximum 2019-2021 Rate	19.18%	22.38%

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Executive Summary

Accounting Information

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

Pension

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

Schedule of Funding Progress

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

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$2,267,242	$2,685,284	$418,042	84%	$725,790	58%
12/31/2012	2,589,998	2,775,002	185,004	93%	668,568	28%
12/31/2013	2,977,221	2,935,300	(41,921)	101%	755,161	(6%)
12/31/2014	3,129,706	3,375,595	245,889	93%	698,676	35%
12/31/2015	3,100,733	3,361,294	260,561	92%	796,047	33%
12/31/2016	3,263,868	3,562,951	299,083	92%	797,051	38%

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Executive Summary

Accounting Information (continued)

Retiree Healthcare

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

Contractually Required Contribution Rate

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

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

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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 Gold Beach

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	$299,083	$260,561
Allocated pooled OPSRP UAL	137,222	113,169
Side account	0	0
Net unfunded pension actuarial accrued liability	436,305	373,730
Combined valuation payroll	797,051	796,047
Net pension UAL as a percentage of payroll	55%	47%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($109)	$3,865

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

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Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$62,854	$61,631
Tier 1/Tier 2 valuation payroll	409,007	419,435
Tier 1/Tier 2 pension normal cost rate	15.37%	14.69%
Tier 1/ Tier 2 Actuarial accrued liability	$3,562,951	$3,361,294
Actuarial asset value	3,263,868	3,100,733
Tier 1/Tier 2 Unfunded actuarial accrued liability	299,083	260,561
Tier 1/ Tier 2 Funded status	92%	92%
Combined valuation payroll	$797,051	$796,047
Tier 1/Tier 2 UAL as a percentage of payroll	38%	33%
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	2.84%	1.29%
Tier 1/Tier 2 active members [1]	7	7
Tier 1/Tier 2 dormant members	3	3
Tier 1/Tier 2 retirees and beneficiaries	23	22

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

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Executive Summary

Principal Valuation Results (continued)

OPSRP

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

Retiree Healthcare

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

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Side Account Information

Reconciliation of Side Accounts

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

All information in this table has been provided by PERS.

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

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Side Account Information

Side Account Balances

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

Development of Side Account Rate

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

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	797,051	796,047
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

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

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Tier 1/Tier 2 Valuation Results

Assets

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

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

	December 31, 2016	December 31, 2015
1. Member reserves	$447,827	$434,795
2. Employer reserves	2,119,354	1,927,920
3. Benefits in force reserve	696,687	738,018
4. Total market value of assets *(1. + 2. + 3.)*	**$3,263,868**	**$3,100,733**

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

Reconciliation of Tier 1/Tier 2 Pension Assets

	December 31, 2015 to December 31, 2016
1. Market value of assets at beginning of year	$3,100,733
2. Regular employer contributions	52,645
3. Benefit payments and expenses	(136,408)
4. Adjustments [1]	26,451
5. Interest credited	220,446
6. Total transferred from side accounts	0
7. Market value of assets at end of year *(1. + 2. + 3. + 4. + 5. + 6.)*	**$3,263,868**

[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.*

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Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

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

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	18,389	18,244
Tier 2 Police & Fire	24,530	23,967
Tier 2 General Service	19,935	19,420
Total	**$62,854**	**$61,631**

Change in Tier 1/Tier 2 Normal Cost

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

	Before Changes	After Changes	Net Change
Normal Cost	$61,296	$62,854	$1,558

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Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

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

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$265,980	$247,171
▪ Tier 1 General Service	419,759	384,169
▪ Tier 2 Police & Fire	433,723	402,138
▪ Tier 2 General Service	405,715	362,294
▪ **Total Active Members**	**$1,525,177**	**$1,395,772**
Dormant Members	392,444	371,999
Retired Members and Beneficiaries	1,645,330	1,593,523
Total Actuarial Accrued Liability	**$3,562,951**	**$3,361,294**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

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

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$3,494,155	$3,562,951	$68,796

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Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

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

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$3,562,951	$3,361,294
2. Actuarial value of assets	3,263,868	3,100,733
3. Unfunded accrued liability *(1. – 2.)*	299,083	260,561
4. Funded percentage *(2. ÷ 1.)*	92%	92%
5. Combined valuation payroll	$797,051	$796,047
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	38%	33%

Reconciliation of UAL Bases

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

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	($41,889)	($3,257)	($3,012)	($41,644)	($3,300)
December 31, 2015	$302,450	$21,885	$21,809	$302,374	$22,126
December 31, 2016	N/A	N/A	N/A	$38,353	$2,708
Total				**$299,083**	**$21,534**

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Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

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

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$3,361,294
b. Normal cost at December 31, 2015 (excluding assumed expenses)	58,779
c. Benefit payments during 2016	(135,261)
d. Interest at 7.50% to December 31, 2016	249,229
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	3,534,041
f. Change in actuarial accrued liability due to assumption, method, and plan changes	68,796
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	3,602,837
2. Actuarial accrued liability at December 31, 2016	3,562,951
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	39,886
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	3,100,733
b. Contributions for 2016[1]	52,645
c. Benefit payments and expenses during 2016	(136,408)
d. Interest at 7.50% to December 31, 2016	229,414
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	3,246,385
5. Actuarial value of assets at December 31, 2016	3,263,868
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	17,483
7. Total actuarial gain/(loss) *(3. + 6.)*	**$57,369**

Unfunded Accrued Liability Reconciliation

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

1. UAL at December 31, 2015	**$260,561**
2. Expected increase	27,095
3. Liability (gain)/loss	(39,886)
4. Asset (gain)/loss	(17,483)
5. Change due to changes in assumptions, methods, and plan provisions	68,796
6. UAL at December 31, 2016 *(1. + 2. + 3. + 4. + 5.)*	**$299,083**

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

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

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

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	Employer Tier 1/Tier 2 Valuation Payroll	Normal Cost Rate	Normal Cost	Employer Tier 1/Tier 2 Valuation Payroll	Normal Cost Rate
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	18,389	135,687	13.55%	18,244	140,345	13.00%
Tier 2 Police & Fire	24,530	121,639	20.17%	23,967	124,966	19.18%
Tier 2 General Service	19,935	151,681	13.14%	19,420	154,124	12.60%
Total	**$62,854**	**$409,007**	**15.37%**	**$61,631**	**$419,435**	**14.69%**

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

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

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

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$299,083	$260,561
2. Next year's Tier 1/Tier 2 UAL payment	21,534	18,628
3. Combined valuation payroll	797,051	796,047
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	2.70%	2.34%

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

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

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

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	15.37%	14.69%
b. Tier 1/Tier 2 UAL rate	2.70%	2.34%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	18.21%	17.18%

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

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

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

1.	Current net Tier 1/Tier 2 pension contribution rate	15.98%
2.	Employer contribution rate attributable to side accounts	0.00%
3.	Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	15.98%
4.	Size of rate collar	
	a. 20% of current employer contribution rate *(20% x 3.)*	3.20%
	b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.20%
	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.)*	3.20%
5.	Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	12.78%
6.	Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	19.18%
7.	Advisory July 1, 2019 total pension rate, before adjustment	18.21%
8.	Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	0.00%
9.	Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	2.70%
10.	Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	2.70%
11.	Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	18.21%
12.	Tier 1/Tier 2 retiree healthcare rate	0.49%
13.	Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14.	Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	15.37%
15.	Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	15.37%
16.	Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	18.21%

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

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

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

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	15.37%	14.69%
b. Tier 1/Tier 2 UAL rate	2.70%	1.14%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	18.21%	15.98%

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Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$135,687	$0	$135,687
Tier 2	151,681	121,639	273,320
Tier 1/Tier 2 valuation payroll	287,368	121,639	409,007
OPSRP valuation payroll	237,269	150,775	388,044
Combined valuation payroll	**$524,637**	**$272,414**	**$797,051**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	2	3	7	12	2	3	7	12
Police & Fire	0	2	3	5	0	2	2	4
Total	2	5	10	17	2	5	9	16
Active Members with previous service segments with the employer								
General Service	0	0	N/A	0	1	0	N/A	1
Police & Fire	2	2	N/A	4	2	2	N/A	4
Total	2	2	N/A	4	3	2	N/A	5
Dormant Members								
General Service	2	0	0	2	2	0	0	2
Police & Fire	1	0	1	2	1	0	1	2
Total	3	0	1	4	3	0	1	4
Retired Members and Beneficiaries								
General Service	8	0	1	9	7	0	0	7
Police & Fire	14	1	1	16	14	1	1	16
Total	22	1	2	25	21	1	1	23
Grand Total Number of Members	**29**	**8**	**13**	**50**	**29**	**8**	**11**	**48**

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

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Data

Demographic Information (continued)

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

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

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

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49		
50-54	1	3,170
55-59	1	0
60-64	1	41
65-69		
70-74		
75+		
Total	3	1,071

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59	2	132
60-64	6	540
65-69	4	339
70-74	2	749
75-79	8	539
80-84	1	943
85-89		
90-94		
95-99		
100+		
Total	23	505

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Brief Summary of Actuarial Methods and Assumptions

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

Actuarial Methods and Valuation Procedures

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

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

Economic Assumptions

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

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

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Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

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

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

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

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

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

- **Administrative Expenses**

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

Changes in Demographic Assumptions

- **Mortality**

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

- **Disability, Retirement, and Termination**

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

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

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Brief Summary of Changes in Plan Provisions

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

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Glossary

Actuarial Accrued Liability

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

Actuarial Asset Value

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

Actuarial Assumptions

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

Actuarial Cost Method

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

Actuarial Gain or (Loss)

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

Combined Valuation Payroll

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

Cost Sharing Multiple-Employer Plan

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

Employer Contribution Rate

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

Funded Status

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

Normal Cost

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

OPSRP Valuation Payroll

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

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Glossary

Pre-SLGRP Liability

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

Pre-SLGRP Pooled Liability

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

Present Value

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

Rate Collar

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

Required Supplementary Information (RSI)

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

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

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

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

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

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

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

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

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

Tier 1/Tier 2 Valuation Payroll

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

Transition Liability

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

Unfunded Accrued Liability (UAL)

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

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Milliman
111 SW Fifth Avenue, Suite 3700
Portland, OR 97204-3654
503 227 0634

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Milliman
111 SW Fifth Avenue, Suite 3700
Portland, OR 97204-3654
503 227 0634

November 2017

City of Gresham/2114
Oregon Public Employees Retirement System

Dear Sir or Madam:

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

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

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

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

Contents of Report

The executive summary provides the basic information you need including:

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

The remainder of the report provides additional information including:

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

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

This work product was prepared solely for Oregon Public Employees Retirement System for the purposes stated herein, and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work. Milliman recommends that third parties be aided by their own actuary or other qualified professional when reviewing the Milliman work product.

Milliman

November 2017
City of Gresham/2114

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

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

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

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

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

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November 2017
City of Gresham/2114

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.

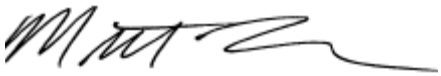
The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

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

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ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

City of Gresham -- #2114

November 2017

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Executive Summary

Milliman has prepared this report for City of Gresham to:

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

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

Employer Contribution Rates

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

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

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	18.71%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	3.24%	3.24%	3.24%
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	(3.83%)	(3.83%)	(3.83%)
Net pension contribution rate	**19.68%**	**9.46%**	**14.19%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**20.17%**	**9.88%**	**14.61%**

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.*

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Executive Summary

Employer Contribution Rates (continued)

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

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

For comparison, the funded status as of December 31, 2016 is 68%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	17.70%	17.70%
Minimum 2019-2021 Rate	14.16%	10.62%
Maximum 2019-2021 Rate	21.24%	24.78%

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Executive Summary

Accounting Information

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

Pension

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

Schedule of Funding Progress

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

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$198,059,438	$225,555,045	$27,495,606	88%	$38,944,096	71%
12/31/2012	217,937,233	227,671,406	9,734,173	96%	39,541,683	25%
12/31/2013	236,982,167	241,803,112	4,820,945	98%	40,300,650	12%
12/31/2014	243,563,554	288,545,125	44,981,571	84%	41,761,187	108%
12/31/2015	235,510,218	303,426,971	67,916,753	78%	42,933,712	158%
12/31/2016	236,602,711	326,567,182	89,964,471	72%	46,206,243	195%

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Executive Summary

Accounting Information (continued)

Retiree Healthcare

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

Contractually Required Contribution Rate

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

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

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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 Gresham

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	$105,888,897	$84,556,205
Allocated pooled OPSRP UAL	7,954,968	6,103,626
Side account	15,924,427	16,639,452
Net unfunded pension actuarial accrued liability	97,919,438	74,020,379
Combined valuation payroll	46,206,243	42,933,712
Net pension UAL as a percentage of payroll	212%	172%
Calculated side account rate relief	(3.83%)	(4.08%)
Allocated pooled RHIA UAL	($6,291)	$208,471

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

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Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$4,103,255	$4,190,943
Tier 1/Tier 2 valuation payroll	21,925,522	22,798,803
Tier 1/Tier 2 pension normal cost rate	18.71%	18.38%
Tier 1/ Tier 2 Actuarial accrued liability	$326,567,182	$303,426,971
Actuarial asset value	220,678,285	218,870,766
Tier 1/Tier 2 Unfunded actuarial accrued liability	105,888,897	84,556,205
Tier 1/ Tier 2 Funded status	68%	72%
Combined valuation payroll	$46,206,243	$42,933,712
Tier 1/Tier 2 UAL as a percentage of payroll	229%	197%
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	3.24%	(0.68%)
Tier 1/Tier 2 active members [1]	228	248
Tier 1/Tier 2 dormant members	113	118
Tier 1/Tier 2 retirees and beneficiaries	490	465

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

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Executive Summary

Principal Valuation Results (continued)

OPSRP

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

Retiree Healthcare

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

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Side Account Information

Reconciliation of Side Accounts

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

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**	**$16,639,452**	**$16,639,452**
2. Deposits made during 2016		N/A	
3. Administrative expenses		(1,000)	(1,000)
4. Amount transferred to employer reserves during 2016		(1,848,892)	(1,848,892)
5. Side account earnings during 2016		1,134,866	1,134,866
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***		**$15,924,427**	**$15,924,427**

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Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$15,924,427	$16,639,452
Side account 2	0	0
Side account 3	0	0
Total	**$15,924,427**	**$16,639,452**

Development of Side Account Rate

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

	December 31, 2016	December 31, 2015
1. Total side account	$15,924,427	$16,639,452
2. Combined valuation payroll	46,206,243	42,933,712
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	(3.83%)	(4.08%)

[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.*

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Tier 1/Tier 2 Valuation Results

Assets

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

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

	December 31, 2016	December 31, 2015
1. Member reserves	$27,154,918	$28,936,118
2. Employer reserves	108,957,310	106,387,894
3. Benefits in force reserve	84,566,057	83,546,755
4. Total market value of assets *(1. + 2. + 3.)*	**$220,678,285**	**$218,870,766**

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

Reconciliation of Tier 1/Tier 2 Pension Assets

	December 31, 2015 to December 31, 2016
1. Market value of assets at beginning of year	$218,870,766
2. Regular employer contributions	1,432,071
3. Benefit payments and expenses	(16,557,615)
4. Adjustments [1]	(272,210)
5. Interest credited	15,356,380
6. Total transferred from side accounts	1,848,892
7. Market value of assets at end of year *(1. + 2. + 3. + 4. + 5. + 6.)*	**$220,678,285**

[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.*

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Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

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

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$1,286,542	$1,370,718
Tier 1 General Service	871,398	994,149
Tier 2 Police & Fire	1,300,280	1,176,131
Tier 2 General Service	645,035	649,945
Total	**$4,103,255**	**$4,190,943**

Change in Tier 1/Tier 2 Normal Cost

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

	Before Changes	After Changes	Net Change
Normal Cost	$3,990,674	$4,103,255	$112,581

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Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

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

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$41,446,981	$42,721,882
▪ Tier 1 General Service	26,642,826	27,324,793
▪ Tier 2 Police & Fire	25,629,317	21,804,259
▪ Tier 2 General Service	15,404,627	14,444,482
▪ **Total Active Members**	**$109,123,751**	**$106,295,416**
Dormant Members	17,728,033	16,738,117
Retired Members and Beneficiaries	199,715,398	180,393,438
Total Actuarial Accrued Liability	**$326,567,182**	**$303,426,971**

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, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$317,539,003	$326,567,182	$9,028,179

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Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

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

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$326,567,182	$303,426,971
2. Actuarial value of assets	220,678,285	218,870,766
3. Unfunded accrued liability *(1. – 2.)*	105,888,897	84,556,205
4. Funded percentage *(2. ÷ 1.)*	68%	72%
5. Combined valuation payroll	$46,206,243	$42,933,712
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	229%	197%

Reconciliation of UAL Bases

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

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	$22,793,318	$1,772,282	$1,638,694	$22,659,730	$1,795,826
December 31, 2015	$61,762,887	$4,469,095	$4,453,671	$61,747,463	$4,518,327
December 31, 2016	N/A	N/A	N/A	$21,481,704	$1,516,748
Total				**$105,888,897**	**$7,830,901**

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Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

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

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$303,426,971
b. Normal cost at December 31, 2015 (excluding assumed expenses)	3,996,884
c. Benefit payments during 2016	(16,418,376)
d. Interest at 7.50% to December 31, 2016	22,291,217
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	313,296,696
f. Change in actuarial accrued liability due to assumption, method, and plan changes	9,028,179
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	322,324,875
2. Actuarial accrued liability at December 31, 2016	326,567,182
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(4,242,307)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	218,870,766
b. Contributions for 2016[1]	3,280,963
c. Benefit payments and expenses during 2016	(16,557,615)
d. Interest at 7.50% to December 31, 2016	15,917,433
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	221,511,547
5. Actuarial value of assets at December 31, 2016	220,678,285
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(833,263)
7. Total actuarial gain/(loss) *(3. + 6.)*	**($5,075,570)**

Unfunded Accrued Liability Reconciliation

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

1. UAL at December 31, 2015	**$84,556,205**
2. Expected increase	7,228,943
3. Liability (gain)/loss	4,242,307
4. Asset (gain)/loss	833,263
5. Change due to changes in assumptions, methods, and plan provisions	9,028,179
6. UAL at December 31, 2016 *(1. + 2. + 3. + 4. + 5.)*	**$105,888,897**

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

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

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

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	Employer Tier 1/Tier 2 Valuation Payroll	Normal Cost Rate	Normal Cost	Employer Tier 1/Tier 2 Valuation Payroll	Normal Cost Rate
Tier 1 Police & Fire	$1,286,542	$5,435,169	23.67%	$1,370,718	$5,975,756	22.94%
Tier 1 General Service	871,398	4,762,375	18.30%	994,149	5,336,113	18.63%
Tier 2 Police & Fire	1,300,280	6,674,120	19.48%	1,176,131	6,284,029	18.72%
Tier 2 General Service	645,035	5,053,858	12.76%	649,945	5,202,905	12.49%
Total	**$4,103,255**	**$21,925,522**	**18.71%**	**$4,190,943**	**$22,798,803**	**18.38%**

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

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

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

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$105,888,897	$84,556,205
2. Next year's Tier 1/Tier 2 UAL payment	7,830,901	6,241,377
3. Combined valuation payroll	46,206,243	42,933,712
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	16.95%	14.54%

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

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

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

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	18.71%	18.38%
b. Tier 1/Tier 2 UAL rate	16.95%	14.54%
c. Multnomah Fire District #10 rate	0.28%	0.30%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	35.94%	33.22%

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

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

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

1.	Current net Tier 1/Tier 2 pension contribution rate	13.62%
2.	Employer contribution rate attributable to side accounts	(4.08%)
3.	Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	17.70%
4.	Size of rate collar	
	a. 20% of current employer contribution rate *(20% x 3.)*	3.54%
	b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.54%
	c. Funded percentage	68%
	d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	4.25%
5.	Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	13.45%
6.	Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	21.95%
7.	Advisory July 1, 2019 total pension rate, before adjustment	35.94%
8.	Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(13.99%)
9.	Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	16.95%
10.	Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	2.96%
11.	Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	21.95%
12.	Tier 1/Tier 2 retiree healthcare rate	0.49%
13.	Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14.	Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	18.71%
15.	Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	18.71%
16.	Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	21.95%

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

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

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

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	18.71%	18.38%
b. Tier 1/Tier 2 UAL rate	2.96%	(0.98%)
c. Multnomah Fire District #10 rate	0.28%	0.30%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	21.95%	17.70%

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Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$4,762,375	$5,435,169	$10,197,544
Tier 2	5,053,858	6,674,120	11,727,978
Tier 1/Tier 2 valuation payroll	9,816,233	12,109,289	21,925,522
OPSRP valuation payroll	13,024,949	11,255,772	24,280,721
Combined valuation payroll	**$22,841,182**	**$23,365,061**	**$46,206,243**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	58	67	189	314	68	71	162	301
Police & Fire	44	59	120	223	51	58	101	210
Total	102	126	309	537	119	129	263	511
Active Members with previous service segments with the employer								
General Service	33	42	N/A	75	32	41	N/A	73
Police & Fire	10	13	N/A	23	12	13	N/A	25
Total	43	55	N/A	98	44	54	N/A	98
Dormant Members								
General Service	45	42	25	112	48	43	22	113
Police & Fire	16	10	1	27	16	11	1	28
Total	61	52	26	139	64	54	23	141
Retired Members and Beneficiaries								
General Service	286	30	2	318	270	31	2	303
Police & Fire	168	6	2	176	151	13	1	165
Total	454	36	4	494	421	44	3	468
Grand Total Number of Members	**660**	**269**	**339**	**1,268**	**648**	**281**	**289**	**1,218**

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

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Data

Demographic Information (continued)

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

	Years of Service									
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40+**	**Total**
<20										
20-24										
25-29										
30-34										
35-39			5	7						**12**
40-44			10	28	4					**42**
45-49			7	20	9					**36**
50-54			4	17	17	15	4			**57**
55-59		1	3	10	11	12	7	2		**46**
60-64			3	6	7	8	1			**25**
65-69			1	4	1	2	1			**9**
70-74				1						**1**
75+										
Total	**0**	**1**	**33**	**93**	**49**	**37**	**13**	**2**	**0**	**228**

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

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39	2	1,006
40-44	14	683
45-49	19	1,107
50-54	25	1,471
55-59	19	1,524
60-64	22	1,149
65-69	6	2,478
70-74	4	376
75+	2	48
Total	113	1,240

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45	3	1,822
45-49	2	3,063
50-54	17	3,625
55-59	50	3,828
60-64	111	2,519
65-69	144	2,283
70-74	89	2,280
75-79	43	1,814
80-84	21	1,626
85-89	6	1,585
90-94	2	2,193
95-99	1	20
100+	1	1,013
Total	490	2,455

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Brief Summary of Actuarial Methods and Assumptions

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

Actuarial Methods and Valuation Procedures

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

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

Economic Assumptions

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

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

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Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

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

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

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

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

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

- **Administrative Expenses**

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

Changes in Demographic Assumptions

- **Mortality**

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

- **Disability, Retirement, and Termination**

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

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

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Brief Summary of Changes in Plan Provisions

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

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Glossary

Actuarial Accrued Liability

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

Actuarial Asset Value

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

Actuarial Assumptions

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

Actuarial Cost Method

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

Actuarial Gain or (Loss)

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

Combined Valuation Payroll

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

Cost Sharing Multiple-Employer Plan

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

Employer Contribution Rate

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

Funded Status

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

Normal Cost

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

OPSRP Valuation Payroll

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

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Glossary

Pre-SLGRP Liability

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

Pre-SLGRP Pooled Liability

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

Present Value

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

Rate Collar

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

Required Supplementary Information (RSI)

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

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

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

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

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

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

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

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

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

Tier 1/Tier 2 Valuation Payroll

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

Transition Liability

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

Unfunded Accrued Liability (UAL)

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

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Milliman
111 SW Fifth Avenue, Suite 3700
Portland, OR 97204-3654
503 227 0634

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Milliman
111 SW Fifth Avenue, Suite 3700
Portland, OR 97204-3654
503 227 0634

November 2017

City of Hillsboro/2115
Oregon Public Employees Retirement System

Dear Sir or Madam:

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

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

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

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

Contents of Report

The executive summary provides the basic information you need including:

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

The remainder of the report provides additional information including:

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

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

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Milliman

November 2017
City of Hillsboro/2115

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

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

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

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

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

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November 2017
City of Hillsboro/2115

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.

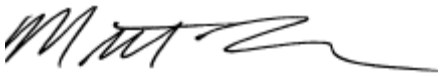
The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

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

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ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

City of Hillsboro -- #2115

November 2017

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Executive Summary

Milliman has prepared this report for City of Hillsboro to:

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

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

Employer Contribution Rates

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

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

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	16.34%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	5.46%	5.46%	5.46%
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**23.36%**	**15.51%**	**20.24%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**23.85%**	**15.93%**	**20.66%**

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.*

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Executive Summary

Employer Contribution Rates (continued)

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

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

For comparison, the funded status as of December 31, 2016 is 69%.

Funded Status as of December 31, 2017	**70% to 130%**	**Under 60% or Over 140%**
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	17.87%	17.87%
Minimum 2019-2021 Rate	14.30%	10.73%
Maximum 2019-2021 Rate	21.44%	25.01%

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Executive Summary

Accounting Information

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

Pension

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

Schedule of Funding Progress

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

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$131,672,972	$163,806,911	$32,133,939	80%	$49,565,888	65%
12/31/2012	146,542,313	171,483,160	24,940,847	85%	52,063,096	48%
12/31/2013	164,443,987	180,158,593	15,714,606	91%	54,358,247	29%
12/31/2014	172,759,359	219,498,006	46,738,647	79%	56,485,044	83%
12/31/2015	170,451,345	232,879,662	62,428,317	73%	59,034,284	106%
12/31/2016	174,575,625	252,687,495	78,111,870	69%	61,697,202	127%

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Executive Summary

Accounting Information (continued)

Retiree Healthcare

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

Contractually Required Contribution Rate

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

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

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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 Hillsboro

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	$78,111,870	$62,428,317
Allocated pooled OPSRP UAL	10,621,925	8,392,547
Side account	0	0
Net unfunded pension actuarial accrued liability	88,733,795	70,820,864
Combined valuation payroll	61,697,202	59,034,284
Net pension UAL as a percentage of payroll	144%	120%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($8,401)	$286,650

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

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Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$4,627,833	$4,691,287
Tier 1/Tier 2 valuation payroll	28,319,114	29,284,922
Tier 1/Tier 2 pension normal cost rate	16.34%	16.02%
Tier 1/ Tier 2 Actuarial accrued liability	$252,687,495	$232,879,662
Actuarial asset value	174,575,625	170,451,345
Tier 1/Tier 2 Unfunded actuarial accrued liability	78,111,870	62,428,317
Tier 1/ Tier 2 Funded status	69%	73%
Combined valuation payroll	$61,697,202	$59,034,284
Tier 1/Tier 2 UAL as a percentage of payroll	127%	106%
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	5.46%	1.85%
Tier 1/Tier 2 active members [1]	305	326
Tier 1/Tier 2 dormant members	158	139
Tier 1/Tier 2 retirees and beneficiaries	399	377

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

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Executive Summary

Principal Valuation Results (continued)

OPSRP

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

Retiree Healthcare

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

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Side Account Information

Reconciliation of Side Accounts

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

All information in this table has been provided by PERS.

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

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Side Account Information

Side Account Balances

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

Development of Side Account Rate

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

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	61,697,202	59,034,284
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

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

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Tier 1/Tier 2 Valuation Results

Assets

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

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

	December 31, 2016	December 31, 2015
1. Member reserves	$20,402,431	$22,556,730
2. Employer reserves	98,444,347	93,314,496
3. Benefits in force reserve	55,728,847	54,580,119
4. Total market value of assets *(1. + 2. + 3.)*	**$174,575,625**	**$170,451,345**

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, 2015 to December 31, 2016
1. Market value of assets at beginning of year	$170,451,345
2. Regular employer contributions	4,675,779
3. Benefit payments and expenses	(10,911,432)
4. Adjustments [1]	(1,726,966)
5. Interest credited	12,086,899
6. Total transferred from side accounts	0
7. Market value of assets at end of year *(1. + 2. + 3. + 4. + 5. + 6.)*	**$174,575,625**

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

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Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

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

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$947,850	$1,021,313
Tier 1 General Service	851,031	948,945
Tier 2 Police & Fire	1,686,593	1,578,258
Tier 2 General Service	1,142,359	1,142,771
Total	**$4,627,833**	**$4,691,287**

Change in Tier 1/Tier 2 Normal Cost

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

	Before Changes	After Changes	Net Change
Normal Cost	$4,497,347	$4,627,833	$130,486

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Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

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

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$26,108,278	$27,937,809
▪ Tier 1 General Service	23,644,842	24,714,540
▪ Tier 2 Police & Fire	32,693,732	28,596,153
▪ Tier 2 General Service	26,616,187	24,070,200
▪ **Total Active Members**	**$109,063,039**	**$105,318,702**
Dormant Members	12,012,445	9,712,032
Retired Members and Beneficiaries	131,612,011	117,848,928
Total Actuarial Accrued Liability	**$252,687,495**	**$232,879,662**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

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

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$245,387,348	$252,687,495	$7,300,147

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Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

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

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$252,687,495	$232,879,662
2. Actuarial value of assets	174,575,625	170,451,345
3. Unfunded accrued liability *(1. – 2.)*	78,111,870	62,428,317
4. Funded percentage *(2. ÷ 1.)*	69%	73%
5. Combined valuation payroll	$61,697,202	$59,034,284
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	127%	106%

Reconciliation of UAL Bases

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

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	$15,702,482	$1,220,938	$1,128,908	$15,610,452	$1,237,157
December 31, 2015	$46,725,835	$3,381,030	$3,369,362	$46,714,167	$3,418,277
December 31, 2016	N/A	N/A	N/A	$15,787,251	$1,114,683
Total				**$78,111,870**	**$5,770,117**

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Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

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

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$232,879,662
b. Normal cost at December 31, 2015 (excluding assumed expenses)	4,473,956
c. Benefit payments during 2016	(10,819,674)
d. Interest at 7.50% to December 31, 2016	17,228,010
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	243,761,954
f. Change in actuarial accrued liability due to assumption, method, and plan changes	7,300,147
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	251,062,101
2. Actuarial accrued liability at December 31, 2016	252,687,495
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(1,625,394)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	170,451,345
b. Contributions for 2016[1]	4,675,779
c. Benefit payments and expenses during 2016	(10,911,432)
d. Interest at 7.50% to December 31, 2016	12,550,014
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	176,765,706
5. Actuarial value of assets at December 31, 2016	174,575,625
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(2,190,080)
7. Total actuarial gain/(loss) *(3. + 6.)*	**($3,815,474)**

Unfunded Accrued Liability Reconciliation

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

1. UAL at December 31, 2015	**$62,428,317**
2. Expected increase	4,567,932
3. Liability (gain)/loss	1,625,394
4. Asset (gain)/loss	2,190,080
5. Change due to changes in assumptions, methods, and plan provisions	7,300,147
6. UAL at December 31, 2016 *(1. + 2. + 3. + 4. + 5.)*	**$78,111,870**

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

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

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

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	Employer Tier 1/Tier 2 Valuation Payroll	Normal Cost Rate	Normal Cost	Employer Tier 1/Tier 2 Valuation Payroll	Normal Cost Rate
Tier 1 Police & Fire	$947,850	$4,436,254	21.37%	$1,021,313	$4,919,341	20.76%
Tier 1 General Service	851,031	5,382,770	15.81%	948,945	5,910,153	16.06%
Tier 2 Police & Fire	1,686,593	8,883,810	18.99%	1,578,258	8,663,817	18.22%
Tier 2 General Service	1,142,359	9,616,280	11.88%	1,142,771	9,791,611	11.67%
Total	**$4,627,833**	**$28,319,114**	**16.34%**	**$4,691,287**	**$29,284,922**	**16.02%**

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

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

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

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$78,111,870	$62,428,317
2. Next year's Tier 1/Tier 2 UAL payment	5,770,117	4,601,968
3. Combined valuation payroll	61,697,202	59,034,284
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	9.35%	7.80%

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

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

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

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	16.34%	16.02%
b. Tier 1/Tier 2 UAL rate	9.35%	7.80%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	25.83%	23.97%

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

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

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

1.	Current net Tier 1/Tier 2 pension contribution rate	17.87%
2.	Employer contribution rate attributable to side accounts	0.00%
3.	Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	17.87%
4.	Size of rate collar	
	a. 20% of current employer contribution rate *(20% x 3.)*	3.57%
	b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.57%
	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.)*	3.93%
5.	Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	13.94%
6.	Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	21.80%
7.	Advisory July 1, 2019 total pension rate, before adjustment	25.83%
8.	Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(4.03%)
9.	Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	9.35%
10.	Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	5.32%
11.	Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	21.80%
12.	Tier 1/Tier 2 retiree healthcare rate	0.49%
13.	Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14.	Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	16.34%
15.	Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	16.34%
16.	Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	21.80%

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

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

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

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	16.34%	16.02%
b. Tier 1/Tier 2 UAL rate	5.32%	1.70%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	21.80%	17.87%

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Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$5,382,770	$4,436,254	$9,819,024
Tier 2	9,616,280	8,883,810	18,500,090
Tier 1/Tier 2 valuation payroll	14,999,050	13,320,064	28,319,114
OPSRP valuation payroll	24,329,709	9,048,379	33,378,088
Combined valuation payroll	**$39,328,759**	**$22,368,443**	**$61,697,202**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	63	121	451	635	72	127	405	604
Police & Fire	39	82	98	219	44	83	83	210
Total	102	203	549	854	116	210	488	814
Active Members with previous service segments with the employer								
General Service	75	134	N/A	209	72	103	N/A	175
Police & Fire	9	10	N/A	19	9	11	N/A	20
Total	84	144	N/A	228	81	114	N/A	195
Dormant Members								
General Service	55	82	48	185	52	68	39	159
Police & Fire	13	8	7	28	13	6	5	24
Total	68	90	55	213	65	74	44	183
Retired Members and Beneficiaries								
General Service	236	48	6	290	227	42	5	274
Police & Fire	109	6	1	116	99	9	1	109
Total	345	54	7	406	326	51	6	383
Grand Total Number of Members	**599**	**491**	**611**	**1,701**	**588**	**449**	**538**	**1,575**

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

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Data

Demographic Information (continued)

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

	Years of Service									
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40+**	**Total**
<20										
20-24										
25-29										
30-34										
35-39		2	19	4	1					**26**
40-44			12	34	4					**50**
45-49			9	40	25	5				**79**
50-54			6	29	20	11				**66**
55-59		1	5	9	20	5	1	1		**42**
60-64			1	16	7	4	3			**31**
65-69				5	5					**10**
70-74				1						**1**
75+										
Total	**0**	**3**	**52**	**138**	**82**	**25**	**4**	**1**	**0**	**305**

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

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34	1	0
35-39	7	524
40-44	22	395
45-49	36	562
50-54	31	702
55-59	31	1,127
60-64	16	439
65-69	8	144
70-74	5	486
75+	1	243
Total	158	634

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45	5	1,676
45-49	3	874
50-54	12	3,144
55-59	43	2,694
60-64	80	2,212
65-69	132	2,014
70-74	64	1,446
75-79	30	1,407
80-84	14	1,120
85-89	12	1,247
90-94	4	975
95-99		
100+		
Total	399	1,947

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Brief Summary of Actuarial Methods and Assumptions

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

Actuarial Methods and Valuation Procedures

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

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

Economic Assumptions

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

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

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Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

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

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

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

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

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

- **Administrative Expenses**

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

Changes in Demographic Assumptions

- **Mortality**

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

- **Disability, Retirement, and Termination**

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

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

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Brief Summary of Changes in Plan Provisions

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

This work product was prepared solely for Oregon Public Employees Retirement System for the purposes stated herein, and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work. Milliman recommends that third parties be aided by their own actuary or other qualified professional when reviewing the Milliman work product.

Glossary

Actuarial Accrued Liability

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

Actuarial Asset Value

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

Actuarial Assumptions

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

Actuarial Cost Method

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

Actuarial Gain or (Loss)

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

Combined Valuation Payroll

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

Cost Sharing Multiple-Employer Plan

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

Employer Contribution Rate

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

Funded Status

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

Normal Cost

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

OPSRP Valuation Payroll

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

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Glossary

Pre-SLGRP Liability

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

Pre-SLGRP Pooled Liability

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

Present Value

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

Rate Collar

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

Required Supplementary Information (RSI)

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

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

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

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

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

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

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

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

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

Tier 1/Tier 2 Valuation Payroll

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

Transition Liability

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

Unfunded Accrued Liability (UAL)

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

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Milliman
111 SW Fifth Avenue, Suite 3700
Portland, OR 97204-3654
503 227 0634

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Milliman
111 SW Fifth Avenue, Suite 3700
Portland, OR 97204-3654
503 227 0634

November 2017

City of Jacksonville/2222
Oregon Public Employees Retirement System

Dear Sir or Madam:

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

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

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

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

Contents of Report

The executive summary provides the basic information you need including:

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

The remainder of the report provides additional information including:

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

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

This work product was prepared solely for Oregon Public Employees Retirement System for the purposes stated herein, and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work. Milliman recommends that third parties be aided by their own actuary or other qualified professional when reviewing the Milliman work product.

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November 2017
City of Jacksonville/2222

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

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

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

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

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

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November 2017
City of Jacksonville/2222

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.

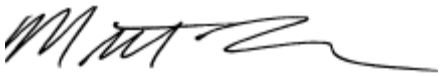
The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

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

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ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

City of Jacksonville -- #2222

November 2017

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Executive Summary

Milliman has prepared this report for City of Jacksonville to:

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

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

Employer Contribution Rates

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

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

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	19.12%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	1.23%	1.23%	1.23%
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**21.91%**	**11.28%**	**16.01%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**22.40%**	**11.70%**	**16.43%**

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

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

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Executive Summary

Employer Contribution Rates (continued)

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

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

For comparison, the funded status as of December 31, 2016 is 76%.

Funded Status as of December 31, 2017	**70% to 130%**	**Under 60% or Over 140%**
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	16.96%	16.96%
Minimum 2019-2021 Rate	13.57%	10.18%
Maximum 2019-2021 Rate	20.35%	23.74%

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Executive Summary

Accounting Information

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

Pension

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

Schedule of Funding Progress

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

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$3,132,652	$3,510,590	$377,938	89%	$877,859	43%
12/31/2012	3,582,220	3,837,033	254,814	93%	989,332	26%
12/31/2013	4,093,913	4,052,248	(41,665)	101%	902,763	(5%)
12/31/2014	4,234,587	4,753,921	519,334	89%	1,038,429	50%
12/31/2015	4,229,016	5,147,899	918,883	82%	1,119,701	82%
12/31/2016	4,300,504	5,637,197	1,336,693	76%	1,064,067	126%

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Executive Summary

Accounting Information (continued)

Retiree Healthcare

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

Contractually Required Contribution Rate

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

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

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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 Jacksonville

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	$1,336,693	$918,883
Allocated pooled OPSRP UAL	183,192	159,181
Side account	0	0
Net unfunded pension actuarial accrued liability	1,519,885	1,078,064
Combined valuation payroll	1,064,067	1,119,701
Net pension UAL as a percentage of payroll	143%	96%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($145)	$5,437

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 that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

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Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$95,609	$102,879
Tier 1/Tier 2 valuation payroll	500,131	531,423
Tier 1/Tier 2 pension normal cost rate	19.12%	19.36%
Tier 1/ Tier 2 Actuarial accrued liability	$5,637,197	$5,147,899
Actuarial asset value	4,300,504	4,229,016
Tier 1/Tier 2 Unfunded actuarial accrued liability	1,336,693	918,883
Tier 1/ Tier 2 Funded status	76%	82%
Combined valuation payroll	$1,064,067	$1,119,701
Tier 1/Tier 2 UAL as a percentage of payroll	126%	82%
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	1.23%	(2.40%)
Tier 1/Tier 2 active members [1]	9	10
Tier 1/Tier 2 dormant members	6	5
Tier 1/Tier 2 retirees and beneficiaries	15	14

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

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Executive Summary

Principal Valuation Results (continued)

OPSRP

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

Retiree Healthcare

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

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Side Account Information

Reconciliation of Side Accounts

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

All information in this table has been provided by PERS.

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

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Side Account Information

Side Account Balances

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

Development of Side Account Rate

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

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	1,064,067	1,119,701
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

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

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Tier 1/Tier 2 Valuation Results

Assets

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

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

	December 31, 2016	December 31, 2015
1. Member reserves	$657,644	$796,829
2. Employer reserves	2,659,827	2,622,922
3. Benefits in force reserve	983,032	809,265
4. Total market value of assets *(1. + 2. + 3.)*	**$4,300,504**	**$4,229,016**

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, 2015 to December 31, 2016
1.	Market value of assets at beginning of year	$4,229,016
2.	Regular employer contributions	79,367
3.	Benefit payments and expenses	(192,473)
4.	Adjustments [1]	(116,335)
5.	Interest credited	300,928
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$4,300,504**

[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.*

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Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

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

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$45,185	$55,653
Tier 1 General Service	26,021	24,794
Tier 2 Police & Fire	10,546	9,406
Tier 2 General Service	13,857	13,026
Total	**$95,609**	**$102,879**

Change in Tier 1/Tier 2 Normal Cost

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

	Before Changes	After Changes	Net Change
Normal Cost	$93,067	$95,609	$2,542

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Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

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

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$961,609	$1,110,698
▪ Tier 1 General Service	1,184,367	1,060,116
▪ Tier 2 Police & Fire	232,284	215,143
▪ Tier 2 General Service	428,224	400,741
▪ **Total Active Members**	**$2,806,484**	**$2,786,698**
Dormant Members	509,135	613,842
Retired Members and Beneficiaries	2,321,578	1,747,359
Total Actuarial Accrued Liability	**$5,637,197**	**$5,147,899**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

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

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$5,491,920	$5,637,197	$145,277

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Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

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

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$5,637,197	$5,147,899
2. Actuarial value of assets	4,300,504	4,229,016
3. Unfunded accrued liability *(1. – 2.)*	1,336,693	918,883
4. Funded percentage *(2. ÷ 1.)*	76%	82%
5. Combined valuation payroll	$1,064,067	$1,119,701
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	126%	82%

Reconciliation of UAL Bases

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

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	($41,633)	($3,237)	($2,993)	($41,389)	($3,280)
December 31, 2015	$960,516	$69,502	$69,262	$960,276	$70,268
December 31, 2016	N/A	N/A	N/A	$417,806	$29,500
Total				**$1,336,693**	**$96,488**

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Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

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

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$5,147,899
b. Normal cost at December 31, 2015 (excluding assumed expenses)	98,093
c. Benefit payments during 2016	(190,854)
d. Interest at 7.50% to December 31, 2016	382,614
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	5,437,752
f. Change in actuarial accrued liability due to assumption, method, and plan changes	145,277
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	5,583,029
2. Actuarial accrued liability at December 31, 2016	5,637,197
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(54,168)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	4,229,016
b. Contributions for 2016[1]	79,367
c. Benefit payments and expenses during 2016	(192,473)
d. Interest at 7.50% to December 31, 2016	312,935
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	4,428,846
5. Actuarial value of assets at December 31, 2016	4,300,504
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(128,342)
7. Total actuarial gain/(loss) *(3. + 6.)*	**($182,510)**

Unfunded Accrued Liability Reconciliation

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

1. UAL at December 31, 2015	**$918,883**
2. Expected increase	90,023
3. Liability (gain)/loss	54,168
4. Asset (gain)/loss	128,342
5. Change due to changes in assumptions, methods, and plan provisions	145,277
6. UAL at December 31, 2016 *(1. + 2. + 3. + 4. + 5.)*	**$1,336,693**

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

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

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

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	Employer Tier 1/Tier 2 Valuation Payroll	Normal Cost Rate	Normal Cost	Employer Tier 1/Tier 2 Valuation Payroll	Normal Cost Rate
Tier 1 Police & Fire	$45,185	$175,092	25.81%	$55,653	$217,351	25.61%
Tier 1 General Service	26,021	177,627	14.65%	24,794	172,669	14.36%
Tier 2 Police & Fire	10,546	50,559	20.86%	9,406	46,881	20.06%
Tier 2 General Service	13,857	96,853	14.31%	13,026	94,522	13.78%
Total	**$95,609**	**$500,131**	**19.12%**	**$102,879**	**$531,423**	**19.36%**

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

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

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

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$1,336,693	$918,883
2. Next year's Tier 1/Tier 2 UAL payment	96,488	66,265
3. Combined valuation payroll	1,064,067	1,119,701
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	9.07%	5.92%

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

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

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

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	19.12%	19.36%
b. Tier 1/Tier 2 UAL rate	9.07%	5.92%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	28.33%	25.43%

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

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

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

1.	Current net Tier 1/Tier 2 pension contribution rate	16.96%
2.	Employer contribution rate attributable to side accounts	0.00%
3.	Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	16.96%
4.	Size of rate collar	
	a. 20% of current employer contribution rate *(20% x 3.)*	3.39%
	b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.39%
	c. Funded percentage	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.)*	3.39%
5.	Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	13.57%
6.	Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	20.35%
7.	Advisory July 1, 2019 total pension rate, before adjustment	28.33%
8.	Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(7.98%)
9.	Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	9.07%
10.	Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	1.09%
11.	Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	20.35%
12.	Tier 1/Tier 2 retiree healthcare rate	0.49%
13.	Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14.	Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	19.12%
15.	Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	19.12%
16.	Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	20.35%

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

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

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

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	19.12%	19.36%
b. Tier 1/Tier 2 UAL rate	1.09%	(2.55%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	20.35%	16.96%

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Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$177,627	$175,092	$352,719
Tier 2	96,853	50,559	147,412
Tier 1/Tier 2 valuation payroll	274,480	225,651	500,131
OPSRP valuation payroll	303,342	260,594	563,936
Combined valuation payroll	**$577,822**	**$486,245**	**$1,064,067**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	3	2	8	13	3	2	7	12
Police & Fire	3	1	6	10	4	1	8	13
Total	6	3	14	23	7	3	15	25
Active Members with previous service segments with the employer								
General Service	2	2	N/A	4	2	2	N/A	4
Police & Fire	3	2	N/A	5	3	3	N/A	6
Total	5	4	N/A	9	5	5	N/A	10
Dormant Members								
General Service	2	1	1	4	3	1	1	5
Police & Fire	2	1	1	4	1	0	1	2
Total	4	2	2	8	4	1	2	7
Retired Members and Beneficiaries								
General Service	7	2	0	9	6	2	0	8
Police & Fire	5	1	0	6	5	1	0	6
Total	12	3	0	15	11	3	0	14
Grand Total Number of Members	**27**	**12**	**16**	**55**	**27**	**12**	**17**	**56**

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

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Data

Demographic Information (continued)

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

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

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

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44	3	443
45-49	1	676
50-54		
55-59		
60-64	1	2,034
65-69	1	13
70-74		
75+		
Total	6	675

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59		
60-64	6	1,021
65-69	5	536
70-74	1	107
75-79	1	1,228
80-84	1	2,716
85-89	1	591
90-94		
95-99		
100+		
Total	15	897

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Brief Summary of Actuarial Methods and Assumptions

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

Actuarial Methods and Valuation Procedures

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

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

Economic Assumptions

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

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

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Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

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

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

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

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

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

- **Administrative Expenses**

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

Changes in Demographic Assumptions

- **Mortality**

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

- **Disability, Retirement, and Termination**

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

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

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Brief Summary of Changes in Plan Provisions

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

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Glossary

Actuarial Accrued Liability

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

Actuarial Asset Value

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

Actuarial Assumptions

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

Actuarial Cost Method

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

Actuarial Gain or (Loss)

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

Combined Valuation Payroll

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

Cost Sharing Multiple-Employer Plan

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

Employer Contribution Rate

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

Funded Status

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

Normal Cost

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

OPSRP Valuation Payroll

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

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Glossary

Pre-SLGRP Liability

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

Pre-SLGRP Pooled Liability

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

Present Value

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

Rate Collar

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

Required Supplementary Information (RSI)

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

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

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

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

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

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

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

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

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

Tier 1/Tier 2 Valuation Payroll

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

Transition Liability

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

Unfunded Accrued Liability (UAL)

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

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Milliman
111 SW Fifth Avenue, Suite 3700
Portland, OR 97204-3654
503 227 0634

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111 SW Fifth Avenue, Suite 3700
Portland, OR 97204-3654
503 227 0634

November 2017

City of Joseph/2232
Oregon Public Employees Retirement System

Dear Sir or Madam:

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

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

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

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

Contents of Report

The executive summary provides the basic information you need including:

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

The remainder of the report provides additional information including:

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

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

This work product was prepared solely for Oregon Public Employees Retirement System for the purposes stated herein, and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work. Milliman recommends that third parties be aided by their own actuary or other qualified professional when reviewing the Milliman work product.

Milliman

November 2017
City of Joseph/2232

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

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

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

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

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

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November 2017
City of Joseph/2232

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.

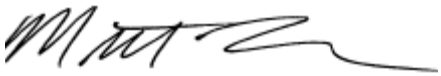
The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

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

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ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

City of Joseph -- #2232

November 2017

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Executive Summary

Milliman has prepared this report for City of Joseph to:

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

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

Employer Contribution Rates

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

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

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	12.62%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	11.56%	11.56%	11.56%
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**25.74%**	**21.61%**	**26.34%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**26.23%**	**22.03%**	**26.76%**

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

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

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Executive Summary

Employer Contribution Rates (continued)

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

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

For comparison, the funded status as of December 31, 2016 is 68%.

Funded Status as of December 31, 2017	**70% to 130%**	**Under 60% or Over 140%**
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	19.50%	19.50%
Minimum 2019-2021 Rate	15.60%	11.70%
Maximum 2019-2021 Rate	23.40%	27.30%

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Executive Summary

Accounting Information

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

Pension

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

Schedule of Funding Progress

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

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$777,639	$1,026,462	$248,823	76%	$133,837	186%
12/31/2012	855,476	1,025,082	169,606	83%	129,996	130%
12/31/2013	939,351	1,027,048	87,697	91%	141,268	62%
12/31/2014	903,550	1,183,083	279,533	76%	143,379	195%
12/31/2015	844,192	1,208,192	364,000	70%	141,255	258%
12/31/2016	840,782	1,233,763	392,981	68%	79,222	496%

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Executive Summary

Accounting Information (continued)

Retiree Healthcare

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

Contractually Required Contribution Rate

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

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

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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 Joseph

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	$392,981	$364,000
Allocated pooled OPSRP UAL	13,639	20,081
Side account	0	0
Net unfunded pension actuarial accrued liability	406,620	384,081
Combined valuation payroll	79,222	141,255
Net pension UAL as a percentage of payroll	513%	272%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($11)	$686

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

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Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$5,143	$4,947
Tier 1/Tier 2 valuation payroll	40,743	40,256
Tier 1/Tier 2 pension normal cost rate	12.62%	12.29%
Tier 1/ Tier 2 Actuarial accrued liability	$1,233,763	$1,208,192
Actuarial asset value	840,782	844,192
Tier 1/Tier 2 Unfunded actuarial accrued liability	392,981	364,000
Tier 1/ Tier 2 Funded status	68%	70%
Combined valuation payroll	$79,222	$141,255
Tier 1/Tier 2 UAL as a percentage of payroll	496%	258%
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	11.56%	7.21%
Tier 1/Tier 2 active members [1]	1	1
Tier 1/Tier 2 dormant members	1	1
Tier 1/Tier 2 retirees and beneficiaries	7	7

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

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Executive Summary

Principal Valuation Results (continued)

OPSRP

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

Retiree Healthcare

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

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Side Account Information

Reconciliation of Side Accounts

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

All information in this table has been provided by PERS.

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

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Side Account Information

Side Account Balances

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

Development of Side Account Rate

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

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	79,222	141,255
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

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

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Tier 1/Tier 2 Valuation Results

Assets

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

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

	December 31, 2016	December 31, 2015
1. Member reserves	$31,951	$30,263
2. Employer reserves	364,082	330,199
3. Benefits in force reserve	444,750	483,730
4. Total market value of assets *(1. + 2. + 3.)*	**$840,782**	**$844,192**

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

Reconciliation of Tier 1/Tier 2 Pension Assets

	December 31, 2015 to December 31, 2016
1. Market value of assets at beginning of year	$844,192
2. Regular employer contributions	9,233
3. Benefit payments and expenses	(87,080)
4. Adjustments [1]	16,885
5. Interest credited	57,552
6. Total transferred from side accounts	0
7. Market value of assets at end of year *(1. + 2. + 3. + 4. + 5. + 6.)*	**$840,782**

[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.*

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Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

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

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	5,143	4,947
Tier 2 Police & Fire	0	0
Tier 2 General Service	0	0
Total	**$5,143**	**$4,947**

Change in Tier 1/Tier 2 Normal Cost

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

	Before Changes	After Changes	Net Change
Normal Cost	$5,089	$5,143	$54

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Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

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

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	171,401	153,494
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	0	0
▪ **Total Active Members**	**$171,401**	**$153,494**
Dormant Members	12,020	10,232
Retired Members and Beneficiaries	1,050,342	1,044,466
Total Actuarial Accrued Liability	**$1,233,763**	**$1,208,192**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

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

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$1,196,266	$1,233,763	$37,497

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Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

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

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$1,233,763	$1,208,192
2. Actuarial value of assets	840,782	844,192
3. Unfunded accrued liability *(1. – 2.)*	392,981	364,000
4. Funded percentage *(2. ÷ 1.)*	68%	70%
5. Combined valuation payroll	$79,222	$141,255
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	496%	258%

Reconciliation of UAL Bases

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

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	$87,630	$6,814	$6,300	$87,116	$6,904
December 31, 2015	$276,370	$19,998	$19,929	$276,301	$20,218
December 31, 2016	N/A	N/A	N/A	$29,564	$2,087
Total				**$392,981**	**$29,209**

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Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

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

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$1,208,192
b. Normal cost at December 31, 2015 (excluding assumed expenses)	4,718
c. Benefit payments during 2016	(86,347)
d. Interest at 7.50% to December 31, 2016	87,553
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	1,214,116
f. Change in actuarial accrued liability due to assumption, method, and plan changes	37,497
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	1,251,613
2. Actuarial accrued liability at December 31, 2016	1,233,763
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	17,850
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	844,192
b. Contributions for 2016[1]	9,233
c. Benefit payments and expenses during 2016	(87,080)
d. Interest at 7.50% to December 31, 2016	60,395
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	826,741
5. Actuarial value of assets at December 31, 2016	840,782
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	14,042
7. Total actuarial gain/(loss) *(3. + 6.)*	**$31,892**

Unfunded Accrued Liability Reconciliation

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

1. UAL at December 31, 2015	**$364,000**
2. Expected increase	23,376
3. Liability (gain)/loss	(17,850)
4. Asset (gain)/loss	(14,042)
5. Change due to changes in assumptions, methods, and plan provisions	37,497
6. UAL at December 31, 2016 *(1. + 2. + 3. + 4. + 5.)*	**$392,981**

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

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

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

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	Employer Tier 1/Tier 2 Valuation Payroll	Normal Cost Rate	Normal Cost	Employer Tier 1/Tier 2 Valuation Payroll	Normal Cost Rate
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	5,143	40,743	12.62%	4,947	40,256	12.29%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	0	0	0.00%	0	0	0.00%
Total	**$5,143**	**$40,743**	**12.62%**	**$4,947**	**$40,256**	**12.29%**

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

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

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

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$392,981	$364,000
2. Next year's Tier 1/Tier 2 UAL payment	29,209	26,812
3. Combined valuation payroll	79,222	141,255
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	36.87%	18.98%

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

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

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

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	12.62%	12.29%
b. Tier 1/Tier 2 UAL rate	36.87%	18.98%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	49.63%	31.42%

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

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

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

1.	Current net Tier 1/Tier 2 pension contribution rate	19.50%
2.	Employer contribution rate attributable to side accounts	0.00%
3.	Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	19.50%
4.	Size of rate collar	
	a. 20% of current employer contribution rate *(20% x 3.)*	3.90%
	b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.90%
	c. Funded percentage	68%
	d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	4.68%
5.	Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	14.82%
6.	Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	24.18%
7.	Advisory July 1, 2019 total pension rate, before adjustment	49.63%
8.	Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(25.45%)
9.	Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	36.87%
10.	Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	11.42%
11.	Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	24.18%
12.	Tier 1/Tier 2 retiree healthcare rate	0.49%
13.	Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14.	Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	12.62%
15.	Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	12.62%
16.	Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	24.18%

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

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

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

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	12.62%	12.29%
b. Tier 1/Tier 2 UAL rate	11.42%	7.06%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	24.18%	19.50%

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Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$40,743	$0	$40,743
Tier 2	0	0	0
Tier 1/Tier 2 valuation payroll	40,743	0	40,743
OPSRP valuation payroll	38,479	0	38,479
Combined valuation payroll	**$79,222**	**$0**	**$79,222**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	1	0	3	4	1	0	4	5
Police & Fire	0	0	0	0	0	0	0	0
Total	1	0	3	4	1	0	4	5
Active Members with previous service segments with the employer								
General Service	0	0	N/A	0	0	0	N/A	0
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	0	0	N/A	0	0	0	N/A	0
Dormant Members								
General Service	0	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	6	1	0	7	6	1	0	7
Police & Fire	0	0	0	0	0	0	0	0
Total	6	1	0	7	6	1	0	7
Grand Total Number of Members	**7**	**2**	**4**	**13**	**7**	**2**	**5**	**14**

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

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Data

Demographic Information (continued)

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

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

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

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39	1	374
40-44		
45-49		
50-54		
55-59		
60-64		
65-69		
70-74		
75+		
Total	1	374

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59		
60-64	2	655
65-69	1	845
70-74	1	2,796
75-79	2	1,330
80-84	1	480
85-89		
90-94		
95-99		
100+		
Total	7	1,156

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Brief Summary of Actuarial Methods and Assumptions

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

Actuarial Methods and Valuation Procedures

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

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

Economic Assumptions

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

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

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Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

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

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

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

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

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

- **Administrative Expenses**

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

Changes in Demographic Assumptions

- **Mortality**

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

- **Disability, Retirement, and Termination**

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

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

This work product was prepared solely for Oregon Public Employees Retirement System for the purposes stated herein, and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work. Milliman recommends that third parties be aided by their own actuary or other qualified professional when reviewing the Milliman work product.

Brief Summary of Changes in Plan Provisions

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

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Glossary

Actuarial Accrued Liability

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

Actuarial Asset Value

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

Actuarial Assumptions

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

Actuarial Cost Method

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

Actuarial Gain or (Loss)

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

Combined Valuation Payroll

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

Cost Sharing Multiple-Employer Plan

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

Employer Contribution Rate

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

Funded Status

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

Normal Cost

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

OPSRP Valuation Payroll

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

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Glossary

Pre-SLGRP Liability

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

Pre-SLGRP Pooled Liability

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

Present Value

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

Rate Collar

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

Required Supplementary Information (RSI)

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

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

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

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

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

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

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

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

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

Tier 1/Tier 2 Valuation Payroll

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

Transition Liability

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

Unfunded Accrued Liability (UAL)

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

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Milliman
111 SW Fifth Avenue, Suite 3700
Portland, OR 97204-3654
503 227 0634

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Milliman
111 SW Fifth Avenue, Suite 3700
Portland, OR 97204-3654
503 227 0634

November 2017

City of Keizer/2279
Oregon Public Employees Retirement System

Dear Sir or Madam:

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

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

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

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

Contents of Report

The executive summary provides the basic information you need including:

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

The remainder of the report provides additional information including:

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

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

This work product was prepared solely for Oregon Public Employees Retirement System for the purposes stated herein, and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work. Milliman recommends that third parties be aided by their own actuary or other qualified professional when reviewing the Milliman work product.

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November 2017
City of Keizer/2279

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

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

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

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

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

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November 2017
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.

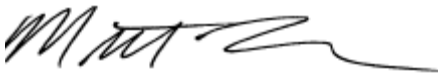
The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

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

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ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

City of Keizer -- #2279

November 2017

Secondary Employers

2539 Keizer Water District

This work product was prepared solely for Oregon Public Employees Retirement System for the purposes stated herein, and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work. Milliman recommends that third parties be aided by their own actuary or other qualified professional when reviewing the Milliman work product.

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Executive Summary

Milliman has prepared this report for City of Keizer to:

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

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

Employer Contribution Rates

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

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

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	19.36%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	(0.22%)	(0.22%)	(0.22%)
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**20.70%**	**9.83%**	**14.56%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**21.19%**	**10.25%**	**14.98%**

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.*

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Executive Summary

Employer Contribution Rates (continued)

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

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

For comparison, the funded status as of December 31, 2016 is 71%.

Funded Status as of December 31, 2017	**70% to 130%**	**Under 60% or Over 140%**
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	15.95%	15.95%
Minimum 2019-2021 Rate	12.76%	9.57%
Maximum 2019-2021 Rate	19.14%	22.33%

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Executive Summary

Accounting Information

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

Pension

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

Schedule of Funding Progress

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

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$14,874,482	$15,789,873	$915,391	94%	$5,827,628	16%
12/31/2012	16,637,219	17,416,511	779,292	96%	5,961,984	13%
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%

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Executive Summary

Accounting Information (continued)

Retiree Healthcare

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

Contractually Required Contribution Rate

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

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

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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, 2016	**December 31, 2015**
T1/T2 UAL	$8,137,300	$6,056,070
Allocated pooled OPSRP UAL	1,166,484	942,448
Side account	0	0
Net unfunded pension actuarial accrued liability	9,303,784	6,998,518
Combined valuation payroll	6,775,495	6,629,305
Net pension UAL as a percentage of payroll	137%	106%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($923)	$32,190

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

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Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$597,384	$579,086
Tier 1/Tier 2 valuation payroll	3,085,303	3,152,980
Tier 1/Tier 2 pension normal cost rate	19.36%	18.37%
Tier 1/ Tier 2 Actuarial accrued liability	$27,647,523	$24,863,283
Actuarial asset value	19,510,223	18,807,213
Tier 1/Tier 2 Unfunded actuarial accrued liability	8,137,300	6,056,070
Tier 1/ Tier 2 Funded status	71%	76%
Combined valuation payroll	$6,775,495	$6,629,305
Tier 1/Tier 2 UAL as a percentage of payroll	120%	91%
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	(0.22%)	(2.42%)
Tier 1/Tier 2 active members [1]	33	35
Tier 1/Tier 2 dormant members	6	6
Tier 1/Tier 2 retirees and beneficiaries	26	24

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

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Executive Summary

Principal Valuation Results (continued)

OPSRP

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

Retiree Healthcare

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

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Side Account Information

Reconciliation of Side Accounts

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

All information in this table has been provided by PERS.

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

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Side Account Information

Side Account Balances

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

Development of Side Account Rate

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

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	6,775,495	6,629,305
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

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

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Tier 1/Tier 2 Valuation Results

Assets

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

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

	December 31, 2016	December 31, 2015
1. Member reserves	$2,951,946	$2,941,351
2. Employer reserves	11,789,165	11,236,208
3. Benefits in force reserve	4,769,113	4,629,654
4. Total market value of assets *(1. + 2. + 3.)*	**$19,510,223**	**$18,807,213**

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

Reconciliation of Tier 1/Tier 2 Pension Assets

	December 31, 2015 to December 31, 2016
1. Market value of assets at beginning of year	$18,807,213
2. Regular employer contributions	330,626
3. Benefit payments and expenses	(933,769)
4. Adjustments [1]	(37,920)
5. Interest credited	1,344,072
6. Total transferred from side accounts	0
7. Market value of assets at end of year *(1. + 2. + 3. + 4. + 5. + 6.)*	**$19,510,223**

[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.*

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Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

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

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$358,687	$348,035
Tier 1 General Service	19,776	26,634
Tier 2 Police & Fire	151,378	141,060
Tier 2 General Service	67,543	63,357
Total	**$597,384**	**$579,086**

Change in Tier 1/Tier 2 Normal Cost

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

	Before Changes	After Changes	Net Change
Normal Cost	$576,867	$597,384	$20,517

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Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

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

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$11,269,008	$10,398,306
▪ Tier 1 General Service	189,901	219,992
▪ Tier 2 Police & Fire	3,623,932	3,155,198
▪ Tier 2 General Service	876,941	694,145
▪ **Total Active Members**	**$15,959,782**	**$14,467,641**
Dormant Members	424,767	399,332
Retired Members and Beneficiaries	11,262,974	9,996,310
Total Actuarial Accrued Liability	**$27,647,523**	**$24,863,283**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

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

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$26,715,294	$27,647,523	$932,229

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Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

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

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$27,647,523	$24,863,283
2. Actuarial value of assets	19,510,223	18,807,213
3. Unfunded accrued liability *(1. – 2.)*	8,137,300	6,056,070
4. Funded percentage *(2. ÷ 1.)*	71%	76%
5. Combined valuation payroll	$6,775,495	$6,629,305
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	120%	91%

Reconciliation of UAL Bases

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

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	$208,525	$16,214	$14,992	$207,303	$16,429
December 31, 2015	$5,847,545	$423,122	$421,662	$5,846,085	$427,783
December 31, 2016	N/A	N/A	N/A	$2,083,912	$147,138
Total				**$8,137,300**	**$591,350**

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Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

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

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$24,863,283
b. Normal cost at December 31, 2015 (excluding assumed expenses)	552,148
c. Benefit payments during 2016	(925,916)
d. Interest at 7.50% to December 31, 2016	1,850,730
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	26,340,245
f. Change in actuarial accrued liability due to assumption, method, and plan changes	932,229
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	27,272,474
2. Actuarial accrued liability at December 31, 2016	27,647,523
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(375,049)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	18,807,213
b. Contributions for 2016[1]	330,626
c. Benefit payments and expenses during 2016	(933,769)
d. Interest at 7.50% to December 31, 2016	1,387,923
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	19,591,994
5. Actuarial value of assets at December 31, 2016	19,510,223
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(81,771)
7. Total actuarial gain/(loss) *(3. + 6.)*	**($456,820)**

Unfunded Accrued Liability Reconciliation

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

1. UAL at December 31, 2015	**$6,056,070**
2. Expected increase	692,181
3. Liability (gain)/loss	375,049
4. Asset (gain)/loss	81,771
5. Change due to changes in assumptions, methods, and plan provisions	932,229
6. UAL at December 31, 2016 *(1. + 2. + 3. + 4. + 5.)*	**$8,137,300**

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

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

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

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	Employer Tier 1/Tier 2 Valuation Payroll	Normal Cost Rate	Normal Cost	Employer Tier 1/Tier 2 Valuation Payroll	Normal Cost Rate
Tier 1 Police & Fire	$358,687	$1,550,891	23.13%	$348,035	$1,579,264	22.04%
Tier 1 General Service	19,776	123,574	16.00%	26,634	199,556	13.35%
Tier 2 Police & Fire	151,378	789,693	19.17%	141,060	768,979	18.34%
Tier 2 General Service	67,543	621,145	10.87%	63,357	605,181	10.47%
Total	**$597,384**	**$3,085,303**	**19.36%**	**$579,086**	**$3,152,980**	**18.37%**

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

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

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

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$8,137,300	$6,056,070
2. Next year's Tier 1/Tier 2 UAL payment	591,350	439,336
3. Combined valuation payroll	6,775,495	6,629,305
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	8.73%	6.63%

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

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

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

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	19.36%	18.37%
b. Tier 1/Tier 2 UAL rate	8.73%	6.63%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	28.23%	25.15%

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

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

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

1.	Current net Tier 1/Tier 2 pension contribution rate	15.95%
2.	Employer contribution rate attributable to side accounts	0.00%
3.	Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	15.95%
4.	Size of rate collar	
	a. 20% of current employer contribution rate *(20% x 3.)*	3.19%
	b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.19%
	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.)*	3.19%
5.	Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	12.76%
6.	Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	19.14%
7.	Advisory July 1, 2019 total pension rate, before adjustment	28.23%
8.	Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(9.09%)
9.	Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	8.73%
10.	Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	(0.36%)
11.	Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	19.14%
12.	Tier 1/Tier 2 retiree healthcare rate	0.49%
13.	Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14.	Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	19.36%
15.	Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	19.36%
16.	Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	19.14%

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

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

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

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	19.36%	18.37%
b. Tier 1/Tier 2 UAL rate	(0.36%)	(2.57%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	19.14%	15.95%

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Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$123,574	$1,550,891	$1,674,465
Tier 2	621,145	789,693	1,410,838
Tier 1/Tier 2 valuation payroll	744,719	2,340,584	3,085,303
OPSRP valuation payroll	2,802,570	887,622	3,690,192
Combined valuation payroll	**$3,547,289**	**$3,228,206**	**$6,775,495**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	1	7	45	53	2	7	44	53
Police & Fire	16	9	11	36	17	9	10	36
Total	17	16	56	89	19	16	54	89
Active Members with previous service segments with the employer								
General Service	1	0	N/A	1	1	0	N/A	1
Police & Fire	9	7	N/A	16	9	7	N/A	16
Total	10	7	N/A	17	10	7	N/A	17
Dormant Members								
General Service	0	0	0	0	0	0	1	1
Police & Fire	5	1	0	6	5	1	0	6
Total	5	1	0	6	5	1	1	7
Retired Members and Beneficiaries								
General Service	6	0	4	10	5	0	4	9
Police & Fire	20	0	0	20	19	0	0	19
Total	26	0	4	30	24	0	4	28
Grand Total Number of Members	**58**	**24**	**60**	**142**	**58**	**24**	**59**	**141**

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

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Data

Demographic Information (continued)

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

	Years of Service									
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40+**	**Total**
<20										
20-24										
25-29										
30-34										
35-39			1							**1**
40-44			4	2						**6**
45-49				6	10	1				**17**
50-54					4	1				**5**
55-59			1			1				**2**
60-64			1							**1**
65-69		1								**1**
70-74										
75+										
Total	**0**	**1**	**7**	**8**	**14**	**3**	**0**	**0**	**0**	**33**

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

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49	2	1,018
50-54	4	397
55-59		
60-64		
65-69		
70-74		
75+		
Total	6	604

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45	1	90
45-49		
50-54	3	2,603
55-59	8	2,741
60-64	3	1,844
65-69	6	2,715
70-74	3	2,711
75-79	1	418
80-84		
85-89		
90-94	1	2,512
95-99		
100+		
Total	26	2,412

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Brief Summary of Actuarial Methods and Assumptions

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

Actuarial Methods and Valuation Procedures

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

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

Economic Assumptions

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

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

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Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

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

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

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

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

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

- **Administrative Expenses**

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

Changes in Demographic Assumptions

- **Mortality**

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

- **Disability, Retirement, and Termination**

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

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

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Brief Summary of Changes in Plan Provisions

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

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Glossary

Actuarial Accrued Liability

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

Actuarial Asset Value

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

Actuarial Assumptions

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

Actuarial Cost Method

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

Actuarial Gain or (Loss)

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

Combined Valuation Payroll

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

Cost Sharing Multiple-Employer Plan

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

Employer Contribution Rate

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

Funded Status

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

Normal Cost

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

OPSRP Valuation Payroll

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

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Glossary

Pre-SLGRP Liability

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

Pre-SLGRP Pooled Liability

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

Present Value

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

Rate Collar

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

Required Supplementary Information (RSI)

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

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

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

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

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

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

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

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

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

Tier 1/Tier 2 Valuation Payroll

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

Transition Liability

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

Unfunded Accrued Liability (UAL)

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

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111 SW Fifth Avenue, Suite 3700
Portland, OR 97204-3654
503 227 0634

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Milliman
111 SW Fifth Avenue, Suite 3700
Portland, OR 97204-3654
503 227 0634

November 2017

City of Maupin/2283
Oregon Public Employees Retirement System

Dear Sir or Madam:

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

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

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

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

Contents of Report

The executive summary provides the basic information you need including:

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

The remainder of the report provides additional information including:

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

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

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November 2017
City of Maupin/2283

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

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

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

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

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

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November 2017
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.

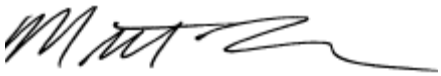
The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

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

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ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

City of Maupin -- #2283

November 2017

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This work product was prepared solely for Oregon Public Employees Retirement System for the purposes stated herein, and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work. Milliman recommends that third parties be aided by their own actuary or other qualified professional when reviewing the Milliman work product.

Executive Summary

Milliman has prepared this report for City of Maupin to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to City of Maupin.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for City of Maupin

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	17.34%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	(1.98%)	(1.98%)	(1.98%)
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**16.92%**	**8.07%**	**12.80%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**17.41%**	**8.49%**	**13.22%**

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.*

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Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 67%.

Funded Status as of December 31, 2017	**70% to 130%**	**Under 60% or Over 140%**
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	11.46%	11.46%
Minimum 2019-2021 Rate	8.46%	5.46%
Maximum 2019-2021 Rate	14.46%	17.46%

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Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$832,750	$878,410	$45,660	95%	$358,633	13%
12/31/2012	964,281	850,528	(113,753)	113%	330,436	(34%)
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%

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Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

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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, 2016	**December 31, 2015**
T1/T2 UAL	$437,028	$365,309
Allocated pooled OPSRP UAL	53,716	41,098
Side account	0	0
Net unfunded pension actuarial accrued liability	490,744	406,407
Combined valuation payroll	312,008	289,091
Net pension UAL as a percentage of payroll	157%	141%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($42)	$1,404

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

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Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$12,190	$11,785
Tier 1/Tier 2 valuation payroll	70,282	68,217
Tier 1/Tier 2 pension normal cost rate	17.34%	17.28%
Tier 1/ Tier 2 Actuarial accrued liability	$1,314,029	$1,247,218
Actuarial asset value	877,001	881,909
Tier 1/Tier 2 Unfunded actuarial accrued liability	437,028	365,309
Tier 1/ Tier 2 Funded status	67%	71%
Combined valuation payroll	$312,008	$289,091
Tier 1/Tier 2 UAL as a percentage of payroll	140%	126%
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	(1.98%)	(5.82%)
Tier 1/Tier 2 active members [1]	1	1
Tier 1/Tier 2 dormant members	1	1
Tier 1/Tier 2 retirees and beneficiaries	4	4

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

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Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2016**	**December 31, 2015**
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

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Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

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Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	312,008	289,091
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

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Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$157,717	$149,442
2. Employer reserves	357,715	342,575
3. Benefits in force reserve	361,569	389,892
4. Total market value of assets *(1. + 2. + 3.)*	**$877,001**	**$881,909**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

	December 31, 2015 to December 31, 2016
1. Market value of assets at beginning of year	$881,909
2. Regular employer contributions	(8,306)
3. Benefit payments and expenses	(70,793)
4. Adjustments [1]	14,509
5. Interest credited	59,683
6. Total transferred from side accounts	0
7. Market value of assets at end of year *(1. + 2. + 3. + 4. + 5. + 6.)*	**$877,001**

[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.*

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Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	12,190	11,785
Tier 2 Police & Fire	0	0
Tier 2 General Service	0	0
Total	**$12,190**	**$11,785**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$12,275	$12,190	($85)

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Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	450,896	397,713
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	0	0
▪ **Total Active Members**	**$450,896**	**$397,713**
Dormant Members	9,233	7,654
Retired Members and Beneficiaries	853,900	841,851
Total Actuarial Accrued Liability	**$1,314,029**	**$1,247,218**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$1,291,253	$1,314,029	$22,776

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Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$1,314,029	$1,247,218
2. Actuarial value of assets	877,001	881,909
3. Unfunded accrued liability *(1. – 2.)*	437,028	365,309
4. Funded percentage *(2. ÷ 1.)*	67%	71%
5. Combined valuation payroll	$312,008	$289,091
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	140%	126%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	($102,161)	($7,943)	($7,345)	($101,563)	($8,049)
December 31, 2015	$467,470	$33,826	$33,709	$467,353	$34,198
December 31, 2016	N/A	N/A	N/A	$71,238	$5,030
Total				**$437,028**	**$31,179**

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Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$1,247,218
b. Normal cost at December 31, 2015 (excluding assumed expenses)	11,240
c. Benefit payments during 2016	(70,198)
d. Interest at 7.50% to December 31, 2016	91,330
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	1,279,590
f. Change in actuarial accrued liability due to assumption, method, and plan changes	22,776
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	1,302,366
2. Actuarial accrued liability at December 31, 2016	1,314,029
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(11,663)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	881,909
b. Contributions for 2016[1]	(8,306)
c. Benefit payments and expenses during 2016	(70,793)
d. Interest at 7.50% to December 31, 2016	63,177
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	865,987
5. Actuarial value of assets at December 31, 2016	877,001
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	11,015
7. Total actuarial gain/(loss) *(3. + 6.)*	**($648)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$365,309**
2. Expected increase	48,295
3. Liability (gain)/loss	11,663
4. Asset (gain)/loss	(11,015)
5. Change due to changes in assumptions, methods, and plan provisions	22,776
6. UAL at December 31, 2016 *(1. + 2. + 3. + 4. + 5.)*	**$437,028**

[1] *Includes rate relief from side accounts.*

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	Employer Tier 1/Tier 2 Valuation Payroll	Normal Cost Rate	Normal Cost	Employer Tier 1/Tier 2 Valuation Payroll	Normal Cost Rate
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	12,190	70,282	17.34%	11,785	68,217	17.28%
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	**$12,190**	**$70,282**	**17.34%**	**$11,785**	**$68,217**	**17.28%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$437,028	$365,309
2. Next year's Tier 1/Tier 2 UAL payment	31,179	25,883
3. Combined valuation payroll	312,008	289,091
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	9.99%	8.95%

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	17.34%	17.28%
b. Tier 1/Tier 2 UAL rate	9.99%	8.95%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	27.47%	26.38%

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1.	Current net Tier 1/Tier 2 pension contribution rate	11.46%
2.	Employer contribution rate attributable to side accounts	0.00%
3.	Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	11.46%
4.	Size of rate collar	
	a. 20% of current employer contribution rate *(20% x 3.)*	2.29%
	b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.00%
	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.)*	3.90%
5.	Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	7.56%
6.	Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	15.36%
7.	Advisory July 1, 2019 total pension rate, before adjustment	27.47%
8.	Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(12.11%)
9.	Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	9.99%
10.	Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	(2.12%)
11.	Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	15.36%
12.	Tier 1/Tier 2 retiree healthcare rate	0.49%
13.	Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14.	Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	17.34%
15.	Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	17.34%
16.	Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	15.36%

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	17.34%	17.28%
b. Tier 1/Tier 2 UAL rate	(2.12%)	(5.97%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	15.36%	11.46%

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Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$70,282	$0	$70,282
Tier 2	0	0	0
Tier 1/Tier 2 valuation payroll	70,282	0	70,282
OPSRP valuation payroll	241,726	0	241,726
Combined valuation payroll	**$312,008**	**$0**	**$312,008**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	1	0	7	8	1	0	6	7
Police & Fire	0	0	0	0	0	0	0	0
Total	1	0	7	8	1	0	6	7
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	1	0	1	2	1	0	1	2
Police & Fire	0	0	0	0	0	0	0	0
Total	1	0	1	2	1	0	1	2
Retired Members and Beneficiaries								
General Service	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**	**8**	**15**	**6**	**0**	**7**	**13**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

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Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40+**	**Total**
<20										
20-24										
25-29										
30-34										
35-39										
40-44										
45-49										
50-54										
55-59						1				**1**
60-64										
65-69										
70-74										
75+										
Total	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49		
50-54		
55-59		
60-64		
65-69		
70-74	1	78
75+		
Total	1	78

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59	1	4,046
60-64		
65-69		
70-74	1	1,926
75-79	1	67
80-84	1	19
85-89		
90-94		
95-99		
100+		
Total	4	1,514

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Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

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Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

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Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

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Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called “funding method,” a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

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Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called “actuarial present value,” the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer’s accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer’s accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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Milliman
111 SW Fifth Avenue, Suite 3700
Portland, OR 97204-3654
503 227 0634

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Milliman
111 SW Fifth Avenue, Suite 3700
Portland, OR 97204-3654
503 227 0634

November 2017

City of Merrill/2246
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

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Milliman

November 2017
City of Merrill/2246

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

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November 2017
City of Merrill/2246

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.

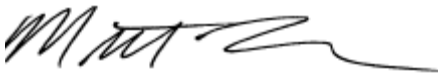
The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

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

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ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

City of Merrill -- #2246

November 2017

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This work product was prepared solely for Oregon Public Employees Retirement System for the purposes stated herein, and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work. Milliman recommends that third parties be aided by their own actuary or other qualified professional when reviewing the Milliman work product.

Executive Summary

Milliman has prepared this report for City of Merrill to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to City of Merrill.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for City of Merrill

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	21.99%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	(10.52%)	(10.52%)	(10.52%)
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**13.03%**	**0.00%**	**4.26%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**13.52%**	**0.42%**	**4.68%**

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.*

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Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 102%.

Funded Status as of December 31, 2017	**70% to 130%**	**Under 60% or Over 140%**
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	8.47%	8.47%
Minimum 2019-2021 Rate	5.47%	2.47%
Maximum 2019-2021 Rate	11.47%	14.47%

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Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$366,777	$352,212	($14,565)	104%	$49,748	(29%)
12/31/2012	419,097	360,969	(58,128)	116%	48,798	(119%)
12/31/2013	456,642	366,421	(90,221)	125%	50,431	(179%)
12/31/2014	489,014	444,524	(44,490)	110%	95,711	(46%)
12/31/2015	504,843	481,897	(22,946)	105%	92,769	(25%)
12/31/2016	531,232	521,549	(9,683)	102%	97,767	(10%)

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Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

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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 Merrill

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	($9,683)	($22,946)
Allocated pooled OPSRP UAL	16,832	13,188
Side account	0	0
Net unfunded pension actuarial accrued liability	7,149	(9,758)
Combined valuation payroll	97,767	92,769
Net pension UAL as a percentage of payroll	7%	(11%)
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($13)	$450

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

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Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$11,535	$10,347
Tier 1/Tier 2 valuation payroll	52,451	48,508
Tier 1/Tier 2 pension normal cost rate	21.99%	21.33%
Tier 1/ Tier 2 Actuarial accrued liability	$521,549	$481,897
Actuarial asset value	531,232	504,843
Tier 1/Tier 2 Unfunded actuarial accrued liability	(9,683)	(22,946)
Tier 1/ Tier 2 Funded status	102%	105%
Combined valuation payroll	$97,767	$92,769
Tier 1/Tier 2 UAL as a percentage of payroll	(10%)	(25%)
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	(10.52%)	(12.86%)
Tier 1/Tier 2 active members [1]	1	1
Tier 1/Tier 2 dormant members	2	2
Tier 1/Tier 2 retirees and beneficiaries	3	5

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

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Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2016**	**December 31, 2015**
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

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Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

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Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	97,767	92,769
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

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Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$146,621	$138,945
2. Employer reserves	380,880	358,213
3. Benefits in force reserve	3,730	7,685
4. Total market value of assets *(1. + 2. + 3.)*	**$531,232**	**$504,843**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

	December 31, 2015 to December 31, 2016
1. Market value of assets at beginning of year	$504,843
2. Regular employer contributions	(2,621)
3. Benefit payments and expenses	(730)
4. Adjustments [1]	(6,026)
5. Interest credited	35,767
6. Total transferred from side accounts	0
7. Market value of assets at end of year *(1. + 2. + 3. + 4. + 5. + 6.)*	**$531,232**

[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.*

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Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$11,535	$10,347
Tier 1 General Service	0	0
Tier 2 Police & Fire	0	0
Tier 2 General Service	0	0
Total	**$11,535**	**$10,347**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$11,108	$11,535	$427

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Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$124,435	$96,943
▪ Tier 1 General Service	0	0
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	0	0
▪ **Total Active Members**	**$124,435**	**$96,943**
Dormant Members	388,305	368,362
Retired Members and Beneficiaries	8,809	16,592
Total Actuarial Accrued Liability	**$521,549**	**$481,897**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$523,610	$521,549	($2,061)

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Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$521,549	$481,897
2. Actuarial value of assets	531,232	504,843
3. Unfunded accrued liability *(1. – 2.)*	(9,683)	(22,946)
4. Funded percentage *(2. ÷ 1.)*	102%	105%
5. Combined valuation payroll	$97,767	$92,769
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	(10%)	(25%)

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	($90,151)	($7,010)	($6,481)	($89,622)	($7,103)
December 31, 2015	$67,205	$4,863	$4,846	$67,188	$4,916
December 31, 2016	N/A	N/A	N/A	$12,751	$900
Total				**($9,683)**	**($1,287)**

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Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$481,897
b. Normal cost at December 31, 2015 (excluding assumed expenses)	9,868
c. Benefit payments during 2016	(724)
d. Interest at 7.50% to December 31, 2016	36,485
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	527,526
f. Change in actuarial accrued liability due to assumption, method, and plan changes	(2,061)
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	525,465
2. Actuarial accrued liability at December 31, 2016	521,549
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	3,916
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	504,843
b. Contributions for 2016[1]	(2,621)
c. Benefit payments and expenses during 2016	(730)
d. Interest at 7.50% to December 31, 2016	37,738
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	539,229
5. Actuarial value of assets at December 31, 2016	531,232
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(7,997)
7. Total actuarial gain/(loss) *(3. + 6.)*	**($4,081)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**($22,946)**
2. Expected increase	11,243
3. Liability (gain)/loss	(3,916)
4. Asset (gain)/loss	7,997
5. Change due to changes in assumptions, methods, and plan provisions	(2,061)
6. UAL at December 31, 2016 *(1. + 2. + 3. + 4. + 5.)*	**($9,683)**

[1] *Includes rate relief from side accounts.*

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	Employer Tier 1/Tier 2 Valuation Payroll	Normal Cost Rate	Normal Cost	Employer Tier 1/Tier 2 Valuation Payroll	Normal Cost Rate
Tier 1 Police & Fire	$11,535	$52,451	21.99%	$10,347	$48,508	21.33%
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	**$11,535**	**$52,451**	**21.99%**	**$10,347**	**$48,508**	**21.33%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	($9,683)	($22,946)
2. Next year's Tier 1/Tier 2 UAL payment	(1,287)	(2,147)
3. Combined valuation payroll	97,767	92,769
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	(1.32%)	(2.31%)

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	21.99%	21.33%
b. Tier 1/Tier 2 UAL rate	(1.32%)	(2.31%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	20.81%	19.17%

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1.	Current net Tier 1/Tier 2 pension contribution rate	8.47%
2.	Employer contribution rate attributable to side accounts	0.00%
3.	Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	8.47%
4.	Size of rate collar	
	a. 20% of current employer contribution rate *(20% x 3.)*	1.69%
	b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.00%
	c. Funded percentage	102%
	d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	3.00%
5.	Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	5.47%
6.	Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	11.47%
7.	Advisory July 1, 2019 total pension rate, before adjustment	20.81%
8.	Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(9.34%)
9.	Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	(1.32%)
10.	Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	(10.66%)
11.	Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	11.47%
12.	Tier 1/Tier 2 retiree healthcare rate	0.49%
13.	Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14.	Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	21.99%
15.	Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	21.99%
16.	Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	11.47%

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	21.99%	21.33%
b. Tier 1/Tier 2 UAL rate	(10.66%)	(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 5.51%)*	11.47%	8.47%

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Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$0	$52,451	$52,451
Tier 2	0	0	0
Tier 1/Tier 2 valuation payroll	0	52,451	52,451
OPSRP valuation payroll	0	45,316	45,316
Combined valuation payroll	**$0**	**$97,767**	**$97,767**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	0	0	0	0	0	0	0	0
Police & Fire	1	0	1	2	1	0	1	2
Total	1	0	1	2	1	0	1	2
Active Members with previous service segments with the employer								
General Service	0	0	N/A	0	0	0	N/A	0
Police & Fire	0	0	N/A	0	0	0	N/A	0
Total	0	0	N/A	0	0	0	N/A	0
Dormant Members								
General Service	0	0	0	0	0	0	0	0
Police & Fire	1	1	0	2	1	1	0	2
Total	1	1	0	2	1	1	0	2
Retired Members and Beneficiaries								
General Service	0	0	0	0	0	0	0	0
Police & Fire	3	0	0	3	4	1	0	5
Total	3	0	0	3	4	1	0	5
Grand Total Number of Members	**5**	**1**	**1**	**7**	**6**	**2**	**1**	**9**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

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Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40+**	**Total**
<20										
20-24										
25-29										
30-34										
35-39										
40-44										
45-49										
50-54										
55-59					1					**1**
60-64										
65-69										
70-74										
75+										
Total	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49		
50-54		
55-59		
60-64	2	1,133
65-69		
70-74		
75+		
Total	2	1,133

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59		
60-64		
65-69	1	6
70-74		
75+	1	9
80-84		
85-89	1	108
90-94		
95-99		
100+		
Total	3	41

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Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

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Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

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Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

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Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called “funding method,” a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

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Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called “actuarial present value,” the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer’s accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer’s accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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Milliman
111 SW Fifth Avenue, Suite 3700
Portland, OR 97204-3654
503 227 0634

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Milliman
111 SW Fifth Avenue, Suite 3700
Portland, OR 97204-3654
503 227 0634

November 2017

City of Metolius/2195
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

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Milliman

November 2017
City of Metolius/2195

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

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Milliman

November 2017
City of Metolius/2195

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.

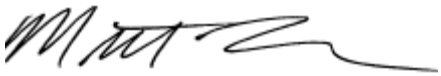
The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

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

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Milliman

ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

City of Metolius -- #2195

November 2017

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Executive Summary

Milliman has prepared this report for City of Metolius to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to City of Metolius.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for City of Metolius

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	19.52%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	(14.01%)	(14.01%)	(14.01%)
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**7.07%**	**0.00%**	**0.77%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**7.56%**	**0.42%**	**1.19%**

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.*

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Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 155%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	5.50%	5.50%
Minimum 2019-2021 Rate	2.50%	0.00%
Maximum 2019-2021 Rate	8.50%	11.50%

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Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$560,285	$312,071	($248,214)	180%	$106,200	(234%)
12/31/2012	630,653	318,594	(312,059)	198%	98,438	(317%)
12/31/2013	709,536	329,020	(380,516)	216%	99,708	(382%)
12/31/2014	749,885	397,234	(352,651)	189%	102,050	(346%)
12/31/2015	728,525	410,943	(317,582)	177%	105,658	(301%)
12/31/2016	717,773	463,147	(254,626)	155%	81,101	(314%)

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Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

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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 Metolius

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	($254,626)	($317,582)
Allocated pooled OPSRP UAL	13,963	15,021
Side account	0	0
Net unfunded pension actuarial accrued liability	(240,663)	(302,561)
Combined valuation payroll	81,101	105,658
Net pension UAL as a percentage of payroll	(297%)	(286%)
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($11)	$513

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

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Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$5,646	$9,523
Tier 1/Tier 2 valuation payroll	40,290	65,443
Tier 1/Tier 2 pension normal cost rate	19.52%	20.05%
Tier 1/ Tier 2 Actuarial accrued liability	$463,147	$410,943
Actuarial asset value	717,773	728,525
Tier 1/Tier 2 Unfunded actuarial accrued liability	(254,626)	(317,582)
Tier 1/ Tier 2 Funded status	155%	177%
Combined valuation payroll	$81,101	$105,658
Tier 1/Tier 2 UAL as a percentage of payroll	(314%)	(301%)
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	(14.01%)	(14.55%)
Tier 1/Tier 2 active members [1]	1	2
Tier 1/Tier 2 dormant members	2	3
Tier 1/Tier 2 retirees and beneficiaries	5	4

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

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Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2016**	**December 31, 2015**
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

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Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

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Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	81,101	105,658
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

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Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$50,018	$69,449
2. Employer reserves	557,790	593,089
3. Benefits in force reserve	109,965	65,987
4. Total market value of assets *(1. + 2. + 3.)*	**$717,773**	**$728,525**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

	December 31, 2015 to December 31, 2016
1. Market value of assets at beginning of year	$728,525
2. Regular employer contributions	(2,668)
3. Benefit payments and expenses	(21,531)
4. Adjustments [1]	(38,022)
5. Interest credited	51,468
6. Total transferred from side accounts	0
7. Market value of assets at end of year *(1. + 2. + 3. + 4. + 5. + 6.)*	**$717,773**

[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.*

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Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	5,646	5,411
Tier 2 Police & Fire	0	0
Tier 2 General Service	0	4,112
Total	**$5,646**	**$9,523**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$5,591	$5,646	$55

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Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	199,927	171,712
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	0	91,091
▪ **Total Active Members**	**$199,927**	**$262,803**
Dormant Members	3,522	5,660
Retired Members and Beneficiaries	259,698	142,480
Total Actuarial Accrued Liability	**$463,147**	**$410,943**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$446,961	$463,147	$16,186

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Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$463,147	$410,943
2. Actuarial value of assets	717,773	728,525
3. Unfunded accrued liability *(1. – 2.)*	(254,626)	(317,582)
4. Funded percentage *(2. ÷ 1.)*	155%	177%
5. Combined valuation payroll	$81,101	$105,658
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	(314%)	(301%)

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	($380,222)	($29,564)	($27,336)	($377,994)	($29,957)
December 31, 2015	$62,640	$4,533	$4,517	$62,624	$4,582
December 31, 2016	N/A	N/A	N/A	$60,744	$4,289
Total				**($254,626)**	**($21,086)**

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Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$410,943
b. Normal cost at December 31, 2015 (excluding assumed expenses)	9,083
c. Benefit payments during 2016	(21,349)
d. Interest at 7.50% to December 31, 2016	30,361
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	429,038
f. Change in actuarial accrued liability due to assumption, method, and plan changes	16,186
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	445,224
2. Actuarial accrued liability at December 31, 2016	463,147
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(17,923)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	728,525
b. Contributions for 2016[1]	(2,668)
c. Benefit payments and expenses during 2016	(21,531)
d. Interest at 7.50% to December 31, 2016	53,732
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	758,059
5. Actuarial value of assets at December 31, 2016	717,773
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(40,286)
7. Total actuarial gain/(loss) *(3. + 6.)*	**($58,209)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**($317,582)**
2. Expected increase	(11,439)
3. Liability (gain)/loss	17,923
4. Asset (gain)/loss	40,286
5. Change due to changes in assumptions, methods, and plan provisions	16,186
6. UAL at December 31, 2016 *(1. + 2. + 3. + 4. + 5.)*	**($254,626)**

[1] *Includes rate relief from side accounts.*

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	Employer Tier 1/Tier 2 Valuation Payroll	Normal Cost Rate	Normal Cost	Employer Tier 1/Tier 2 Valuation Payroll	Normal Cost Rate
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	5,646	40,290	14.01%	5,411	39,587	13.67%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	0	0	0.00%	4,112	25,856	15.90%
Total	**$5,646**	**$40,290**	**14.01%**	**$9,523**	**$65,443**	**14.55%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	($254,626)	($317,582)
2. Next year's Tier 1/Tier 2 UAL payment	(21,086)	(25,031)
3. Combined valuation payroll	81,101	105,658
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	(26.00%)	(23.69%)

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	14.01%	14.55%
b. Tier 1/Tier 2 UAL rate	(26.00%)	(23.69%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	(11.85%)	(8.99%)

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1.	Current net Tier 1/Tier 2 pension contribution rate	5.50%
2.	Employer contribution rate attributable to side accounts	0.00%
3.	Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	5.50%
4.	Size of rate collar	
	a. 20% of current employer contribution rate *(20% x 3.)*	1.10%
	b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.00%
	c. Funded percentage	155%
	d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	6.00%
5.	Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	0.00%
6.	Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	11.50%
7.	Advisory July 1, 2019 total pension rate, before adjustment	(11.85%)
8.	Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	11.85%
9.	Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	(26.00%)
10.	Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	(14.15%)
11.	Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	0.00%
12.	Tier 1/Tier 2 retiree healthcare rate	0.49%
13.	Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	5.51%
14.	Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	14.01%
15.	Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	19.52%
16.	Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	5.51%

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	19.52%	20.05%
b. Tier 1/Tier 2 UAL rate	(14.15%)	(14.70%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	5.51%	5.50%

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Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$40,290	$0	$40,290
Tier 2	0	0	0
Tier 1/Tier 2 valuation payroll	40,290	0	40,290
OPSRP valuation payroll	40,811	0	40,811
Combined valuation payroll	**$81,101**	**$0**	**$81,101**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	1	0	2	3	1	1	2	4
Police & Fire	0	0	0	0	0	0	0	0
Total	1	0	2	3	1	1	2	4
Active Members with previous service segments with the employer								
General Service	2	0	N/A	2	2	0	N/A	2
Police & Fire	1	0	N/A	1	1	0	N/A	1
Total	3	0	N/A	3	3	0	N/A	3
Dormant Members								
General Service	1	1	0	2	1	1	0	2
Police & Fire	0	0	0	0	1	0	0	1
Total	1	1	0	2	2	1	0	3
Retired Members and Beneficiaries								
General Service	1	1	0	2	1	0	0	1
Police & Fire	2	1	0	3	2	1	0	3
Total	3	2	0	5	3	1	0	4
Grand Total Number of Members	**8**	**3**	**2**	**13**	**9**	**3**	**2**	**14**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

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Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40+**	**Total**
<20										
20-24										
25-29										
30-34										
35-39										
40-44										
45-49										
50-54					1					**1**
55-59										
60-64										
65-69										
70-74										
75+										
Total	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49		
50-54		
55-59		
60-64		
65-69		
70-74		
75+	2	147
Total	2	147

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59	1	2
60-64	1	634
65-69	1	3
70-74	1	1,145
75-79	1	26
80-84		
85-89		
90-94		
95-99		
100+		
Total	5	362

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Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

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Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

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Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

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Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called “funding method,” a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

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Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called “actuarial present value,” the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer’s accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer’s accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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Milliman
111 SW Fifth Avenue, Suite 3700
Portland, OR 97204-3654
503 227 0634

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Milliman
111 SW Fifth Avenue, Suite 3700
Portland, OR 97204-3654
503 227 0634

November 2017

City of Molalla/2290
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

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Milliman

November 2017
City of Molalla/2290

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

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November 2017
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.

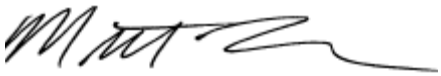
The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

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

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ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

City of Molalla -- #2290

November 2017

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Executive Summary

Milliman has prepared this report for City of Molalla to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to City of Molalla.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for City of Molalla

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	14.68%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	1.74%	1.74%	1.74%
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**17.98%**	**11.79%**	**16.52%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**18.47%**	**12.21%**	**16.94%**

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.*

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Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 91%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	13.42%	13.42%
Minimum 2019-2021 Rate	10.42%	7.42%
Maximum 2019-2021 Rate	16.42%	19.42%

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Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$11,117,542	$11,296,702	$179,160	98%	$2,470,181	7%
12/31/2012	12,478,336	11,761,394	(716,942)	106%	2,512,747	(29%)
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%

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Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

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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, 2016	**December 31, 2015**
T1/T2 UAL	$1,228,187	$609,934
Allocated pooled OPSRP UAL	508,888	379,154
Side account	0	0
Net unfunded pension actuarial accrued liability	1,737,075	989,088
Combined valuation payroll	2,955,866	2,667,019
Net pension UAL as a percentage of payroll	59%	37%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($402)	$12,950

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

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Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$182,988	$174,938
Tier 1/Tier 2 valuation payroll	1,246,731	1,158,898
Tier 1/Tier 2 pension normal cost rate	14.68%	15.10%
Tier 1/ Tier 2 Actuarial accrued liability	$13,823,729	$13,254,903
Actuarial asset value	12,595,542	12,644,969
Tier 1/Tier 2 Unfunded actuarial accrued liability	1,228,187	609,934
Tier 1/ Tier 2 Funded status	91%	95%
Combined valuation payroll	$2,955,866	$2,667,019
Tier 1/Tier 2 UAL as a percentage of payroll	42%	23%
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	1.74%	(1.68%)
Tier 1/Tier 2 active members [1]	15	14
Tier 1/Tier 2 dormant members	22	21
Tier 1/Tier 2 retirees and beneficiaries	42	41

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

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Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2016**	**December 31, 2015**
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

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Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

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Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	2,955,866	2,667,019
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

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Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$1,429,087	$1,480,188
2. Employer reserves	7,888,222	7,860,162
3. Benefits in force reserve	3,278,233	3,304,619
4. Total market value of assets *(1. + 2. + 3.)*	**$12,595,542**	**$12,644,969**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

	December 31, 2015 to December 31, 2016
1. Market value of assets at beginning of year	$12,644,969
2. Regular employer contributions	59,255
3. Benefit payments and expenses	(641,862)
4. Adjustments [1]	(335,773)
5. Interest credited	868,953
6. Total transferred from side accounts	0
7. Market value of assets at end of year *(1. + 2. + 3. + 4. + 5. + 6.)*	**$12,595,542**

[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.*

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Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	29,979	29,574
Tier 2 Police & Fire	84,749	96,864
Tier 2 General Service	68,260	48,500
Total	**$182,988**	**$174,938**

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, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$177,914	$182,988	$5,074

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Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$282,943	$267,875
▪ Tier 1 General Service	593,515	548,615
▪ Tier 2 Police & Fire	1,843,074	1,963,348
▪ Tier 2 General Service	1,281,430	1,170,126
▪ **Total Active Members**	**$4,000,962**	**$3,949,964**
Dormant Members	2,080,728	2,169,635
Retired Members and Beneficiaries	7,742,039	7,135,304
Total Actuarial Accrued Liability	**$13,823,729**	**$13,254,903**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$13,554,041	$13,823,729	$269,688

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Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$13,823,729	$13,254,903
2. Actuarial value of assets	12,595,542	12,644,969
3. Unfunded accrued liability *(1. – 2.)*	1,228,187	609,934
4. Funded percentage *(2. ÷ 1.)*	91%	95%
5. Combined valuation payroll	$2,955,866	$2,667,019
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	42%	23%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	($1,503,975)	($116,941)	($108,126)	($1,495,160)	($118,494)
December 31, 2015	$2,113,909	$152,960	$152,432	$2,113,381	$154,645
December 31, 2016	N/A	N/A	N/A	$609,966	$43,068
Total				**$1,228,187**	**$79,219**

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Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$13,254,903
b. Normal cost at December 31, 2015 (excluding assumed expenses)	166,892
c. Benefit payments during 2016	(636,464)
d. Interest at 7.50% to December 31, 2016	976,509
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	13,761,840
f. Change in actuarial accrued liability due to assumption, method, and plan changes	269,688
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	14,031,528
2. Actuarial accrued liability at December 31, 2016	13,823,729
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	207,799
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	12,644,969
b. Contributions for 2016[1]	59,255
c. Benefit payments and expenses during 2016	(641,862)
d. Interest at 7.50% to December 31, 2016	926,525
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	12,988,887
5. Actuarial value of assets at December 31, 2016	12,595,542
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(393,345)
7. Total actuarial gain/(loss) *(3. + 6.)*	**($185,546)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$609,934**
2. Expected increase	163,019
3. Liability (gain)/loss	(207,799)
4. Asset (gain)/loss	393,345
5. Change due to changes in assumptions, methods, and plan provisions	269,688
6. UAL at December 31, 2016 *(1. + 2. + 3. + 4. + 5.)*	**$1,228,187**

[1] *Includes rate relief from side accounts.*

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	Employer Tier 1/Tier 2 Valuation Payroll	Normal Cost Rate	Normal Cost	Employer Tier 1/Tier 2 Valuation Payroll	Normal Cost Rate
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	29,979	185,101	16.20%	29,574	178,336	16.58%
Tier 2 Police & Fire	84,749	478,003	17.73%	96,864	570,275	16.99%
Tier 2 General Service	68,260	583,627	11.70%	48,500	410,287	11.82%
Total	**$182,988**	**$1,246,731**	**14.68%**	**$174,938**	**$1,158,898**	**15.10%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$1,228,187	$609,934
2. Next year's Tier 1/Tier 2 UAL payment	79,219	36,019
3. Combined valuation payroll	2,955,866	2,667,019
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	2.68%	1.35%

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	14.68%	15.10%
b. Tier 1/Tier 2 UAL rate	2.68%	1.35%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	17.50%	16.60%

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1.	Current net Tier 1/Tier 2 pension contribution rate	13.42%
2.	Employer contribution rate attributable to side accounts	0.00%
3.	Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	13.42%
4.	Size of rate collar	
	a. 20% of current employer contribution rate *(20% x 3.)*	2.68%
	b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.00%
	c. Funded percentage	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.)*	3.00%
5.	Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	10.42%
6.	Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	16.42%
7.	Advisory July 1, 2019 total pension rate, before adjustment	17.50%
8.	Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(1.08%)
9.	Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	2.68%
10.	Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	1.60%
11.	Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	16.42%
12.	Tier 1/Tier 2 retiree healthcare rate	0.49%
13.	Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14.	Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	14.68%
15.	Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	14.68%
16.	Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	16.42%

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	14.68%	15.10%
b. Tier 1/Tier 2 UAL rate	1.60%	(1.83%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	16.42%	13.42%

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Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$185,101	$0	$185,101
Tier 2	583,627	478,003	1,061,630
Tier 1/Tier 2 valuation payroll	768,728	478,003	1,246,731
OPSRP valuation payroll	1,155,447	553,688	1,709,135
Combined valuation payroll	**$1,924,175**	**$1,031,691**	**$2,955,866**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	2	8	25	35	2	6	21	29
Police & Fire	0	5	7	12	0	6	5	11
Total	2	13	32	47	2	12	26	40
Active Members with previous service segments with the employer								
General Service	2	3	N/A	5	3	2	N/A	5
Police & Fire	2	1	N/A	3	2	2	N/A	4
Total	4	4	N/A	8	5	4	N/A	9
Dormant Members								
General Service	9	9	5	23	9	9	5	23
Police & Fire	3	1	0	4	3	0	0	3
Total	12	10	5	27	12	9	5	26
Retired Members and Beneficiaries								
General Service	23	7	0	30	23	6	0	29
Police & Fire	7	5	0	12	6	6	0	12
Total	30	12	0	42	29	12	0	41
Grand Total Number of Members	**48**	**39**	**37**	**124**	**48**	**37**	**31**	**116**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

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Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40+**	**Total**
<20										
20-24										
25-29										
30-34										
35-39			1	1						**2**
40-44			1	3	1					**5**
45-49				1						**1**
50-54			2	1			1			**4**
55-59				1		1				**2**
60-64				1						**1**
65-69										
70-74										
75+										
Total	**0**	**0**	**4**	**8**	**1**	**1**	**1**	**0**	**0**	**15**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34	1	19
35-39		
40-44	1	46
45-49	2	2,424
50-54	4	1,553
55-59	6	504
60-64	3	376
65-69	4	64
70-74	1	419
75+		
Total	22	725

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54	1	2,821
55-59	1	1,286
60-64	12	1,214
65-69	7	819
70-74	12	1,281
75-79	7	883
80-84	2	1,640
85-89		
90-94		
95-99		
100+		
Total	42	1,172

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Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

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Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

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Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

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Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called “funding method,” a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

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Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called "actuarial present value," the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer's accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer's accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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Milliman
111 SW Fifth Avenue, Suite 3700
Portland, OR 97204-3654
503 227 0634

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Milliman
111 SW Fifth Avenue, Suite 3700
Portland, OR 97204-3654
503 227 0634

November 2017

City of Mt Angel/2174
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

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Milliman

November 2017
City of Mt Angel/2174

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

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November 2017
City of Mt Angel/2174

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

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ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

City of Mt Angel -- #2174

November 2017

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Executive Summary

Milliman has prepared this report for City of Mt Angel to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to City of Mt Angel.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for City of Mt Angel

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	15.59%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	(0.05%)	(0.05%)	(0.05%)
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**17.10%**	**10.00%**	**14.73%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**17.59%**	**10.42%**	**15.15%**

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.*

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Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 82%.

Funded Status as of December 31, 2017	**70% to 130%**	**Under 60% or Over 140%**
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	12.54%	12.54%
Minimum 2019-2021 Rate	9.54%	6.54%
Maximum 2019-2021 Rate	15.54%	18.54%

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Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$4,075,365	$4,266,957	$191,592	96%	$814,389	24%
12/31/2012	4,514,828	4,265,668	(249,160)	106%	895,751	(28%)
12/31/2013	4,963,410	4,530,814	(432,596)	110%	938,325	(46%)
12/31/2014	4,822,582	5,419,613	597,031	89%	796,573	75%
12/31/2015	4,741,713	5,588,943	847,230	85%	760,161	111%
12/31/2016	4,897,385	5,973,232	1,075,847	82%	936,723	115%

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Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

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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 Mt Angel

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	$1,075,847	$847,230
Allocated pooled OPSRP UAL	161,268	108,067
Side account	0	0
Net unfunded pension actuarial accrued liability	1,237,115	955,297
Combined valuation payroll	936,723	760,161
Net pension UAL as a percentage of payroll	132%	126%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($128)	$3,691

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

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Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$47,433	$60,274
Tier 1/Tier 2 valuation payroll	304,196	380,419
Tier 1/Tier 2 pension normal cost rate	15.59%	15.84%
Tier 1/ Tier 2 Actuarial accrued liability	$5,973,232	$5,588,943
Actuarial asset value	4,897,385	4,741,713
Tier 1/Tier 2 Unfunded actuarial accrued liability	1,075,847	847,230
Tier 1/ Tier 2 Funded status	82%	85%
Combined valuation payroll	$936,723	$760,161
Tier 1/Tier 2 UAL as a percentage of payroll	115%	111%
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	(0.05%)	(3.30%)
Tier 1/Tier 2 active members [1]	4	5
Tier 1/Tier 2 dormant members	22	17
Tier 1/Tier 2 retirees and beneficiaries	66	66

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

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Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2016**	**December 31, 2015**
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

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Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

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Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	936,723	760,161
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

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Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$664,686	$626,933
2. Employer reserves	2,799,435	2,588,538
3. Benefits in force reserve	1,433,263	1,526,242
4. Total market value of assets *(1. + 2. + 3.)*	**$4,897,385**	**$4,741,713**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

		December 31, 2015 to December 31, 2016
1.	Market value of assets at beginning of year	$4,741,713
2.	Regular employer contributions	14,300
3.	Benefit payments and expenses	(280,626)
4.	Adjustments [1]	91,567
5.	Interest credited	330,430
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year *(1. + 2. + 3. + 4. + 5. + 6.)***	**$4,897,385**

[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.*

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Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	15,956	15,309
Tier 2 Police & Fire	17,994	16,273
Tier 2 General Service	13,483	28,692
Total	**$47,433**	**$60,274**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$46,451	$47,433	$982

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Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$339,600	$309,314
▪ Tier 1 General Service	633,763	588,591
▪ Tier 2 Police & Fire	668,434	575,771
▪ Tier 2 General Service	751,048	637,953
▪ **Total Active Members**	**$2,392,845**	**$2,111,629**
Dormant Members	195,522	181,866
Retired Members and Beneficiaries	3,384,865	3,295,448
Total Actuarial Accrued Liability	**$5,973,232**	**$5,588,943**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$5,836,603	$5,973,232	$136,629

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Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$5,973,232	$5,588,943
2. Actuarial value of assets	4,897,385	4,741,713
3. Unfunded accrued liability *(1. – 2.)*	1,075,847	847,230
4. Funded percentage *(2. ÷ 1.)*	82%	85%
5. Combined valuation payroll	$936,723	$760,161
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	115%	111%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	($432,263)	($33,610)	($31,077)	($429,730)	($34,057)
December 31, 2015	$1,279,493	$92,583	$92,263	$1,279,173	$93,603
December 31, 2016	N/A	N/A	N/A	$226,404	$15,986
Total				**$1,075,847**	**$75,532**

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Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$5,588,943
b. Normal cost at December 31, 2015 (excluding assumed expenses)	57,488
c. Benefit payments during 2016	(278,266)
d. Interest at 7.50% to December 31, 2016	410,892
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	5,779,057
f. Change in actuarial accrued liability due to assumption, method, and plan changes	136,629
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	5,915,686
2. Actuarial accrued liability at December 31, 2016	5,973,232
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(57,546)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	4,741,713
b. Contributions for 2016[1]	14,300
c. Benefit payments and expenses during 2016	(280,626)
d. Interest at 7.50% to December 31, 2016	345,641
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	4,821,028
5. Actuarial value of assets at December 31, 2016	4,897,385
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	76,356
7. Total actuarial gain/(loss) *(3. + 6.)*	**$18,810**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$847,230**
2. Expected increase	110,798
3. Liability (gain)/loss	57,546
4. Asset (gain)/loss	(76,356)
5. Change due to changes in assumptions, methods, and plan provisions	136,629
6. UAL at December 31, 2016 *(1. + 2. + 3. + 4. + 5.)*	**$1,075,847**

[1] *Includes rate relief from side accounts.*

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	Employer Tier 1/Tier 2 Valuation Payroll	Normal Cost Rate	Normal Cost	Employer Tier 1/Tier 2 Valuation Payroll	Normal Cost Rate
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	15,956	78,282	20.38%	15,309	76,750	19.95%
Tier 2 Police & Fire	17,994	89,193	20.17%	16,273	83,976	19.38%
Tier 2 General Service	13,483	136,721	9.86%	28,692	219,693	13.06%
Total	**$47,433**	**$304,196**	**15.59%**	**$60,274**	**$380,419**	**15.84%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$1,075,847	$847,230
2. Next year's Tier 1/Tier 2 UAL payment	75,532	58,973
3. Combined valuation payroll	936,723	760,161
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	8.06%	7.76%

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	15.59%	15.84%
b. Tier 1/Tier 2 UAL rate	8.06%	7.76%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	23.79%	23.75%

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1.	Current net Tier 1/Tier 2 pension contribution rate	12.54%
2.	Employer contribution rate attributable to side accounts	0.00%
3.	Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	12.54%
4.	Size of rate collar	
	a. 20% of current employer contribution rate *(20% x 3.)*	2.51%
	b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.00%
	c. Funded percentage	82%
	d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	3.00%
5.	Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	9.54%
6.	Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	15.54%
7.	Advisory July 1, 2019 total pension rate, before adjustment	23.79%
8.	Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(8.25%)
9.	Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	8.06%
10.	Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	(0.19%)
11.	Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	15.54%
12.	Tier 1/Tier 2 retiree healthcare rate	0.49%
13.	Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14.	Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	15.59%
15.	Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	15.59%
16.	Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	15.54%

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	15.59%	15.84%
b. Tier 1/Tier 2 UAL rate	(0.19%)	(3.45%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	15.54%	12.54%

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Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$78,282	$0	$78,282
Tier 2	136,721	89,193	225,914
Tier 1/Tier 2 valuation payroll	215,003	89,193	304,196
OPSRP valuation payroll	411,958	220,569	632,527
Combined valuation payroll	**$626,961**	**$309,762**	**$936,723**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	1	2	12	15	1	3	6	10
Police & Fire	0	1	4	5	0	1	3	4
Total	1	3	16	20	1	4	9	14
Active Members with previous service segments with the employer								
General Service	13	18	N/A	31	12	12	N/A	24
Police & Fire	32	45	N/A	77	30	33	N/A	63
Total	45	63	N/A	108	42	45	N/A	87
Dormant Members								
General Service	6	3	1	10	5	3	1	9
Police & Fire	7	6	0	13	6	3	0	9
Total	13	9	1	23	11	6	1	18
Retired Members and Beneficiaries								
General Service	23	1	0	24	22	2	0	24
Police & Fire	39	3	0	42	37	5	0	42
Total	62	4	0	66	59	7	0	66
Grand Total Number of Members	**121**	**79**	**17**	**217**	**113**	**62**	**10**	**185**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

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Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40+**	**Total**
<20										
20-24										
25-29										
30-34										
35-39										
40-44			1	2						**3**
45-49										
50-54										
55-59										
60-64							1			**1**
65-69										
70-74										
75+										
Total	**0**	**0**	**1**	**2**	**0**	**0**	**1**	**0**	**0**	**4**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34	1	0
35-39	1	3
40-44	2	100
45-49	3	0
50-54	6	172
55-59	2	2
60-64	4	211
65-69	1	1,815
70-74	1	123
75+	1	676
Total	22	213

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45	4	1
45-49	2	0
50-54	3	3
55-59	9	3
60-64	18	297
65-69	10	569
70-74	12	526
75-79	5	345
80-84	2	352
85-89	1	2,669
90-94		
95-99		
100+		
Total	66	341

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Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

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Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

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Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

This work product was prepared solely for Oregon Public Employees Retirement System for the purposes stated herein, and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work. Milliman recommends that third parties be aided by their own actuary or other qualified professional when reviewing the Milliman work product.

Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called “funding method,” a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

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Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called "actuarial present value," the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer's accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer's accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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Milliman
111 SW Fifth Avenue, Suite 3700
Portland, OR 97204-3654
503 227 0634

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Milliman
111 SW Fifth Avenue, Suite 3700
Portland, OR 97204-3654
503 227 0634

November 2017

City of Ontario/2118
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

This work product was prepared solely for Oregon Public Employees Retirement System for the purposes stated herein, and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work. Milliman recommends that third parties be aided by their own actuary or other qualified professional when reviewing the Milliman work product.

Milliman

November 2017
City of Ontario/2118

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

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November 2017
City of Ontario/2118

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.

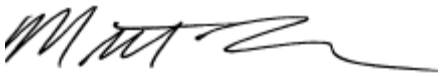
The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

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

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ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

City of Ontario -- #2118

November 2017

Secondary Employers

2762 Ontario Rural Fire Protection District

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Executive Summary

Milliman has prepared this report for City of Ontario to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to City of Ontario.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for City of Ontario

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	18.45%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	16.81%	16.81%	16.81%
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**36.82%**	**26.86%**	**31.59%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**37.31%**	**27.28%**	**32.01%**

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.*

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Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 64%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	26.72%	26.72%
Minimum 2019-2021 Rate	21.38%	16.04%
Maximum 2019-2021 Rate	32.06%	37.40%

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Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$27,279,942	$36,378,159	$9,098,217	75%	$4,606,302	198%
12/31/2012	30,253,320	36,203,427	5,950,107	84%	4,494,055	132%
12/31/2013	32,785,346	37,071,655	4,286,309	88%	4,270,487	100%
12/31/2014	33,239,837	43,492,688	10,252,851	76%	2,772,185	370%
12/31/2015	31,068,639	45,363,359	14,294,720	68%	2,867,836	498%
12/31/2016	30,598,699	47,571,936	16,973,237	64%	2,556,588	664%

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Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

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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 Ontario

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	$16,973,237	$14,294,720
Allocated pooled OPSRP UAL	440,148	407,703
Side account	0	0
Net unfunded pension actuarial accrued liability	17,413,385	14,702,423
Combined valuation payroll	2,556,588	2,867,836
Net pension UAL as a percentage of payroll	681%	513%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($348)	$13,925

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

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Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$281,477	$349,525
Tier 1/Tier 2 valuation payroll	1,525,614	1,866,821
Tier 1/Tier 2 pension normal cost rate	18.45%	18.72%
Tier 1/ Tier 2 Actuarial accrued liability	$47,571,936	$45,363,359
Actuarial asset value	30,598,699	31,068,639
Tier 1/Tier 2 Unfunded actuarial accrued liability	16,973,237	14,294,720
Tier 1/ Tier 2 Funded status	64%	68%
Combined valuation payroll	$2,556,588	$2,867,836
Tier 1/Tier 2 UAL as a percentage of payroll	664%	498%
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	16.81%	8.00%
Tier 1/Tier 2 active members [1]	20	26
Tier 1/Tier 2 dormant members	50	46
Tier 1/Tier 2 retirees and beneficiaries	124	121

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

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Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2016**	**December 31, 2015**
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

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Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

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Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	2,556,588	2,867,836
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

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Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$3,439,987	$3,689,545
2. Employer reserves	13,134,844	13,318,407
3. Benefits in force reserve	14,023,869	14,060,687
4. Total market value of assets *(1. + 2. + 3.)*	**$30,598,699**	**$31,068,639**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

	December 31, 2015 to December 31, 2016
1. Market value of assets at beginning of year	$31,068,639
2. Regular employer contributions	437,163
3. Benefit payments and expenses	(2,745,804)
4. Adjustments [1]	(308,108)
5. Interest credited	2,146,809
6. Total transferred from side accounts	0
7. Market value of assets at end of year *(1. + 2. + 3. + 4. + 5. + 6.)*	**$30,598,699**

[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.*

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Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$103,810	$192,199
Tier 1 General Service	33,408	38,379
Tier 2 Police & Fire	130,674	108,342
Tier 2 General Service	13,585	10,605
Total	**$281,477**	**$349,525**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$271,961	$281,477	$9,516

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Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$3,796,550	$5,543,577
▪ Tier 1 General Service	1,756,640	1,786,779
▪ Tier 2 Police & Fire	2,591,831	2,245,717
▪ Tier 2 General Service	934,372	1,105,649
▪ **Total Active Members**	**$9,079,393**	**$10,681,722**
Dormant Members	5,373,078	4,321,921
Retired Members and Beneficiaries	33,119,465	30,359,716
Total Actuarial Accrued Liability	**$47,571,936**	**$45,363,359**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$46,290,852	$47,571,936	$1,281,084

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Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$47,571,936	$45,363,359
2. Actuarial value of assets	30,598,699	31,068,639
3. Unfunded accrued liability *(1. – 2.)*	16,973,237	14,294,720
4. Funded percentage *(2. ÷ 1.)*	64%	68%
5. Combined valuation payroll	$2,556,588	$2,867,836
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	664%	498%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	$4,283,003	$333,023	$307,921	$4,257,901	$337,447
December 31, 2015	$10,011,717	$724,437	$721,937	$10,009,217	$732,417
December 31, 2016	N/A	N/A	N/A	$2,706,119	$191,070
Total				**$16,973,237**	**$1,260,934**

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Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$45,363,359
b. Normal cost at December 31, 2015 (excluding assumed expenses)	333,381
c. Benefit payments during 2016	(2,722,714)
d. Interest at 7.50% to December 31, 2016	3,312,652
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	46,286,678
f. Change in actuarial accrued liability due to assumption, method, and plan changes	1,281,084
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	47,567,762
2. Actuarial accrued liability at December 31, 2016	47,571,936
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(4,174)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	31,068,639
b. Contributions for 2016[1]	437,163
c. Benefit payments and expenses during 2016	(2,745,804)
d. Interest at 7.50% to December 31, 2016	2,243,574
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	31,003,572
5. Actuarial value of assets at December 31, 2016	30,598,699
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(404,873)
7. Total actuarial gain/(loss) *(3. + 6.)*	**($409,047)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$14,294,720**
2. Expected increase	988,386
3. Liability (gain)/loss	4,174
4. Asset (gain)/loss	404,873
5. Change due to changes in assumptions, methods, and plan provisions	1,281,084
6. UAL at December 31, 2016 *(1. + 2. + 3. + 4. + 5.)*	**$16,973,237**

[1] *Includes rate relief from side accounts.*

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	Employer Tier 1/Tier 2 Valuation Payroll	Normal Cost Rate	Normal Cost	Employer Tier 1/Tier 2 Valuation Payroll	Normal Cost Rate
Tier 1 Police & Fire	$103,810	$495,270	20.96%	$192,199	$899,460	21.37%
Tier 1 General Service	33,408	218,618	15.28%	38,379	291,136	13.18%
Tier 2 Police & Fire	130,674	686,620	19.03%	108,342	591,127	18.33%
Tier 2 General Service	13,585	125,106	10.86%	10,605	85,098	12.46%
Total	**$281,477**	**$1,525,614**	**18.45%**	**$349,525**	**$1,866,821**	**18.72%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$16,973,237	$14,294,720
2. Next year's Tier 1/Tier 2 UAL payment	1,260,934	1,057,460
3. Combined valuation payroll	2,556,588	2,867,836
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	49.32%	36.87%

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	18.45%	18.72%
b. Tier 1/Tier 2 UAL rate	49.32%	36.87%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	67.91%	55.74%

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1.	Current net Tier 1/Tier 2 pension contribution rate	26.72%
2.	Employer contribution rate attributable to side accounts	0.00%
3.	Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	26.72%
4.	Size of rate collar	
	a. 20% of current employer contribution rate *(20% x 3.)*	5.34%
	b. Preliminary size of rate collar *(maximum of 3% or a.)*	5.34%
	c. Funded percentage	64%
	d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	8.54%
5.	Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	18.18%
6.	Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	35.26%
7.	Advisory July 1, 2019 total pension rate, before adjustment	67.91%
8.	Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(32.65%)
9.	Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	49.32%
10.	Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	16.67%
11.	Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	35.26%
12.	Tier 1/Tier 2 retiree healthcare rate	0.49%
13.	Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14.	Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	18.45%
15.	Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	18.45%
16.	Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	35.26%

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	18.45%	18.72%
b. Tier 1/Tier 2 UAL rate	16.67%	7.85%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	35.26%	26.72%

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Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$218,618	$495,270	$713,888
Tier 2	125,106	686,620	811,726
Tier 1/Tier 2 valuation payroll	343,724	1,181,890	1,525,614
OPSRP valuation payroll	314,803	716,171	1,030,974
Combined valuation payroll	**$658,527**	**$1,898,061**	**$2,556,588**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	3	2	8	13	4	2	6	12
Police & Fire	6	9	10	25	12	8	11	31
Total	9	11	18	38	16	10	17	43
Active Members with previous service segments with the employer								
General Service	11	10	N/A	21	10	11	N/A	21
Police & Fire	8	9	N/A	17	7	8	N/A	15
Total	19	19	N/A	38	17	19	N/A	36
Dormant Members								
General Service	19	23	9	51	18	21	9	48
Police & Fire	6	2	2	10	4	3	1	8
Total	25	25	11	61	22	24	10	56
Retired Members and Beneficiaries								
General Service	79	11	2	92	79	10	2	91
Police & Fire	33	1	0	34	31	1	0	32
Total	112	12	2	126	110	11	2	123
Grand Total Number of Members	**165**	**67**	**31**	**263**	**165**	**64**	**29**	**258**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

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Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40+**	**Total**
<20										
20-24										
25-29										
30-34										
35-39										
40-44			2	4	1					**7**
45-49				2	3	1				**6**
50-54			1		1	2				**4**
55-59				1						**1**
60-64		1			1					**2**
65-69										
70-74										
75+										
Total	**0**	**1**	**3**	**7**	**6**	**3**	**0**	**0**	**0**	**20**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34	1	0
35-39	2	1,478
40-44	5	822
45-49	11	714
50-54	8	1,182
55-59	13	984
60-64	5	1,061
65-69	4	547
70-74		
75+	1	372
Total	50	901

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45	3	12
45-49	3	12
50-54	7	1,281
55-59	10	2,317
60-64	23	1,753
65-69	28	2,113
70-74	21	1,425
75-79	12	2,016
80-84	10	1,319
85-89	5	831
90-94	2	991
95-99		
100+		
Total	124	1,654

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Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

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Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

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Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

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Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called “funding method,” a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

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Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called "actuarial present value," the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer's accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer's accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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Milliman
111 SW Fifth Avenue, Suite 3700
Portland, OR 97204-3654
503 227 0634

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Milliman
111 SW Fifth Avenue, Suite 3700
Portland, OR 97204-3654
503 227 0634

November 2017

City of Powers/2215
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

This work product was prepared solely for Oregon Public Employees Retirement System for the purposes stated herein, and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work. Milliman recommends that third parties be aided by their own actuary or other qualified professional when reviewing the Milliman work product.

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November 2017
City of Powers/2215

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

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November 2017
City of Powers/2215

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

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ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

City of Powers -- #2215

November 2017

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Executive Summary

Milliman has prepared this report for City of Powers to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to City of Powers.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for City of Powers

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	16.95%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	(11.38%)	(11.38%)	(11.38%)
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**7.13%**	**0.00%**	**3.40%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**7.62%**	**0.42%**	**3.82%**

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.*

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Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 596%.

Funded Status as of December 31, 2017	**70% to 130%**	**Under 60% or Over 140%**
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	5.50%	5.50%
Minimum 2019-2021 Rate	2.50%	0.00%
Maximum 2019-2021 Rate	8.50%	11.50%

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Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$106,075	$52,769	($53,306)	201%	$65,891	(81%)
12/31/2012	121,512	51,982	(69,530)	234%	45,124	(154%)
12/31/2013	134,165	47,018	(87,147)	285%	48,604	(179%)
12/31/2014	138,439	46,595	(91,844)	297%	48,944	(188%)
12/31/2015	134,574	44,578	(89,996)	302%	51,440	(175%)
12/31/2016	123,640	20,759	(102,881)	596%	69,648	(148%)

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Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

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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 Powers

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	($102,881)	($89,996)
Allocated pooled OPSRP UAL	11,991	7,313
Side account	0	0
Net unfunded pension actuarial accrued liability	(90,890)	(82,683)
Combined valuation payroll	69,648	51,440
Net pension UAL as a percentage of payroll	(131%)	(161%)
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($9)	$250

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

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Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$0	$0
Tier 1/Tier 2 valuation payroll	0	0
Tier 1/Tier 2 pension normal cost rate	16.95%	18.92%
Tier 1/ Tier 2 Actuarial accrued liability	$20,759	$44,578
Actuarial asset value	123,640	134,574
Tier 1/Tier 2 Unfunded actuarial accrued liability	(102,881)	(89,996)
Tier 1/ Tier 2 Funded status	596%	302%
Combined valuation payroll	$69,648	$51,440
Tier 1/Tier 2 UAL as a percentage of payroll	(148%)	(175%)
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	(11.38%)	(13.42%)
Tier 1/Tier 2 active members [1]	0	0
Tier 1/Tier 2 dormant members	1	1
Tier 1/Tier 2 retirees and beneficiaries	2	4

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

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Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2016**	**December 31, 2015**
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

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Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

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Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	69,648	51,440
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

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Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$3,566	$3,378
2. Employer reserves	115,124	114,740
3. Benefits in force reserve	4,949	16,456
4. Total market value of assets *(1. + 2. + 3.)*	**$123,640**	**$134,574**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

	December 31, 2015 to December 31, 2016
1. Market value of assets at beginning of year	$134,574
2. Regular employer contributions	(7,208)
3. Benefit payments and expenses	(969)
4. Adjustments [1]	(11,020)
5. Interest credited	8,262
6. Total transferred from side accounts	0
7. Market value of assets at end of year *(1. + 2. + 3. + 4. + 5. + 6.)*	**$123,640**

[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.*

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Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	0	0
Tier 2 Police & Fire	0	0
Tier 2 General Service	0	0
Total	**$0**	**$0**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$0	$0	$0

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Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$9,071	$9,047
▪ Tier 1 General Service	0	0
▪ Tier 2 Police & Fire	0	0
▪ Tier 2 General Service	0	0
▪ **Total Active Members**	**$9,071**	**$9,047**
Dormant Members	0	0
Retired Members and Beneficiaries	11,688	35,531
Total Actuarial Accrued Liability	**$20,759**	**$44,578**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$20,434	$20,759	$325

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Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$20,759	$44,578
2. Actuarial value of assets	123,640	134,574
3. Unfunded accrued liability *(1. – 2.)*	(102,881)	(89,996)
4. Funded percentage *(2. ÷ 1.)*	596%	302%
5. Combined valuation payroll	$69,648	$51,440
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	(148%)	(175%)

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	($87,080)	($6,771)	($6,260)	($86,569)	($6,861)
December 31, 2015	($2,916)	($211)	($210)	($2,915)	($213)
December 31, 2016	N/A	N/A	N/A	($13,397)	($946)
Total				**($102,881)**	**($8,020)**

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Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$44,578
b. Normal cost at December 31, 2015 (excluding assumed expenses)	0
c. Benefit payments during 2016	(961)
d. Interest at 7.50% to December 31, 2016	3,307
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	46,924
f. Change in actuarial accrued liability due to assumption, method, and plan changes	325
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	47,249
2. Actuarial accrued liability at December 31, 2016	20,759
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	26,490
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	134,574
b. Contributions for 2016[1]	(7,208)
c. Benefit payments and expenses during 2016	(969)
d. Interest at 7.50% to December 31, 2016	9,786
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	136,184
5. Actuarial value of assets at December 31, 2016	123,640
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(12,544)
7. Total actuarial gain/(loss) *(3. + 6.)*	**$13,946**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**($89,996)**
2. Expected increase	736
3. Liability (gain)/loss	(26,490)
4. Asset (gain)/loss	12,544
5. Change due to changes in assumptions, methods, and plan provisions	325
6. UAL at December 31, 2016 *(1. + 2. + 3. + 4. + 5.)*	**($102,881)**

[1] *Includes rate relief from side accounts.*

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	Employer Tier 1/Tier 2 Valuation Payroll	Normal Cost Rate	Normal Cost	Employer Tier 1/Tier 2 Valuation Payroll	Normal Cost Rate
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	0	0	0.00%	0	0	0.00%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	0	0	0.00%	0	0	0.00%
Total	**$0**	**$0**	**16.95%**	**$0**	**$0**	**16.71%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	($102,881)	($89,996)
2. Next year's Tier 1/Tier 2 UAL payment	(8,020)	(6,982)
3. Combined valuation payroll	69,648	51,440
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	(11.52%)	(13.57%)

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	16.95%	16.71%
b. Tier 1/Tier 2 UAL rate	(11.52%)	(13.57%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	5.57%	3.29%

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1.	Current net Tier 1/Tier 2 pension contribution rate	5.50%
2.	Employer contribution rate attributable to side accounts	0.00%
3.	Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	5.50%
4.	Size of rate collar	
	a. 20% of current employer contribution rate *(20% x 3.)*	1.10%
	b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.00%
	c. Funded percentage	596%
	d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	6.00%
5.	Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	0.00%
6.	Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	11.50%
7.	Advisory July 1, 2019 total pension rate, before adjustment	5.57%
8.	Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	0.00%
9.	Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	(11.52%)
10.	Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	(11.52%)
11.	Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	5.57%
12.	Tier 1/Tier 2 retiree healthcare rate	0.49%
13.	Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14.	Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	16.95%
15.	Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	16.95%
16.	Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	5.57%

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	16.95%	18.92%
b. Tier 1/Tier 2 UAL rate	(11.52%)	(13.57%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate	5.57%	5.50%
(a. + b. + c., minimum of 5.51%)		

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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	69,648	69,648
Combined valuation payroll	**$0**	**$69,648**	**$69,648**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	0	0	0	0	0	0	0	0
Police & Fire	0	0	2	2	0	0	1	1
Total	0	0	2	2	0	0	1	1
Active Members with previous service segments with the employer								
General Service	0	0	N/A	0	0	0	N/A	0
Police & Fire	1	0	N/A	1	1	0	N/A	1
Total	1	0	N/A	1	1	0	N/A	1
Dormant Members								
General Service	0	0	0	0	0	0	0	0
Police & Fire	0	1	0	1	0	1	0	1
Total	0	1	0	1	0	1	0	1
Retired Members and Beneficiaries								
General Service	0	0	0	0	0	0	0	0
Police & Fire	2	0	0	2	4	0	0	4
Total	2	0	0	2	4	0	0	4
Grand Total Number of Members	**3**	**1**	**2**	**6**	**5**	**1**	**1**	**7**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

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Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20										
20-24										
25-29										
30-34										
35-39										
40-44										
45-49										
50-54										
55-59										
60-64										
65-69										
70-74										
75+										
Total	0	0	0	0	0	0	0	0	0	0

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49		
50-54		
55-59		
60-64		
65-69		
70-74		
75+	1	0
Total	1	0

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59		
60-64		
65-69	2	35
70-74		
75-79		
80-84		
85-89		
90-94		
95-99		
100+		
Total	2	35

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Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

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Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

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Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

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Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called “funding method,” a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

This work product was prepared solely for Oregon Public Employees Retirement System for the purposes stated herein, and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work. Milliman recommends that third parties be aided by their own actuary or other qualified professional when reviewing the Milliman work product.

Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called “actuarial present value,” the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer’s accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer’s accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer’s accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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Milliman
111 SW Fifth Avenue, Suite 3700
Portland, OR 97204-3654
503 227 0634

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Milliman
111 SW Fifth Avenue, Suite 3700
Portland, OR 97204-3654
503 227 0634

November 2017

City of Prairie City/2218
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

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November 2017
City of Prairie City/2218

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

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November 2017
City of Prairie City/2218

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.

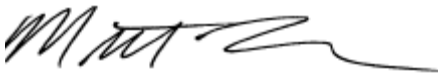
The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

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

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ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

City of Prairie City -- #2218

November 2017

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This work product was prepared solely for Oregon Public Employees Retirement System for the purposes stated herein, and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work. Milliman recommends that third parties be aided by their own actuary or other qualified professional when reviewing the Milliman work product.

Executive Summary

Milliman has prepared this report for City of Prairie City to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to City of Prairie City.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for City of Prairie City

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	11.24%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	2.88%	2.88%	2.88%
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**15.68%**	**12.93%**	**17.66%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**16.17%**	**13.35%**	**18.08%**

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.*

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Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 84%.

Funded Status as of December 31, 2017	**70% to 130%**	**Under 60% or Over 140%**
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	11.12%	11.12%
Minimum 2019-2021 Rate	8.12%	5.12%
Maximum 2019-2021 Rate	14.12%	17.12%

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Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$1,335,696	$1,442,081	$106,385	93%	$186,382	57%
12/31/2012	1,502,438	1,452,831	(49,607)	103%	169,129	(29%)
12/31/2013	1,646,646	1,601,587	(45,059)	103%	140,853	(32%)
12/31/2014	1,689,674	1,929,150	239,476	88%	155,302	154%
12/31/2015	1,698,113	1,984,239	286,126	86%	192,008	149%
12/31/2016	1,757,876	2,090,248	332,372	84%	204,917	162%

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Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

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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 Prairie City

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	$332,372	$286,126
Allocated pooled OPSRP UAL	35,279	27,297
Side account	0	0
Net unfunded pension actuarial accrued liability	367,651	313,423
Combined valuation payroll	204,917	192,008
Net pension UAL as a percentage of payroll	179%	163%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($28)	$932

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

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Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$14,976	$13,936
Tier 1/Tier 2 valuation payroll	133,246	123,262
Tier 1/Tier 2 pension normal cost rate	11.24%	11.31%
Tier 1/ Tier 2 Actuarial accrued liability	$2,090,248	$1,984,239
Actuarial asset value	1,757,876	1,698,113
Tier 1/Tier 2 Unfunded actuarial accrued liability	332,372	286,126
Tier 1/ Tier 2 Funded status	84%	86%
Combined valuation payroll	$204,917	$192,008
Tier 1/Tier 2 UAL as a percentage of payroll	162%	149%
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	2.88%	(0.19%)
Tier 1/Tier 2 active members [1]	3	3
Tier 1/Tier 2 dormant members	1	1
Tier 1/Tier 2 retirees and beneficiaries	9	10

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

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Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2016**	**December 31, 2015**
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

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Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

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Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	204,917	192,008
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

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Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$417,343	$395,541
2. Employer reserves	1,021,666	943,424
3. Benefits in force reserve	318,867	359,148
4. Total market value of assets *(1. + 2. + 3.)*	**$1,757,876**	**$1,698,113**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

		December 31, 2015 to December 31, 2016
1.	Market value of assets at beginning of year	$1,698,113
2.	Regular employer contributions	10,297
3.	Benefit payments and expenses	(62,433)
4.	Adjustments [1]	(6,913)
5.	Interest credited	118,811
6.	Total transferred from side accounts	0
7.	**Market value of assets at end of year** ***(1. + 2. + 3. + 4. + 5. + 6.)***	**$1,757,876**

[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.*

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Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$0	$0
Tier 1 General Service	5,437	5,157
Tier 2 Police & Fire	0	0
Tier 2 General Service	9,539	8,779
Total	**$14,976**	**$13,936**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$14,699	$14,976	$277

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Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$0	$0
▪ Tier 1 General Service	195,624	172,312
▪ Tier 2 Police & Fire	139,278	94,398
▪ Tier 2 General Service	165,632	136,794
▪ **Total Active Members**	**$500,534**	**$403,504**
Dormant Members	836,661	805,265
Retired Members and Beneficiaries	753,053	775,470
Total Actuarial Accrued Liability	**$2,090,248**	**$1,984,239**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$2,073,926	$2,090,248	$16,322

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Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$2,090,248	$1,984,239
2. Actuarial value of assets	1,757,876	1,698,113
3. Unfunded accrued liability *(1. – 2.)*	332,372	286,126
4. Funded percentage *(2. ÷ 1.)*	84%	86%
5. Combined valuation payroll	$204,917	$192,008
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	162%	149%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	($45,026)	($3,501)	($3,237)	($44,762)	($3,547)
December 31, 2015	$331,152	$23,962	$23,879	$331,069	$24,226
December 31, 2016	N/A	N/A	N/A	$46,065	$3,252
Total				**$332,372**	**$23,931**

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Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$1,984,239
b. Normal cost at December 31, 2015 (excluding assumed expenses)	13,291
c. Benefit payments during 2016	(61,908)
d. Interest at 7.50% to December 31, 2016	146,995
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	2,082,617
f. Change in actuarial accrued liability due to assumption, method, and plan changes	16,322
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	2,098,939
2. Actuarial accrued liability at December 31, 2016	2,090,248
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	8,691
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	1,698,113
b. Contributions for 2016[1]	10,297
c. Benefit payments and expenses during 2016	(62,433)
d. Interest at 7.50% to December 31, 2016	125,403
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	1,771,381
5. Actuarial value of assets at December 31, 2016	1,757,876
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(13,505)
7. Total actuarial gain/(loss) *(3. + 6.)*	**($4,814)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$286,126**
2. Expected increase	25,110
3. Liability (gain)/loss	(8,691)
4. Asset (gain)/loss	13,505
5. Change due to changes in assumptions, methods, and plan provisions	16,322
6. UAL at December 31, 2016 *(1. + 2. + 3. + 4. + 5.)*	**$332,372**

[1] *Includes rate relief from side accounts.*

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	Employer Tier 1/Tier 2 Valuation Payroll	Normal Cost Rate	Normal Cost	Employer Tier 1/Tier 2 Valuation Payroll	Normal Cost Rate
Tier 1 Police & Fire	$0	$0	0.00%	$0	$0	0.00%
Tier 1 General Service	5,437	35,565	15.29%	5,157	33,688	15.31%
Tier 2 Police & Fire	0	0	0.00%	0	0	0.00%
Tier 2 General Service	9,539	97,681	9.77%	8,779	89,574	9.80%
Total	**$14,976**	**$133,246**	**11.24%**	**$13,936**	**$123,262**	**11.31%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$332,372	$286,126
2. Next year's Tier 1/Tier 2 UAL payment	23,931	20,461
3. Combined valuation payroll	204,917	192,008
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	11.68%	10.66%

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	11.24%	11.31%
b. Tier 1/Tier 2 UAL rate	11.68%	10.66%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	23.06%	22.12%

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1.	Current net Tier 1/Tier 2 pension contribution rate	11.12%
2.	Employer contribution rate attributable to side accounts	0.00%
3.	Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	11.12%
4.	Size of rate collar	
	a. 20% of current employer contribution rate *(20% x 3.)*	2.22%
	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, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	8.12%
6.	Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	14.12%
7.	Advisory July 1, 2019 total pension rate, before adjustment	23.06%
8.	Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(8.94%)
9.	Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	11.68%
10.	Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	2.74%
11.	Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	14.12%
12.	Tier 1/Tier 2 retiree healthcare rate	0.49%
13.	Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14.	Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	11.24%
15.	Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	11.24%
16.	Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	14.12%

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	11.24%	11.31%
b. Tier 1/Tier 2 UAL rate	2.74%	(0.34%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	14.12%	11.12%

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Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$35,565	$0	$35,565
Tier 2	97,681	0	97,681
Tier 1/Tier 2 valuation payroll	133,246	0	133,246
OPSRP valuation payroll	71,671	0	71,671
Combined valuation payroll	**$204,917**	**$0**	**$204,917**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	1	2	2	5	1	2	2	5
Police & Fire	0	0	0	0	0	0	0	0
Total	1	2	2	5	1	2	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	1	N/A	1	0	1	N/A	1
Total	0	1	N/A	1	0	1	N/A	1
Dormant Members								
General Service	1	0	0	1	1	0	0	1
Police & Fire	0	0	0	0	0	0	0	0
Total	1	0	0	1	1	0	0	1
Retired Members and Beneficiaries								
General Service	4	1	0	5	4	1	0	5
Police & Fire	2	2	0	4	3	2	0	5
Total	6	3	0	9	7	3	0	10
Grand Total Number of Members	**8**	**6**	**2**	**16**	**9**	**6**	**2**	**17**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

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Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40+**	**Total**
<20										
20-24										
25-29										
30-34										
35-39										
40-44			1							**1**
45-49				1						**1**
50-54										
55-59										
60-64										
65-69						1				**1**
70-74										
75+										
Total	**0**	**0**	**1**	**1**	**0**	**1**	**0**	**0**	**0**	**3**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49		
50-54		
55-59		
60-64	1	5,260
65-69		
70-74		
75+		
Total	1	5,260

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54		
55-59	1	123
60-64	2	516
65-69	4	700
70-74		
75-79	1	294
80-84	1	265
85-89		
90-94		
95-99		
100+		
Total	9	502

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Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

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Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

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Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

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Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called “funding method,” a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

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Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called "actuarial present value," the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer's accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer's accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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Milliman
111 SW Fifth Avenue, Suite 3700
Portland, OR 97204-3654
503 227 0634

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Milliman
111 SW Fifth Avenue, Suite 3700
Portland, OR 97204-3654
503 227 0634

November 2017

City of Prineville/2146
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

This work product was prepared solely for Oregon Public Employees Retirement System for the purposes stated herein, and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work. Milliman recommends that third parties be aided by their own actuary or other qualified professional when reviewing the Milliman work product.

Milliman

November 2017
City of Prineville/2146

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

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November 2017
City of Prineville/2146

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.

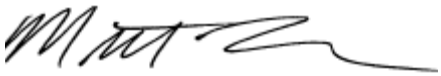
The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

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

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ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

City of Prineville -- #2146

November 2017

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Executive Summary

Milliman has prepared this report for City of Prineville to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to City of Prineville.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for City of Prineville

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	16.33%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	3.39%	3.39%	3.39%
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	(6.09%)	(6.09%)	(6.09%)
Net pension contribution rate	**15.19%**	**7.35%**	**12.08%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**15.68%**	**7.77%**	**12.50%**

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.*

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Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 70%.

Funded Status as of December 31, 2017	70% to 130%	Under 60% or Over 140%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	16.43%	16.43%
Minimum 2019-2021 Rate	13.14%	9.85%
Maximum 2019-2021 Rate	19.72%	23.01%

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Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$13,842,964	$17,171,719	$3,328,755	81%	$3,614,154	92%
12/31/2012	15,017,643	17,271,790	2,254,147	87%	3,682,268	61%
12/31/2013	16,602,350	18,041,760	1,439,410	92%	3,875,956	37%
12/31/2014	20,033,316	21,184,360	1,151,044	95%	3,864,509	30%
12/31/2015	18,680,228	21,263,318	2,583,090	88%	4,049,315	64%
12/31/2016	18,906,605	22,721,364	3,814,759	83%	4,039,242	94%

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Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

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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 Prineville

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
T1/T2 UAL	$6,920,685	$5,723,290
Allocated pooled OPSRP UAL	695,405	575,667
Side account	3,105,926	3,140,201
Net unfunded pension actuarial accrued liability	4,510,164	3,158,756
Combined valuation payroll	4,039,242	4,049,315
Net pension UAL as a percentage of payroll	112%	78%
Calculated side account rate relief	(6.09%)	(6.03%)
Allocated pooled RHIA UAL	($550)	$19,662

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

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Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$258,591	$266,506
Tier 1/Tier 2 valuation payroll	1,583,397	1,647,479
Tier 1/Tier 2 pension normal cost rate	16.33%	16.18%
Tier 1/ Tier 2 Actuarial accrued liability	$22,721,364	$21,263,318
Actuarial asset value	15,800,679	15,540,028
Tier 1/Tier 2 Unfunded actuarial accrued liability	6,920,685	5,723,290
Tier 1/ Tier 2 Funded status	70%	73%
Combined valuation payroll	$4,039,242	$4,049,315
Tier 1/Tier 2 UAL as a percentage of payroll	171%	141%
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	3.39%	0.25%
Tier 1/Tier 2 active members [1]	23	24
Tier 1/Tier 2 dormant members	23	21
Tier 1/Tier 2 retirees and beneficiaries	61	58

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

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Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2016**	**December 31, 2015**
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

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Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**	**$3,140,201**	**$3,140,201**
2. Deposits made during 2016		N/A	
3. Administrative expenses		(1,000)	(1,000)
4. Amount transferred to employer reserves during 2016		(252,722)	
5. Side account earnings during 2016		219,448	219,448
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***		**$3,105,926**	**$3,105,926**

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Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$3,105,926	$3,140,201
Side account 2	0	0
Side account 3	0	0
Total	**$3,105,926**	**$3,140,201**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$3,105,926	$3,140,201
2. Combined valuation payroll	4,039,242	4,049,315
3. Average Amortization factor	12.618	12.861
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	(6.09%)	(6.03%)

[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.*

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Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$2,342,142	$2,585,115
2. Employer reserves	7,785,723	7,546,579
3. Benefits in force reserve	5,672,814	5,408,334
4. Total market value of assets *(1. + 2. + 3.)*	**$15,800,679**	**$15,540,028**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

	December 31, 2015 to December 31, 2016
1. Market value of assets at beginning of year	$15,540,028
2. Regular employer contributions	(50,300)
3. Benefit payments and expenses	(1,110,709)
4. Adjustments [1]	65,783
5. Interest credited	1,103,155
6. Total transferred from side accounts	252,722
7. Market value of assets at end of year *(1. + 2. + 3. + 4. + 5. + 6.)*	**$15,800,679**

[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.*

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Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$20,405	$31,063
Tier 1 General Service	102,335	96,803
Tier 2 Police & Fire	58,894	55,922
Tier 2 General Service	76,957	82,718
Total	**$258,591**	**$266,506**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$253,028	$258,591	$5,563

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Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$2,360,371	$2,336,012
▪ Tier 1 General Service	2,672,563	2,824,163
▪ Tier 2 Police & Fire	1,416,935	1,364,840
▪ Tier 2 General Service	1,521,359	1,646,959
▪ **Total Active Members**	**$7,971,228**	**$8,171,974**
Dormant Members	1,352,937	1,413,716
Retired Members and Beneficiaries	13,397,199	11,677,628
Total Actuarial Accrued Liability	**$22,721,364**	**$21,263,318**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$22,050,571	$22,721,364	$670,793

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Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$22,721,364	$21,263,318
2. Actuarial value of assets	15,800,679	15,540,028
3. Unfunded accrued liability *(1. – 2.)*	6,920,685	5,723,290
4. Funded percentage *(2. ÷ 1.)*	70%	73%
5. Combined valuation payroll	$4,039,242	$4,049,315
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	171%	141%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	$1,438,300	$111,834	$103,405	$1,429,871	$113,320
December 31, 2015	$4,284,990	$310,057	$308,987	$4,283,920	$313,473
December 31, 2016	N/A	N/A	N/A	$1,206,894	$85,215
Total				**$6,920,685**	**$512,008**

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Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$21,263,318
b. Normal cost at December 31, 2015 (excluding assumed expenses)	254,159
c. Benefit payments during 2016	(1,101,369)
d. Interest at 7.50% to December 31, 2016	1,562,978
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	21,979,086
f. Change in actuarial accrued liability due to assumption, method, and plan changes	670,793
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	22,649,879
2. Actuarial accrued liability at December 31, 2016	22,721,364
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	(71,485)
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	15,540,028
b. Contributions for 2016[1]	202,421
c. Benefit payments and expenses during 2016	(1,110,709)
d. Interest at 7.50% to December 31, 2016	1,131,441
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	15,763,182
5. Actuarial value of assets at December 31, 2016	15,800,679
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	37,497
7. Total actuarial gain/(loss) *(3. + 6.)*	**($33,988)**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$5,723,290**
2. Expected increase	492,614
3. Liability (gain)/loss	71,485
4. Asset (gain)/loss	(37,497)
5. Change due to changes in assumptions, methods, and plan provisions	670,793
6. UAL at December 31, 2016 *(1. + 2. + 3. + 4. + 5.)*	**$6,920,685**

[1] *Includes rate relief from side accounts.*

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	Employer Tier 1/Tier 2 Valuation Payroll	Normal Cost Rate	Normal Cost	Employer Tier 1/Tier 2 Valuation Payroll	Normal Cost Rate
Tier 1 Police & Fire	$20,405	$81,157	25.14%	$31,063	$137,196	22.64%
Tier 1 General Service	102,335	624,699	16.38%	96,803	561,349	17.24%
Tier 2 Police & Fire	58,894	274,215	21.48%	55,922	275,473	20.30%
Tier 2 General Service	76,957	603,326	12.76%	82,718	673,461	12.28%
Total	**$258,591**	**$1,583,397**	**16.33%**	**$266,506**	**$1,647,479**	**16.18%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$6,920,685	$5,723,290
2. Next year's Tier 1/Tier 2 UAL payment	512,008	421,891
3. Combined valuation payroll	4,039,242	4,049,315
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	12.68%	10.42%

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	16.33%	16.18%
b. Tier 1/Tier 2 UAL rate	12.68%	10.42%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	29.15%	26.75%

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1.	Current net Tier 1/Tier 2 pension contribution rate	10.40%
2.	Employer contribution rate attributable to side accounts	(6.03%)
3.	Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	16.43%
4.	Size of rate collar	
	a. 20% of current employer contribution rate *(20% x 3.)*	3.29%
	b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.29%
	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.)*	3.29%
5.	Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	13.14%
6.	Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	19.72%
7.	Advisory July 1, 2019 total pension rate, before adjustment	29.15%
8.	Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(9.43%)
9.	Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	12.68%
10.	Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	3.25%
11.	Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	19.72%
12.	Tier 1/Tier 2 retiree healthcare rate	0.49%
13.	Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14.	Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	16.33%
15.	Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	16.33%
16.	Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	19.72%

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	16.33%	16.18%
b. Tier 1/Tier 2 UAL rate	3.25%	0.10%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	19.72%	16.43%

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Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$624,699	$81,157	$705,856
Tier 2	603,326	274,215	877,541
Tier 1/Tier 2 valuation payroll	1,228,025	355,372	1,583,397
OPSRP valuation payroll	1,601,420	854,425	2,455,845
Combined valuation payroll	**$2,829,445**	**$1,209,797**	**$4,039,242**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	10	9	34	53	9	10	31	50
Police & Fire	1	3	11	15	2	3	10	15
Total	11	12	45	68	11	13	41	65
Active Members with previous service segments with the employer								
General Service	7	10	N/A	17	6	8	N/A	14
Police & Fire	6	8	N/A	14	7	9	N/A	16
Total	13	18	N/A	31	13	17	N/A	30
Dormant Members								
General Service	3	13	14	30	3	11	13	27
Police & Fire	0	7	2	9	1	6	1	8
Total	3	20	16	39	4	17	14	35
Retired Members and Beneficiaries								
General Service	30	2	1	33	29	2	0	31
Police & Fire	27	2	0	29	25	2	0	27
Total	57	4	1	62	54	4	0	58
Grand Total Number of Members	**84**	**54**	**62**	**200**	**82**	**51**	**55**	**188**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

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Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40+**	**Total**
<20										
20-24										
25-29										
30-34			1							**1**
35-39			1							**1**
40-44				2						**2**
45-49										
50-54			1	3	1	4				**9**
55-59				4	2					**6**
60-64			1		1					**2**
65-69			1			1				**2**
70-74										
75+										
Total	**0**	**0**	**5**	**9**	**4**	**5**	**0**	**0**	**0**	**23**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39	3	379
40-44	5	551
45-49	1	1,189
50-54	4	475
55-59	4	901
60-64	4	361
65-69	2	60
70-74		
75+		
Total	23	528

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49		
50-54	3	2,540
55-59	8	1,277
60-64	9	1,674
65-69	21	1,172
70-74	10	1,342
75-79	6	1,103
80-84	2	1,004
85-89	2	312
90-94		
95-99		
100+		
Total	61	1,314

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Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

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Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

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Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

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Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called “funding method,” a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

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Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called "actuarial present value," the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer's accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer's accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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Milliman
111 SW Fifth Avenue, Suite 3700
Portland, OR 97204-3654
503 227 0634

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Milliman
111 SW Fifth Avenue, Suite 3700
Portland, OR 97204-3654
503 227 0634

November 2017

City of Rainier/2297
Oregon Public Employees Retirement System

Dear Sir or Madam:

As part of our engagement with the Oregon Public Employees Retirement Board, we performed a system-wide actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2016. Information is also provided to assist you in preparing your required financial reporting disclosures under Statement 45 of the Governmental Accounting Standards Board. GASB 68 information will be provided separately by PERS and is not included in this report.

This valuation is advisory and does not affect employer contribution rates. Employer contribution rates effective July 1, 2019 through June 30, 2021 will be calculated in the December 31, 2017 actuarial valuation.

This report reflects the System's benefit provisions in effect as of December 31, 2016. The full development of the valuation results for the OPSRP and Retiree Health Insurance Account (RHIA) programs can be found in the separate system-wide actuarial valuation report. Costs of the IAP (Individual Account Program) are not included in this or the system-wide actuarial valuation report. Further, costs of pension obligation bond payments are not included in this or the system-wide actuarial valuation report.

If you have any questions about this report, please contact Debra Hembree, Actuarial Services Coordinator at Oregon PERS, at 503 603 7704 or Debra.Hembree@state.or.us.

Contents of Report

The executive summary provides the basic information you need including:

- Contribution rates for Tier 1/Tier 2, OPSRP general service, and OPSRP police and fire payroll,
- Information to assist you in completing GASB 45 financial reporting requirements, and
- A summary of principal valuation results.

The remainder of the report provides additional information including:

- Side account balances, transactions and rate relief,
- Detailed development of Tier 1/Tier 2 valuation results,
- A brief summary of methods and assumptions, and
- A brief summary of any changes in System benefit provisions.

Additional information is provided in the system-wide actuarial valuation report, which is available at www.oregon.gov/PERS/Pages/Financials/Actuarial-Financial-Information.aspx.

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Milliman

November 2017
City of Rainier/2297

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, System benefit provisions as defined by statute, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While a valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: System experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in System benefit provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements. The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2017.

Some of the actuarial computations presented in this report are for purposes of estimating the contribution rates effective from July 2019 to June 2021 for System employers. Other actuarial computations presented in this report under GASB Statement No. 45 are for purposes of assisting System employers in fulfilling their financial reporting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the System benefit provisions described in the appendixes of this report, and of GASB Statement No. 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

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Milliman

November 2017
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.

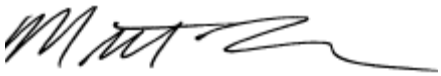
The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

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

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ACTUARIAL VALUATION REPORT DECEMBER 31, 2016

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

INDEPENDENT EMPLOYERS

City of Rainier -- #2297

November 2017

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This work product was prepared solely for Oregon Public Employees Retirement System for the purposes stated herein, and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work. Milliman recommends that third parties be aided by their own actuary or other qualified professional when reviewing the Milliman work product.

Executive Summary

Milliman has prepared this report for City of Rainier to:

- Provide summary December 31, 2016 valuation results for the Oregon Public Service Retirement Plan (OPSRP) and the Retiree Health Insurance Account (RHIA),
- Provide advisory information calculated as of December 31, 2016 on estimated employer-specific contribution rates effective July 1, 2019 through June 30, 2021,
- Provide employer-specific valuation results for side accounts and Tier 1/Tier 2 assets and liabilities as of December 31, 2016, and
- Provide reporting and disclosure information for financial statements for governmental agencies and pursuant to GASB Statement Number 45. GASB 68 information will be provided separately by PERS and is not included in this report.

This report summarizes the valuation results for the OPSRP and RHIA. The full development of these results can be found in the December 31, 2016 system-wide actuarial valuation report. This report develops employer-specific Tier 1/Tier 2 and side account rates and applies the results from the system-wide valuation to City of Rainier.

Employer Contribution Rates

The following table summarizes the employer contribution rates calculated as of December 31, 2016 for each type of payroll. There are separate normal cost rates for each of the payrolls based on the benefit structure supported by that payroll. The other rates apply to all payrolls regardless of the benefit structure to which they are attributed.

Advisory 2019 - 2021 Employer Rates Calculated as of December 31, 2016 for City of Rainier

	Payroll		
		OPSRP	
	Tier 1/Tier 2	General Service	Police & Fire
Pension			
Normal cost rate	17.99%	8.49%	13.22%
Tier 1/Tier 2 UAL rate[1]	(0.28%)	(0.28%)	(0.28%)
OPSRP UAL rate	1.56%	1.56%	1.56%
Side account rate relief	0.00%	0.00%	0.00%
Net pension contribution rate	**19.27%**	**9.77%**	**14.50%**
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.42%	0.42%	0.42%
Net retiree healthcare rate	**0.49%**	**0.42%**	**0.42%**
Total net employer contribution rate	**19.76%**	**10.19%**	**14.92%**

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.*

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Executive Summary

Employer Contribution Rates (continued)

Range of Potential Tier 1/Tier 2 Employer Pension Contribution Rates for the July 2019 to June 2021 Biennium

The rate collar limits changes in contribution rates, but does not limit changes in rates for individual employers related to side accounts. The table below shows the possible minimum and maximum rates first effective as of July 1, 2019, which will depend on the funded status as of December 31, 2017. If the employer's funded status excluding side accounts is less than 60 percent or greater than 140 percent, the rate collar doubles in size. If the employer's funded status excluding side accounts is between 60 and 70 percent or between 130 and 140 percent, the size of the rate collar is increased on a graded scale. Also, please note that by Board policy, independent employers with less than 2,500 employees cannot have a Tier 1/Tier 2 pension rate less than 6 percent of payroll (excludes side accounts and OPSRP UAL rates). The rates shown are before any adjustment for side account offsets or the 6 percent minimum independent employer contribution rate.

For comparison, the funded status as of December 31, 2016 is 75%.

Funded Status as of December 31, 2017	**70% to 130%**	**Under 60% or Over 140%**
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate	14.71%	14.71%
Minimum 2019-2021 Rate	11.71%	8.71%
Maximum 2019-2021 Rate	17.71%	20.71%

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Executive Summary

Accounting Information

Milliman is not an accounting or audit firm and cannot provide accounting advice. Milliman is not responsible for the interpretation of, or compliance with, accounting standards; citations to, and descriptions of accounting standards provided in this report are for reference purposes only. The information provided in this section is intended to assist the employer in completing its financial statements, but any accounting determination should be reviewed by your auditor.

Pension

In June 2012 the GASB issued Statement No. 68, which replaced GASB 27 and governs employer financial reporting for fiscal years beginning after June 15, 2014. The new standard replaced many of the key elements of the prior reporting requirements. Under the new rules, employers are required to record a balance sheet liability for their unfunded pension obligations. In addition, the timing and coordination of plan and employer reporting has changed under the new requirements. GASB 68 information for employers will be provided separately by PERS and is not included in this report.

Schedule of Funding Progress

Under GASB 27, the Schedule of Funding Progress for Tier 1/Tier 2 pension liabilities was reported in the Required Supplementary Information. This schedule is no longer required now that GASB 68 has replaced GASB 27. However, for additional information and the sake of historical comparison, the updated schedule is shown below for the last several valuations. For employers with side accounts, the actuarial value of assets in this Schedule includes the value of the employer's side accounts.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b - a)	Funded Ratio (a ÷ b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b-a) ÷ c)
12/31/2011	$3,641,708	$4,207,024	$565,316	87%	$1,076,703	53%
12/31/2012	3,755,949	3,944,269	188,320	95%	950,115	20%
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%

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Executive Summary

Accounting Information (continued)

Retiree Healthcare

The Retiree Health Insurance Account (RHIA) is a cost-sharing pool under Statement No. 45 of the Governmental Accounting Standards Board (GASB 45). Consequently, each employer reports the contractually required contribution. The contractually required contribution for retiree healthcare liabilities for the period July 1, 2017 through June 30, 2019 was calculated as a part of the December 31, 2015 valuation, and is expressed as contribution rates that are applied to the appropriate payroll. The rates and appropriate payroll are shown in the table below.

Contractually Required Contribution Rate

	Payroll		
		OPSRP	
	Tier 1 / Tier 2	General Service	Police & Fire
July 1, 2015 to June 30, 2017	0.53%	0.45%	0.45%
July 1, 2017 to June 30, 2019	0.50%	0.43%	0.43%

In June 2015, the GASB issued Statement 75, which will replace GASB 45 and govern employer financial reporting for retiree healthcare obligations for fiscal years beginning after June 15, 2017. In general, the changes required by GASB 75 parallel those that occurred for pension reporting when GASB 68 replaced GASB 27. Accounting information for reporting under GASB 75 will be provided separately and is not included in this report.

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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, 2016	**December 31, 2015**
T1/T2 UAL	$1,448,206	$1,208,445
Allocated pooled OPSRP UAL	174,261	126,344
Side account	0	0
Net unfunded pension actuarial accrued liability	1,622,467	1,334,789
Combined valuation payroll	1,012,188	888,719
Net pension UAL as a percentage of payroll	160%	150%
Calculated side account rate relief	0.00%	0.00%
Allocated pooled RHIA UAL	($138)	$4,315

In the above exhibit, UAL amounts for the pools (OPSRP and RHIA) are allocated pro-rata based on the ratio of an employer's combined valuation payroll to that of the applicable pool. Pool total results are summarized on page 7 of this report. Allocated amounts shown above differ from the proportionate share of Net Pension Liability (NPL) that will be allocated to employers under GASB 68.

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Executive Summary

Principal Valuation Results (continued)

Tier 1/Tier 2

	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
Normal cost	$97,573	$93,251
Tier 1/Tier 2 valuation payroll	542,394	525,026
Tier 1/Tier 2 pension normal cost rate	17.99%	17.76%
Tier 1/ Tier 2 Actuarial accrued liability	$5,720,312	$5,608,244
Actuarial asset value	4,272,106	4,399,799
Tier 1/Tier 2 Unfunded actuarial accrued liability	1,448,206	1,208,445
Tier 1/ Tier 2 Funded status	75%	78%
Combined valuation payroll	$1,012,188	$888,719
Tier 1/Tier 2 UAL as a percentage of payroll	143%	136%
Tier 1/Tier 2 UAL rate (includes Multnomah Fire District #10)	(0.28%)	(3.05%)
Tier 1/Tier 2 active members [1]	7	7
Tier 1/Tier 2 dormant members	2	2
Tier 1/Tier 2 retirees and beneficiaries	17	15

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

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Executive Summary

Principal Valuation Results (continued)

OPSRP

($ in millions)	Actuarial Valuation as of	
	December 31, 2016	**December 31, 2015**
General service normal cost	$402.9	$342.2
OPSRP general service valuation payroll	4,746.4	4,266.9
General service normal cost rate	8.49%	8.02%
Police and fire normal cost	$80.6	$69.9
OPSRP police and fire valuation payroll	609.4	546.4
Police and fire normal cost rate	13.22%	12.79%
Actuarial accrued liability	$4,717.0	$3,742.5
Actuarial asset value	3,021.4	2,389.1
Unfunded actuarial accrued liability	1,695.6	1,353.5
Funded status	64%	64%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	17%	14%
UAL rate	1.56%	1.27%

Retiree Healthcare

($ in millions)	Actuarial Valuation as of	
RHIA	**December 31, 2016**	**December 31, 2015**
Normal cost	$3.0	$3.3
Tier 1 / Tier 2 valuation payroll	4,516.7	4,730.8
Normal cost rate	0.07%	0.07%
Actuarial accrued liability	$463.7	$465.6
Actuarial asset value	465.0	419.3
Unfunded actuarial accrued liability	(1.3)	46.3
Funded status	100%	90%
Combined valuation payroll	$9,872.6	$9,544.1
UAL as a percentage of payroll	0%	0%
UAL rate	0.42%	0.43%

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Side Account Information

Reconciliation of Side Accounts

The following table reconciles the total side account from the beginning of the year to the end of the year. Side account transfers were calculated by PERS and made on a monthly basis. The amount of these transfers is shown in the table below.

All information in this table has been provided by PERS.

	New	Continuing	Total
1. Side account as of December 31, 2015	**N/A**		
2. Deposits made during 2016		N/A	
3. Administrative expenses			
4. Amount transferred to employer reserves during 2016			
5. Side account earnings during 2016			
6. Side account as of December 31, 2016 ***(1. + 2. + 3. + 4. + 5.)***			

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Side Account Information

Side Account Balances

	December 31, 2016	December 31, 2015
Side account 1	$0	$0
Side account 2	0	0
Side account 3	0	0
Total	**$0**	**$0**

Development of Side Account Rate

The rate relief attributable to an employer's side account is determined by amortizing the side account balance on the valuation date over a fixed period, and expressing the result as a percentage of combined valuation payroll. For side accounts established prior to December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the fixed period ends 18 years after the first rate-setting valuation following its creation.

	December 31, 2016	December 31, 2015
1. Total side account	$0	$0
2. Combined valuation payroll	1,012,188	888,719
3. Average Amortization factor	8.994	9.504
4. Total side account rate *(-1. ÷ 2. ÷ 3.)* [1]	0.00%	0.00%

[1] *For employers with more than one side account, the Total Side Account Rate is determined by calculating the rate on each side account separately and adding the rates together.*

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Tier 1/Tier 2 Valuation Results

Assets

A summary of the market value of pension assets, and reconciliation from the prior year are shown below.

Summary of Market Value of Tier 1/Tier 2 Pension Assets

	December 31, 2016	December 31, 2015
1. Member reserves	$306,859	$431,891
2. Employer reserves	2,379,683	2,404,913
3. Benefits in force reserve	1,585,564	1,562,995
4. Total market value of assets *(1. + 2. + 3.)*	**$4,272,106**	**$4,399,799**

The market value of member and employer reserves is provided by PERS. The benefits in force reserve provided by PERS is allocated each year among employers in proportion to their liabilities for retired members and beneficiaries.

Reconciliation of Tier 1/Tier 2 Pension Assets

	December 31, 2015 to December 31, 2016
1. Market value of assets at beginning of year	$4,399,799
2. Regular employer contributions	41,958
3. Benefit payments and expenses	(310,445)
4. Adjustments [1]	(158,840)
5. Interest credited	299,635
6. Total transferred from side accounts	0
7. Market value of assets at end of year *(1. + 2. + 3. + 4. + 5. + 6.)*	**$4,272,106**

[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.*

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Tier 1/Tier 2 Valuation Results

Liabilities

Normal Cost

The normal cost represents the value of benefits assigned to the next year of service by the actuarial cost method. If all actuarial assumptions are met, the normal cost represents the amount that would need to be contributed each year to fund plan benefits. Amounts shown below include assumed administrative expenses, which are allocated pro-rata based on normal cost.

Summary of Normal Cost by Tier/Member Classification

	December 31, 2016	December 31, 2015
Tier 1 Police & Fire	$0	$11,870
Tier 1 General Service	0	0
Tier 2 Police & Fire	65,802	63,731
Tier 2 General Service	31,771	17,650
Total	**$97,573**	**$93,251**

Change in Tier 1/Tier 2 Normal Cost

The following table shows the impact of the assumption, method, and plan changes on normal cost as of December 31, 2016.

	Before Changes	After Changes	Net Change
Normal Cost	$94,305	$97,573	$3,268

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Tier 1/Tier 2 Valuation Results

Liabilities

Actuarial Accrued Liability

The actuarial accrued liability represents the value of benefits allocated to service performed before the valuation date by the actuarial cost method. If all actuarial assumptions are met, the actuarial accrued liability represents the amount of assets that would need to be accumulated as of the valuation date to provide for the portion of benefits allocated to service already performed.

Summary of Actuarial Accrued Liability by Tier/Member Classification

	December 31, 2016	December 31, 2015
Active Members		
▪ Tier 1 Police & Fire	$0	$434,607
▪ Tier 1 General Service	392,455	431,091
▪ Tier 2 Police & Fire	1,065,411	926,258
▪ Tier 2 General Service	419,135	350,392
▪ **Total Active Members**	**$1,877,001**	**$2,142,348**
Dormant Members	98,766	91,091
Retired Members and Beneficiaries	3,744,545	3,374,805
Total Actuarial Accrued Liability	**$5,720,312**	**$5,608,244**

Change in Tier 1/Tier 2 Actuarial Accrued Liability

The following table shows the impact of the assumption, method, and plan changes on the actuarial accrued liability as of December 31, 2016.

	Before Changes	After Changes	Net Change
Actuarial Accrued Liability	$5,567,000	$5,720,312	$153,312

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Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Summary of UAL

The UAL represents the difference between the assets accumulated and the liability attributed to prior years of service by the cost method.

	December 31, 2016	December 31, 2015
1. Actuarial accrued liability	$5,720,312	$5,608,244
2. Actuarial value of assets	4,272,106	4,399,799
3. Unfunded accrued liability *(1. – 2.)*	1,448,206	1,208,445
4. Funded percentage *(2. ÷ 1.)*	75%	78%
5. Combined valuation payroll	$1,012,188	$888,719
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	143%	136%

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, each odd-year valuation establishes a 20-year closed-period amortization schedule for outstanding regular Tier 1/Tier 2 UAL amounts. For subsequent odd-year valuations, amortization schedules are calculated based on the total Tier 1/Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/Tier 2 UAL bases. This even-year advisory valuation shows an estimate of the amortization schedules to be established on December 31, 2017, with the estimate based on experience through the end of 2016. The payment schedules for the unamortized balances as of December 31, 2016 have been modified to reflect the lowering of the investment return assumption first effective with this valuation.

Amortization Base	UAL December 31, 2015	Payment	Interest	UAL December 31, 2016	Next Year's Payment
December 31, 2013	($243,871)	($18,962)	($17,533)	($242,442)	($19,214)
December 31, 2015	$1,452,316	$105,088	$104,725	$1,451,953	$106,246
December 31, 2016	N/A	N/A	N/A	$238,695	$16,853
Total				**$1,448,206**	**$103,885**

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Tier 1/Tier 2 Valuation Results

Unfunded Accrued Liability (UAL)

Actuarial Gain or Loss since Prior Valuation

The system-wide actuarial valuation report contains a detailed analysis of gains and losses since the last valuation. The table below shows the gain or loss for the individual employer.

1. Expected actuarial accrued liability	
a. Actuarial accrued liability at December 31, 2015	$5,608,244
b. Normal cost at December 31, 2015 (excluding assumed expenses)	88,935
c. Benefit payments during 2016	(307,835)
d. Interest at 7.50% to December 31, 2016	412,410
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	5,801,754
f. Change in actuarial accrued liability due to assumption, method, and plan changes	153,312
g. Expected actuarial accrued liability at December 31, 2016 *(e. + f.)*	5,955,066
2. Actuarial accrued liability at December 31, 2016	5,720,312
3. Gain/(loss) on actuarial accrued liability *(1.g. – 2.)*	234,754
4. Expected actuarial value of assets	
a. Actuarial value of assets at December 31, 2015	4,399,799
b. Contributions for 2016[1]	41,958
c. Benefit payments and expenses during 2016	(310,445)
d. Interest at 7.50% to December 31, 2016	319,917
e. Expected actuarial value of assets at December 31, 2016 *(a. + b. + c. + d.)*	4,451,227
5. Actuarial value of assets at December 31, 2016	4,272,106
6. Gain/(loss) on actuarial value of assets *(5. - 4.e.)*	(179,121)
7. Total actuarial gain/(loss) *(3. + 6.)*	**$55,633**

Unfunded Accrued Liability Reconciliation

A reconciliation of the Tier 1/Tier 2 UAL from December 31, 2015 is provided below.

1. UAL at December 31, 2015	**$1,208,445**
2. Expected increase	142,082
3. Liability (gain)/loss	(234,754)
4. Asset (gain)/loss	179,121
5. Change due to changes in assumptions, methods, and plan provisions	153,312
6. UAL at December 31, 2016 *(1. + 2. + 3. + 4. + 5.)*	**$1,448,206**

[1] *Includes rate relief from side accounts.*

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Normal Cost Rate

For independent employers, the normal cost calculated previously is divided by projected payroll to determine a normal cost rate. The table below shows the development of the rate for each tier and member classification.

Development of Tier 1/Tier 2 Normal Cost Rate

	December 31, 2016			December 31, 2015		
	Normal Cost	Employer Tier 1/Tier 2 Valuation Payroll	Normal Cost Rate	Normal Cost	Employer Tier 1/Tier 2 Valuation Payroll	Normal Cost Rate
Tier 1 Police & Fire	$0	$0	0.00%	$11,870	$49,084	24.18%
Tier 1 General Service	0	0	0.00%	0	0	0.00%
Tier 2 Police & Fire	65,802	327,584	20.09%	63,731	346,137	18.41%
Tier 2 General Service	31,771	214,810	14.79%	17,650	129,805	13.60%
Total	**$97,573**	**$542,394**	**17.99%**	**$93,251**	**$525,026**	**17.76%**

An independent employer that has no Tier 1/Tier 2 active payroll will be assigned the weighted average normal cost of all independent employers as calculated in the system-wide actuarial valuation report.

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Development of Tier 1/Tier 2 UAL Rates

The UAL rate is determined by calculating the next year's scheduled payment to the UAL as a percentage of combined valuation payroll.

	December 31, 2016	December 31, 2015
1. Total Tier 1/Tier 2 UAL	$1,448,206	$1,208,445
2. Next year's Tier 1/Tier 2 UAL payment	103,885	86,126
3. Combined valuation payroll	1,012,188	888,719
4. Tier 1/Tier 2 UAL rate *(2. ÷ 3.)*	10.26%	9.69%

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the employer's pension contribution rate for Tier 1/Tier 2. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates apply to combined valuation payroll. These rates do not reflect adjustments due to the rate collar, the minimum 6 percent rate for independent employers with fewer than 2,500 members, or side accounts.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	17.99%	17.76%
b. Tier 1/Tier 2 UAL rate	10.26%	9.69%
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c.)*	28.39%	27.60%

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Adjustments Due to Rate Collar and Minimum Rate Requirements

Employer contribution rates are generally limited to change by no more than the greater of 3 percent of payroll or 20 percent from the current contribution rate. However, if the funded percentage excluding side accounts is below 60 percent or above 140 percent the rate collar doubles in size. If the funded percentage excluding side accounts is between 60 and 70 percent or 130 and 140 percent, the size of the collar is increased on a graded scale. In addition, for independent employers with less than 2,500 active members, the net employer Tier 1/Tier 2 contribution rate cannot be less than 6 percent of payroll. All collar and minimum rate calculations are performed prior to adjustments for side accounts and the OPSRP UAL rate.

The table below shows the current contribution rate for the period from July 1, 2017 through June 30, 2019, develops the maximum and minimum advisory contribution rates effective July 1, 2019 based on the collar, and calculates the net adjustment due to the collar and minimum independent employer contribution rate. The net adjustment due to the rate collar is applied to the UAL rate. The net adjustment due to the 6 percent minimum independent employer contribution rate is applied to the pension normal cost rate.

1.	Current net Tier 1/Tier 2 pension contribution rate	14.71%
2.	Employer contribution rate attributable to side accounts	0.00%
3.	Current employer Tier 1/Tier 2 pension contribution rate *(1. – 2.)*	14.71%
4.	Size of rate collar	
	a. 20% of current employer contribution rate *(20% x 3.)*	2.94%
	b. Preliminary size of rate collar *(maximum of 3% or a.)*	3.00%
	c. Funded percentage	75%
	d. Size of rate collar *(If c. < 60% or c. > 140%, 2 x b. If c. is 70%-130%, b. Otherwise, a graded rate between b. and 2 x b.)*	3.00%
5.	Advisory July 1, 2019 minimum employer contribution rate *(3. – 4.d. but not < 0%)*	11.71%
6.	Advisory July 1, 2019 maximum employer contribution rate *(3. + 4.d.)*	17.71%
7.	Advisory July 1, 2019 total pension rate, before adjustment	28.39%
8.	Net adjustment due to rate collar *(5. – 7., but not < 0, or 6. – 7., but not > 0)*	(10.68%)
9.	Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, before collar	10.26%
10.	Advisory July 1, 2019 Tier 1/Tier 2 UAL rate, after collar *(8. + 9.)*	(0.42%)
11.	Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after collar	17.71%
12.	Tier 1/Tier 2 retiree healthcare rate	0.49%
13.	Net adjustment due to 6% minimum *(6% - 11. - 12., minimum 0%)*	0.00%
14.	Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, before minimum adjustment	17.99%
15.	Advisory July 1, 2019 Tier 1/Tier 2 pension normal cost rate, after minimum adjustment *(13. + 14.)*	17.99%
16.	Advisory July 1, 2019 Tier 1/Tier 2 pension rate, after minimum adjustment *(11. + 13.)*	17.71%

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Tier 1/Tier 2 Valuation Results

Contribution Rate Development

Tier 1/Tier 2 Employer Contribution Rate Summary (Post-Rate Collar)

The table below summarizes the employer's pension contribution rate for Tier 1 /Tier 2 after adjustments for the rate collar and the 6 percent of payroll minimum employer contribution rate.

	Advisory July 1, 2019 Rates calculated as of December 31, 2016	July 1, 2017 Rates calculated as of December 31, 2015
1. Tier 1/Tier 2 pension contribution rates		
a. Employer Tier 1/Tier 2 pension normal cost rate	17.99%	17.76%
b. Tier 1/Tier 2 UAL rate	(0.42%)	(3.20%)
c. Multnomah Fire District #10 rate	0.14%	0.15%
d. Total Tier 1/Tier 2 pension rate *(a. + b. + c., minimum of 5.51%)*	17.71%	14.71%

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Data

Demographic Information

Employer Valuation Payroll

	General Service	Police & Fire	Total
Tier 1	$0	$0	$0
Tier 2	214,810	327,584	542,394
Tier 1/Tier 2 valuation payroll	214,810	327,584	542,394
OPSRP valuation payroll	392,953	76,841	469,794
Combined valuation payroll	**$607,763**	**$404,425**	**$1,012,188**

Employer Member Census

	December 31							
	2016				2015			
	Tier 1	Tier 2	OPSRP	Total	Tier 1	Tier 2	OPSRP	Total
Active Members [1]								
General Service	0	3	8	11	0	2	5	7
Police & Fire	0	4	1	5	1	4	1	6
Total	0	7	9	16	1	6	6	13
Active Members with previous service segments with the employer								
General Service	3	1	N/A	4	3	1	N/A	4
Police & Fire	0	1	N/A	1	1	1	N/A	2
Total	3	2	N/A	5	4	2	N/A	6
Dormant Members								
General Service	1	1	0	2	1	1	1	3
Police & Fire	0	0	0	0	0	0	0	0
Total	1	1	0	2	1	1	1	3
Retired Members and Beneficiaries								
General Service	7	0	0	7	7	0	0	7
Police & Fire	10	0	0	10	8	0	0	8
Total	17	0	0	17	15	0	0	15
Grand Total Number of Members	**21**	**10**	**9**	**40**	**21**	**9**	**7**	**37**

[1] *Active counts do not include concurrent employees who have a separate dominant employer.*

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Data

Demographic Information (continued)

Employer Tier 1/Tier 2 Active Members as of December 31, 2016

	Years of Service									
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40+**	**Total**
<20										
20-24										
25-29										
30-34										
35-39										
40-44				2						**2**
45-49				3						**3**
50-54										
55-59				1						**1**
60-64				1						**1**
65-69										
70-74										
75+										
Total	**0**	**0**	**0**	**7**	**0**	**0**	**0**	**0**	**0**	**7**

Distribution of Employer Tier 1/Tier 2 Members as of December 31, 2016

Dormant Members

Age	Count	Average Deferred Monthly Benefit
<20		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49		
50-54	2	511
55-59		
60-64		
65-69		
70-74		
75+		
Total	2	511

Retired Members and Beneficiaries

Age	Count	Average Monthly Benefit
<45		
45-49	1	2,563
50-54	1	272
55-59	3	1,692
60-64	1	1,459
65-69	5	1,576
70-74	3	1,611
75-79	1	133
80-84	2	992
85-89		
90-94		
95-99		
100+		
Total	17	1,423

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Brief Summary of Actuarial Methods and Assumptions

A detailed summary of the actuarial methods and assumptions used to prepare the December 31, 2016 valuation can be found in the system-wide actuarial valuation report.

Actuarial Methods and Valuation Procedures

A brief summary of the methods used in this valuation is shown below:

Actuarial cost method	Entry Age Normal.
Amortization Method	The UAL is amortized as a level percentage of combined payroll. The OPSRP UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 16 year period. The Retiree Healthcare UAL as of December 31, 2007 and experience in each subsequent biennium is amortized over a closed 10 year period. All existing Tier 1/Tier 2 UAL was re-amortized over a 20 year period as of the December 31, 2013 rate-setting valuation. Gains and losses between subsequent odd-year valuations will be amortized as a level percentage of projected combined valuation payroll over a closed 20 year period.
Asset valuation method	Market value of assets, excluding reserves.
Contribution rate stabilization method (rate collar)	Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) or independent employer are confined to a collar based on the rate pool's prior pension contribution rate (excluding side account rate offsets). The new contribution rate generally will not increase or decrease from the prior contribution rate by more than the greater of 3 percent of payroll or 20 percent of the current rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funding percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Economic Assumptions

A brief summary of the key economic assumptions used in this valuation is shown below:

Net investment return	7.20% compounded annually on system assets.
Interest crediting	7.20% compounded annually on members' regular account balances. 7.20% compounded annually on members' variable account balances.
Consumer price inflation	2.50% per year.
Future general wage inflation	3.50% per year.
Healthcare cost inflation	Ranging from 7.5% in 2017 to 4.2% in 2093.
Administrative Expenses	$6.5 million added to OPSRP normal cost. $37.5 million added to Tier 1/Tier 2 normal cost.

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Brief Summary of Actuarial Methods and Assumptions

Changes Since Last Valuation

The key changes since the December 31, 2015 actuarial valuation are described briefly below and are described in additional detail in the system-wide report.

Changes in Actuarial Methods and Valuation Procedures

- **Allocation of Liability for Service Segments**

For allocating Tier 1/Tier 2 liability among multiple employers, the weighting between Money Match and Full Formula methodologies was updated to reflect expected future experience.

Changes in Economic Assumptions

- **Investment Return and Interest Crediting**

  The assumed investment return and interest crediting to both regular and variable account balances was reduced to 7.20%. Previously, the assumed investment return and interest crediting to both regular and variable account balances was 7.50%.

- **Administrative Expenses**

  Administrative expenses were assumed to be $6.5 million per year for the OPSRP System and $37.5 million per year for the Tier 1/Tier 2 System.

Changes in Demographic Assumptions

- **Mortality**

  Mortality assumption uses RP-2014 base tables and mortality improvement scale based on 60-year unisex average Social Security experience.

- **Disability, Retirement, and Termination**

  Rates for the disability, retirement, and termination assumptions were adjusted.

A complete summary of all assumptions used as part of the December 31, 2016 actuarial valuation is contained in the system-wide report.

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Brief Summary of Changes in Plan Provisions

There were no changes in plan provisions occurred since the December 31, 2015 actuarial valuation. A complete summary of the Tier 1/Tier 2, OPSRP, RHIA, and RHIPA plan provisions valued is provided as part of the system-wide actuarial valuation report.

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Glossary

Actuarial Accrued Liability

The portion of the present value of prospective benefits allocated to service and compensation before the valuation date in accordance with the actuarial cost method.

Actuarial Asset Value

The value of assets used in calculating the required contributions. The actuarial asset value may be equal to the fair market value of assets, or it may spread the recognition of certain investment gains or losses over a period of years in accordance with an asset valuation method.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement and retirement; rates of investment earnings and other relevant items.

Actuarial Cost Method

Sometimes called “funding method,” a particular technique used by actuaries to establish the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded actuarial accrued liability.

Actuarial Gain or (Loss)

A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

Combined Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for both Tier 1/Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

Cost Sharing Multiple-Employer Plan

A single plan used to provide pensions to the employees of more than one employer wherein pension obligations are pooled and plan assets can be used to pay the benefits of the employees of any employer that provides pension through the plan.

Employer Contribution Rate

Consists of the normal cost rate and the UAL rates, plus adjustments for other items such as side account rate offsets.

Funded Status

The actuarial value of assets expressed as a percentage of the actuarial accrued liability.

Normal Cost

The annual cost allocated to the current year, under the actuarial cost method in use. The normal cost divided by the applicable payroll is the normal cost rate.

OPSRP Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for OPSRP active members. This payroll is used to calculate OPSRP normal cost rates.

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Glossary

Pre-SLGRP Liability

The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability

The difference between the total UAL and the UAL attributable to the SLGRP for a pool of employers that joined the SLGRP. There are currently two pre-SLGRP pools. One was created for State Agencies and Community Colleges when the SLGRP was formed. The other one was created when the Local Government Rate Pool joined the SLGRP.

Present Value

Sometimes called "actuarial present value," the estimated cost (as of the valuation date) of a series of future payments. The present value is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Rate Collar

A methodology that defines the maximum permissible period-to-period change in the base employer contribution rate. The width of the rate collar is determined by the current contribution rate and funded status.

Required Supplementary Information (RSI)

Schedules, statistical data, and other information that are an essential part of financial reporting and should be presented with, but are not part of, the basic financial statements of a governmental entity.

Statement No. 27 of the Governmental Accounting Standards Board (GASB 27)

The accounting standard governing a state or local governmental employer's accounting for pensions prior to GASB 68.

Statement No. 45 of the Governmental Accounting Standards Board (GASB 45)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68)

The accounting standard governing a state or local governmental employer's accounting for pensions for fiscal years beginning after June 15, 2014.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)

The accounting standard governing a state or local governmental employer's accounting for post-employment benefits other than pensions for fiscal years beginning after June 15, 2017.

Tier 1/Tier 2 Valuation Payroll

Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier 1 and Tier 2 active members. This payroll is used to calculate the Tier 1/Tier 2 normal cost rate.

Transition Liability

The difference between the total UAL and the UAL attributable to the SLGRP for an individual employer that joined the SLGRP or the Local Government Rate Pool.

Unfunded Accrued Liability (UAL)

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. The UAL is divided by combined valuation payroll and an amortization factor to determine an initial pre-collar UAL rate. The final UAL rate can be adjusted by the rate collar.

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Milliman
111 SW Fifth Avenue, Suite 3700
Portland, OR 97204-3654
503 227 0634

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