OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

TIER 1/TIER 2 AND OPSRP PENSION BENEFITS
RHIA/RHIPA RETIREE MEDICAL BENEFITS

December 31, 2020 Actuarial Valuation

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December 9, 2021

Retirement Board
Oregon Public Employees Retirement System

Dear Members of the Board,

As part of our engagement with the Board, we performed an actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2020. Our findings are set forth in this actuarial valuation report. This report reflects the benefit provisions in effect as of December 31, 2020, as modified by Senate Bill 111 and House Bill 2906 from the 2021 legislative session, as described in this report.

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. The valuation results were developed using models intended for valuations that use standard actuarial techniques.

This 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 the 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 herein in October 2021.

Some of the actuarial computations presented in this report are for purposes of determining the advisory July 2023 to June 2025 contribution rates for System employers. Other actuarial computations presented in this report are for purposes of assisting the System and participating 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 as summarized in this report. This report does not include results determined under GASB Statements Nos. 67 and 68, or under GASB Statements Nos. 74 and 75, which will be provided separately. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman's work is prepared solely for the use and benefit of the Oregon Public Employees Retirement System.

Milliman does not intend to benefit or create a legal duty to any third party recipient of this report. No third party recipient of Milliman's work product should rely upon this report. 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 which are consistent with the principles prescribed by the Actuarial Standards Board and the *Code of Professional Conduct* and *Qualification Standards for Actuaries Issuing Statements of Actuarial Opinion in the United States* published by the American Academy of Actuaries. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein. Assumptions related to the healthcare trend (cost inflation) rates for the RHIPA program discussed in this report were determined by Milliman actuaries qualified in such matters.

Sincerely,

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

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

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Executive Summary

Executive Summary

Milliman prepared this report for the Oregon Public Employees Retirement System to:

- Present Milliman's actuarial estimates of the system-wide liabilities and expenses of the Oregon Public Employees Retirement System (PERS), including pension benefits provided through Tier 1/Tier 2 and the Oregon Public Service Retirement Plan (OPSRP), and retiree medical benefits provided through the Retiree Health Insurance Account (RHIA) and the Retiree Health Insurance Premium Account (RHIPA), as of December 31, 2020 for PERS to incorporate, as PERS deems appropriate, in its financial statements; and
- Provide information on advisory system-wide average employer contribution rates and advisory employer contribution rates for the School District rate pool and the State and Local Government Rate Pool (SLGRP) calculated as of December 31, 2020.

This valuation does not cover the defined contribution Individual Account Program (IAP). Except where otherwise explicitly noted, contribution rates in this valuation do not include contributions to the IAP. In addition, the valuation does not include an allowance for employer debt service payments on pension obligation bonds.

Summarizing a key result of this report, this advisory valuation indicates that the system-average collared "net" employer contribution rate for the 2023-2025 biennium is projected to increase compared to the rate currently in effect for the 2021-2023 biennium. The increase is primarily due to the reduction in the investment return assumption from 7.20% to 6.90% adopted by the PERS Board. Further discussion and explanation of the change in collared rates can be found in our October 2021 presentation materials to the PERS Board.

For more information on projections of future rate increases, we encourage readers of this report to review our financial modeling presentations to the PERS Board. The most recent such presentation was given at the December 2020 PERS Board meeting.

Projected Benefit Payments and the Fundamental Cost Equation

The actuarial liabilities contained in this report are calculated from a projection of benefit payments. This projection reflects the current plan provisions, assumptions, and demographic information documented herein. The stream of projected future benefit payments is converted to a net present value as of the valuation date based on the valuation's investment return assumption, which currently is 6.90%. The total net present value is then assigned to past, present, and future service according to the actuarial cost method. The portion assigned to the past is called the **actuarial accrued liability**[1], while the portion assigned to the current year is referred to as the **normal cost**.

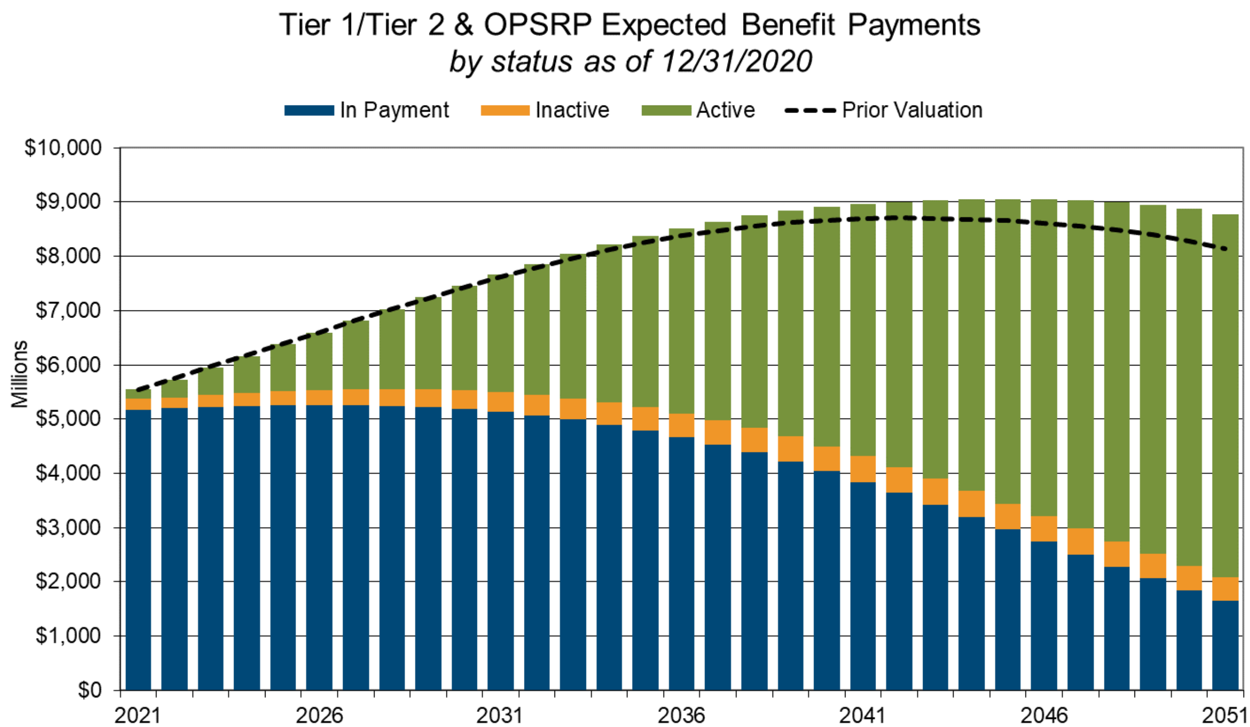
Actuarial valuations provide a tool for measuring a System's progress towards funding its benefit obligations and adjusting budgeted contributions as appropriate to reflect changing circumstances. Even though they affect actuarial funded status and contribution rate calculations, assumptions regarding plan investment returns and participant experience do not affect the ultimate long-term cost of the program, which is governed by the **fundamental cost equation**:

Benefits + Expenses = Contributions + Investment Earnings

[1] *Bolded terms from the Executive Summary are defined in the report glossary.*

From a plan funding perspective, contributions are the balancing item in the equation. To the extent actual plan investment earnings underperform compared to assumption, contributions must increase to fund the defined level of benefits; if investments outperform the assumption, contributions can decrease.

The graph below illustrates projected benefit payments from the System calculated in both the current valuation and the prior valuation, organized by member status as of the actuarial valuation date. The graph includes the estimated effects on projected benefits of anticipated future service by current active members, including the assumed effects of future salary increases. The graph does not include expected benefit payments for members hired after the valuation date. The dotted line illustrates the shape of the graph from the prior valuation, which was performed as of December 31, 2019. As shown in the graph, there was little change in the projected benefits calculated in the current valuation.



Retirement System Risks

Oregon PERS, like all defined benefit plans, is subject to various risks that will affect the future plan liabilities and contribution requirements, including investment risk, demographic risk, and contribution risk. While the results of an actuarial valuation are based on one set of reasonable assumptions, it is almost certain that future experience will not exactly match the assumptions. The section of this report titled *Risk Disclosure* discusses the System's risks in more detail. In addition, our annual financial modeling work provides analysis of the effect of different possible future experience with a key source of risk: future investment performance.

Employer Contribution Rates

Pension Contribution Rates

This report presents system average employer contribution rates calculated as of December 31, 2020. These rates are advisory only. The December 31, 2021 valuation will determine employer contribution rates that will be presented for PERS Board adoption to be first effective July 1, 2023. The December 31, 2019 valuation presented the employer contribution rates effective from July 1, 2021 through June 30, 2023 that were adopted by the PERS Board on October 2, 2020.

Employer pension contribution rates consist of a normal cost rate and a rate to amortize the Unfunded Accrued Liability (UAL). Normal cost rates are calculated and charged separately to the Tier 1/Tier 2, OPSRP general service and OPSRP police and fire payrolls. UAL rates are calculated separately for Tier 1/Tier 2 and OPSRP, but each UAL rate so developed is then charged across all payrolls. Rates for individual employers are adjusted if the employer maintains a side account or has a **pre-SLGRP liability or surplus**. The table below compares the average employer contribution rates for each type of payroll calculated for this valuation to the rates in effect from July 1, 2021 through June 30, 2023. In the table below, redirected member contributions that are made to the Employee Pension Stability Account (EPSA) fund a portion of the normal cost rate and serve as a partial offset to the employer contribution rate otherwise payable absent that redirection.

Collared Pension Contribution Rates (Excludes IAP)

	Advisory July 1, 2023			Effective July 1, 2021		
Payroll	Tier 1/Tier 2	OPSRP General Service	OPSRP Police & Fire	Tier 1/Tier 2	OPSRP General Service	OPSRP Police & Fire
Normal Cost Rate	16.36%	9.99%	14.74%	14.92%	8.64%	13.00%
Tier 1/Tier 2 UAL Rate[1]	14.41%	14.41%	14.41%	13.04%	13.04%	13.04%
OPSRP UAL Rate	2.09%	2.09%	2.09%	1.69%	1.69%	1.69%
Total Pension Rate	**32.86%**	**26.49%**	**31.24%**	**29.65%**	**23.37%**	**27.73%**
Average Adjustment[2]	(6.36%)	(6.36%)	(6.36%)	(6.64%)	(6.64%)	(6.64%)
Member Redirect Offset[3]	(2.40%)	(0.65%)	(0.65%)	(2.45%)	(0.70%)	(0.70%)
Net Employer Pension Rate	**24.10%**	**19.48%**	**24.23%**	**20.56%**	**16.03%**	**20.39%**

[1] *Includes Multnomah Fire District #10*

[2] *Adjustments shown are for side accounts and pre-SLGRP liabilities and are shown on system-wide average basis. For this purpose, adjustments are not assumed to be limited when an individual employer reaches a 0% contribution rate.*

[3] *Redirected member contributions under Senate Bill 1049 (2.50% of payroll for Tier 1/Tier 2 and 0.75% of payroll for OPSRP) offset employer contribution rates. Redirect does not apply to members with monthly pay belowa threshold. The values shown in the table incorporate an estimate of the effect of this limitation, taaking into account the changes enacted in Senatee Bill 111.*

Average collared UAL rates calculated in this valuation increased compared to the contribution rates calculated in the December 31, 2019 valuation, which produced rates effective July 1, 2021. This is primarily due to the reduction in the investment return assumption made with the December 31, 2020 valuation. The Tier 1/Tier 2 UAL rate effective July 1, 2021 reflects a reamortization of the Tier 1/Tier 2 UAL over 22 years, as directed by Senate Bill 1049. The reamortization resulted in a smaller increase in the UAL rate, but means the UAL rate will be expected to be paid over a longer period of time, if all assumptions are met. A portion of the Total Pension Rate for each payroll category will be paid by the redirected member contributions, as shown in the table.

Pension contribution rates differ for each Tier 1/Tier 2 rate pool. This report calculates the specific rates for each rate pool. Tier 1/Tier 2 rates for independent employers (employers that do not participate in a Tier 1/Tier 2 rate pool) are calculated in separate reports for each employer. Changes from biennium to biennium in pension contribution rates for each rate pool (or independent employer) are confined to a **rate collar** depending on **funded status**. The table below shows the employer pension contribution rates for each Tier 1/Tier 2 rate pool calculated in this valuation compared to the rates in effect as of July 1, 2021, along with the average adjustment to those rates for side account rate offsets and for pre-SLGRP and Transition Liability/(Surplus) charges and credits and the effect of the offset for redirected member contributions.

Tier 1/Tier 2 Collared Pension Contribution Rates (Excludes IAP, OPSRP UAL Rates)				
	Advisory July 1, 2023		Effective July 1, 2021	
	SLGRP	School Districts	SLGRP	School Districts
Tier 1/Tier 2 Normal Cost Rate	16.78%	15.01%	15.41%	13.45%
Tier 1/Tier 2 UAL Rate[1]	13.90%	15.31%	12.67%	14.09%
Total Tier 1/Tier 2 Pension Rate[2]	**30.68%**	**30.32%**	**28.08%**	**27.54%**
Average Adjustment[3]	(5.37%)	(9.74%)	(5.68%)	(9.93%)
Member Redirect Offset[4]	(2.40%)	(2.40%)	(2.45%)	(2.45%)
Net Employer Tier 1/Tier 2 Pension Rate[2]	**22.91%**	**18.18%**	**19.95%**	**15.16%**

[1] *Includes Multnomah Fire District #10*

[2] *Excludes OPSRP UAL rate, which is also charged on Tier 1/Tier 2 payroll*

[3] *Adjustments shown are for side accounts and pre-SLGRP liabilities and are shown on a rate pool average basis. For this purpose, adjustments are not assumed to be limited when an individual employer reaches a 0% contribution rate.*

[4] *Redirected member contributions under Senate Bill 1049 (2.50% of payroll for Tier 1/Tier 2) will offset employer contribution rates beginning July 1, 2021. Redirect does not apply to members with monthly pay below a threshold. The values shown in the table incorporate an estimate of the effect of this limitation.*

The Tier 1/Tier 2 contribution rates shown here are after reflecting the effects of the rate collar. In the December 31, 2019 rate-setting valuation, the contribution rates for both the SLGRP and the School District rate pool were not limited by the collar. In the advisory December 31, 2020 valuation, the contribution rate increases calculated for these rate pools are also not limited by the collar, as shown below. In general, any contribution rate increases deferred by the rate collar will be reflected in future rate-setting periods. For both the SLGRP and School District pools, since the rate collar is not limiting the contribution rate calculated in this valuation, there currently are not any deferred increases beyond the advisory July 1, 2023 contribution rates shown in this valuation. As noted in the table above, the “average adjustment” in the table below quantifies the effects of side accounts and pre-SLGRP liabilities on a rate pool average basis.

Collar Impact on Tier 1/Tier 2 Pension Contribution Rates (Excludes IAP, OPSRP UAL Rates)		
	Advisory July 1, 2023	
	SLGRP	School Districts
Total Tier 1/Tier 2 Pension Rate Before Collar[1]	30.68%	30.32%
Collar Adjustment	0.00%	0.00%
Total Tier 1/Tier 2 Pension Rate After Collar[1]	**30.68%**	**30.32%**
Average Adjustment	(5.37%)	(9.74%)
Member Redirect Offset	(2.40%)	(2.40%)
Net Employer Tier 1/Tier 2 Pension Rate[1]	**22.91%**	**18.18%**

[1] *Excludes OPSRP UAL rate, which is also charged on Tier 1/Tier 2 payroll*

Retiree Healthcare Contribution Rates

In addition to the pension contribution rates, all employers contribute to the Retirement Health Insurance Account (RHIA). Further, State Agencies and State Judiciary also contribute to the Retiree Health Insurance Premium Account (RHIPA). Only Tier 1 and Tier 2 members are eligible for these benefits, so the normal cost rates are only charged to Tier 1/Tier 2 payroll, but the UAL rates are charged to all payrolls. For each type of payroll used in this valuation the table below compares the employer contribution rates calculated in this valuation to the rates in effect from July 1, 2021 through June 30, 2023. The funded status for both retiree healthcare programs has improved rapidly in recent years due to the PERS Board's decision to amortize the UAL over a shorter period and due to declining election rates among eligible participants. Funded status for both programs is now above 100%. With the 2020 Experience Study, the PERS Board adopted an amortization for the retiree healthcare programs that allows the actuarial surplus to be amortized over a rolling 20-year period, with the negative UAL rate providing a limited rate offset to the normal cost rate paid on Tier 1/Tier 2 payroll (but not below 0.00%). Based on the current funded status of the programs, this valuation resulted in a 0.00% total rate for both RHIA and RHIPA.

Retiree Healthcare Contribution Rates						
	Advisory July 1, 2023			Effective July 1, 2021		
Payroll	Tier 1/Tier 2	OPSRP General Service	OPSRP Police & Fire	Tier 1/Tier 2	OPSRP General Service	OPSRP Police & Fire
RHIA Normal Cost Rate	0.05%	0.00%	0.00%	0.05%	0.00%	0.00%
RHIA UAL Rate	(0.05%)	0.00%	0.00%	0.00%	0.00%	0.00%
Total RHIA rate	**0.00%**	**0.00%**	**0.00%**	**0.05%**	**0.00%**	**0.00%**
RHIPA Normal Cost Rate	0.09%	0.00%	0.00%	0.11%	0.00%	0.00%
RHIPA UAL Rate	(0.09%)	0.00%	0.00%	0.17%	0.17%	0.17%
Total RHIPA rate	**0.00%**	**0.00%**	**0.00%**	**0.28%**	**0.17%**	**0.17%**

System-Average Total Pension Contribution Rates

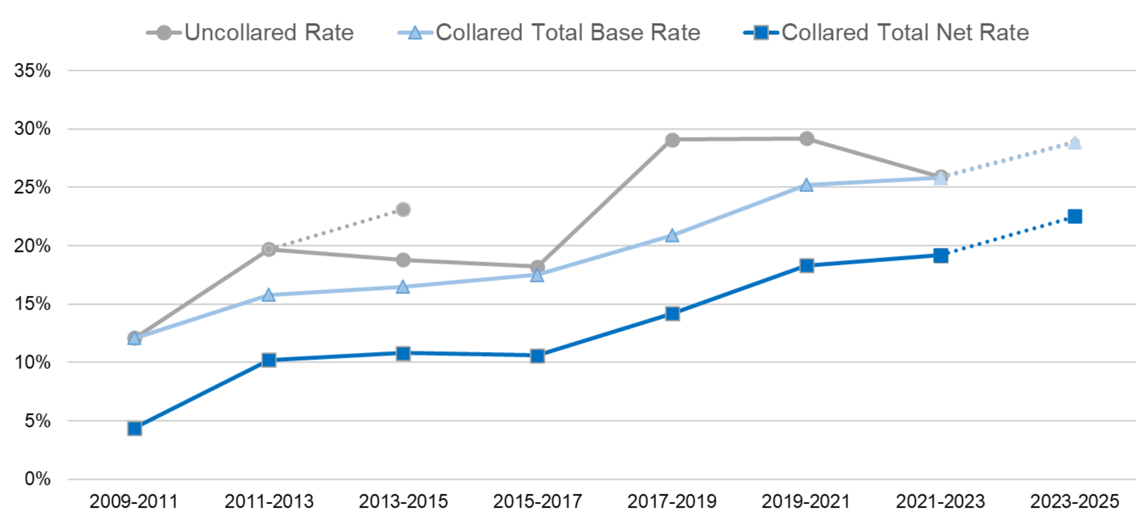
The system-wide weighted average pension contribution rates are shown below for each period since the July 1, 2009 to June 30, 2011 biennium, the rates for which were based on the December 31, 2007 rate-setting valuation. The rates shown reflect a blend of Tier 1/Tier 2 and OPSRP normal costs based on the relative proportions of system-wide payroll between those categories at the relevant rate-setting valuation. Rates shown are for illustration only, as no employer pays the system-wide average contribution rate, but instead each employer pays a rate determined based on its own experience or that of its rate pool.

The graph shows the average level of uncollared rates, collared base rates, and collared net rates over the depicted period. All rates are “Total Pension Rates”, and do not reflect the offset to employer contribution rates beginning with the July 1, 2021 to June 30, 2023 biennium due to redirected member contributions.

The uncollared rate is calculated based on the normal cost and UAL rates initially calculated in a valuation and is the starting point of the rate-setting process. If the uncollared rate is well above (or below) the current (collared) rate being paid, the contribution rate stabilization method (the “rate collar”) limits the increase (or decrease) in the rate paid in the next biennium. As a result, the collared rate may temporarily be below (or above) the uncollared rate, as the rate collar methodology systematically spreads large adjustments over multiple periods.

For an individual employer, collared base pension rates are adjusted for side account rate offsets to develop collared net pension rates paid by the employer. Side accounts are the result of employer supplemental deposits, often financed through a pension obligation bond. When a supplemental deposit is made, a side account is established (after any Transition Liabilities related to joining the SLGRP have been paid) and used to offset the otherwise required contribution rate. This occurs by having the employer pay part of its collared contribution rate via a transfer from its side account. As of December 31, 2020, the system has approximately $5.1 billion in unamortized side accounts, down from $5.5 billion in the prior year. At a system-average level, side accounts now offset employer contribution rates by 5.96% of payroll in the current advisory valuation, but there is wide variation among employers.

For individual employers in the SLGRP, collared base pension rates are also adjusted for amortization charges (or credits) on pre-SLGRP liabilities (or assets). The average adjustment to individual employer rates due to side accounts and pre-SLGRP charges or credits is shown on a combined basis in the table on page 4.



The system-average total pension contribution rates shown above reflect significant recent events affecting the System:

- The 2009-2011 contribution rates were set before the financial crisis (based on the December 31, 2007 rate-setting valuation). Rates increased in 2011-2013, reflecting the asset losses during 2008 and 2009.
- The dotted line shown for the uncollared rate in 2013-2015 illustrates the basis for the initially adopted contribution rates for that biennium. However, legislative changes to the system made in 2013 (most notably to the COLA) reduced projected future benefits. At legislative direction, contribution rates were reduced to reflect the legislated changes, and these rates are shown in the solid lines for 2013-2015.
- The 2015 Oregon Supreme Court ruling in *Moro v. State of Oregon* reversed the majority of the effect of the 2013 legislation. The decision first affected contribution rates for the 2017-2019 biennium, leading to a significant increase in the uncollared rate and the first of multiple scheduled increases in the collared rate to reflect the change.
- The valuation assumed return was 8.00% for contribution rates effective through the 2013-2015 biennium. The rate was lowered to 7.75% for the 2015-2017 biennium, to 7.50% for the 2017-2019 biennium, to 7.20% for the 2019-2021 and 2021-2023 biennia, and then to 6.90% for the advisory results shown for the 2023-2025 biennium. A lower assumed return increases the estimated present value of liabilities and increases near-term calculated contribution rates.
- The contribution rates based on this advisory valuation are shown as the dotted lines for the 2023-25 biennium. Based on this valuation at a system-average level, the advisory increase in the collared total base rate is projected to result in a rate equal to the uncollared rate for employers comprising the substantial majority of PERS payroll. Actual contribution rates for the 2023-25 biennium will be based on the December 31, 2021 rate-setting valuation.

As noted above, rates shown in the graph do not reflect the offset to employer contribution rates beginning with the July 1, 2021 to June 30, 2023 biennium due to redirected member contributions.

Limits on Future Pension Contribution Rates

The minimum and maximum the Tier 1/Tier 2 UAL Rate that can be effective July 1, 2023 for each Tier 1/ Tier 2 rate pool (prior to adjustments discussed below) are shown in the next table. The limits are calculated and applied on an individual employer basis for independent employers. The contribution rates for employers in Tier 1/Tier 2 pooling arrangements (i.e., the SLGRP and School Districts rate pool) are adjusted from the rates of the pool to reflect side account rate offsets, charges or credits for pre-SLGRP liabilities. These adjustments are not limited by the rate collar. Changes in the Tier 1/Tier 2 normal cost rate are also not limited by the rate collar.

The size of the UAL Rate collar depends on the rate pool and employer status. The collar width is 3% of pay for the two large Tier 1/Tier 2 experience-sharing pools (the SLGRP and School District Pool), and is 1% of pay for OPSRP. For independent employers, the collar width for the Tier 1/Tier 2 UAL Rate is the greater of 4% of pay or one-third of the difference between the collared and uncollared UAL Rates at the last rate-setting valuation.

As part of the rate collar, the UAL Rate is only allowed to decrease by the full collar width if the funded status (excluding side accounts) of the relevant rate pool or employer is greater than or equal to 90%. The UAL rate is not allowed to decrease at all if funded status is below 87%, and the allowable decrease is phased in for funded status levels from 87% to 90%.

Limits on Tier 1/Tier 2 UAL Rates		
	Effective July 1, 2023	
	SLGRP	School Districts
90% Funded or More		
Minimum UAL Rate	9.46%	10.95%
Maximum UAL Rate	15.46%	16.95%
87% Funded or Less		
Minimum UAL Rate	12.46%	13.95%
Maximum UAL Rate	15.46%	16.95%

For Rate Pools funded between 87% and 90%, the limits vary linearly between the rates shown above. Rates shown exclude Tier 1/Tier 2 Normal Cost Rate and OPSRP UAL rate, both of which are also charged on Tier 1/Tier 2 payroll. Changes in Tier 1/Tier 2 Normal Cost Rate are not limited between biennia.

Funded Status

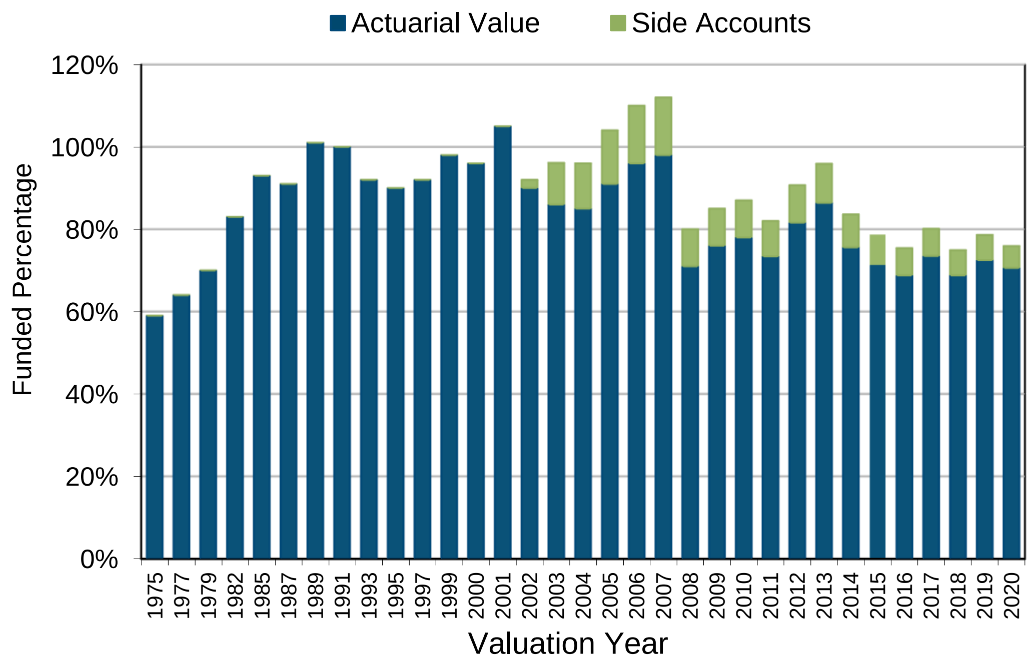
The table below shows the funded status of the various pension rate pools both on the basis used to calculate the contribution rate for each rate pool and after adjustment for side accounts (assuming side accounts offset Tier 1/Tier 2 liabilities). For this exhibit, all independent employers, including State Judiciary, have been grouped together.

	SLGRP	School Districts	Independent Employers	OPSRP	Pension System Totals[1]
December 31, 2020					
Actuarial accrued liability	$46,382.2	$31,486.0	$7,373.8	$10,008.1	$95,300.4
Actuarial value of assets	$31,884.9	$22,873.7	$5,028.3	$7,548.8	$67,256.6
Funded status	**68.7%**	**72.6%**	**68.2%**	**75.4%**	**70.6%**
Side accounts	$2,523.4	$2,471.8	$126.6	$0.0	$5,121.7
Funded status reflecting side accounts	**74.2%**	**80.5%**	**69.9%**	**75.4%**	**75.9%**
December 31, 2019					
Actuarial accrued liability	$44,122.1	$30,274.5	$6,916.0	$8,082.2	$89,445.7
Actuarial value of assets	$31,384.1	$22,394.1	$4,964.6	$6,190.4	$64,842.2
Funded status	**71.1%**	**74.0%**	**71.8%**	**76.6%**	**72.5%**
Side accounts	$2,675.9	$2,697.4	$96.7	$0.0	$5,470.0
Funded status reflecting side accounts	**77.2%**	**82.9%**	**73.2%**	**76.6%**	**78.6%**

Amounts in millions

[1] *Includes Multnomah Fire District #10*

As shown in the graph below, the funded status of the system generally improved until the market decline of 2000-2002. After the decline, funded status generally improved for several years due to better than expected investment returns until 2008, when it decreased significantly due to investment losses. Funded status then improved through the December 31, 2013 valuation due to legislative changes in plan provisions and investment gains during 2012 and 2013. Funded status declined in the December 31, 2014 valuation due to the combined effects of the *Moro* decision and assumption changes. It continued decreasing in subsequent years due to the combined effects of investment losses and adoption of a lower assumed rate of return, then improved in the December 31, 2017 valuation due to 2017 investment gains, decreased in the December 31, 2018 valuation due to lower than expected investment returns in 2018, and increased in the December 31, 2019 valuation due to 2019 investment gains. It decreased in the current valuation due to the reduction in the investment return assumption.



The retiree medical benefits are funded using a 401(h) account within the pension trust. The table below shows the funded status of the retiree medical programs. The funded status of the RHIA and RHIPA programs improved since the prior valuation due the effects of employer contributions and actual member plan coverage election experience.

	December 31, 2020			December 31, 2019		
	RHIA	RHIPA	Total	RHIA	RHIPA	Total
Actuarial accrued liability	\$383.6	\$48.0	\$431.6	\$403.9	\$59.3	\$463.2
Actuarial value of assets	\$660.2	\$63.6	\$723.8	\$644.1	\$51.9	\$696.0
Funded status	**172.1%**	**132.6%**	**167.7%**	**159.5%**	**87.5%**	**150.3%**

Amounts in millions

Asset Changes

Since December 31, 2019, contributions (including supplemental deposits but excluding side account rate offset transfers) for pension benefits have increased assets by 3.0% while benefit payments decreased assets by about 7.2%. On the whole, assets increased by 2.0%, since the investment returns of approximately 7.0% of beginning of year market value were enough to offset the system's negative non-investment-related cash flow position.

	Amount	Percentage of Beginning Market Value
Market Value of Assets, December 31, 2019	**$72,298.6**	
Contributions	2,180.4	3.0%
Investment Income (less administrative expenses)	5,067.3	7.0%
Benefit Payments	(5,190.9)	(7.2%)
Market Value of Assets, December 31, 2020	**$74,355.3**	**102.8%**

Amounts in millions

The Tier 1 Rate Guarantee Reserve that is used to pay for the interest crediting rate guarantee on active Tier 1 member accounts when actual investment earnings are below the assumed rate has increased from a reserve of $492 million as of December 31, 2019 to a reserve of $527 million as of December 31, 2020 due to investment performance and Tier 1 retirement patterns in 2020. Tier 1 non-retired member accounts that are linked to the Rate Guarantee Reserve decreased from $3.4 billion on December 31, 2019 to $3.1 billion on December 31, 2020 due to retirements during the year of Tier 1 active members.

Market values of assets are reported to Milliman by PERS. It is our understanding that the December 31 market values of select real estate and private equity investments are reported on a three-month lag basis. This valuation report does not attempt to quantify the impact of any such lag effects.

Liability Changes

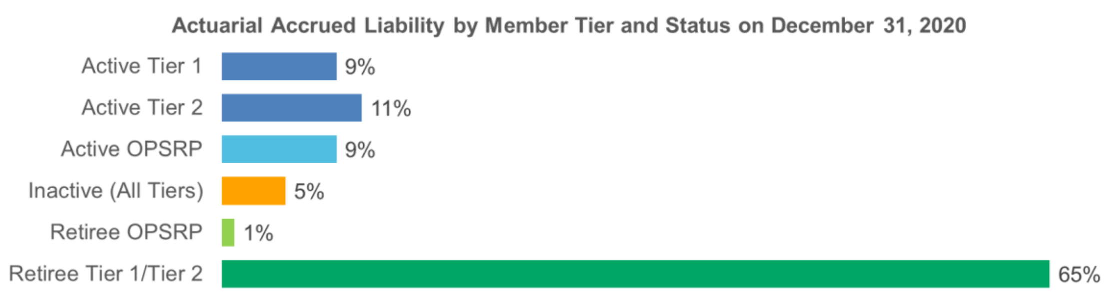
Since December 31, 2019, the system-wide actuarial accrued liability has increased primarily due to interest on the liability as current active members get closer to retirement and assumption changes made as part of the 2020 Experience Study. The normal cost for 2020, or the present value of projected future benefits for active members allocated to that year of service, was about one-quarter of the value of benefits paid out during the year. Plan changes to provide increased death benefits also increased the actuarial accrued liability measured in the valuation. There was also a relatively small decrease in the actuarial accrued liability attributable to demographic experience, which includes actual experience differing from assumption, data corrections, and the effect of new members joining the system during the year.

	Amount	Percentage of Beginning AAL
Actuarial Accrued Liability, December 31, 2019	**$89,909.0**	
Normal Cost	1,242.3	1.4%
Benefit Payments	(5,190.9)	(5.8%)
Interest	6,331.3	7.0%
Assumption & Method Changes	3,249.0	3.6%
Plan Changes	198.7	0.2%
Demographic Experience	(7.3)	(0.0%)
Actuarial Accrued Liability, December 31, 2020	**$95,732.0**	**106.5%**

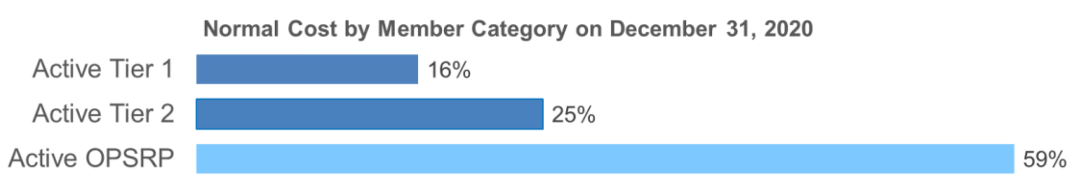
Amounts in millions

The Oregon Public Employees Retirement System is a mature system. There are currently 1.16 active members in the system for every annuitant (including retired members and beneficiaries). By comparison, the average ratio in NASRA's November 2020 Public Fund Survey is 1.32. Since contributions to the system are based on active payroll, a lower active-to-annuitant ratio generally means there will be a larger change in contribution rates for any given level of actuarial gain or loss, such as for investment experience varying from assumption by a certain percentage, compared to peer systems. The ratio of active members to annuitants may decline further as a significant portion of active members are currently eligible to retire.

The chart below illustrates the system's actuarial accrued liability by member pension tier and status. Actuarial accrued liability for active members is divided fairly evenly amongst tiers, but 71% of the system's actuarial accrued liability is due to members who are no longer actively working in covered employment.



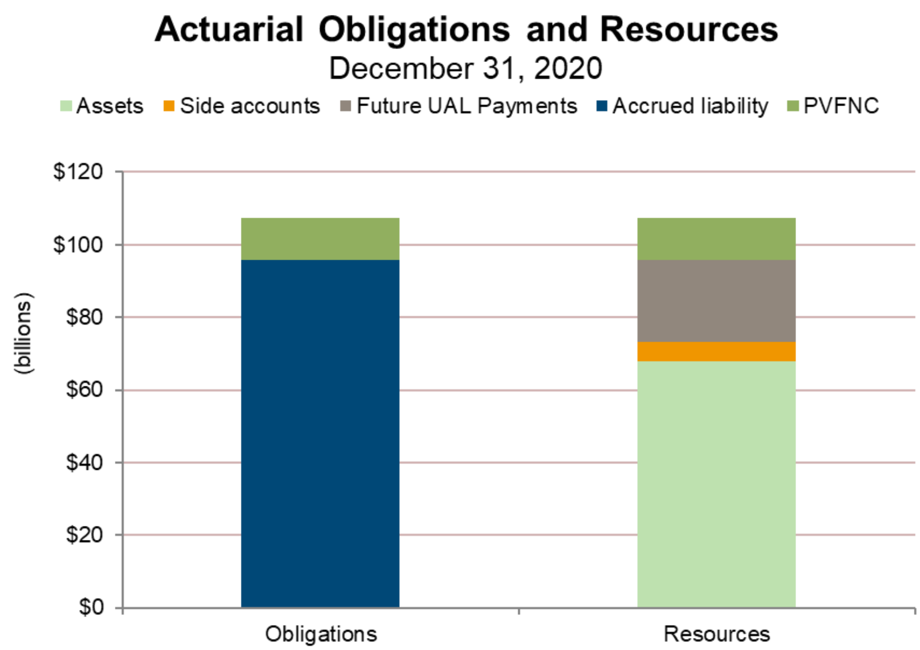
The following chart illustrates the system's normal cost. Active Tier 2 members account for 25% of the system's normal cost compared to about 11% of the system's actuarial accrued liability. Active OPSRP members account for 59% of the normal cost compared to just 9% of the actuarial accrued liability.



Actuarial Obligations and Resources

The actuarial accrued liability discussed above is the present value of benefits allocated to past service by the actuarial cost allocation method. The **total actuarial present value of benefits** (also referred to as "total liability") is a broader measure that reflects both the actuarial accrued liability and the **present value of future normal cost** (PVFNC) for current members. Conceptually, the total actuarial present value of benefits can be thought of as the total expected benefit obligation, in today's dollars, associated with members as of the valuation date for service throughout their working careers, including assumed service subsequent to the valuation date. As of December 31, 2020, the total actuarial present value of benefits for the system was $107.5 billion.

The resources to fund this expected obligation include assets the system has set aside as of the valuation date, plus the present value of expected future contributions to normal cost and UAL payments. By design, the resources and obligations are equal in this "actuarial balance sheet", as shown in the graph below.



Contributions to future normal costs and UAL payments are made as a percent of subject member salary, known as valuation payroll. The table below shows the amount of projected salary in the year following the valuation date as well as the present value of all future projected salary amounts for members included in the valuation.

	Projected Valuation Payroll for Year Subsequent to Valuation Date	Present Value of Future Valuation Payroll[1]
Tier 1/Tier 2	$3,687.3	$20,978.6
OPSRP General Service	7,322.9	75,938.2
OPSRP Police & Fire	1,032.6	12,700.7
Total	**$12,042.7**	**$109,617.5**

Amounts in millions

[1] *For members as of the valuation date.*

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 after the summary. **Combined valuation payroll** is the projected Tier 1/Tier 2 payroll plus OPSRP payroll for the calendar year subsequent to the actuarial valuation date.

	Actuarial Valuation as of		
	December 31, 2020	December 31, 2019	Percent Change
Tier 1/Tier 2 Pension			
Actuarial accrued liability	$85,292.3	$81,363.5	5%
Actuarial value of assets	$59,707.7	$58,651.8	2%
Unfunded actuarial accrued liability	$25,584.5	$22,711.7	13%
Funded status	70%	72%	
UAL as a percentage of combined payroll	212%	197%	
Normal cost	$603.3	$578.1	4%
Tier 1/Tier 2 valuation payroll	$3,687.3	$3,873.9	(5%)
Normal cost rate	16.36%	14.92%	
OPSRP Pension			
Actuarial accrued liability	$10,008.1	$8,082.2	24%
Actuarial value of assets	$7,548.8	$6,190.4	22%
Unfunded actuarial accrued liability	$2,459.3	$1,891.8	30%
Funded status	75%	77%	
UAL as a percentage of combined payroll	20%	16%	
Normal cost	$883.4	$701.6	26%
OPSRP valuation payroll	$8,355.4	$7,659.8	9%
Normal cost rate	10.57%	9.16%	
Combined Pension			
Actuarial accrued liability	$95,300.4	$89,445.7	7%
Actuarial value of assets	$67,256.6	$64,842.2	4%
Unfunded actuarial accrued liability	$28,043.8	$24,603.5	14%
Funded status	71%	72%	
Combined valuation payroll	$12,042.7	$11,533.7	4%
UAL as a percentage of combined payroll	233%	213%	
Normal cost	$1,486.7	$1,279.6	16%
Combined valuation payroll	$12,042.7	$11,533.7	4%
Normal cost rate	12.35%	11.09%	

Amounts in millions

	Actuarial Valuation as of		
	December 31, 2020	December 31, 2019	Percent Change
RHIA			
Actuarial accrued liability	$383.6	$403.9	(5%)
Actuarial asset value	$660.2	$644.1	2%
Unfunded actuarial accrued liability	($276.6)	($240.3)	15%
Funded status	172%	159%	
Combined valuation payroll	$12,042.7	$11,533.7	4%
UAL as a percentage of payroll	(2%)	(2%)	
Normal cost	$1.7	$1.9	(10%)
Tier 1/Tier 2 valuation payroll	$3,687.3	$3,873.9	(5%)
Normal cost rate	0.05%	0.05%	
RHIPA			
Actuarial accrued liability	$48.0	$59.3	(19%)
Actuarial asset value	$63.6	$51.9	23%
Unfunded actuarial accrued liability	($15.6)	$7.4	(310%)
Funded status	133%	87%	
Combined valuation payroll	$3,712.6	$3,479.8	7%
UAL as a percentage of payroll	(0%)	0%	
Normal cost	$1.0	$1.2	(17%)
Tier 1/Tier 2 valuation payroll	$1,091.8	$1,120.6	(3%)
Normal cost rate	0.09%	0.11%	

Amounts in millions

Data Summary

A brief summary of the data underlying the current and prior valuations follows. As shown below, the active member count remained essentially flat, while the system's total member population increased by about 1.2%. The data section of this report provides additional detail. State Judiciary is included in the Tier 1 counts.

	December 31, 2020				December 31, 2019
	Tier 1	Tier 2	OPSRP	Total	Total
Active Members					
Count	14,727	30,156	135,802	180,685	180,757
Average age	57.3	52.6	43.3	46.0	46.0
Average total service	27.2	19.7	7.1	10.8	10.7
Average prior year covered salary	$86,151	$79,909	$57,721	$63,741	$61,914
Inactive Members[1]					
Count	10,313	13,803	24,064	48,180	46,792
Average age	61.2	55.0	48.3	53.0	53.0
Average monthly deferred benefit	$2,287	$888	$457	$972	$980
Retired Members and Beneficiaries[1]					
Count	129,923	18,356	7,877	156,156	152,978
Average age	73.4	68.6	68.0	72.5	72.2
Average monthly benefit	$3,090	$1,218	$586	$2,743	$2,687
Total Members	**154,963**	**62,315**	**167,743**	**385,021**	**380,527**

[1] *Inactive and Retiree counts are shown by lives within the system. In other words, a member is counted once for purposes of this exhibit, regardless of their service history for different rate pools. This contrasts with the method used to count inactive participants in some of the later exhibits of this report.*

Effects of Changes

Effective with the December 31, 2020 actuarial valuation the following changes were made:

Assumption Changes

- The long-term inflation assumption was lowered from 2.50% to 2.40% and the system payroll growth assumption was lowered from 3.50% to 3.40%.
- Assumed average annual future long-term investment return was lowered from 7.20% to 6.90%.
- Interest crediting on regular and variable member accounts was also lowered to 6.90%.
- Assumed administrative expenses were updated and changed to a combined assumption for both Tier 1/Tier 2 and OPSRP.
- The base mortality assumption was changed for School District males and an updated mortality improvement projection scale was adopted for all groups.
- Termination, disability and retirement rates were updated for some groups to more closely match observed experience.
- Assumptions for merit increases, unused sick leave, and vacation pay were updated.
- The assumed healthcare cost trend rates for the RHIPA program as well as the participation assumptions for both RHIA and RHIPA were updated.

Method Changes

- The rate collar methodology was revised to only restrict changes in the UAL Rate component and to narrow the width of allowable changes. The collar width varies depending on the rate pool, and no decrease in UAL Rate is allowed unless funded status threshold is met.

- The UAL Rate amortization methodologies for the RHIA and RHIPA programs were changed to allow a limited rate offset when a program is in an actuarial surplus position (over 100% funded).

- The assumed system-average level of member redirect contributions to Tier 1/Tier 2 and OPSRP was updated to 2.40% (Tier 1/Tier 2) and 0.65% (OPSRP) to reflect the projected effects of House Bill 2906.

Plan Changes

- The provisions of Senate Bill 111, enacted in June 2021, included increased death benefits payable to Tier 1, Tier 2, and OPSRP members who die on or after their earliest retirement date.

- House Bill 2906 increased the salary threshold at which member redirect contributions are required.

System-Wide Assets

System-Wide Assets

The table below reconciles the market value of assets, as provided by PERS, to the asset values used in this valuation.

	Tier 1/Tier 2	OPSRP	Side Accounts	Contingency and Capital Preservation Reserve	Rate Guarantee Reserve	RHIA and RHIPA	System Totals
Amount reported by PERS December 31, 2020	$60,384.2	$7,548.8	$5,121.7	$50.0	$526.8	$723.8	$74,355.3
Adjustment for Recognized Transition Liability Receivable	(383.9)	0.0	0.0	0.0	0.0	0.0	(383.9)
Adjustment for Negative Rate Guarantee Reserve	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Net Pre-SLGRP Liabilities	(292.6)	0.0	0.0	0.0	0.0	0.0	(292.6)
December 31, 2020 Actuarial Value of Assets	$59,707.7	$7,548.8	$5,121.7	$50.0	$526.8	$723.8	$73,678.9

Amounts in millions

PERS calculates the amount that should be transferred from side accounts to employer reserves in Tier 1/ Tier 2 and OPSRP for rate relief on a monthly basis. PERS does not track net Pre-SLGRP liabilities.

Employer supplemental deposits establish individual side accounts within the pension trust. The side accounts are treated as prepaid contributions. Employer contribution rates are first determined excluding side accounts. Then, an amortized portion of the side account is used to offset the contribution otherwise required for the individual employers that have side accounts. While side accounts are excluded from valuation assets in determining contribution rates for each of the rate pools, side accounts are included in valuation assets for financial reporting purposes such as the reporting of funded status.

In addition, pension assets are held in the Contingency Reserve, the Capital Preservation Reserve, and the Tier 1 Rate Guarantee Reserve (RGR). As shown below, at December 31, 2020 the RGR was in surplus status of $527 million. It is possible for the RGR to be in deficit at its year-end measurement date, which occurred most recently at December 31, 2012. It is our understanding that if a RGR deficit arose and then persisted for five years, employers may be required to restore the Tier 1 Rate Guarantee Reserve.

Tier 1/Tier 2 assets are adjusted by the net outstanding balance of pre-SLGRP liabilities to arrive at the actuarial value of assets. These notional employer-specific balances, created at the formation of the SLGRP and at later dates when additional employers join the pool, are treated akin to receivables to the SLGRP from individual employers (for pre-SLGRP liabilities) or payables – in the form of future rate offsets – from the SLGRP assets to individual employers (for pre-SLGRP surpluses). For accounting purposes, PERS recognizes outstanding pre-SLGRP liabilities as receivables in the system financial statements. However, for funding purposes, future contributions associated with pre-SLGRP liabilities are not current assets of the system. The resulting adjustment for Transition Liability receivables is shown above.

Finally, assets are held in separate accounts established under Internal Revenue Code Section 401(h) (the Retirement Health Insurance Account (RHIA) and the Retiree Health Insurance Premium Account (RHIPA)) to provide retiree medical benefits.

Reconciliation of Pension and Retiree Healthcare Assets

The following table reconciles the changes in the system-wide assets from December 31, 2019 to December 31, 2020. The reconciliation of assets is provided by PERS.

	Tier 1/Tier 2	OPSRP	Side Accounts	Contingency Reserve	Capital Preservation Reserve	Rate Guarantee Reserve	RHIA and RHIPA	System Totals
Additions								
1. Contributions								
a. Employer	$1,088.5	$878.3	$127.3	-	-	-	$14.4	$2,108.5
b. Transfer from side accounts[1]	$818.7	-	($818.7)	-	-	-	-	-
c. Judge member contributions	$2.0	-	-	-	-	-	-	$2.0
d. EPSA contributions	$38.1	$24.2	-	-	-	-	-	$62.3
e. Member service purchases	$7.6	-	-	-	-	-	-	$7.6
f. Total	**$1,954.9**	**$902.4**	**($691.3)**	-	-	-	**$14.4**	**$2,180.4**
2. Net investment income								
a. Transfers	$0.6	-	-	-	-	($0.6)	-	-
b. From investments	$4,250.2	$444.1	$343.2	-	-	$35.4	$50.5	$5,123.4
c. Total	**$4,250.8**	**$444.1**	**$343.2**	**-**	**-**	**$34.8**	**$50.5**	**$5,123.4**
3. Other[2]	($71.7)	$73.9	-	-	-	-	-	$2.2
4. Total additions	**$6,134.0**	**$1,420.4**	**($348.1)**	**-**	**-**	**$34.8**	**$64.8**	**$7,305.9**
Deductions								
5. Retirement and survivor benefits	($5,078.0)	($53.8)	-	-	-	-	($35.5)	($5,167.3)
6. Death Benefits	($6.2)	-	-	-	-	-	-	($6.2)
7. Refund of contributions	($17.5)	-	-	-	-	-	-	($17.5)
9. Administrative expenses	($48.3)	($8.2)	($0.2)	-	-	-	($1.6)	($58.3)
10. Total deductions	**($5,150.0)**	**($62.0)**	**($0.2)**	-	-	-	**($37.1)**	**($5,249.2)**
11. Net change	**$984.0**	**$1,358.4**	**($348.3)**	**-**	**-**	**$34.8**	**$27.8**	**$2,056.7**
12. Net assets held in trust for pension benefits								
a. Beginning of year	$59,400.2	$6,190.4	$5,470.0	$50.0	-	$492.0	$696.0	$72,298.6
b. End of year	**$60,384.2**	**$7,548.8**	**$5,121.7**	**$50.0**	**-**	**$526.8**	**$723.8**	**$74,355.3**

Amounts in millions

[1] *Side account transfers shown in this exhibit are all credited to Tier 1/Tier 2 assets. We understand the portion to be credited to OPSRP is credited through the employer contribution line of the exhibit.*

[2] *Includes TRFA transfer from Metlife and adjustments by PERS.*

Reconciliation of Side Accounts

Side accounts are established for employers who make supplemental payments (a lump sum payment in excess of the required employer contribution). For SLGRP employers, this supplemental payment is first applied toward the employer's Transition Liability, if any, and any excess is established in a Side Account. A reconciliation of the side accounts from December 31, 2019 to December 31, 2020, is shown below on a rate pool basis. For this exhibit, all independent employers are grouped together.

	SLGRP	School Districts	Independent Employers	System Totals
Side Accounts, December 31, 2019	**$2,675.9**	**$2,697.4**	**$96.7**	**$5,470.0**
Deposits during 2020	80.5	12.8	34.1	127.3
Interest	168.8	165.4	9.0	343.2
Administrative expenses	(0.1)	(0.1)	(0.0)	(0.2)
Transfers to employer reserves	(401.8)	(403.7)	(13.2)	(818.7)
Side Accounts, December 31, 2020	**$2,523.4**	**$2,471.8**	**$126.6**	**$5,121.7**

Amounts in millions

Development of Side Account Rate Relief

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 on or before December 31, 2009, the fixed period ends December 31, 2027. For side accounts established at a later date, the default fixed period ends 18 years after the first rate-setting valuation following its creation, though employers can select a shorter period under certain specified circumstances. The table below shows the average rate relief attributable to side accounts for each rate pool. While results are shown at a rate pool level, the rate relief provided by side accounts varies from employer to employer.

	December 31, 2020			
	SLGRP	School Districts	Independent Employers	System Totals
1. Side Account	$2,523.4	$2,471.8	$126.6	$5,121.7
2. Combined valuation payroll	$7,134.3	$3,821.9	$1,086.5	$12,042.7
3. Average Amortization Factor[1]	7.531	6.641	9.059	7.139
4. Average Side Account Rate Relief *(1. ÷ 2. ÷ 3.)*	**4.70%**	**9.74%**	**1.29%**	**5.96%**

Amounts in millions

[1] *Weighted average*

Pension Plan Valuation

Tier 1/Tier 2 Pension Assets

Summary of Actuarial Value of Assets

This section summarizes the Tier 1/Tier 2 pension valuation assets as of the current and prior actuarial valuation. For valuation purposes, Tier 1/Tier 2 pension assets are divided among the State & Local Government Rate Pool (SLGRP), the School Districts rate pool, and various independent employers to determine employer contribution rates. For this system-wide report, all independent employers, including State Judiciary, have been grouped together as if they were a rate pool.

	SLGRP	School Districts	Independent Employers	Tier 1/Tier 2 Totals[1]
December 31, 2020				
Member reserves	$2,698.2	$1,454.2	$364.6	$4,517.1
Employer reserves	18,632.2	13,484.6	2,946.6	34,967.7
Benefit in force reserves	10,822.3	7,922.9	1,713.3	20,475.1
EPSA reserves	24.7	12.0	3.9	40.6
Net outstanding pre-SLGRP liabilities	(292.6)			(292.6)
Total actuarial value of assets	**$31,884.9**	**$22,873.7**	**$5,028.3**	**$59,707.7**
December 31, 2019				
Member reserves	$2,924.6	$1,584.7	$398.1	$4,907.4
Employer reserves	17,348.1	12,291.4	2,777.7	32,307.2
Benefit in force reserves	11,431.3	8,518.0	1,788.9	21,757.1
Net outstanding pre-SLGRP liabilities	(319.8)			(319.8)
Total actuarial value of assets	**$31,384.1**	**$22,394.1**	**$4,964.6**	**$58,651.8**

Amounts in millions

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

Pre-SLGRP liabilities and surpluses are notional balances specific to individual employers or groups of employers. For contribution rate calculations, pre-SLGRP liabilities are treated akin to receivables to the SLGRP from the individual employers and pre-SLGRP surpluses are treated akin to payables (in the form of future rate offsets) from the SLGRP assets to individual employers. The assets of the SLGRP used to calculate the pooled contribution rate reflect the net outstanding balance of these items.

Side accounts are treated as pre-paid contributions. Consequently, they are not reflected in the actuarial value of assets shown above. The actuarial value of assets for each rate pool is used to develop the contribution rate for that pool. Side accounts are used by employers to pay a portion of the base contribution rate via a side account rate offset and deduction mechanism. The net impact of side accounts is shown in a separate section of this report.

Reconciliation of Actuarial Value of Assets

The table below shows a reconciliation of the actuarial value of assets from the prior valuation to the current valuation for each of the rate pools. Again, independent employers, including State Judiciary, are treated as if they were a single rate pool for purposes of the system-wide report.

	SLGRP	School Districts	Independent Employers	Tier 1/Tier 2 Totals[1]
Actuarial value of assets, December 31, 2019	**$31,384.1**	**$22,394.1**	**$4,964.6**	**$58,651.8**
Contributions				
Employer	$736.8	$414.2	$123.0	$1,274.0
Side account transfers	401.8	403.7	13.2	818.7
Member	23.3	11.3	5.7	40.2
Total contributions	**$1,161.9**	**$829.2**	**$141.8**	**$2,132.9**
Investment income	2,212.9	1,579.1	348.8	4,132.2
Benefit payments and expenses	(2,721.8)	(1,992.6)	(430.9)	(5,149.5)
Adjustments[2]	(152.2)	63.9	4.0	(59.7)
Actuarial value of assets, December 31, 2020	**$31,884.9**	**$22,873.7**	**$5,028.3**	**$59,707.7**

Amounts in millions

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

[2] *Adjustments include a reallocation of the benefits in force reserve, transfers to Multnomah Fire District #10, member service purchases, and other adjustments made by PERS. EPSA interaccount transfers of $0.7 million are not included here, since they have already been reflected in the benefit payments and expenses line item above.*

Outstanding Balance of Pre-SLGRP Liabilities

In the valuation, pre-SLGRP liabilities are treated as assets of the SLGRP. That is, a pre-SLGRP liability is treated as a receivable owed to the SLGRP by the employer. Pre-SLGRP surpluses are treated as payables from the SLGRP to employers.

Prior to the formation of the SLGRP, the State and Community Colleges were pooled together and some employers participated in the Local Government Rate Pool (LGRP). The UAL attributable to the State and Community Colleges or the LGRP at the time the SLGRP was formed is maintained separately from the SLGRP and is reduced by contributions and increased for interest charges at the assumed interest rate.

Similarly, when an independent employer joins the SLGRP, a Transition Liability or Surplus is calculated to ensure that each employer enters the pool on a comparable basis. The Transition Liability for each employer is maintained separately from the SLGRP and is reduced by contributions and increased for interest charges at the assumed interest rate. The Transition Surplus for each employer is also maintained separately from the SLGRP and is amortized over time through contribution rate offsets and credited with interest at the assumed interest rate. The table below shows the reconciliation of the pre-SLGRP pooled liability attributable to the State and Community Colleges and the LGRP from the last valuation to the current valuation. It also shows the reconciliation of the total Transition Liability or Surplus from the last valuation to the current valuation.

	State and Community Colleges	Local Government Rate Pool	Transition	Total
Pre-SLGRP liability/(surplus), January 1, 2020	**$408.7**	**($174.9)**	**($553.6)**	**($319.8)**
Employer contributions	(70.1)	29.6	90.4	49.9
Supplemental payments	0.0	0.0	(3.1)	(3.1)
Interest	24.4	(10.5)	(33.5)	(19.6)
Employer mergers/adjustments	0.0	0.0	0.0	0.0
Pre-SLGRP liability/(surplus), December 31, 2020	**$362.9**	**($155.8)**	**($499.7)**	**($292.6)**

Amounts in millions

Tier 1/Tier 2 Pension Liabilities

Normal Cost

The normal cost represents the present value of benefits allocated to the next year of service by the actuarial cost method. If all current actuarial assumptions are met in both past and future years, the normal cost represents the percent of payroll that would need to be contributed each year to fully fund plan benefits during each member's working career.

A summary of the normal cost by assumed cause of future termination of service is shown below on a system-wide basis for the Tier 1/Tier 2 pension benefits.

	December 31, 2020	December 31, 2019	Percent Change
Normal Cost			
Service Retirement	$437.3	$399.8	9.4%
Withdrawal	129.6	128.5	0.8%
Duty Disability	2.0	2.5	(20.9%)
Nonduty Disability	8.1	11.4	(28.8%)
Death	8.2	3.3	146.7%
Administrative Expenses	18.1	32.5	(44.4%)
Total Normal Cost	**$603.3**	**$578.1**	**4.4%**

Amounts in millions

Reconciliation of Change in Normal Cost

The decrease in normal cost since the prior valuation is primarily due to the reduction in active Tier 1/Tier 2 members as members retire from the closed Tier 1/Tier 2 group.

The table below reconciles the normal cost from the prior valuation to the current valuation.

	Tier 1/Tier 2 Pension
Normal Cost, December 31, 2019	**$578.1**
Expected increase (decrease)	(36.1)
Assumption and method changes	62.6
Plan changes	4.5
Deviations from expected experience	
Pay increases	$0.1
Interest crediting experience	0.5
All other sources	(6.4)
Total demographic (gains) and losses	**($5.8)**
Normal Cost, December 31, 2020	**$603.3**

Amounts in millions

Summary of Normal Cost by Group and Tier

A summary of the normal cost by tier and employment category for each rate pool is shown below. Again, independent employers, including State Judiciary, are treated as if they were a single rate pool for purposes of the system-wide report.

	December 31, 2020				December 31, 2019	
	SLGRP	School Districts	Independent Employers	Tier 1/ Tier 2 Totals	Tier 1/ Tier 2 Totals	Percent Change
Normal Cost[1]						
Tier 1 General Service	$114.5	$69.9	$18.7	$203.1	$204.8	(0.8%)
Tier 2 General Service	145.4	117.1	18.1	280.6	258.6	8.5%
Tier 1 Police & Fire	24.1	0.2	7.6	31.9	36.0	(11.3%)
Tier 2 Police & Fire	66.5	0.4	20.7	87.6	78.7	11.3%
Total Normal Cost	**$350.5**	**$187.7**	**$65.1**	**$603.3**	**$578.1**	**4.4%**

Amounts in millions

[1] *Includes assumed administrative expenses. Assumed expenses allocated pro-rata based on normal cost.*

Actuarial Accrued Liability

The actuarial accrued liability represents the present value of benefits allocated to prior years of service by the actuarial cost method. A summary of the actuarial accrued liability is shown below on a system-wide basis for the Tier 1/Tier 2 pension benefits.

	December 31, 2020	December 31, 2019	Percent Change
Active Members	$18,928.2	$18,446.1	2.6%
Inactive Members	4,351.3	4,349.7	0.0%
Retired Members and Beneficiaries	62,012.8	58,567.8	5.9%
Total Actuarial Accrued Liability	**$85,292.3**	**$81,363.5**	**4.8%**

Amounts in millions

Actuarial Accrued Liability

A summary of actuarial accrued liabilities based on member status, tier and employment category is shown in the table below. For this exhibit, all independent employers, including State Judiciary, have been grouped together.

	December 31, 2020				December 31, 2019	
	SLGRP	School Districts	Independent Employers	Tier 1 / Tier 2 Totals[1]	Tier 1 / Tier 2 Totals[1]	Percent Change
Active Members						
Tier 1 General Service	$4,308.7	$2,803.3	$526.1	$7,638.1	$8,016.3	(4.7%)
Tier 1 Police & Fire	791.7	4.4	278.7	1,074.9	1,246.7	(13.8%)
Tier 1 Total	**5,100.3**	**2,807.8**	**804.8**	**8,713.0**	**9,263.0**	**(5.9%)**
Tier 2 General Service	4,114.3	3,333.2	537.5	7,985.1	7,226.7	10.5%
Tier 2 Police & Fire	1,685.2	6.8	538.2	2,230.2	1,956.4	14.0%
Tier 2 Total	**5,799.5**	**3,340.0**	**1,075.7**	**10,215.3**	**9,183.1**	**11.2%**
Total Active Members	**$10,899.9**	**$6,147.8**	**$1,880.5**	**$18,928.2**	**$18,446.0**	**2.6%**
Inactive Members	**2,704.7**	**1,342.2**	**304.3**	**4,351.3**	**4,349.7**	**0.0%**
Retired Members and Beneficiaries	**32,777.6**	**23,996.0**	**5,188.9**	**62,012.8**	**58,567.8**	**5.9%**
Total Tier 1/ Tier 2 Pension Liability, December 31,	**$46,382.2**	**$31,486.0**	**$7,373.8**	**$85,292.3**	**$81,363.5**	**4.8%**

Amounts in millions

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

Reconciliation of Change in Actuarial Accrued Liability

The change in actuarial accrued liability since the last valuation reflects the experience of the system. The actuarial accrued liability is expected to increase due to benefits earned during the year and interest, and to decrease due to benefits paid during the year.

The table below reconciles the actuarial accrued liability from the last valuation to this valuation.

	Tier 1/Tier 2 Pension
Actuarial Accrued Liability December 31, 2019	**$81,363.5**
Expected change	1,138.1
Assumption and method changes	2,722.2
Plan changes	133.6
Deviations from expected experience	
Retirements from active status	$48.4
Disability retirements	4.2
Active mortality and withdrawal	18.6
Pay increases	(4.1)
Interest crediting experience	20.3
Inactive mortality	(99.1)
Data corrections	13.1
Other	(67.9)
Total demographic (gains) and losses	**($66.6)**
New Entrants	1.4
Actuarial Accrued Liability December 31, 2020	**$85,292.3**

Amounts in millions

Tier 1/Tier 2 Pension Unfunded Accrued Liability (UAL)

Calculation of UAL

The Unfunded Accrued Liability (UAL) represents the difference between the actuarial accrued liability and the valuation assets. To determine uncollared and collared base employer contribution rates, the UAL is calculated excluding side accounts. The calculated collared base contribution rate is later offset by an amortized portion of the side accounts for individual employers with such accounts. A summary of the UAL by rate pool is shown on the following table. All independent employers, including State Judiciary, have been grouped together.

	SLGRP	School Districts	Independent Employers	Tier 1 / Tier 2 Totals[1]
December 31, 2020				
1. Actuarial accrued liability	$46,382.2	$31,486.0	$7,373.8	$85,292.3
2. Actuarial value of assets	$31,884.9	$22,873.7	$5,028.3	$59,707.7
3. Unfunded accrued liability *(2. - 1.)*	$14,497.4	$8,612.3	$2,345.5	$25,584.5
4. Funded percentage *(2. ÷ 1.)*	68.7%	72.6%	68.2%	70.0%
5. Combined valuation payroll	$7,134.3	$3,821.9	$1,086.5	$12,042.7
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	203.2%	225.3%	215.9%	212.4%
December 31, 2019				
1. Actuarial accrued liability	$44,122.1	$30,274.5	$6,916.0	$81,363.5
2. Actuarial value of assets	$31,384.1	$22,394.1	$4,964.6	$58,651.8
3. Unfunded accrued liability *(2. - 1.)*	$12,738.0	$7,880.4	$1,951.4	$22,711.7
4. Funded percentage *(2. ÷ 1.)*	71.1%	74.0%	71.8%	72.1%
5. Combined valuation payroll	$6,768.8	$3,740.7	$1,024.2	$11,533.7
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	188.2%	210.7%	190.5%	196.9%

Amounts in millions

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

Reconciliation of UAL Bases

Beginning with the December 31, 2013 actuarial valuation, the PERS Board established a policy to amortize the Tier 1/Tier 2 UAL over a 20-year period, with each subsequent odd-year valuation establishing a new 20-year closed-period amortization schedule for new Tier 1/Tier 2 UAL amounts based on the total Tier 1/ Tier 2 UAL as of that valuation date less the remaining unamortized balance of previously established Tier 1/ Tier 2 UAL bases. As part of Senate Bill 1049, passed in 2019, the Legislature directed the PERS Board to enact a one-time re-amortization of Tier 1/Tier 2 UAL over 22 years. This means that effective with the December 31, 2019 rate-setting valuation, the entire unamortized Tier 1/Tier 2 UAL for each rate pool and independent employer was re-amortized over a 22-year period as a level percentage of projected future payroll. For the December 31, 2021 and subsequent odd-year valuations, the PERS Board again has authority to set the amortization schedule. In the 2020 Experience Study, the PERS Board confirmed the policy of 20-year closed-period amortization schedules for Tire 1/Tier 2 UAL going forward.

This even-year advisory valuation shows both the progress of the amortization base established in the prior valuation and an estimate of the base to be established on December 31, 2021, with the estimate based on experience during 2020.

The UAL amortization schedules are shown for the SLGRP and School District rate pools below. UAL bases for independent employers are developed individually for each employer and are shown in each employer's individual valuation report.

SLGRP					
Amortization Base	UAL December 31, 2019	Payment	Interest	UAL December 31, 2020	Next Year's Payment
December 31, 2019	$12,738.0	$843.2	$884.8	$12,779.5	$857.7
December 31, 2020	N/A	N/A	N/A	1,717.8	119.3
Total				**$14,497.4**	**$977.0**

Amounts in millions

School Districts					
Amortization Base	UAL December 31, 2019	Payment	Interest	UAL December 31, 2020	Next Year's Payment
December 31, 2019	$7,880.4	$521.7	$547.4	$7,906.1	$530.6
December 31, 2020	N/A	N/A	N/A	706.2	49.0
Total				**$8,612.3**	**$579.7**

Amounts in millions

Actuarial Gain or Loss since Prior Valuation

In every actuarial valuation, assumptions are made as to the future experience of the plan and covered group of participants. Whenever there is a difference between the actual experience and that anticipated by the actuarial assumptions, there is an actuarial gain or loss to the plan. Gains are the result of experience that is more financially favorable to the system than assumed (i.e., serves to reduce the unfunded accrued liability or increase the surplus), while losses are the result of financially unfavorable experience to the system.

The table below shows the development of the actuarial gain (or loss) for the Tier 1/Tier 2 pension benefits for the year ending December 31, 2020. For this exhibit, all independent employers, including State Judiciary, have been grouped together.

	SLGRP	School Districts	Independent Employers	Tier 1/Tier 2 Totals[1]
1. Expected actuarial accrued liability				
a. Actuarial accrued liability at January 1, 2020	$44,122.1	$30,274.5	$6,916.0	$81,363.5
b. Normal cost (excluding expenses) at January 1, 2020	317.6	168.9	59.0	545.6
c. Benefit payments (excluding expenses) for year ending December 31, 2020	(2,696.5)	(1,974.1)	(426.9)	(5,101.7)
d. Interest	3,091.2	2,114.8	484.7	5,694.2
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	$44,834.4	$30,584.1	$7,032.9	$82,501.6
f. Change in actuarial accrued liability at December 31, 2020, due to assumption, method, and plan changes	1,587.5	991.9	275.3	2,855.9
g. Expected actuarial accrued liability at December 31, 2020 *(e. + f.)*	$46,421.8	$31,576.0	$7,308.2	$85,357.5
2. Actuarial accrued liability at December 31, 2020	$46,382.2	$31,486.0	$7,373.8	$85,292.3
3. Liability gain/(loss) *(1.g. - 2)*	**$39.6**	**$90.0**	**($65.6)**	**$65.2**
4. Expected actuarial value of assets				
a. Actuarial value of assets at January 1, 2020	$31,384.1	$22,394.1	$4,964.6	$58,651.8
b. Actual contributions for 2020	1,161.9	829.2	141.8	2,132.9
c. Benefit payments and expenses for year ending December 31, 2020	(2,721.8)	(1,992.6)	(430.9)	(5,149.5)
d. Assumed investment return	2,203.5	1,570.5	347.0	4,114.3
e. Expected actuarial value of assets before changes *(a. + b. + c. + d.)*	$32,027.7	$22,801.2	$5,022.6	$59,749.6
f. Change in actuarial value of assets at December 31, 2020, due to assumption changes	0.0	0.0	0.0	0.0
g. Expected actuarial value of assets at December 31, 2020 *(e. + f.)*	$32,027.7	$22,801.2	$5,022.6	$59,749.6
5. Actuarial value of assets as of December 31, 2020	$31,884.9	$22,873.7	$5,028.3	$59,707.7
6. Asset gain/(loss) *(5. - 4.g.)*	**($142.8)**	**$72.4**	**$5.7**	**($41.8)**
7. Net actuarial gain/(loss) *(3. + 6.)*	**($103.2)**	**$162.5**	**($59.9)**	**$23.3**

Amounts in millions

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

Reconciliation of the UAL

The table below reconciles the UAL from the last valuation to this valuation. For this exhibit, all independent employers, including State Judiciary, have been grouped together.

	SLGRP	School Districts	Independent Employers	Tier 1 / Tier 2 Totals[1]
UAL, December 31, 2019	$12,738.0	$7,880.4	$1,951.4	$22,711.7
Normal cost	317.6	168.9	59.0	545.6
Administrative expenses[2]	25.3	18.5	4.0	47.8
Contributions	(1,161.9)	(829.2)	(141.8)	(2,132.9)
Liability (gain) or loss	(39.6)	(90.0)	65.6	(65.2)
Asset (gain) or loss	142.8	(72.4)	(5.7)	41.8
Assumption, method, and plan changes	1,587.5	991.9	275.3	2,855.9
Interest at 7.20%	887.7	544.3	137.7	1,579.8
UAL, December 31, 2020	**$14,497.4**	**$8,612.3**	**$2,345.5**	**$25,584.5**

Amounts in millions

[1] Includes Multnomah Fire District #10.

[2] Reduced by EPSA interaccount transfers of $0.7 million.

Tier 1/Tier 2 Pension Contribution Rate Development

Normal Cost Rates

The table below shows the development of the system-wide weighted average Tier 1/ Tier 2 normal cost rate.

	December 31, 2020	December 31, 2019	Percent Change
Normal Cost			
a. Service Retirement	$437.3	$399.8	9.4%
b. Withdrawal	129.6	128.5	0.8%
c. Duty Disability	2.0	2.5	(20.9%)
d. Nonduty Disability	8.1	11.4	(28.8%)
e. Death	8.2	3.3	146.7%
f. Administrative Expenses	18.1	32.5	(44.4%)
g. Total Normal Cost	**$603.3**	**$578.1**	**4.4%**
Tier 1/Tier 2 Valuation Payroll	**$3,687.3**	**$3,873.9**	**(4.8%)**
Average Normal Cost Rate			
a. Service Retirement	11.86%	10.32%	
b. Withdrawal	3.51%	3.32%	
c. Duty Disability	0.05%	0.06%	
d. Nonduty Disability	0.22%	0.29%	
e. Death	0.22%	0.09%	
f. Administrative Expenses	0.49%	0.84%	
g. Average Normal Cost Rate	**16.36%**	**14.92%**	

Amounts in millions

The table below shows the development of the Tier 1/Tier 2 normal cost rate for the various rate pools. For this exhibit, all independent employers, including State Judiciary, have been grouped together.

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

	SLGRP	School Districts	Independent Employers	Tier 1 / Tier 2 Totals
Normal Cost				
Tier 1 General Service	$114.5	$69.9	$18.7	$203.1
Tier 2 General Service	145.4	117.1	18.1	280.6
Tier 1 Police & Fire	24.1	0.2	7.6	31.9
Tier 2 Police & Fire	66.5	0.4	20.7	87.6
Total Normal Cost	**$350.5**	**$187.7**	**$65.1**	**$603.3**
Tier 1/Tier 2 Valuation Payroll				
Tier 1 General Service	$631.3	$408.5	$91.3	$1,131.1
Tier 2 General Service	1,048.6	839.2	129.9	2,017.8
Tier 1 Police & Fire	100.9	0.9	30.9	132.7
Tier 2 Police & Fire	308.2	1.8	95.7	405.6
Total Valuation Payroll	**$2,089.0**	**$1,250.4**	**$347.9**	**$3,687.3**
Average Normal Cost Rates				
Tier 1 General Service	18.14%	17.12%	20.45%	17.96%
Tier 2 General Service	13.87%	13.96%	13.94%	13.91%
Tier 1 Police & Fire	23.86%	26.07%	24.61%	24.05%
Tier 2 Police & Fire	21.58%	22.04%	21.67%	21.60%
Average Rates				
Tier 1 Average	18.92%	17.14%	21.50%	18.60%
Tier 2 Average	15.62%	13.97%	17.21%	15.20%
General Service Average	15.47%	14.99%	16.63%	15.36%
Police & Fire Average	22.14%	23.40%	22.39%	22.21%
System Average	**16.78%**	**15.01%**	**18.72%**	**16.36%**
Judiciary Member Contributions			0.57%	0.05%
Adjusted System Average	**16.78%**	**15.01%**	**18.15%**	**16.31%**

Amounts in millions

UAL Rates Prior to Application of the Rate Collar

The Tier 1/Tier 2 UAL rate prior to application of the rate collar is determined by calculating the sum of next year's scheduled amortization payments to the Tier 1/Tier 2 UAL as a percentage of combined (Tier 1/Tier 2 plus OPSRP) valuation payroll.

The following table develops the Tier 1/Tier 2 UAL rate separately for each of the rate pools. For this exhibit, all independent employers, including State Judiciary, have been grouped together.

	SLGRP	School Districts	Independent Employers	Tier 1 / Tier 2 Totals[1]
December 31, 2020				
1. Total UAL	$14,497.4	$8,612.3	$2,345.5	$25,584.5
2. Next year's UAL payment	$977.0	$579.7	$158.3	$1,715.1
3. Combined valuation payroll	$7,134.3	$3,821.9	$1,086.5	$12,042.7
4. UAL rate *(2 ÷ 3)*	**13.70%**	**15.17%**	**14.57%**	**14.24%**
December 31, 2019				
1. Total UAL	$12,738.0	$7,880.4	$1,951.4	$22,711.7
2. Next year's UAL payment	$843.2	$521.7	$129.2	$1,494.1
3. Combined valuation payroll	$6,768.8	$3,740.7	$1,024.2	$11,533.7
4. UAL rate *(2 ÷ 3)*	**12.46%**	**13.95%**	**12.61%**	**12.95%**

Amounts in millions

[1] *While the Tier 1/Tier 2 Total UAL amount includes the UAL for Multnomah Fire District #10 (MFD), the UAL rate for MFD is developed separately in this report and is added to the rates shown in this table.*

Pre-SLGRP Pooled Rate

Prior to the formation of the SLGRP, the State and Community Colleges were pooled together and some employers participated in the Local Government Rate Pool (LGRP). The Tier 1/Tier 2 UAL attributable to the State and Community Colleges and the LGRP at the time the SLGRP was formed is maintained separately from the Tier 1/Tier 2 UAL for the SLGRP. The balance of the pre-SLGRP pooled liability attributable to the State and Community Colleges or the LGRP on the valuation date is amortized over the period ending December 31, 2027 and expressed as a percentage of the pool's combined (Tier 1/Tier 2 plus OPSRP) valuation payroll.

The following table develops the Pre-SLGRP pooled rate separately for the State and Community College Pool and the LGRP.

	December 31, 2020	December 31, 2019
State and Community College Pool		
1. Total pre-SLGRP pooled liability	$362.9	$408.7
2. Combined valuation payroll	$4,152.2	$3,913.0
3. Amortization Factor	6.158	6.875
4. Pre-SLGRP pooled rate *(1. ÷ 2. ÷ 3.)*	**1.42%**	**1.52%**
Local Government Rate Pool		
1. Total pre-SLGRP pooled liability	($155.8)	($174.9)
2. Combined valuation payroll	$1,781.2	$1,716.0
3. Amortization Factor	6.158	6.875
4. Pre-SLGRP pooled rate *(1. ÷ 2. ÷3.)*	**(1.42%)**	**(1.48%)**

Amounts in millions

Transition Liability or Surplus Rate

When an employer joins the SLGRP, a Transition Liability or Surplus is calculated to ensure that each employer enters the pool on a comparable basis. The Transition Liability or Surplus for each employer is maintained separately from the Tier 1/Tier 2 UAL for the SLGRP. The Transition Liability is amortized over a fixed period, and is expressed as a percentage of the employer's combined (Tier 1/Tier 2 plus OPSRP) valuation payroll. The Transition Surplus for each employer is also maintained separately from the SLGRP, and is amortized over a fixed period via contribution rate offsets as a percentage of the employer's combined valuation payroll. For employers joining the SLGRP prior to December 31, 2009, the fixed period ends December 31, 2027. For all others, the fixed period ends 18 years after the date the employer joined the SLGRP.

The following table develops the average rate impact across all employers with outstanding Transition Liabilities or Surpluses as of the valuation date. The amortization factor below reflects the weighted average of the amortization periods for all such employers.

	December 31, 2020	December 31, 2019
1. Total transition liability/(surplus)	($499.7)	($553.5)
2. Combined valuation payroll	$2,505.3	$2,464.2
3. Average Amortization Factor[1]	6.260	6.964
4. Average transition liability/(surplus) rate *(1. ÷ 2. ÷ 3.)*	**(3.19%)**	**(3.23%)**

Amounts in millions

[1] *Weighted average*

Multnomah Fire District #10 UAL Rate

The Multnomah Fire District #10 UAL rate is determined by amortizing Multnomah Fire District #10's unfunded accrued liability over the period ending December 31, 2027, and expressing the result as a percentage of combined valuation payroll.

As part of 2003 legislation, the Multnomah Fire District #10 UAL was allocated to all Tier 1/Tier 2 employers. Multnomah Fire District #10 was allocated $50,000 of the outstanding UAL, which was fully paid in November, 2003. Of the remaining UAL, City of Portland is allocated 21.8743%, while all Tier 1/Tier 2 employers, including City of Portland, share in the remaining 78.1257%. Four employers (City of Gresham, City of Fairview, City of Wood Village, and City of Troutdale) are required to pay twice the rate that is determined under item 6.b. below. Thus, the combined valuation payroll for all Tier 1/Tier 2 employers, shown below in item 4.b., includes twice the valuation payroll for those four employers.

	December 31, 2020	December 31, 2019
1. Actuarial accrued liability		
a. Active members	$0.0	$0.0
b. Inactive members	0.0	0.0
c. Retired members and beneficiaries	50.3	50.9
d. Total actuarial accrued liability	$50.3	$50.9
2. Actuarial value of assets		
a. Employer reserve	($95.7)	($110.0)
b. Members reserve	0.0	0.0
c. Benefits in force reserve	16.6	18.9
d. Total actuarial value of aseets	($79.1)	($91.1)
3. Multnomah FD #10 UAL *(1.d. - 2.d.)*	$129.4	$141.9
a. Portion allocated to City of Portland *(21.8743% x 3.)*	$28.3	$31.0
b. Portion allocated to all T1/T2 employers *(78.1257% x 3.)*	$101.1	$110.9
4. Combined valuation payroll		
a. City of Portland	$496.0	$477.1
b. All employers[1]	$12,105.0	$11,595.0
5. Amortization factor	6.158	6.875
6. Multnomah FD #10 UAL Rate		
a. City of Portland *(3.a. ÷ 4.a. ÷ 5.)*	0.93%	0.95%
b. All Tier 1 / Tier 2 employers *(3.b. ÷ 4.b. ÷ 5.)*	0.14%	0.14%
7. Total Multnomah FD #10 UAL Rate		
a. City of Portland *(6.a. + 6.b.)*	1.07%	1.09%
b. City of Gresham, City of Fairview, City of Wood Village, City of Troutdale *(2 x 6.b.)*	0.28%	0.28%
c. All other Tier 1 / Tier 2 employers *(6.b.)*	0.14%	0.14%

Amounts in millions

[1] *For weighting purposes, includes double valuation payroll for each of the four employers listed in 7.b.*

Calculated Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the development of the total Tier 1/Tier 2 contribution rate for each rate pool as of the valuation date. The normal cost rates apply to Tier 1/Tier 2 payroll only, but all other rates are applied to combined (Tier 1/Tier 2 plus OPSRP) valuation payroll. These rates are adjusted on an individual employer basis for side accounts and pre-SLGRP liabilities, if applicable. Weighted average adjustments for side accounts and pre-SLGRP liabilities are shown in the table. For individual employers, these adjustments cannot reduce the pension contribution rate below 0.00%.

Advisory July 1, 2023 Rates Calculated as of December 31, 2020				
	SLGRP	School Districts	Independent Employers	Tier 1 / Tier 2 Totals
Tier 1/Tier 2 pension contribution rates				
Normal cost rate	16.78%	15.01%	18.15%	16.31%
Judiciary member contributions			0.57%	0.05%
Uncollared UAL rate	13.70%	15.17%	14.57%	14.24%
Multnomah FD #10 rate	0.20%	0.14%	0.15%	0.18%
Uncollared total Tier 1/Tier 2 pension rate	**30.68%**	**30.32%**	**33.44%**	**30.78%**
Average adjustments				
Pre-SLGRP liability/(surplus) rate	(0.67%)	N/A	N/A	(0.40%)
Side account rate	(4.70%)	(9.74%)	(1.29%)	(5.96%)
Total average adjustment	**(5.37%)**	**(9.74%)**	**(1.29%)**	**(6.36%)**
Member redirect offset[1]	**(2.40%)**	**(2.40%)**	**(2.40%)**	**(2.40%)**
Uncollared net employer Tier 1/Tier 2 pension	**22.91%**	**18.18%**	**29.75%**	**22.02%**

[1] *Redirected member contributions under Senate Bill 1049 (2.50% of payroll for Tier 1/Tier 2) will offset employer contribution rates beginning July 1, 2021. Redirect does not apply to members with monthly pay below a threshold. The values shown in the table incorporate an estimate of the effect of this limitation.*

Calculation of Rate Collar

Under the contribution rate stabilization method (the “rate collar”), the UAL Rate for a rate pool or employer is confined to a collared range based on the prior biennium’s collared UAL Rate component. For the SLGRP and School District Pool, the UAL Rate will not change by more than 3% of payroll. For an independent employer, the collar width for the Tier 1/Tier 2 UAL Rate is the greater of 4% of payroll or one-third of the difference between the collared and uncollared UAL Rate at the prior rate-setting valuation. Also, for independent employers the UAL Rate will not be allowed to be less than 0.00% of payroll if the employer’s funded status (excluding side accounts) is less than 100%.

As part of this policy, the PERS Board also adopted restrictions on when the UAL Rate may decrease, depending on the funded status of the rate pool or employer. The UAL Rate for any rate pool will not be allowed to decrease if the pool’s funded status (excluding side accounts) is 87% or lower. The rate may decrease by the collar width if funded status is 90% or greater, and the allowable decrease amount is phased in from 87% to 90% funded.

All rate collar calculations are performed excluding amounts and contribution rates attributable to pre-SLGRP liabilities, side accounts and member IAP contributions. Retiree medical rates are also excluded from the rate collar calculation.

The table below develops the impact of the collar for each of the Tier 1/Tier 2 rate pools. Although the calculation is performed individually for independent employers, the table shows the calculation as if independent employers were a single rate pool.

Advisory July 1, 2023 Tier 1/Tier 2 Rates Calculated as of December 31, 2020

Calculation of Collar Adjustments	SLGRP	School Districts	Independent Employers	Tier 1 / Tier 2 Totals[1]
1. Current Tier 1/Tier 2 UAL rate	12.46%	13.95%	10.48%	12.75%
2. Size of rate collar				
a. Impact of rate collar, prior rate-setting valuation	0.00%	0.00%	(0.99%)	(0.09%)
b. Size of rate collar ***(3.00% for rate pools; otherwise greater of 4.00% or absolute value of [a. ÷ 3])***	**3.00%**	**3.00%**	**4.00%**	
c. Funded percentage	69%	73%	68%	70%
d. Permissible decrease to UAL rate ***(b. if c. ≥ 90%; 0.00% if c. ≤ 87%; otherwise graded between those rates)***	**0.00%**	**0.00%**	**0.00%**	
3. July 1, 2023 Minimum UAL rate *(1. - 2.d.)*	12.46%	13.95%	10.48%	
4. July 1, 2023 Maximum UAL rate *(1. + 2.b.)*	15.46%	16.95%	14.48%	
5. Advisory July 1, 2023 UAL rate before collar	13.70%	15.17%	14.57%	
6. Advisory July 1, 2023 UAL rate after collar *(5., but not less than 3. or more than 4.)*	13.70%	15.17%	14.48%	
7. Impact of collar *(6. - 5.)*[2]	**0.00%**	**0.00%**	**(0.09%)**	**(0.01%)**

[1] *The average Tier 1/Tier 2 rate has been recalculated based on current valuation payroll.*

[2] *The impact of collar shown for the system-wide column is the weighted average of the impact shown for each rate pool.*

Calculated Employer Contribution Rate Summary (Post-Rate Collar)

Any needed adjustment to reflect the effects of the rate collar is made to the UAL rate. The table below summarizes the advisory average rates that would be effective July 1, 2023 by pool and component. Although the rate collar is applied individually for independent employers, the table shows the average rates as if independent employers were a single rate pool.

Advisory July 1, 2023 Rates Calculated as of December 31, 2020				
	SLGRP	School Districts	Independent Employers	Tier 1 / Tier 2 Totals
Tier 1/Tier 2 pension contribution rates				
Normal cost rate	16.78%	15.01%	18.15%	16.31%
Judiciary member contributions			0.57%	0.05%
Collared UAL rate	13.70%	15.17%	14.48%	14.23%
Multnomah FD #10 rate	0.20%	0.14%	0.15%	0.18%
Collared total Tier 1/Tier 2 pension rate	**30.68%**	**30.32%**	**33.35%**	**30.77%**
Average adjustments				
Pre-SLGRP liability/(surplus) rate	(0.67%)	N/A	N/A	(0.40%)
Side account rate	(4.70%)	(9.74%)	(1.29%)	(5.96%)
Total average adjustment	**(5.37%)**	**(9.74%)**	**(1.29%)**	**(6.36%)**
Member redirect offset[1]	**(2.40%)**	**(2.40%)**	**(2.40%)**	**(2.40%)**
Collared net employer Tier 1/Tier 2 pension rate	**22.91%**	**18.18%**	**29.66%**	**22.01%**

[1] *Redirected member contributions under Senate Bill 1049 (2.50% of payroll for Tier 1/Tier 2) will offset employer contribution rates beginning July 1, 2021. Redirect does not apply to members with monthly pay below a threshold. The values shown in the table incorporate an estimate of the effect of this limitation.*

OPSRP Assets

Information on OPSRP assets is shown in the section of this report covering the system-wide assets. As of December 31, 2020, the actuarial value of assets for OPSRP is $7,548.8 million.

OPSRP Liabilities

Normal Cost

The normal cost represents the present value of projected future benefits allocated to the next year of service by the actuarial cost method. If all current actuarial assumptions are met in past and future years, the normal cost represents the percent of payroll that would need to be contributed each year to fully fund each member's plan benefits during his or her working career.

A summary of the normal cost by assumed cause of future termination of service is shown below for the current and prior year.

	December 31, 2020			December 31, 2019		
	General Service	Police & Fire	Total	General Service	Police & Fire	Total
Pre-Retirement Disability						
Duty	$0.9	$1.6	$2.6	$0.7	$1.4	$2.1
Non-Duty	9.8	1.2	10.9	10.1	1.2	11.3
Total Pre-Retirement Disability	**$10.7**	**$2.8**	**$13.5**	**$10.8**	**$2.6**	**$13.4**
Other Benefits						
Service Retirement	$598.6	$133.3	$731.9	$498.5	$107.4	$605.9
Withdrawal	66.3	6.9	73.2	53.6	5.5	59.1
Death	12.0	1.5	13.5	4.8	0.7	5.4
Duty Disability Retirement	0.5	1.4	1.9	0.4	1.1	1.5
Non-Duty Disability Retirement	7.3	1.2	8.5	7.0	1.2	8.2
Total Other Benefits	**$684.7**	**$144.3**	**$829.0**	**$564.3**	**$115.9**	**$680.2**
Assumed Administrative Expenses	35.9	5.1	40.9	7.0	1.0	8.0
Total Normal Cost	**$731.3**	**$152.2**	**$883.4**	**$582.1**	**$119.5**	**$701.6**

Amounts in millions

Reconciliation of Change in Normal Cost

The increase in the normal cost since the prior valuation is primarily attributable to the effect of assumption changes and new entrants to the OPSRP program. The table below reconciles the normal cost from the prior valuation to the current valuation.

	OPSRP
Normal Cost, December 31, 2019	**$701.6**
Expected increase (decrease)	(12.8)
Assumption and method changes	115.9
Plan changes	7.1
New entrants	63.4
Deviations from expected experience	
Pay increases	$2.0
All other sources	6.2
Total demographic (gains) and losses	**$8.2**
Normal Cost, December 31, 2020	**$883.4**

Amounts in millions

Actuarial Accrued Liability

The actuarial accrued liability represents the present value of projected future benefits allocated to prior years of service by the actuarial cost method. For active members, a summary of the actuarial accrued liability by assumed cause of future termination of service is shown below for the current and prior year.

	December 31, 2020			December 31, 2019		
	General Service	Police & Fire	Total	General Service	Police & Fire	Total
Active Members						
Pre-retirement Duty Disability	$1.6	$3.6	$5.3	$1.6	$3.3	$4.9
Pre-retirement Non-Duty Disability	86.2	8.8	95.1	89.2	9.2	98.4
Service Retirement	6,601.6	1,351.4	7,953.0	5,409.5	1,069.0	6,478.4
Withdrawal	304.3	26.0	330.3	262.1	22.2	284.3
Death	120.5	14.2	134.7	47.0	5.9	52.9
Duty Disability Retirement	2.8	8.3	11.1	2.6	6.8	9.5
Non-Duty Disability Retirement	72.4	10.5	82.9	69.3	10.1	79.4
Total Active Members	**$7,189.5**	**$1,422.8**	**$8,612.3**	**$5,881.4**	**$1,126.5**	**$7,007.9**
Inactive Members			669.7			520.1
Retired Members and Beneficiaries			726.1			554.3
Total Actuarial Accrued Liability			**$10,008.1**			**$8,082.2**

Amounts in millions

Reconciliation of Change in Actuarial Accrued Liability

The change in actuarial accrued liability since the last valuation reflects the experience of the system. The actuarial accrued liability is expected to increase due to benefits earned during the year and interest, and to decrease due to benefits paid during the year. The table below reconciles the actuarial accrued liability from the last valuation to this valuation.

	OPSRP
Actuarial Accrued Liability December 31, 2019	**$8,082.2**
Expected change	1,244.8
Assumption and method changes	542.7
Plan changes	65.0
Deviations from expected experience	
Retirements from active status	$4.2
Disability retirements	(3.9)
Active mortality and withdrawal	31.1
Pay increases	(8.0)
Inactive mortality	(3.9)
Data corrections	(0.4)
Other	(33.9)
Total demographic (gains) and losses	**($14.8)**
New entrants	88.2
Actuarial Accrued Liability December 31, 2020	**$10,008.1**

Amounts in millions

OPSRP Unfunded Accrued Liability (UAL)

Calculation of UAL

The Unfunded Accrued Liability (UAL) represents the difference between the actuarial accrued liability and the valuation assets. The UAL is amortized over combined (Tier 1/Tier 2 and OPSRP) valuation payroll. The table below shows the OPSRP UAL, funded status, and UAL as a percentage of combined valuation payroll.

	December 31, 2020	December 31, 2019
1. Actuarial accrued liability	$10,008.1	$8,082.2
2. Actuarial value of assets	$7,548.8	$6,190.4
3. Unfunded accrued liability *(2. - 1.)*	$2,459.3	$1,891.8
4. Funded percentage *(2. ÷ 1.)*	75.4%	76.6%
5. Combined valuation payroll	$12,042.7	$11,533.7
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	20.4%	16.4%

Amounts in millions

Reconciliation of UAL Bases

Beginning with the December 31, 2007, actuarial valuation, each odd-year valuation establishes a 16-year closed-period amortization base for outstanding OPSRP UAL amounts. For odd-year valuations subsequent to December 31, 2007, this amortization base is calculated based on the total OPSRP UAL as of that valuation date less the remaining unamortized balance of any OPSRP UAL bases established at previous odd-year valuation dates. In other words, OPSRP experience from December 31, 2017 to December 31, 2019 is amortized based on a 16-year amortization schedule beginning December 31, 2019.

This even-year advisory valuation shows both the progress of the amortization bases established in prior valuations and an estimate of the base to be established on December 31, 2021, with the estimate based on experience during 2020.

Reconciliation of UAL Bases					
Amortization Base	UAL December 31, 2019	Payment	Interest	UAL December 31, 2020	Next Year's Payment
December 31, 2007	($34.3)	($9.3)	($2.1)	($27.1)	($9.6)
December 31, 2009	102.4	19.2	6.6	89.8	19.8
December 31, 2011	43.0	6.3	2.9	39.6	6.4
December 31, 2013	401.0	48.2	27.0	379.8	49.5
December 31, 2015	698.5	72.4	47.5	673.6	74.2
December 31, 2017	214.6	19.7	14.7	209.6	20.1
December 31, 2019	466.6	38.7	32.1	460.1	39.5
December 31, 2020	N/A	N/A	N/A	633.8	51.8
Total				**$2,459.3**	**$251.7**

Amounts in millions

Actuarial Gain or Loss since Prior Valuation

In every actuarial valuation, assumptions are made as to the future experience of the plan and covered group of participants. Whenever there is a difference between the actual experience and that anticipated by the actuarial assumptions, there is an actuarial gain or loss to the plan. Gains are the result of experience that is more financially favorable to the system than anticipated (i.e., serves to reduce the unfunded accrued liability or increase the surplus), while losses are the result of experience that is financially unfavorable to the system.

The table below develops the actuarial gain or loss for OPSRP for the year ending December 31, 2020.

			OPSRP
1.	Expected actuarial accrued liability		
	a.	Actuarial accrued liability at January 1, 2020	$8,082.2
	b.	Normal cost (excluding expenses) at January 1, 2020	693.6
	c.	Benefit payments (excluding expenses) for year ending December 31, 2020	(53.8)
	d.	Interest	605.0
	e.	Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	$9,327.0
	f.	Change in actuarial accrued liability at December 31, 2020, due to assumption and method changes	542.7
	g.	Change in actuarial accrued liability at December 31, 2020, due to plan changes	65.0
	h.	Expected actuarial accrued liability at December 31, 2020 *(e. + f. + g.)*	$9,934.7
2.	Actuarial accrued liability at December 31, 2020		$10,008.1
3.	**Liability gain/(loss) *(1.h. - 2)***		**($73.4)**
4.	Expected actuarial value of assets		
	a.	Actuarial value of assets at January 1, 2020	$6,190.4
	b.	Actual contributions for 2020	902.4
	c.	Benefit payments and expenses for year ending December 31, 2020	(62.0)
	d.	Assumed investment return	476.0
	e.	Expected actuarial value of assets at December 31, 2020 *(a. + b. + c. + d.)*	$7,506.8
5.	Actuarial value of assets as of December 31, 2020		$7,548.8
6.	**Asset gain/(loss) *(5. - 4.e.)***		**$42.0**
7.	**Net actuarial gain/(loss) *(3. + 6.)***		**($31.4)**

Amounts in millions

Reconciliation of the UAL

The table below summarizes the changes in UAL since the prior valuation.

The 2020 liability loss shown is primarily due to the accrued liability associated with new entrants to the OPSRP program. For a full assessment of the new entrant effect on UAL, the accrued liability associated with new entrants would need to be combined with contributions associated with new entrants.

	OPSRP
UAL, December 31, 2019	**$1,891.8**
Normal cost (including actual administrative expenses)	701.8
Contributions	(902.4)
Liability (gain) or loss	73.4
Asset (gain) or loss	(42.0)
Assumption and method changes	542.7
Plan changes	65.0
Interest at 7.20%	129.0
UAL, December 31, 2020	**$2,459.3**

Amounts in millions

OPSRP Contribution Rate Development

Normal Cost Rates

The table below shows the development of the OPSRP normal cost rates. Total normal cost rates shown below are before any offset for redirected member contributions under Senate Bill 1049.

	December 31, 2020			December 31, 2019		
	General Service	Police & Fire	Total	General Service	Police & Fire	Total
Normal Cost						
Pre-retirement Disability Benefits	$10.7	$2.8	$13.5	$10.8	$2.6	$13.4
All Other Benefits	684.7	144.3	829.0	564.3	115.9	680.2
Assumed Administrative Expenses	35.9	5.1	40.9	7.0	1.0	8.0
Total Normal Cost	**$731.3**	**$152.2**	**$883.4**	**$582.1**	**$119.5**	**$701.6**
OPSRP Valuation Payroll	**$7,322.9**	**$1,032.6**	**$8,355.4**	**$6,740.9**	**$919.0**	**$7,659.8**
Normal Cost Rate						
Pre-retirement Disability Benefits	0.15%	0.27%	0.16%	0.16%	0.29%	0.17%
All Other Benefits	9.35%	13.98%	9.92%	8.37%	12.61%	8.88%
Assumed Administrative Expenses	0.49%	0.49%	0.49%	0.10%	0.10%	0.10%
Total Normal Cost Rate	**9.99%**	**14.74%**	**10.57%**	**8.64%**	**13.00%**	**9.16%**

Amounts in millions

UAL Rates

The UAL rate is determined by calculating the sum of next year’s scheduled amortization payments to the UAL as a percentage of combined (Tier 1/Tier 2 and OPSRP) valuation payroll.

	December 31, 2020	December 31, 2019
1. Total UAL	$2,459.3	$1,891.8
2. Next year's UAL payment	$251.7	$195.1
3. Combined valuation payroll	$12,042.7	$11,533.7
4. UAL rate *(2 ÷ 3)*	**2.09%**	**1.69%**

Amounts in millions

Calculated Employer Contribution Rates (Pre-Rate Collar)

The following table summarizes the OPSRP contribution rate for general service and police & fire members as of the valuation date, prior to application of the rate collar.

The normal cost rates apply to OPSRP payroll only, but the UAL rate is applied to combined (Tier 1/Tier 2 and OPSRP) valuation payroll. These rates, after the application of the rate collar, are combined with each employer's Tier 1/Tier 2 rates (other than Tier 1/Tier 2 normal cost rate) to determine each employer's pension contribution rate on OPSRP payroll.

Advisory July 1, 2023 Rates Calculated as of December 31, 2020	General Service	Police & Fire	Average Rate
OPSRP pension contribution rates			
Normal cost rate	9.99%	14.74%	10.57%
Uncollared UAL rate	2.09%	2.09%	2.09%
Uncollared total OPSRP pension rate	**12.08%**	**16.83%**	**12.66%**
Member redirect offset[1]	**(0.65%)**	**(0.65%)**	**(0.65%)**
Uncollared net employer OPSRP pension rate	**11.43%**	**16.18%**	**12.01%**

[1] *Redirected member contributions under Senate Bill 1049 (0.75% of payroll for OPSRP) will offset employer contribution rates beginning July 1, 2021. Redirect does not apply to members with monthly pay below a threshold. The values shown in the table incorporate an estimate of the effect of this limitation.*

Calculation of Rate Collar

The rate collar restricts the OPSRP UAL Rate cannot change by more than 1% of payroll from the prior biennium's collared UAL Rate. The PERS Board also adopted restrictions on when the UAL Rate may decrease, depending on the funded status of the rate pool. The OPSRP UAL Rate will not be allowed to decrease if the pool's funded status (excluding side accounts) is 87% or lower. The rate may decrease by the 1% of payroll collar width if funded status is 90% or greater, and the allowable decrease amount is phased in from 87% to 90% funded.

All collar calculations are performed based on the weighted average OPSRP contribution rate, and any adjustment due to the collar is applied to the OPSRP UAL rate.

The table below shows the calculation of and any adjustment for the rate collar.

Advisory July 1, 2023 Rates Calculated as of December 31, 2020	Average Rate
1. Current OPSRP UAL rate	1.69%
2. Size of rate collar	
a. Size of rate collar *(1.00% for OPSRP)*	**1.00%**
b. Funded percentage	75%
c. Permissible decrease to UAL rate *(1.00% if b. ≥ 90%; 0.00% if b. ≤ 87%; otherwise graded between those rates)*	**0.00%**
3. July 1, 2023 Minimum OPSRP UAL rate *(1. - 2.c.)*	1.69%
4. July 1, 2023 Maximum OPSRP UAL rate *(1. + 2.a.)*	2.69%
5. Advisory July 1, 2023 OPSRP UAL rate before collar	2.09%
6. Advisory July 1, 2023 OPSRP UAL rate after collar *(5., but not less than 3. or more than 4.)*	2.09%
7. Impact of collar *(6. - 5.)*	**0.00%**

Calculated Employer Contribution Rates (Post-Rate Collar)

The table below summarizes the OPSRP contribution rate for general service and police & fire members as of the valuation date, after adjustments for the rate collar.

Advisory July 1, 2023 Rates Calculated as of December 31, 2020			
	General Service	Police & Fire	Average Rate
OPSRP pension contribution rates			
Normal cost rate	9.99%	14.74%	10.57%
Collared UAL rate	2.09%	2.09%	2.09%
Collared total OPSRP pension rate	**12.08%**	**16.83%**	**12.66%**
Member redirect offset[1]	**(0.65%)**	**(0.65%)**	**(0.65%)**
Collared net employer OPSRP pension rate	**11.43%**	**16.18%**	**12.01%**

[1] *Redirected member contributions under Senate Bill 1049 (0.75% of payroll for OPSRP) will offset employer contribution rates beginning July 1, 2021. Redirect does not apply to members with monthly pay below a threshold. The values shown in the table incorporate an estimate of the effect of this limitation.*

Retiree Healthcare Valuation

Retiree Healthcare Assets

Assets

A reconciliation of retiree healthcare assets is shown below. The reconciliation of assets is provided by PERS.

	RHIA	RHIPA	Retiree Healthcare Totals
Additions			
1. Employer contributions	$3.0	$11.4	$14.4
2. Net investment income	46.0	4.5	50.5
3. Other	0.0	0.0	0.0
4. Total additions	**$49.0**	**$15.8**	**$64.8**
Deductions			
4. Healthcare Premium Subsidies	($31.7)	($3.9)	($35.5)
5. Administrative expenses	(1.3)	(0.3)	(1.6)
6. Total deductions	**($32.9)**	**($4.1)**	**($37.1)**
7. Net change	**$16.1**	**$11.7**	**$27.8**
8. Net assets held in trust for benefits			
a. Beginning of year	$644.1	$51.9	$696.0
b. End of year	**$660.2**	**$63.6**	**$723.8**

Amounts in millions

Retiree Healthcare Liabilities

Normal Cost

A summary of the normal cost by assumed cause of future termination of service is shown below for the current and prior year.

	RHIA			RHIPA		
	December 31, 2020	December 31, 2019	Percent Change	December 31, 2020	December 31, 2019	Percent Change
Normal Cost						
Service Retirement	$1.2	$1.4		$1.0	$1.2	
Withdrawal	0.4	0.5		0.0	0.0	
Disability	0.0	0.1		0.0	0.1	
Death	0.0	0.0		0.0	0.0	
Total Normal Cost	**$1.7**	**$1.9**	**(10.4%)**	**$1.0**	**$1.2**	**(16.6%)**

Amounts in millions

The table below reconciles the normal cost from the prior valuation to the current valuation.

	RHIA	RHIPA
Normal Cost December 31, 2019	**$1.9**	**$1.2**
Expected increase (decrease)	(0.1)	(0.0)
Assumption and method changes	0.0	(0.1)
Plan changes	0.0	0.0
Deviations from expected experience		
Demographic (gains) or losses	(0.1)	(0.0)
Normal Cost December 31, 2020	**$1.7**	**$1.0**

Amounts in millions

Actuarial Accrued Liability

A summary of the actuarial accrued liability by status is shown below for the current and prior year.

	RHIA			RHIPA		
	December 31, 2020	December 31, 2019	Percent Change	December 31, 2020	December 31, 2019	Percent Change
Actives	$47.6	$58.3	(18.3%)	$37.2	$47.2	(21.2%)
Inactive Members	16.7	18.7	(10.6%)	0.0	0.0	0.0%
Retired Members and Beneficiaries	319.3	326.9	(2.3%)	10.8	12.1	(11.1%)
Total Actuarial Accrued Liability	**$383.6**	**$403.9**	**(5.0%)**	**$48.0**	**$59.3**	**(19.1%)**

Amounts in millions

The change in actuarial accrued liability since the last valuation reflects the experience of the system. The actuarial accrued liability is expected to increase due to benefits earned during the year and interest, and to decrease due to benefits paid during the year. The table below reconciles the actuarial accrued liability from the last valuation to this valuation.

	RHIA	RHIPA	Total
Actuarial Accrued Liability December 31, 2019	**$403.9**	**$59.3**	**$463.2**
Expected change	(1.7)	1.5	(0.2)
Assumption and method changes	(7.1)	(8.9)	(16.0)
Plan changes	0.0	0.0	0.0
Deviations from expected experience			
Demographic (gains) or losses	(11.5)	(4.0)	(15.5)
Actuarial Accrued Liability December 31, 2020	**$383.6**	**$48.0**	**$431.6**

Amounts in millions

Retiree Healthcare Unfunded Accrued Liability (UAL)

Calculation of UAL

The Unfunded Accrued Liability (UAL) represents the difference between the actuarial accrued liability and the valuation assets. A summary of the UAL by program is shown on the following table.

	RHIA			RHIPA		
	December 31, 2020	December 31, 2019	Percent Change	December 31, 2020	December 31, 2019	Percent Change
1. Actuarial accrued liability	$383.6	$403.9	(5.0%)	$48.0	$59.3	(19.1%)
2. Actuarial value of assets	$660.2	$644.1	2.5%	$63.6	$51.9	22.5%
3. Unfunded accrued liability	($276.6)	($240.3)	15.1%	($15.6)	$7.4	(310.1%)
4. Funded percentage *(2. ÷ 1.)*	172.1%	159.5%	7.9%	132.6%	87.5%	51.5%
5. Combined valuation payroll	$12,042.7	$11,533.7	4.4%	$3,712.6	$3,479.8	6.7%
6. Unfunded accrued liability as % of combined valuation payroll *(3. ÷ 5.)*	(2.3%)	(2.1%)		(0.4%)	0.2%	

Amounts in millions

Reconciliation of UAL Bases

Beginning with the December 31, 2007 actuarial valuation, each rate-setting valuation has established a 10-year amortization base for outstanding RHIA and RHIPA UAL amounts. For odd-year valuations subsequent to December 31, 2007, each amortization base was calculated based on the total UAL as of that valuation date less the remaining unamortized balance of any UAL bases established at previous odd-year valuation dates. Beginning with the December 31, 2021 rate-setting valuation, the amortization policy when a program is over 100% funded status will be to amortize the actuarial surplus over Tier 1/Tier 2 payroll using a 20-year amortization basis. The resulting negative UAL rate will offset the normal cost for the program, but not below 0.0%.

In the current valuation, both RHIA and RHIPA are over 100% funded status. As a result, the tables below show the elimination of the previous amortization bases and an estimate of the new surplus base that would be established in the December 31, 2021 rate-setting valuation, with that estimate based on experience during 2020.

RHIA					
Amortization Base	UAL December 31, 2019	Payment	Interest	UAL December 31, 2020	Next Year's Payment
December 31, 2011	($9.5)	($5.0)	($0.5)	N/A	N/A
December 31, 2013	(25.0)	(6.8)	(1.5)	N/A	N/A
December 31, 2015	(4.7)	(0.9)	(0.3)	N/A	N/A
December 31, 2017	(69.5)	(10.1)	(4.6)	N/A	N/A
December 31, 2019	(131.6)	(15.8)	(8.9)	N/A	N/A
December 31, 2020	N/A	N/A	N/A	($276.6)	($19.2)
Total				**($276.6)**	**($19.2)**

Amounts in millions

RHIPA					
Amortization Base	UAL December 31, 2019	Payment	Interest	UAL December 31, 2020	Next Year's Payment
December 31, 2011	$4.4	$2.3	$0.2	N/A	N/A
December 31, 2013	17.1	4.7	1.1	N/A	N/A
December 31, 2015	8.2	1.5	0.5	N/A	N/A
December 31, 2017	(1.9)	(0.3)	(0.1)	N/A	N/A
December 31, 2019	(20.4)	(2.5)	(1.4)	N/A	N/A
December 31, 2020	N/A	N/A	N/A	($15.6)	($1.1)
Total				**($15.6)**	**($1.1)**

Amounts in millions

Actuarial Gain or Loss since Prior Valuation

In every actuarial valuation, assumptions are made as to the future experience of the plan and covered group of participants. Whenever there is a difference between the actual experience and that anticipated by the actuarial assumptions, there is an actuarial gain or loss to the plan. Gains are the result of experience that is more financially favorable to the system than anticipated (i.e., serves to reduce the unfunded accrued liability or increase the surplus), while losses are the result of experience that is financially unfavorable to the system.

The table below shows the development of the actuarial gain (or loss) for RHIA and RHIPA for the plan year ending December 31, 2020.

	RHIA	RHIPA	Retiree Healthcare Totals
1. Expected actuarial accrued liability			
a. Actuarial accrued liability at January 1, 2020	$403.9	$59.3	$463.2
b. Normal cost at January 1, 2020	1.9	1.2	3.1
c. Benefit payments for year ending December 31, 2020	(31.7)	(3.9)	(35.5)
d. Interest	28.0	4.2	32.2
e. Expected actuarial accrued liability before changes *(a. + b. + c. + d.)*	$402.2	$60.8	$463.0
f. Change in actuarial accrued liability at December 31, 2020, due to assumption and method changes	(7.1)	(8.9)	(16.0)
g. Change in actuarial accrued liability at December 31, 2020, due to plan changes	0.0	0.0	0.0
h. Expected actuarial accrued liability at December 31, 2020 *(e. + f. + g.)*	$395.1	$51.9	$447.0
2. Actuarial accrued liability at December 31, 2020	$383.6	$48.0	$431.6
3. Liability gain/(loss) *(1.h. - 2.)*	**$11.5**	**$4.0**	**$15.5**
4. Expected actuarial value of assets			
a. Actuarial value of assets at January 1, 2020	$644.1	$51.9	$696.0
b. Actual contributions for 2020	3.0	11.4	14.4
c. Benefit payments and expenses for year ending December 31, 2020	(32.9)	(4.1)	(37.1)
d. Assumed investment return	45.3	4.0	49.3
e. Expected actuarial value of assets before changes *(a. + b. + c. + d.)*	$659.5	$63.1	$722.6
f. Change in actuarial value of assets at December 31, 2020, due to assumption changes	0.0	0.0	0.0
g. Change in actuarial value of assets at December 31, 2020, due to plan changes	0.0	0.0	0.0
h. Expected actuarial value of assets at December 31, 2020 *(e. + f. + g.)*	$659.5	$63.1	$722.6
5. Actuarial value of assets at December 31, 2020	$660.2	$63.6	$723.8
6. Actuarial asset gain/(loss) *(5. - 4.h.)*	**$0.7**	**$0.5**	**$1.2**
7. Net actuarial gain/(loss) *(3. + 6.)*	**$12.2**	**$4.5**	**$16.6**

Amounts in millions

Reconciliation of UAL

The table below summarizes the changes in UAL since the prior valuation.

The significant decrease in both the RHIA and RHIPA UAL is primarily due to employer contributions, and lower participation than assumed.

	RHIA	RHIPA
UAL, December 31, 2019	**($240.3)**	**$7.4**
Normal Cost (including actual administrative expenses)	3.2	1.5
Contributions	(3.0)	(11.4)
Liability (gain) or loss	(11.5)	(4.0)
Asset (gain) or loss	(0.7)	(0.5)
Assumption and method changes	(7.1)	(8.9)
Interest	(17.3)	0.2
UAL, December 31, 2020	**($276.6)**	**($15.6)**

Amounts in millions

Retiree Healthcare Contribution Rate Development

Normal Cost Rate

The table below shows the development of the retiree healthcare normal cost rates. For RHIA, valuation payroll is shown on a system-wide basis. For RHIPA, valuation payroll is for the State of Oregon and the State Judiciary only.

	RHIA		RHIPA	
	December 31, 2020	December 31, 2019	December 31, 2020	December 31, 2019
Normal Cost	$1.7	$1.9	$1.0	$1.2
Tier 1/Tier 2 Valuation Payroll	$3,687.3	$3,873.9	$1,091.8	$1,120.6
Normal Cost Rate	**0.05%**	**0.05%**	**0.09%**	**0.11%**

Amounts in millions

The table below shows the development of the retiree healthcare normal cost rates for the various rate pools. For RHIA, valuation payroll is shown on a system-wide basis. For RHIPA, valuation payroll is for the State of Oregon and the State Judiciary only. For this exhibit, all independent employers, including State Judiciary, have been grouped together.

	December 31, 2020			
	SLGRP	School Districts	Independent Employers	Retiree Healthcare Total
1. Tier 1/ Tier 2 Valuation Payroll				
a. All Employers' Payroll	$2,089.0	$1,250.4	$347.9	$3,687.3
b. RHIPA Employers' Payroll	$1,063.3	$0.0	$28.4	$1,091.8
2. Normal Cost Rate				
a. RHIA	0.05%	0.05%	0.05%	0.05%
b. RHIPA	0.09%	0.00%	0.09%	0.09%
3. Weighted Average Normal Cost Rate ***[(1.a. x 2.a + 1.b. x 2.b.) / 1.a]***	**0.10%**	**0.05%**	**0.06%**	**0.08%**

Amounts in millions

UAL Rate

The UAL rate is determined by calculating the sum of next year's scheduled amortization payments to the UAL as a percentage of combined (Tier 1/Tier 2 and OPSRP) valuation payroll. For RHIPA, valuation payroll is for the State of Oregon and the State Judiciary only.

Beginning with the December 31, 2021 rate-setting valuation, the amortization policy when a program is over 100% funded status will be to amortize the actuarial surplus over Tier 1/Tier 2 payroll using a 20-year amortization basis. The resulting negative UAL rate will offset the normal cost for the program, but not below 0.00%. The results shown below for this December 31, 2020 advisory valuation illustrate that new policy.

	RHIA		RHIPA	
	December 31, 2020	December 31, 2019	December 31, 2020	December 31, 2019
1. Total UAL	($276.6)	($240.3)	($15.6)	$7.4
2. Next year's UAL payment	($19.2)	($38.6)	($1.1)	$5.8
3. Applicable payroll				
a. Combined valuation payroll	$12,042.7	$11,533.7	$3,712.6	$3,479.8
b. Tier 1/ Tier 2 valuation payroll	$3,687.3	$3,873.9	$1,091.8	$1,120.6
c. Applicable payroll *(a. if before December 31, 2020, or if 1. ≥ $0; otherwise b.)*	$3,687.3	$11,533.7	$1,091.8	$3,479.8
4. UAL rate				
a. Preliminary UAL rate *(2. ÷ 3.c.)*	(0.52%)	(0.33%)	(0.10%)	0.17%
b. Normal cost rate	0.05%	0.05%	0.09%	0.11%
c. Final UAL rate *(greater of a. or 0.00% if before December 31, 2020; otherwise greater of a. or -b.)*	**(0.05%)**	**0.00%**	**(0.09%)**	**0.17%**

Amounts in millions

The table below shows the development of the retiree healthcare UAL rates for the various rate pools. For RHIA, combined valuation payroll is shown on a system-wide basis. For RHIPA, valuation payroll is for the State of Oregon and the State Judiciary only. For this exhibit, all independent employers, including State Judiciary, have been grouped together.

	December 31, 2020			
	SLGRP	School Districts	Independent Employers	Retiree Healthcare Total
1. All Employers' Payroll				
a. Combined Valuation Payroll	$7,134.3	$3,821.9	$1,086.5	$12,042.7
b. Tier 1/Tier 2 Valuation Payroll	$2,089.0	$1,250.4	$347.9	$3,687.3
c. RHIA UAL				($276.6)
d. Applicable Payroll *(a. if c. ≥ $0; otherwise b.)*	$2,089.0	$1,250.4	$347.9	$3,687.3
2. RHIPA Employers' Payroll				
a. Combined Valuation Payroll	$3,684.1	$0.0	$28.4	$3,712.6
b. Tier 1/Tier 2 Valuation Payroll	$1,063.3	$0.0	$28.4	$1,091.8
c. RHIPA UAL				($15.6)
d. Applicable Payroll *(a. if c. ≥ $0; otherwise b.)*	$1,063.3	$0.0	$28.4	$1,091.8
3. UAL Rate				
a. RHIA	(0.05%)	(0.05%)	(0.05%)	(0.05%)
b. RHIPA	(0.09%)	0.00%	(0.09%)	(0.09%)
4. Weighted Average UAL Rate				
Combined Valuation Payroll ***(1.d. x 3.a + 2.d. x 3.b.) / 1.a.***	**(0.03%)**	**(0.02%)**	**(0.02%)**	**(0.02%)**
Tier 1/Tier 2 Valuation Payroll ***(1.b. x 3.a + 2.b. x 3.b.) / 1.b.***	**(0.10%)**	**(0.05%)**	**(0.06%)**	**(0.08%)**

Amounts in millions

Calculated Employer Contribution Rate Summary

The following table summarizes the calculated employer contribution rates for the retiree healthcare programs. The normal cost rates are applied against Tier 1/Tier 2 payroll, but the UAL rates are applied against all payroll. For RHIPA, valuation payroll is for the State of Oregon and the State Judiciary only.

Advisory July 1, 2023 Rates Calculated as of December 31, 2020			
	State Agencies and Judiciary	All Other Employers	Retiree Healthcare Total
Normal Cost Rates			
RHIA	0.05%	0.05%	0.05%
RHIPA	0.09%	0.00%	0.03%
Total normal cost rate	**0.14%**	**0.05%**	**0.08%**
UAL Rates			
RHIA	(0.05%)	(0.05%)	(0.05%)
RHIPA	(0.09%)	0.00%	(0.03%)
Total UAL rate	**(0.14%)**	**(0.05%)**	**(0.08%)**
Total retiree healthcare rate	**0.00%**	**0.00%**	**0.00%**

Accounting / ACFR Exhibits

Accounting/ACFR Exhibits

The following information as of December 31, 2020 has been prepared and provided to Oregon PERS for inclusion in the Actuarial Section of the 2021 Annual Comprehensive Financial Report (ACFR):

- Schedule of Active Member Valuation Data
- Schedule of Retirees and Beneficiaries Added to and Removed from Rolls
- Schedules of Funding Progress by Rate Pool
- Solvency Test
- Analysis of Financial Experience
- Schedules of Funding Progress

These exhibits do not reflect GASB Statements No. 74 and 75, which were issued by GASB in June 2015 to replace Statements No. 43 and 45, and govern financial reporting for postemployment benefits other than pensions. GASB 74 governs plan reporting effective for fiscal years beginning after June 15, 2016, while GASB 75 governs employer reporting for fiscal years beginning after June 15, 2017. Milliman provided results for Oregon PERS under GASB 74 and 75 determined as of a June 30, 2020 measurement date in letters dated November 24, 2020 and March 12, 2021, respectively. The results for a measurement date of June 30, 2021 will be provided separately.

These exhibits do not reflect GASB Statements No. 67 and 68, issued by GASB in June 2012 to replace Statements No. 25 and 27. GASB 67 governs plan financial reporting effective for fiscal years beginning after June 15, 2013, while GASB 68 governs employer financial reporting for fiscal years beginning after June 15, 2014. Milliman provided results for Oregon PERS under GASB 67 and 68 determined as of a June 30, 2020 measurement date in letters dated November 24, 2020 and March 12, 2021, respectively. The results for a measurement date of June 30, 202` will be provided separately.

Some employers have made supplemental deposits in addition to their regularly scheduled contributions. These deposits are placed in a side account within the pension trust and used to offset future contribution requirements of that employer. The Schedules of Funding Progress and Solvency Test include side accounts as part of the Plan’s assets since those amounts are in a restricted trust available exclusively for the benefit of plan members.

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 Oregon PERS in completing its financial statements, but any accounting determination should be reviewed by your auditor.

The exhibits are provided on the following pages.

Actuarial Schedules

Schedule of Active Member Valuation Data

Valuation Date	Count	Annual Payroll (Thousands)	Average Annual Pay	% Increase in Average Pay	Number of Participating Employers[1]	
12/31/1993	137,513	$4,466,797	$32,483		N/A	
12/31/1995	141,471	$4,848,058	$34,269	5.5%	N/A	
12/31/1997	143,194	$5,161,562	$36,045	5.2%	N/A	
12/31/1999	151,262	$5,676,606	$37,528	4.1%	N/A	
12/31/2000	156,869	$6,195,862	$39,497	5.2%	N/A	
12/31/2001	160,477	$6,520,225	$40,630	2.9%	N/A	Old Basis
12/31/2001	160,477	$6,253,965	$38,971	---	N/A	New Basis[2]
12/31/2002	159,287	$6,383,475	$40,075	2.8%	N/A	
12/31/2003	153,723	$6,248,550	$40,648	1.4%	N/A	
12/31/2004	142,635	$6,306,447	$44,214	8.8%	806	
12/31/2005 [3]	156,501	$6,791,891	$43,398	(1.8%)	810	
12/31/2006	163,261	$7,326,798	$44,878	3.4%	758	
12/31/2007	167,023	$7,721,819	$46,232	3.0%	760	
12/31/2008	170,569	$8,130,136	$47,665	3.1%	766	
12/31/2009	178,606	$8,512,192	$47,659	(0.0%)	776	
12/31/2010	193,569	$8,750,064	$45,204	(5.2%)	787	
12/31/2011	170,972	$8,550,511	$50,011	10.6%	791	
12/31/2012	167,103	$8,590,879	$51,411	2.8%	798	
12/31/2013	162,185	$8,671,835	$53,469	4.0%	799	
12/31/2014	164,859	$9,115,767	$55,294	3.4%	802	
12/31/2015	168,177	$9,544,132	$56,751	2.6%	804	
12/31/2016	172,483	$9,872,557	$57,238	0.9%	805	
12/31/2017	173,002	$10,098,889	$58,374	2.0%	802	
12/31/2018	176,763	$10,851,980	$61,393	5.2%	798	
12/31/2019	180,757	$11,533,740	$63,808	3.9%	802	
12/31/2020	180,685	$12,042,674	$66,650	4.5%	797	

[1] *Effective in 2006, participating employers are defined for this purpose as any employer with covered payroll during the prior year. In prior years, employers with liabilities but without covered payroll were included as well.*

[2] *Effective in 2001, the Annual Payroll excludes the member pick-up, if any.*

[3] *Effective with the 12/31/2005 valuation, OPSRP members and payroll are included.*

Actuarial Schedules

Schedule of Retirees and Beneficiaries Added to and Removed from Rolls

Annual Allowances are shown in thousands.

Valuation Date	Added to Rolls		Removed from Rolls		Rolls - End of Year		%Increase in Annual Allowances[2]	Average Annual Allowances
	Count	Annual Allowances[1]	Count	Annual Allowances	Count	Annual Allowances		
12/31/1993					60,841	$564,341	27.6%	$9,276
12/31/1995					64,796	$700,171	24.1%	$10,806
12/31/1997					69,624	$919,038	31.3%	$13,200
12/31/1999					82,819	$1,299,380	41.4%	$15,689
12/31/2000					82,458	$1,385,556	6.6%	$16,803
12/31/2001					85,216	$1,514,491	9.3%	$17,772
12/31/2002					89,482	$1,722,865	13.8%	$19,254
12/31/2003					97,777	$2,040,533	8.4%	$20,869
12/31/2004 [3]	6,754	$149,474	2,863	$35,151	101,668	$2,154,856	5.6%	$21,195
12/31/2005 [3]	4,472	$149,127	3,217	$36,784	102,923	$2,267,198	5.2%	$22,028
12/31/2006 [3]	5,060	$151,240	3,263	$39,735	104,720	$2,378,704	4.9%	$22,715
12/31/2007 [3]	5,385	$183,232	3,304	$40,590	106,801	$2,521,345	6.0%	$23,608
12/31/2008 [3]	5,963	$171,484	3,626	$47,062	109,138	$2,645,767	4.9%	$24,242
12/31/2009 [3]	6,377	$226,713	3,374	$46,228	112,141	$2,826,252	6.8%	$25,203
12/31/2010 [3]	6,359	$217,424	3,512	$51,627	114,988	$2,992,048	5.9%	$26,021
12/31/2011 [3]	8,715	$282,098	3,679	$55,633	120,024	$3,218,514	7.6%	$26,816
12/31/2012 [3]	7,023	$235,917	4,875	$59,353	122,172	$3,395,079	5.5%	$27,789
12/31/2013	9,724	$307,551	3,644	$66,607	128,252	$3,636,023	7.1%	$28,351
12/31/2014 [4]	6,910	$235,250	3,524	$66,621	131,638	$3,804,651	4.6%	$28,902
12/31/2015 [4]	8,566	$304,818	3,781	$73,305	136,423	$4,036,165	6.1%	$29,586
12/31/2016 [4]	6,413	$242,372	3,931	$80,903	138,905	$4,197,633	4.0%	$30,219
12/31/2017 [4]	10,075	$385,197	3,878	$83,921	145,102	$4,498,910	7.2%	$31,005
12/31/2018	7,856	$297,542	3,933	$90,107	149,025	$4,706,345	4.6%	$31,581
12/31/2019	8,200	$322,057	4,124	$95,486	153,101	$4,932,915	4.8%	$32,220
12/31/2020	7,747	$320,438	4,587	$112,806	156,261	$5,140,547	4.2%	$32,897

[1] *Additions to annual allowances reflect the combined effects of new retirements and COLA increases since the previous valuation date.*

[2] *Since last valuation date.*

[3] *Annual allowances reflect estimated adjustments to retiree benefits due to the implementation of the Strunk v. PERB, et al. and City of Eugene v. State of Oregon, PERB, et al. decisions.*

[4] *Annual allowances reflect estimated adjustments to retiree benefits for the Moro v. State of Oregon decision for records that were not already adjusted in the data provided.*

Actuarial Schedules

Schedule of Funding Progress by Rate Pool

The liabilities and assets resulting from the last six actuarial valuations are as follows *(dollar amounts in millions)*

Actuarial Valuation Date	Actuarial Value of Assets[1,2] (a)	Actuarial Accrued Liability (AAL)[2] (b)	Unfunded AAL (UAAL) (b-a)	Funded Ratio (a/b)	Covered Payroll[3] (c)	UAAL as a % of Covered Payroll ((b-a)/c)
Tier 1/Tier 2 State & Local Government Rate Pool						
12/31/2015 [4]	$30,185.3	$38,396.8	$8,211.5	78.6%	$2,691.8	305.1%
12/31/2016	$30,417.6	$40,351.3	$9,933.7	75.4%	$2,546.7	390.1%
12/31/2017 [4]	$33,366.0	$42,150.7	$8,784.7	79.2%	$2,410.6	364.4%
12/31/2018	$31,798.9	$43,149.3	$11,350.4	73.7%	$2,299.5	493.6%
12/31/2019 [4]	$34,060.0	$44,122.1	$10,062.1	77.2%	$2,183.5	460.8%
12/31/2020	$34,408.2	$46,382.2	$11,974.0	74.2%	$2,089.0	573.2%
Tier 1/Tier 2 School District Rate Pool						
12/31/2015	$22,728.9	$27,670.7	$4,941.8	82.1%	$1,578.8	313.0%
12/31/2016	$22,870.2	$29,152.2	$6,282.0	78.5%	$1,532.7	409.9%
12/31/2017	$24,934.4	$29,677.4	$4,743.1	84.0%	$1,443.7	328.5%
12/31/2018	$23,557.9	$29,898.4	$6,340.6	78.8%	$1,401.2	452.5%
12/31/2019	$25,091.5	$30,274.5	$5,183.0	82.9%	$1,330.2	389.6%
12/31/2020	$25,345.4	$31,486.0	$6,140.6	80.5%	$1,250.4	491.1%
Tier 1/Tier 2 Independent Employers and Judiciary						
12/31/2015 [4]	$4,807.6	$6,327.1	$1,519.5	76.0%	$460.3	330.1%
12/31/2016	$4,856.6	$6,690.8	$1,834.3	72.6%	$437.3	419.5%
12/31/2017 [4]	$5,018.2	$6,536.3	$1,518.1	76.8%	$392.6	386.7%
12/31/2018	$4,756.2	$6,736.3	$1,980.1	70.6%	$375.4	527.5%
12/31/2019 [4]	$5,061.3	$6,916.0	$1,854.7	73.2%	$360.3	514.8%
12/31/2020	$5,155.0	$7,373.8	$2,218.8	69.9%	$347.9	637.8%
OPSRP Rate Pool						
12/31/2015	$2,389.1	$3,742.5	$1,353.5	63.8%	$4,813.3	28.1%
12/31/2016	$3,021.4	$4,717.0	$1,695.6	64.1%	$5,355.8	31.7%
12/31/2017	$4,116.5	$5,634.7	$1,518.2	73.1%	$5,852.0	25.9%
12/31/2018	$4,783.0	$6,738.0	$1,955.0	71.0%	$6,775.9	28.9%
12/31/2019	$6,190.4	$8,082.2	$1,891.8	76.6%	$7,659.8	24.7%
12/31/2019	$7,548.8	$10,008.1	$2,459.3	75.4%	$8,355.4	29.4%
Postemployment Healthcare Benefits - Retirement Health Insurance Account						
12/31/2015	$419.3	$465.6	$46.3	90.0%	$4,730.8	1.0%
12/31/2016	$465.0	$463.7	($1.3)	100.3%	$4,516.7	(0.0%)
12/31/2017	$553.3	$437.6	($115.7)	126.4%	$4,246.9	(2.7%)
12/31/2018	$570.7	$411.7	($159.1)	138.6%	$4,076.1	(3.9%)
12/31/2019	$644.1	$403.9	($240.3)	159.5%	$3,873.9	(6.2%)
12/31/2020	$660.2	$383.6	($276.6)	172.1%	$3,687.3	(7.5%)
Postemployment Healthcare Benefits - Retiree Health Insurance Premium Account						
12/31/2015	$11.2	$67.8	$56.6	16.5%	$1,339.4	4.2%
12/31/2016	$19.1	$67.9	$48.8	28.1%	$1,276.0	3.8%
12/31/2017	$29.8	$69.4	$39.5	43.0%	$1,212.2	3.3%
12/31/2018	$38.5	$62.7	$24.3	61.3%	$1,159.5	2.1%
12/31/2019	$51.9	$59.3	$7.4	87.5%	$1,120.6	0.7%
12/31/2020	$63.6	$48.0	($15.6)	132.6%	$1,091.8	(1.4%)

Notes:

[1] *Side account assets are included with Tier 1/Tier 2 assets.*

[2] *Excludes effect of Multnomah Fire District (net UAAL of $129 million as of 12/31/2020).*

[3] *Covered payroll shown is for members of the rate pool benefiting from the specified program. For example, Tier 1/Tier 2 School District payroll is only payroll for Tier 1/Tier 2 members and excludes OPSRP. However, UAL is amortized using combined Tier 1/Tier 2 and OPSRP payroll.*

[4] *Reflects the transfer in assets and liabilities for new employers that joined the SLGRP effective January 1 following the valuation date.*

Actuarial Schedules

Solvency Test

Pension and Retiree Healthcare Plans Combined

(dollar amounts in millions)

The schedule below shows results from the defined benefit pension plans and retiree healthcare plans on a consolidated basis. Results are also shown separately for each program: Tier 1/Tier 2, OPSRP, and retiree healthcare. Note that the defined benefit pension plan constitutes over 99% of the consolidated assets and liabilities.

	Actuarial Accrued Liability[1]				Portion of Actuarial Accrued Liabilities Covered by Assets		
Valuation Date[2]	Active Member Contributions (1)	Retired Members and Beneficiaries (2)	Other Members (3)	Valuation Assets[1,3]	(1)	(2)	(3)
12/31/2012 [4]	$7,704.9	$36,759.3	$16,473.1	$55,080.1	100%	100%	64%
12/31/2013 [5]	$7,120.1	$39,531.5	$16,476.8	$60,372.9	100%	100%	83%
12/31/2014 [6]	$6,950.4	$46,576.7	$20,470.8	$61,798.3	100%	100%	40%
12/31/2015 [5]	$6,476.8	$49,158.7	$21,094.5	$60,430.6	100%	100%	23%
12/31/2016	$6,168.1	$52,232.7	$23,101.0	$61,543.2	100%	100%	14%
12/31/2017 [5]	$5,585.9	$55,636.9	$23,340.3	$67,909.2	100%	100%	29%
12/31/2018	$5,153.6	$57,297.7	$24,597.8	$65,411.5	100%	100%	12%
12/31/2019 [5]	$4,907.4	$59,461.0	$25,540.5	$71,008.3	100%	100%	26%
12/31/2020	$4,517.1	$63,068.9	$28,146.0	$73,102.1	100%	100%	20%

[1] *Includes effect of Multnomah Fire District (net UAAL of $129 million as of 12/31/2020).*

[2] *An extensive revision of the actuarial assumptions occurs prior to each even-year valuation; therefore, the figures are not directly comparable.*

[3] *Includes the value of UAL Lump Sum Side Accounts.*

[4] *The 12/31/2012 valuation reflects the benefit changes enacted by the 2013 Oregon Legislature in Senate Bills 822 and 861, as well as a change in cost method to Entry Age Normal.*

[5] *Reflects the transfer in assets and liabilities for new employers that joined the SLGRP effective January 1 following the valuation date.*

[6] *The 12/31/2014 valuation reflects benefit changes from the Oregon Supreme Court's ruling in Moro v. State of Oregon, which overturned portions of Senate Bills 822 and 861.*

Actuarial Schedules

Solvency Test

Tier 1/Tier 2 Pension

(dollar amounts in millions)

Valuation Date[2]	Actuarial Accrued Liability[1] Active Member Contributions (1)	Retired Members and Beneficiaries (2)	Other Members (3)	Valuation Assets[1,3]	Portion of Actuarial Accrued Liabilities Covered by Assets (1)	(2)	(3)
12/31/2012 [4]	$7,704.9	$36,377.3	$14,527.4	$53,594.0	100%	100%	65%
12/31/2013 [5]	$7,120.1	$39,116.2	$14,114.1	$58,384.0	100%	100%	86%
12/31/2014 [6]	$6,950.4	$46,113.5	$17,331.0	$59,370.6	100%	100%	36%
12/31/2015 [5]	$6,476.8	$48,641.5	$17,335.7	$57,611.0	100%	100%	14%
12/31/2016	$6,168.1	$51,655.5	$18,429.6	$58,037.6	100%	100%	1%
12/31/2017 [5]	$5,585.9	$54,967.4	$17,868.1	$63,209.7	100%	100%	15%
12/31/2018	$5,153.6	$56,534.9	$18,148.3	$60,019.3	100%	97%	0%
12/31/2019 [5]	$4,907.4	$58,567.8	$17,888.4	$64,121.8	100%	100%	4%
12/31/2020	$4,517.1	$62,012.8	$18,762.4	$64,829.5	100%	97%	0%

[1] *Includes effect of Multnomah Fire District (net UAAL of $129 million as of 12/31/2020).*

[2] *An extensive revision of the actuarial assumptions occurs prior to each even-year valuation; therefore, the figures are not directly comparable.*

[3] *Includes the value of UAL Lump Sum Side Accounts.*

[4] *The 12/31/2012 valuation reflects the benefit changes enacted by the 2013 Oregon Legislature in Senate Bills 822 and 861, as well as a change in cost method to Entry Age Normal.*

[5] *Reflects the transfer in assets and liabilities for new employers that joined the SLGRP effective January 1 following the valuation date.*

[6] *The 12/31/2014 valuation reflects benefit changes from the Oregon Supreme Court's ruling in Moro v. State of Oregon, which overturned portions of Senate Bills 822 and 861.*

OPSRP Pension

(dollar amounts in millions)

Valuation Date[1]	Actuarial Accrued Liability Active Member Contributions (1)	Retired Members and Beneficiaries (2)	Other Members (3)	Valuation Assets	Portion of Actuarial Accrued Liabilities Covered by Assets (1)	(2)	(3)
12/31/2012 [2]	$0.0	$28.6	$1,766.9	$1,190.0	100%	100%	66%
12/31/2013	$0.0	$51.2	$2,192.1	$1,630.2	100%	100%	72%
12/31/2014 [3]	$0.0	$92.4	$2,971.6	$2,024.6	100%	100%	65%
12/31/2015	$0.0	$144.6	$3,597.9	$2,389.1	100%	100%	62%
12/31/2016	$0.0	$201.1	$4,515.9	$3,021.4	100%	100%	62%
12/31/2017	$0.0	$310.1	$5,324.5	$4,116.5	100%	100%	71%
12/31/2018	$0.0	$419.0	$6,318.9	$4,783.0	100%	100%	69%
12/31/2019	$0.0	$554.3	$7,527.9	$6,190.4	100%	100%	75%
12/31/2020	$0.0	$726.1	$9,282.0	$7,548.8	100%	100%	74%

[1] *An extensive revision of the actuarial assumptions occurs prior to each even-year valuation; therefore, the figures are not directly comparable.*

[2] *The 12/31/2012 valuation reflects the benefit changes enacted by the 2013 Oregon Legislature in Senate Bills 822 and 861, as well as a change in cost method to Entry Age Normal.*

[3] *The 12/31/2014 valuation reflects benefit changes from the Oregon Supreme Court's ruling in Moro v. State of Oregon, which overturned portions of Senate Bills 822 and 861.*

Retiree Healthcare (RHIA and RHIPA)

(dollar amounts in millions)

Retiree Health Insurance Account (RHIA)							
	Actuarial Accrued Liability				Portion of Actuarial Accrued Liabilities Covered by Assets		
Valuation Date[1]	Active Member Contributions (1)	Retired Members and Beneficiaries (2)	Other Members (3)	Valuation Assets	(1)	(2)	(3)
12/31/2012 [2]	$0.0	$338.3	$133.5	$291.6	100%	86%	0%
12/31/2013	$0.0	$348.0	$125.6	$353.5	100%	100%	4%
12/31/2014	$0.0	$355.1	$113.3	$395.9	100%	100%	36%
12/31/2015	$0.0	$357.7	$107.9	$419.3	100%	100%	57%
12/31/2016	$0.0	$361.7	$102.0	$465.0	100%	100%	101%
12/31/2017	$0.0	$343.9	$93.7	$553.3	100%	100%	224%
12/31/2018	$0.0	$329.8	$81.8	$570.7	100%	100%	294%
12/31/2019	$0.0	$326.9	$77.0	$644.1	100%	100%	412%
12/31/2020	$0.0	$319.3	$64.3	$660.2	100%	100%	530%

[1] *An extensive revision of the actuarial assumptions occurs prior to each even-year valuation; therefore, the figures are not directly comparable.*

[2] *The 12/31/2012 valuation reflects a change in cost method to Entry Age Normal.*

Retiree Health Insurance Premium Account (RHIPA)							
	Actuarial Accrued Liability				Portion of Actuarial Accrued Liabilities Covered by Assets		
Valuation Date[1]	Active Member Contributions (1)	Retired Members and Beneficiaries (2)	Other Members (3)	Valuation Assets	(1)	(2)	(3)
12/31/2012 [2]	$0.0	$15.1	$45.3	$4.4	100%	29%	0%
12/31/2013	$0.0	$16.1	$45.1	$5.2	100%	33%	0%
12/31/2014	$0.0	$15.7	$54.9	$7.2	100%	46%	0%
12/31/2015	$0.0	$14.9	$52.9	$11.2	100%	75%	0%
12/31/2016	$0.0	$14.4	$53.5	$19.1	100%	100%	9%
12/31/2017	$0.0	$14.4	$53.5	$19.1	100%	100%	9%
12/31/2018	$0.0	$14.0	$48.8	$38.5	100%	100%	50%
12/31/2019	$0.0	$12.1	$47.2	$51.9	100%	100%	84%
12/31/2020	$0.0	$10.8	$37.2	$63.6	100%	100%	142%

[1] *An extensive revision of the actuarial assumptions occurs prior to each even-year valuation; therefore, the figures are not directly comparable.*

[2] *The 12/31/2012 valuation reflects a change in cost method to Entry Age Normal.*

Actuarial Schedules

Analysis of Financial Experience

The schedule below shows results from the defined benefit pension plans and retiree healthcare plans on a consolidated basis. Results are also shown separately for each program on subsequent pages.

Gains and Losses in Unfunded Accrued Liability Resulting from Differences Between Assumed Experience and Actual Experience and Assumption Changes

(dollar amounts in millions)

Pension and Retiree Healthcare Plans	$ Gain (or Loss) for Year 2020	$ Gain (or Loss) for Year 2019
Type of Activity		
Retirements from Active Status	($52.9)	($119.4)
Active Mortality and Withdrawal	(49.7)	(38.4)
Pay Increases	12.1	(213.4)
Contributions	230.3	111.8
Interest Crediting Experience	(20.3)	(85.7)
Investment Income	1.3	3,547.4
Retirement, Mortality and Lump Sums from Inactive Status	7.4	7.0
Retiree and Beneficiary Mortality	95.7	5.1
New Entrants[1]	(89.6)	(110.3)
Other	104.5	79.1
Gain (or Loss) During Year from Financial Experience	**$238.9**	**$3,183.2**
Non-Recurring Items		
Assumption Changes	(3,249.0)	0.0
Plan Changes	(198.7)	0.0
Composite Gain (or Loss) During Year	**($3,208.8)**	**$3,183.2**

[1] *Accrued liability associated with new entrants is shown. For a full assessment of the new entrant effect on UAL, this would need to be combined with contributions associated with new entrants.*

The schedules below show results from the Tier 1/Tier 2 and OPSRP pension programs separately.

Gains and Losses in Unfunded Accrued Liability Resulting from Differences between Assumed Experience and Actual Experience and Assumption Changes

(dollar amounts in millions)

Tier 1/Tier 2 Pension Program	$ Gain (or Loss) for Year	
	2020	2019
Type of Activity		
Retirements from Active Status	($52.6)	($119.0)
Active Mortality and Withdrawal	(18.6)	(14.6)
Pay Increases	4.1	(75.5)
Contributions	177.9	60.8
Interest Crediting Experience	(20.3)	(85.7)
Investment Income	(41.8)	3,207.6
Retirement, Mortality and Lump Sums from Inactive Status	5.5	4.4
Retiree and Beneficiary Mortality	93.6	3.5
New Entrants	(1.4)	(4.3)
Other	54.7	68.4
Gain (or Loss) During Year from Financial Experience	**$201.3**	**$3,045.5**
Non-Recurring Items		
Assumption Changes	(2,722.2)	0.0
Plan Changes	(133.6)	0.0
Composite Gain (or Loss) During Year	**($2,654.6)**	**$3,045.5**

OPSRP Pension Program	$ Gain (or Loss) for Year	
	2020	2019
Type of Activity		
Retirements from Active Status	($0.4)	($0.3)
Active Mortality and Withdrawal	($31.1)	(23.8)
Pay Increases	$8.0	(137.9)
Contributions	$51.0	45.7
Investment Income	$42.0	301.8
Retirement, Mortality and Lump Sums from Inactive Status	$1.9	2.5
Retiree and Beneficiary Mortality	$2.0	1.6
New Entrants[1]	($88.2)	(106.0)
Other	$34.3	(0.5)
Gain (or Loss) During Year from Financial Experience	**$19.6**	**$83.2**
Non-Recurring Items		
Assumption Changes	($542.7)	0.0
Plan Changes	($65.0)	0.0
Composite Gain (or Loss) During Year	**($588.1)**	**$83.2**

Accrued liability associated with new entrants is shown. For a full assessment of the new entrant effect on UAL, this would need to be combined with contributions associated with new entrants.

The schedule below shows results from the retiree healthcare programs.

Gains and Losses in Unfunded Accrued Liability Resulting from Differences Between Assumed Experience and Actual Experience and Assumption Changes

(dollar amounts in millions)

	$ Gain (or Loss) for Year			
	RHIA		RHIPA	
Retiree Healthcare Programs	2020	2019	2020	2019
Type of Activity				
Contributions	$0.7	$4.3	$0.6	$1.0
Investment Income	0.7	35.7	0.5	2.3
Other	11.5	6.4	4.0	4.8
Gain (or Loss) During Year from Financial Experience	**$12.9**	**$46.4**	**$5.1**	**$8.1**
Non-Recurring Items				
Assumption Changes	7.1	0.0	8.9	0.0
Plan Changes	0.0	0.0	0.0	0.0
Composite Gain (or Loss) During Year	**$20.0**	**$46.4**	**$14.0**	**$8.1**

Actuarial Schedules

Schedules of Funding Progress

(dollar amounts in millions)

Actuarial Valuation Date	Actuarial Value of Assets[1] (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (UAAL) (b-a)	Funded Ratio (a/b)	Covered Payroll (c)	UAAL as a % of Covered Payroll ((b-a)/c)
Pension Benefits - Tier 1/Tier 2 and OPSRP[2]						
12/31/2011 [3]	$50,168.2	$61,198.4	$11,030.2	82.0%	$8,550.5	129.0%
12/31/2012 [4]	$54,784.1	$60,405.2	$5,621.1	90.7%	$8,590.9	65.4%
12/31/2013 [3]	$60,014.1	$62,593.6	$2,579.5	95.9%	$8,671.8	29.7%
12/31/2014 [5]	$61,395.2	$73,458.9	$12,063.7	83.6%	$9,115.8	132.3%
12/31/2015 [3]	$60,000.1	$76,196.6	$16,196.5	78.7%	$9,544.1	169.7%
12/31/2016	$61,059.0	$80,970.3	$19,911.2	75.4%	$9,872.6	201.7%
12/31/2017 [3]	$67,326.1	$84,056.1	$16,730.0	80.1%	$10,098.9	165.7%
12/31/2018	$64,802.3	$86,574.7	$21,772.4	74.9%	$10,852.0	200.6%
12/31/2019 [3]	$70,312.3	$89,445.7	$19,133.5	78.6%	$11,533.7	165.9%
12/31/2020	$72,378.3	$95,300.4	$22,922.1	75.9%	$12,042.7	190.3%
Postemployment Healthcare Benefits - Retirement Health Insurance Account						
12/31/2011	$239.6	$461.1	$221.5	52.0%	$8,550.5	2.6%
12/31/2012	$291.6	$471.8	$180.2	61.8%	$8,590.9	2.1%
12/31/2013	$353.5	$473.6	$120.0	74.7%	$8,671.8	1.4%
12/31/2014	$395.9	$468.4	$72.5	84.5%	$9,115.8	0.8%
12/31/2015	$419.3	$465.6	$46.3	90.0%	$9,544.1	0.5%
12/31/2016	$465.0	$463.7	($1.3)	100.3%	$9,872.6	(0.0%)
12/31/2017	$553.3	$437.6	($115.7)	126.4%	$10,098.9	(1.1%)
12/31/2018	$570.7	$411.7	($159.1)	138.6%	$10,852.0	(1.5%)
12/31/2019	$644.1	$403.9	($240.3)	159.5%	$11,533.7	(2.1%)
12/31/2020	$660.2	$383.6	($276.6)	172.1%	$12,042.7	(2.3%)
Postemployment Healthcare Benefits - Retiree Health Insurance Premium Account						
12/31/2011	$4.5	$34.4	$29.9	13.2%	$2,376.9	1.3%
12/31/2012	$4.4	$60.3	$55.9	7.4%	$2,432.4	2.3%
12/31/2013	$5.2	$61.2	$55.9	8.6%	$2,531.5	2.2%
12/31/2014	$7.2	$70.5	$63.3	10.2%	$2,718.9	2.3%
12/31/2015	$11.2	$67.8	$56.6	16.5%	$2,831.8	2.0%
12/31/2016	$19.1	$67.9	$48.8	28.1%	$2,881.4	1.7%
12/31/2017	$29.8	$69.4	$39.5	43.0%	$2,984.5	1.3%
12/31/2018	$38.5	$62.7	$24.3	61.3%	$3,211.6	0.8%
12/31/2019	$51.9	$59.3	$7.4	87.5%	$3,479.8	0.2%
12/31/2020	$63.6	$48.0	($15.6)	132.6%	$3,712.6	(0.4%)

Notes:

[1] *Side account assets are included with pension assets.*

[2] *Includes UAAL for Multnomah Fire District ($129 million as of 12/31/2020).*

[3] *Reflects the transfer in assets and liabilities for new employers that joined the SLGRP effective January 1 following the valuation date.*

[4] *The 12/31/2012 valuation reflects the benefit changes enacted by the 2013 Oregon Legislature in Senate Bills 822 and 861, as well as a change in cost method to Entry Age Normal.*

[5] *The 12/31/2014 valuation reflects benefit changes from the Oregon Supreme Court's ruling in Moro v. State of Oregon, which overturned portions of Senate Bills 822 and 861.*

Data Exhibits

This valuation is based upon the membership of the System as of December 31, 2020.

System Wide Data Exhibits

Valuation Pay and Census Exhibit

The following tables illustrate the breakdown of member counts and valuation payroll for the SLGRP, School District Pool, and independent employers.

SLGRP

	General Service	Police & Fire	Total
Tier 1	$631.3	$100.9	$732.2
Tier 2	1,048.6	308.2	1,356.8
Tier 1/Tier 2 Valuation Payroll	1,679.9	409.1	2,089.0
OPSRP Valuation Payroll	4,219.3	826.0	5,045.3
Combined Valuation Payroll	**$5,899.2**	**$1,235.1**	**$7,134.3**

Amounts in millions

	December 31				
	2020				2019
	Tier 1	Tier 2	OPSRP	Total	Total
Active Members in the Pool					
General Service	6,912	12,462	61,883	81,257	81,222
Police & Fire	911	2,906	9,349	13,166	13,054
Total	7,823	15,368	71,232	94,423	94,276
Average Age	57.7	52.9	43.4	46.1	46.1
Average Service	27.8	19.9	7.1	10.9	10.8
Average prior year Covered Salary	$93,399	$87,173	$66,204	$71,870	$69,546
Active Members outside the Pool with previous Segments in the Pool					
General Service	1,644	2,143		3,787	4,219
Police & Fire	153	316		469	516
Total	1,797	2,459		4,256	4,735
Average Age	56.4	50.6		53.0	52.7
Average Service in the Pool	3.2	3.1		3.2	3.0
Inactive Members[1]					
General Service	6,371	7,406	12,255	26,032	25,608
Police & Fire	472	652	1,076	2,200	2,057
Total	6,843	8,058	13,331	28,232	27,665
Average Age	60.7	54.9	47.8	52.9	52.9
Average Monthly Benefit	$2,149	$897	$508	$1,017	$1,022
Retired Members and Beneficiaries[1]					
General Service	69,341	9,757	4,539	83,637	81,880
Police & Fire	10,334	1,531	443	12,308	11,858
Total	79,675	11,288	4,982	95,945	93,738
Average Age	72.9	68.8	68.0	72.2	71.8
Average Monthly Benefit	$2,621	$1,237	$633	$2,355	$2,302
Grand Total Number of Members	**96,138**	**37,173**	**89,545**	**222,856**	**220,414**

[1] *In these exhibits, Inactives and Retirees are counted by members with service in each rate pool. As a result, individual members with service segments in more than one rate pool will be included in more than one exhibit.*

School District Pool

	General Service	Police & Fire	Total
Tier 1	$408.5	$0.9	$409.4
Tier 2	839.2	1.8	841.0
Tier 1/Tier 2 Valuation Payroll	1,247.7	2.7	1,250.4
OPSRP Valuation Payroll	2,569.3	2.2	2,571.4
Combined Valuation Payroll	**$3,817.0**	**$4.9**	**$3,821.8**

Amounts in millions

	December 31				
	2020				2019
	Tier 1	Tier 2	OPSRP	Total	Total
Active Members					
General Service	5,769	12,401	54,275	72,445	72,771
Police & Fire	11	21	32	64	70
Total	5,780	12,422	54,307	72,509	72,841
Average Age	56.9	52.3	43.4	46.0	46.0
Average Service	26.8	19.4	7.2	10.9	10.7
Average prior year Covered Salary	$71,498	$67,822	$44,785	$50,861	$49,981
Active Members outside the Pool with previous Segments in the Pool					
General Service	741	1,152		1,893	2,074
Police & Fire	4	8		12	12
Total	745	1,160		1,905	2,086
Average Age	57.3	51.7		53.9	53.5
Average Service	6.1	4.8		5.3	5.1
Inactive Members[1]					
General Service	3,972	5,985	9,182	19,139	18,472
Police & Fire	8	19	10	37	33
Total	3,980	6,004	9,192	19,176	18,505
Average Age	61.6	54.8	49.1	53.5	53.5
Average Monthly Benefit	$1,839	$679	$373	$773	$778
Retired Members and Beneficiaries[1]					
General Service	63,062	6,936	2,274	72,272	71,241
Police & Fire	199	42	10	251	243
Total	63,261	6,978	2,284	72,523	71,484
Average Age	74.1	68.0	67.9	73.3	73.0
Average Monthly Benefit	$2,539	$911	$468	$2,317	$2,277
Grand Total Number of Members	**73,766**	**26,564**	**65,783**	**166,113**	**164,916**

[1] *In these exhibits, Inactives and Retirees are counted by members with service in each rate pool. As a result, individual members with service segments in more than one rate pool will be included in more than one exhibit.*

Independents

	General Service	Police & Fire	Total
Tier 1	$91.3	$30.9	$122.3
Tier 2	129.9	95.7	225.6
Tier 1/Tier 2 Valuation Payroll	221.3	126.6	347.9
OPSRP Valuation Payroll	534.2	204.4	738.6
Combined Valuation Payroll	**$755.5**	**$331.0**	**$1,086.5**

Amounts in millions

	December 31				
	2020				2019
	Tier 1	Tier 2	OPSRP	Total	Total
Active Members					
General Service	887	1,568	8,113	10,568	10,444
Police & Fire	237	798	2,150	3,185	3,196
Total	1,124	2,366	10,263	13,753	13,640
Average Age	56.2	51.8	42.0	44.8	44.8
Average Service	24.7	19.9	6.9	10.6	10.5
Average prior year Covered Salary	$111,059	$96,183	$67,288	$75,836	$72,895
Active Members outside the Pool with previous Segments in the Pool					
General Service	621	1,046		1,667	1,783
Police & Fire	141	272		413	463
Total	762	1,318		2,080	2,246
Average Age	56.0	50.6		52.6	52.1
Average Service	4.8	4.4		4.6	4.5
Inactive Members[1]					
General Service	794	1,094	1,368	3,256	3,220
Police & Fire	153	180	173	506	484
Total	947	1,274	1,541	3,762	3,704
Average Age	59.8	54.5	48.4	53.3	53.4
Average Monthly Benefit	$1,648	$744	$510	$876	$857
Retired Members and Beneficiaries[1]					
General Service	9,633	1,687	561	11,881	11,542
Police & Fire	3,422	257	51	3,730	3,601
Total	13,055	1,944	612	15,611	15,143
Average Age	71.4	68.0	67.9	70.8	70.4
Average Monthly Benefit	$2,448	$1,040	$633	$2,201	$2,150
Grand Total Number of Members	**15,888**	**6,902**	**12,416**	**35,206**	**34,733**

[1] In these exhibits, Inactives and Retirees are counted by members with service in each rate pool. As a result, individual members with service segments in more than one rate pool will be included in more than one exhibit.

Total

	General Service	Police & Fire	Total
Tier 1	$1,131.1	$132.7	$1,263.8
Tier 2	2,017.8	405.6	2,423.4
Tier 1/Tier 2 Valuation Payroll	3,148.9	538.4	3,687.3
OPSRP Valuation Payroll	7,322.8	1,032.6	8,355.3
Combined Valuation Payroll	**$10,471.7**	**$1,570.9**	**$12,042.6**

Amounts in millions

	December 31				
	2020				2019
	Tier 1	Tier 2	OPSRP	Total	Total
Active Members					
General Service	13,568	26,431	124,271	164,270	164,437
Police & Fire	1,159	3,725	11,531	16,415	16,320
Total	14,727	30,156	135,802	180,685	180,757
Average Age	57.3	52.6	43.3	46.0	46.0
Average Service	27.2	19.7	7.1	10.8	10.7
Average prior year Covered Salary	$86,151	$79,909	$57,721	$63,741	$61,914
Inactive Members[1]					
General Service	11,137	14,485	22,805	48,427	47,300
Police & Fire	633	851	1,259	2,743	2,574
Total	11,770	15,336	24,064	51,170	49,874
Average Age	60.9	54.8	48.3	53.2	53.2
Average Monthly Benefit	$2,004	$799	$456	$915	$919
Retired Members and Beneficiaries[1]					
General Service	142,036	18,380	7,374	167,790	164,663
Police & Fire	13,955	1,830	504	16,289	15,702
Total	155,991	20,210	7,878	184,079	180,365
Average Age	73.2	68.4	68.0	72.5	72.2
Average Monthly Benefit	$2,573	$1,106	$585	$2,327	$2,279
Grand Total Number of Members	**182,488**	**65,702**	**167,744**	**415,934**	**410,996**

[1] *In these exhibits, Inactives and Retirees are counted by members with service in each rate pool. As a result, individual members with service segments in more than one rate pool are counted more than once in this exhibit.*

Age/Service and Prior Year Covered Payroll by Tier and Job Class

Tier 1 General Service Active Members

		0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20		0	0	0	0	0	0	0	0	0	**0**
	$	0	0	0	0	0	0	0	0	0	**0**
20-24		0	0	0	0	0	0	0	0	0	**0**
	$	0	0	0	0	0	0	0	0	0	**0**
25-29		0	0	0	0	0	0	0	0	0	**0**
	$	0	0	0	0	0	0	0	0	0	**0**
30-34		0	0	0	0	0	0	0	0	0	**0**
	$	0	0	0	0	0	0	0	0	0	**0**
35-39		2	0	0	0	0	0	0	0	0	**2**
	$	148,533	0	0	0	0	0	0	0	0	**148,533**
40-44		12	1	1	2	20	8	0	0	0	**44**
	$	151,340	158,384	158,384	107,824	78,887	71,639	0	0	0	**102,258**
45-49		13	13	21	40	353	321	11	0	0	**772**
	$	158,246	88,548	60,729	71,451	84,781	88,026	96,548	0	0	**86,253**
50-54		15	45	72	125	850	2,060	308	4	0	**3,479**
	$	155,881	81,044	77,729	71,210	85,364	89,352	87,067	82,113	0	**87,454**
55-59		11	38	87	140	693	2,146	1,101	151	8	**4,375**
	$	146,687	64,115	73,139	72,522	79,518	85,876	87,460	87,184	78,211	**84,582**
60-64		3	24	76	89	467	1,518	844	283	64	**3,368**
	$	158,384	80,072	75,420	68,692	69,723	76,907	83,897	87,401	79,212	**78,432**
65-69		2	5	17	45	146	536	292	127	64	**1,234**
	$	143,970	108,855	85,565	94,600	73,119	76,940	83,922	97,216	86,403	**81,718**
70-74		1	1	6	4	30	83	55	28	22	**230**
	$	158,384	168,101	121,377	102,502	57,774	85,194	92,006	109,761	102,007	**89,769**
75+		0	0	1	1	7	26	11	7	11	**64**
	$	0	0	84,573	67,325	63,264	61,185	77,540	89,679	117,122	**77,415**
Total		**59**	**127**	**281**	**446**	**2,566**	**6,698**	**2,622**	**600**	**169**	**13,568**
	$	**153,281**	**78,953**	**76,130**	**73,937**	**79,728**	**84,179**	**85,965**	**90,458**	**87,323**	**83,747**

Tier 2 General Service Active Members

		0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20		0	0	0	0	0	0	0	0	0	**0**
	$	0	0	0	0	0	0	0	0	0	**0**
20-24		0	0	0	0	0	0	0	0	0	**0**
	$	0	0	0	0	0	0	0	0	0	**0**
25-29		0	0	0	0	0	0	0	0	0	**0**
	$	0	0	0	0	0	0	0	0	0	**0**
30-34		0	0	0	1	0	0	0	0	0	**1**
	$	0	0	0	94,725	0	0	0	0	0	**94,725**
35-39		0	7	25	198	18	0	0	0	0	**248**
	$	0	49,866	75,079	68,903	77,488	0	0	0	0	**69,611**
40-44		5	60	254	2,294	613	0	0	0	0	**3,226**
	$	63,572	37,465	66,559	82,012	79,715	0	0	0	0	**79,502**
45-49		3	97	304	2,788	2,923	0	0	0	0	**6,115**
	$	23,575	48,265	65,102	81,613	85,672	0	0	0	0	**82,175**
50-54		5	70	210	2,530	3,097	0	0	0	0	**5,912**
	$	42,882	56,151	66,382	78,669	82,874	0	0	0	0	**80,138**
55-59		0	38	120	2,282	2,776	0	0	0	0	**5,216**
	$	0	50,954	64,909	70,803	75,256	0	0	0	0	**72,892**
60-64		0	31	78	1,691	2,211	0	0	0	0	**4,011**
	$	0	39,270	60,671	64,940	68,303	0	0	0	0	**66,512**
65-69		5	11	33	628	703	0	0	0	0	**1,380**
	$	18,591	47,744	67,065	65,556	68,863	0	0	0	0	**66,965**
70-74		1	8	8	115	116	0	0	0	0	**248**
	$	34,862	35,783	51,171	60,985	62,933	0	0	0	0	**60,661**
75+		1	1	3	42	27	0	0	0	0	**74**
	$	48,441	24,258	51,767	54,960	52,921	0	0	0	0	**53,584**
Total		**20**	**323**	**1,035**	**12,569**	**12,484**	**0**	**0**	**0**	**0**	**26,431**
	$	**38,963**	**47,054**	**65,520**	**75,608**	**78,053**	**0**	**0**	**0**	**0**	**75,991**

Tier 1 Police and Fire Active Members

		0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20		0	0	0	0	0	0	0	0	0	**0**
	$	0	0	0	0	0	0	0	0	0	**0**
20-24		0	0	0	0	0	0	0	0	0	**0**
	$	0	0	0	0	0	0	0	0	0	**0**
25-29		0	0	0	0	0	0	0	0	0	**0**
	$	0	0	0	0	0	0	0	0	0	**0**
30-34		0	0	0	0	0	0	0	0	0	**0**
	$	0	0	0	0	0	0	0	0	0	**0**
35-39		0	0	0	0	0	0	0	0	0	**0**
	$	0	0	0	0	0	0	0	0	0	**0**
40-44		0	0	0	0	2	2	0	0	0	**4**
	$	0	0	0	0	124,612	98,227	0	0	0	**111,419**
45-49		0	1	0	6	89	129	1	0	0	**226**
	$	0	131,765	0	82,062	121,881	129,045	74,683	0	0	**124,747**
50-54		0	0	2	8	131	328	31	0	0	**500**
	$	0	0	90,339	95,711	112,308	120,986	114,514	0	0	**117,784**
55-59		0	4	2	6	29	135	92	7	0	**275**
	$	0	109,918	60,678	79,738	120,871	112,734	106,948	80,687	0	**109,701**
60-64		0	2	2	2	20	56	32	10	2	**126**
	$	0	86,234	76,431	120,396	87,176	94,475	109,346	105,365	127,587	**98,477**
65-69		0	1	0	0	4	5	8	1	2	**21**
	$	0	13,252	0	0	87,760	91,005	77,067	109,604	94,843	**82,626**
70-74		0	0	0	0	1	1	2	0	1	**5**
	$	0	0	0	0	64,757	80,447	76,677	0	153,708	**90,453**
75+		0	0	0	0	1	1	0	0	0	**2**
	$	0	0	0	0	77,967	87,364	0	0	0	**82,666**
Total		**0**	**8**	**6**	**22**	**277**	**657**	**166**	**18**	**5**	**1,159**
	$	**0**	**94,644**	**75,816**	**89,876**	**113,904**	**118,203**	**106,824**	**96,004**	**119,713**	**114,288**

Tier 2 Police and Fire Active Members

		0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	**Total**
<20		0	0	0	0	0	0	0	0	0	**0**
	$	0	0	0	0	0	0	0	0	0	**0**
20-24		0	0	0	0	0	0	0	0	0	**0**
	$	0	0	0	0	0	0	0	0	0	**0**
25-29		0	0	0	0	0	0	0	0	0	**0**
	$	0	0	0	0	0	0	0	0	0	**0**
30-34		0	0	0	0	0	0	0	0	0	**0**
	$	0	0	0	0	0	0	0	0	0	**0**
35-39		0	0	6	32	2	0	0	0	0	**40**
	$	0	0	82,438	111,027	112,717	0	0	0	0	**106,823**
40-44		0	3	20	439	173	0	0	0	0	**635**
	$	0	95,651	102,200	112,658	116,667	0	0	0	0	**113,340**
45-49		0	1	14	477	857	0	0	0	0	**1,349**
	$	0	102,096	92,001	108,832	112,919	0	0	0	0	**111,249**
50-54		0	1	6	302	736	0	0	0	0	**1,045**
	$	0	98,065	89,804	103,704	110,229	0	0	0	0	**108,214**
55-59		0	1	1	114	304	0	0	0	0	**420**
	$	0	71,710	123,179	93,750	98,764	0	0	0	0	**97,397**
60-64		0	0	2	67	105	0	0	0	0	**174**
	$	0	0	64,153	85,022	91,268	0	0	0	0	**88,551**
65-69		0	0	0	18	37	0	0	0	0	**55**
	$	0	0	0	81,124	90,768	0	0	0	0	**87,612**
70-74		0	0	0	2	4	0	0	0	0	**6**
	$	0	0	0	73,933	116,019	0	0	0	0	**101,990**
75+		0	0	0	1	0	0	0	0	0	**1**
	$	0	0	0	65,406	0	0	0	0	0	**65,406**
Total		**0**	**6**	**49**	**1,452**	**2,218**	**0**	**0**	**0**	**0**	**3,725**
	$	**0**	**93,137**	**94,224**	**106,266**	**108,989**	**0**	**0**	**0**	**0**	**107,708**

All Tier 1/Tier 2 Active Members

		0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20		0	0	0	0	0	0	0	0	0	**0**
	$	0	0	0	0	0	0	0	0	0	**0**
20-24		0	0	0	0	0	0	0	0	0	**0**
	$	0	0	0	0	0	0	0	0	0	**0**
25-29		0	0	0	0	0	0	0	0	0	**0**
	$	0	0	0	0	0	0	0	0	0	**0**
30-34		0	0	0	1	0	0	0	0	0	**1**
	$	0	0	0	94,725	0	0	0	0	0	**94,725**
35-39		2	7	31	230	20	0	0	0	0	**290**
	$	148,533	49,866	76,503	74,763	81,011	0	0	0	0	**75,288**
40-44		17	64	275	2,735	808	10	0	0	0	**3,909**
	$	125,526	42,082	69,485	86,950	87,717	76,956	0	0	0	**85,287**
45-49		16	112	339	3,311	4,222	450	12	0	0	**8,462**
	$	132,995	54,167	65,942	85,412	91,891	99,784	94,726	0	0	**88,319**
50-54		20	116	290	2,965	4,814	2,388	339	4	0	**10,936**
	$	127,631	66,169	69,849	80,950	88,297	93,697	89,577	82,113	0	**86,870**
55-59		11	81	210	2,542	3,802	2,281	1,193	158	8	**10,286**
	$	146,687	60,296	68,556	71,948	78,260	87,465	88,963	86,896	78,211	**79,849**
60-64		3	57	158	1,849	2,803	1,574	876	293	66	**7,679**
	$	158,384	58,098	68,009	65,908	69,535	77,532	84,826	88,014	80,678	**72,764**
65-69		7	17	50	691	890	541	300	128	66	**2,690**
	$	54,414	63,689	73,355	67,853	70,557	77,070	83,739	97,313	86,659	**74,277**
70-74		2	9	14	121	151	84	57	28	23	**489**
	$	96,623	50,485	81,259	62,571	63,326	85,137	91,468	109,761	104,255	**75,164**
75+		1	1	4	44	35	27	11	7	11	**141**
	$	48,441	24,258	59,968	55,479	55,705	62,155	77,540	89,679	117,122	**64,897**
Total		**79**	**464**	**1,371**	**14,489**	**17,545**	**7,355**	**2,788**	**618**	**174**	**44,883**
	$	**124,340**	**57,202**	**68,766**	**78,651**	**82,775**	**87,218**	**87,207**	**90,620**	**88,254**	**81,957**

Age/Service and Prior Year Covered Payroll by Rate Pool

Tier 1/Tier 2 SLGRP Active Members

		0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20		0	0	0	0	0	0	0	0	0	**0**
	$	0	0	0	0	0	0	0	0	0	**0**
20-24		0	0	0	0	0	0	0	0	0	**0**
	$	0	0	0	0	0	0	0	0	0	**0**
25-29		0	0	0	0	0	0	0	0	0	**0**
	$	0	0	0	0	0	0	0	0	0	**0**
30-34		0	0	0	0	0	0	0	0	0	**0**
	$	0	0	0	0	0	0	0	0	0	**0**
35-39		0	2	14	143	15	0	0	0	0	**174**
	$	0	109,492	79,629	80,019	86,242	0	0	0	0	**80,862**
40-44		3	20	107	1,168	506	6	0	0	0	**1,810**
	$	90,582	45,464	80,560	89,775	88,139	87,651	0	0	0	**88,277**
45-49		2	39	127	1,531	2,094	300	11	0	0	**4,104**
	$	19,628	63,604	69,888	89,487	95,785	103,568	95,881	0	0	**92,860**
50-54		4	43	113	1,477	2,593	1,202	235	3	0	**5,670**
	$	53,556	70,669	81,572	88,760	92,538	98,636	91,962	86,593	0	**92,408**
55-59		0	44	107	1,229	2,007	1,153	672	114	6	**5,332**
	$	0	69,763	76,864	83,472	88,286	93,910	94,333	91,614	81,467	**88,836**
60-64		0	30	80	920	1,410	857	563	177	44	**4,081**
	$	0	70,084	72,321	78,575	83,200	90,374	90,765	90,373	85,138	**84,730**
65-69		2	6	26	398	536	308	204	94	43	**1,617**
	$	34,808	72,692	77,808	76,600	80,797	92,446	92,172	104,976	91,953	**84,985**
70-74		1	4	4	80	80	57	40	23	17	**306**
	$	34,862	57,920	86,161	71,972	76,614	100,237	100,417	125,996	115,333	**88,519**
75+		0	1	2	31	23	15	9	6	10	**97**
	$	0	24,258	93,950	63,621	64,807	79,633	81,058	100,488	126,941	**77,024**
Total		**12**	**189**	**580**	**6,977**	**9,264**	**3,898**	**1,734**	**417**	**120**	**23,191**
	$	**52,475**	**66,200**	**76,541**	**85,638**	**89,793**	**95,245**	**92,680**	**96,087**	**95,158**	**89,273**

Tier 1/Tier 2 School District Active Members

		0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20		0	0	0	0	0	0	0	0	0	**0**
	$	0	0	0	0	0	0	0	0	0	**0**
20-24		0	0	0	0	0	0	0	0	0	**0**
	$	0	0	0	0	0	0	0	0	0	**0**
25-29		0	0	0	0	0	0	0	0	0	**0**
	$	0	0	0	0	0	0	0	0	0	**0**
30-34		0	0	0	0	0	0	0	0	0	**0**
	$	0	0	0	0	0	0	0	0	0	**0**
35-39		0	4	12	62	3	0	0	0	0	**81**
	$	0	27,323	68,231	55,913	56,696	0	0	0	0	**56,355**
40-44		2	38	155	1,337	204	3	0	0	0	**1,739**
	$	23,057	33,697	60,088	81,011	77,080	47,905	0	0	0	**77,528**
45-49		1	67	191	1,500	1,759	84	0	0	0	**3,602**
	$	31,470	43,466	60,156	78,513	83,473	76,094	0	0	0	**79,241**
50-54		1	55	151	1,262	1,820	1,022	74	1	0	**4,386**
	$	188	42,891	53,719	69,274	78,395	84,235	77,407	68,673	0	**75,800**
55-59		1	26	86	1,138	1,510	967	442	35	1	**4,206**
	$	54,142	26,677	47,747	57,292	62,204	77,118	79,701	67,981	44,788	**65,669**
60-64		0	20	55	821	1,217	637	250	103	17	**3,120**
	$	0	29,329	43,274	49,781	51,506	58,649	67,353	80,963	55,949	**54,490**
65-69		3	7	19	241	292	205	79	28	19	**893**
	$	7,780	32,655	50,294	48,427	48,872	50,933	57,712	72,629	76,271	**51,100**
70-74		0	4	4	35	51	21	11	5	5	**136**
	$	0	13,645	13,410	37,290	37,275	43,972	40,049	35,076	64,965	**38,077**
75+		1	0	2	11	11	10	2	1	1	**39**
	$	48,441	0	25,986	34,467	38,766	37,271	61,706	24,829	18,935	**37,073**
Total		**9**	**221**	**675**	**6,407**	**6,867**	**2,949**	**858**	**173**	**43**	**18,202**
	$	**22,633**	**37,214**	**55,231**	**68,112**	**69,697**	**73,345**	**73,330**	**75,266**	**64,857**	**68,989**

Tier 1/Tier 2 Independent Employers Active Members

		0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20		0	0	0	0	0	0	0	0	0	**0**
	$	0	0	0	0	0	0	0	0	0	**0**
20-24		0	0	0	0	0	0	0	0	0	**0**
	$	0	0	0	0	0	0	0	0	0	**0**
25-29		0	0	0	0	0	0	0	0	0	**0**
	$	0	0	0	0	0	0	0	0	0	**0**
30-34		0	0	0	1	0	0	0	0	0	**1**
	$	0	0	0	94,725	0	0	0	0	0	**94,725**
35-39		2	1	5	25	2	0	0	0	0	**35**
	$	148,533	20,786	87,606	91,452	78,252	0	0	0	0	**91,391**
40-44		12	6	13	230	98	1	0	0	0	**360**
	$	151,340	83,919	90,359	107,124	107,682	99,943	0	0	0	**107,738**
45-49		13	6	21	280	369	66	1	0	0	**756**
	$	158,246	112,319	94,705	100,091	109,925	112,739	82,016	0	0	**106,919**
50-54		15	18	26	226	401	164	30	0	0	**880**
	$	155,881	126,549	112,581	95,108	105,814	116,469	100,914	0	0	**106,361**
55-59		10	11	17	175	285	161	79	9	1	**748**
	$	155,942	101,891	121,532	86,321	92,728	103,458	95,112	100,694	92,099	**95,520**
60-64		3	7	23	108	176	80	63	13	5	**478**
	$	158,384	88,921	112,159	80,596	84,719	90,319	101,093	111,763	125,507	**89,889**
65-69		2	4	5	52	62	28	17	6	4	**180**
	$	143,970	104,491	137,831	90,942	84,160	99,288	103,491	92,442	79,091	**93,069**
70-74		1	1	6	6	20	6	6	0	1	**47**
	$	158,384	168,101	123,223	84,706	76,608	85,764	126,072	0	112,388	**95,524**
75+		0	0	0	2	1	2	0	0	0	**5**
	$	0	0	0	44,841	32,687	55,489	0	0	0	**46,670**
Total		**58**	**54**	**116**	**1,105**	**1,414**	**508**	**196**	**28**	**11**	**3,490**
	$	**154,990**	**107,508**	**108,645**	**95,635**	**100,300**	**106,160**	**99,530**	**104,065**	**104,398**	**100,974**

OPSRP Active General Service Members

		0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20		50	0	0	0	0	0	0	0	0	**50**
	$	9,606	0	0	0	0	0	0	0	0	**9,606**
20-24		2,320	41	0	0	0	0	0	0	0	**2,361**
	$	28,500	31,015	0	0	0	0	0	0	0	**28,543**
25-29		8,585	1,506	13	0	0	0	0	0	0	**10,104**
	$	40,776	46,712	47,123	0	0	0	0	0	0	**41,669**
30-34		9,346	5,834	863	20	0	0	0	0	0	**16,063**
	$	46,869	55,290	61,295	64,426	0	0	0	0	0	**50,724**
35-39		8,483	6,656	4,743	838	0	0	0	0	0	**20,720**
	$	50,118	60,878	68,730	69,941	0	0	0	0	0	**58,637**
40-44		7,266	6,149	4,838	2,221	0	0	0	0	0	**20,474**
	$	50,060	62,281	71,714	77,286	0	0	0	0	0	**61,801**
45-49		5,355	5,064	4,073	1,764	0	0	0	0	0	**16,256**
	$	49,037	59,788	70,534	74,917	0	0	0	0	0	**60,581**
50-54		4,357	4,161	3,854	1,877	0	0	0	0	0	**14,249**
	$	49,713	58,840	66,354	68,271	0	0	0	0	0	**59,324**
55-59		3,130	3,100	3,173	1,758	0	0	0	0	0	**11,161**
	$	47,837	55,852	60,936	60,590	0	0	0	0	0	**55,796**
60-64		2,296	2,254	2,326	1,381	0	0	0	0	0	**8,257**
	$	45,760	54,113	59,243	59,104	0	0	0	0	0	**54,070**
65-69		996	994	909	534	0	0	0	0	0	**3,433**
	$	40,959	49,366	58,556	58,604	0	0	0	0	0	**50,797**
70-74		277	265	227	114	0	0	0	0	0	**883**
	$	27,513	36,996	48,095	55,852	0	0	0	0	0	**39,309**
75+		86	87	57	30	0	0	0	0	0	**260**
	$	19,710	22,001	38,483	37,305	0	0	0	0	0	**26,622**
Total		**52,547**	**36,111**	**25,076**	**10,537**	**0**	**0**	**0**	**0**	**0**	**124,271**
	$	**46,200**	**57,762**	**66,476**	**68,214**	**0**	**0**	**0**	**0**	**0**	**55,518**

OPSRP Active Police and Fire Members

		0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20		0	0	0	0	0	0	0	0	0	**0**
	$	0	0	0	0	0	0	0	0	0	**0**
20-24		328	7	0	0	0	0	0	0	0	**335**
	$	53,588	65,335	0	0	0	0	0	0	0	**53,834**
25-29		1,293	297	1	0	0	0	0	0	0	**1,591**
	$	66,965	79,958	30,017	0	0	0	0	0	0	**69,367**
30-34		1,123	970	205	1	0	0	0	0	0	**2,299**
	$	68,015	86,724	94,774	94,702	0	0	0	0	0	**78,306**
35-39		645	806	872	167	0	0	0	0	0	**2,490**
	$	68,834	87,262	96,806	103,373	0	0	0	0	0	**86,912**
40-44		399	457	737	347	0	0	0	0	0	**1,940**
	$	67,938	84,495	97,012	100,598	0	0	0	0	0	**88,725**
45-49		274	277	428	250	0	0	0	0	0	**1,229**
	$	68,363	83,247	93,481	98,459	0	0	0	0	0	**86,587**
50-54		176	183	275	141	0	0	0	0	0	**775**
	$	70,515	79,004	86,652	97,355	0	0	0	0	0	**83,129**
55-59		131	121	144	91	0	0	0	0	0	**487**
	$	75,677	81,147	85,576	95,879	0	0	0	0	0	**83,738**
60-64		66	60	95	51	0	0	0	0	0	**272**
	$	78,289	79,044	79,819	80,364	0	0	0	0	0	**79,379**
65-69		16	29	28	14	0	0	0	0	0	**87**
	$	68,972	74,712	85,995	83,261	0	0	0	0	0	**78,664**
70-74		2	7	8	4	0	0	0	0	0	**21**
	$	134,083	59,035	92,453	74,394	0	0	0	0	0	**81,839**
75+		0	1	3	1	0	0	0	0	0	**5**
	$	0	195,000	107,573	61,066	0	0	0	0	0	**115,757**
Total		**4,453**	**3,215**	**2,796**	**1,067**	**0**	**0**	**0**	**0**	**0**	**11,531**
	$	**67,290**	**84,643**	**93,915**	**98,365**	**0**	**0**	**0**	**0**	**0**	**81,460**

All OPSRP Active Members

		0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20		50	0	0	0	0	0	0	0	0	**50**
	$	9,606	0	0	0	0	0	0	0	0	**9,606**
20-24		2,648	48	0	0	0	0	0	0	0	**2,696**
	$	31,607	36,020	0	0	0	0	0	0	0	**31,686**
25-29		9,878	1,803	14	0	0	0	0	0	0	**11,695**
	$	44,204	52,189	45,901	0	0	0	0	0	0	**45,437**
30-34		10,469	6,804	1,068	21	0	0	0	0	0	**18,362**
	$	49,137	59,771	67,721	65,868	0	0	0	0	0	**54,178**
35-39		9,128	7,462	5,615	1,005	0	0	0	0	0	**23,210**
	$	51,440	63,728	73,090	75,496	0	0	0	0	0	**61,670**
40-44		7,665	6,606	5,575	2,568	0	0	0	0	0	**22,414**
	$	50,991	63,818	75,058	80,436	0	0	0	0	0	**64,131**
45-49		5,629	5,341	4,501	2,014	0	0	0	0	0	**17,485**
	$	49,978	61,004	72,716	77,840	0	0	0	0	0	**62,409**
50-54		4,533	4,344	4,129	2,018	0	0	0	0	0	**15,024**
	$	50,521	59,690	67,706	70,303	0	0	0	0	0	**60,552**
55-59		3,261	3,221	3,317	1,849	0	0	0	0	0	**11,648**
	$	48,955	56,802	62,006	62,327	0	0	0	0	0	**56,964**
60-64		2,362	2,314	2,421	1,432	0	0	0	0	0	**8,529**
	$	46,668	54,759	60,051	59,862	0	0	0	0	0	**54,877**
65-69		1,012	1,023	937	548	0	0	0	0	0	**3,520**
	$	41,402	50,085	59,376	59,234	0	0	0	0	0	**51,486**
70-74		279	272	235	118	0	0	0	0	0	**904**
	$	28,277	37,563	49,605	56,481	0	0	0	0	0	**40,297**
75+		86	88	60	31	0	0	0	0	0	**265**
	$	19,710	23,967	41,937	38,071	0	0	0	0	0	**28,304**
Total		**57,000**	**39,326**	**27,872**	**11,604**	**0**	**0**	**0**	**0**	**0**	**135,802**
	$	**47,848**	**59,960**	**69,229**	**70,986**	**0**	**0**	**0**	**0**	**0**	**57,721**

Inactive Member Data Exhibits

For the following exhibits, inactive members are counted by lives, not by segments.

Total Tier 1/Tier 2

Inactive Members	Count	Average Deferred Monthly Benefit
<20	0	$0
20-24	0	0
25-29	0	0
30-34	5	69
35-39	200	514
40-44	1,530	879
45-49	3,221	1,237
50-54	4,552	1,433
55-59	5,187	1,493
60-64	4,376	1,587
65-69	2,783	1,889
70-74	1,147	1,476
75+	1,115	2,012
Total	**24,116**	**$1,486**

Retirees and Beneficiaries	Count	Average Monthly Benefit
<45	523	$1,160
45-49	326	1,925
50-54	1,249	3,701
55-59	4,909	3,382
60-64	15,771	3,008
65-69	31,889	3,016
70-74	37,185	3,008
75-79	25,372	2,898
80-84	15,769	2,610
85-89	9,083	2,252
90-94	4,516	1,875
95-99	1,489	1,373
100+	198	994
Total	**148,279**	**$2,858**

OPSRP

Inactive Members	Count	Average Deferred Monthly Benefit
<20	0	$0
20-24	20	111
25-29	361	217
30-34	1,668	330
35-39	3,906	457
40-44	4,447	525
45-49	3,410	540
50-54	3,274	494
55-59	2,760	477
60-64	2,159	486
65-69	1,047	296
70-74	520	136
75+	492	81
Total	**24,064**	**$457**

Retirees and Beneficiaries	Count	Average Monthly Benefit
<45	25	$1,740
45-49	16	1,984
50-54	42	1,523
55-59	343	545
60-64	1,159	528
65-69	3,339	607
70-74	2,294	578
75-79	565	500
80-84	80	479
85-89	14	447
90-94	0	0
95-99	0	0
100+	0	0
Total	**7,877**	**$586**

System-Wide Totals

Inactive Members	Count	Average Deferred Monthly Benefit
<20	0	$0
20-24	20	111
25-29	361	217
30-34	1,673	330
35-39	4,106	460
40-44	5,977	615
45-49	6,631	879
50-54	7,826	1,040
55-59	7,947	1,140
60-64	6,535	1,223
65-69	3,830	1,453
70-74	1,667	1,058
75+	1,607	1,421
Total	**48,180**	**$972**

Retirees and Beneficiaries	Count	Average Monthly Benefit
<45	548	$1,186
45-49	342	1,928
50-54	1,291	3,631
55-59	5,252	3,197
60-64	16,930	2,839
65-69	35,228	2,787
70-74	39,479	2,866
75-79	25,937	2,846
80-84	15,849	2,599
85-89	9,097	2,249
90-94	4,516	1,875
95-99	1,489	1,373
100+	198	994
Total	**156,156**	**$2,743**

Retiree Healthcare Member Data Exhibits

For the following exhibits, inactive members are counted by lives, not by pool or employer segments.

RHIA Members

	As of December 31, 2020	As of December 31, 2019
Dormant members		
Number	11,786	12,149
Average Age	55.6	55.2
Retired members eligible for deferred RHIA benefits		
Number	22,171	23,497
Average Age	60.5	60.6
Retired members receiving RHIA benefits		
Number	43,761	44,386
Average Age	77.2	76.9

RHIPA Members

	As of December 31, 2020	As of December 31, 2019
Active Tier 1/Tier 2 employees of RHIPA employers		
Number	12,345	13,452
Average Age	55.0	54.6
Average Service	22.8	22.1
Retired members receiving RHIPA benefits		
Number	740	842
Average Age	62.0	61.9
Average Monthly Subsidy Amount	412	399

Actuarial Methods and Assumptions

Tier 1/Tier 2 (including Retiree Healthcare)

Actuarial Methods and Valuation Procedures

In October 2021 the Board adopted the following actuarial methods and valuation procedures for the December 31, 2020 and 2021 actuarial valuations of PERS Tier 1/Tier 2 benefits.

Actuarial cost method	**Entry Age Normal.** Under the Entry Age Normal (EAN) cost method, each active member's **entry age present value of projected benefits** is allocated over the member's service from the member's date of entry until their assumed date of exit, taking into consideration expected future compensation increases. Thus, the total pension to which each member is expected to become entitled at retirement is broken down into units, each associated with a year of past or projected future credited service. Typically, when this method is introduced, there will be an initial liability for benefits credited for service prior to that date, and to the extent that the liability is not covered by assets of the plan, there is an unfunded accrued liability to be funded over a stipulated period in accordance with an amortization schedule. A detailed description of the calculation follows: • An individual member's **entry age present value of projected benefits** is the sum of the present value of the benefit described under the plan at each possible separation date, determined at the member's entry age using the projected compensation and service at each separation date. • An individual member's **entry age present value of projected salaries** is the sum of the present value of the projected compensation over the member's working career associated with each possible future separation date, determined at the member's entry age. • An individual member's **present value of projected benefits** is the sum of the present value of the benefit described under the plan at each possible separation date, determined at the valuation date using the projected compensation and service at each separation date. • An individual member's **normal cost** for a certain year is the member's **entry age present value of projected benefits** divided by the member's **entry age present value of projected salaries** and multiplied by the member's projected compensation for the year following the valuation date. • An individual member's **actuarial accrued liability** is the member's **present value of projected benefits** less the sum of the present value of the member's **normal costs** for each future year, determined at the valuation date using the projected compensation and service at each future year. – The plan's **normal cost** is the sum of the individual member normal costs, and the plan's **actuarial accrued liability** is the sum of the individual members' actuarial accrued liabilities.

Tier 1/Tier 2 UAL amortization	The Tier 1/Tier 2 UAL amortization period was reset to 20 years as of December 31, 2013. Gains and losses between subsequent odd-year valuations have been amortized as a level percentage of projected combined valuation payroll (Tier 1/ Tier 2 plus OPSRP payroll) over a closed 20-year period from the valuation in which they are first recognized. Senate Bill 1049 was signed into law in June 2019 and required a one-time re-amortization of Tier 1/Tier 2 UAL over a closed 22-year period at the December 31, 2019 rate-setting actuarial valuation, which set actuarially determined contribution rates for the 2021-2023 biennium. Future Tier 1/Tier 2 UAL gains or losses will be amortized over 20 years. The closed period amortization under Senate Bill 1049 will continue to decline, and will have 20 years remaining as of the December 31, 2021 rate-setting valuation.
Retiree Healthcare UAL amortization	The UAL for the Retiree Healthcare programs (RHIA and RHIPA) as of December 31, 2007 were amortized as a level percentage of projected combined valuation payroll (Tier 1/ Tier 2 plus OPSRP payroll) over a closed 10-year period. When RHIA or RHIPA are less than 100% funded, gains and losses between subsequent odd-year valuations are amortized as a level percentage of combined valuation payroll over a closed 10-year period from the valuation in which they are first recognized. If RHIA or RHIPA are in actuarial surplus (over 100% funded), the surplus is amortized over a rolling 20-year period over Tier 1/Tier 2 payroll. The resulting negative UAL rate will offset the normal cost of the program, but not below 0.00%.
Asset valuation method	The actuarial value of assets equals the market value of assets, excluding the Contingency and Capital Preservation Reserves, and the Rate Guarantee Reserve when it is in positive surplus status. Market values are reported to Milliman by PERS. It is our understanding that select real estate and private equity investments are reported on a three-month lag basis. This valuation report does not attempt to quantify any effects of the reporting lag.

Contribution rate stabilization method	The UAL Rate component for a rate pool (e.g., Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) is confined to a collared range based on the prior biennium's collared UAL Rate component (prior to consideration of side account offsets, SLGRP transition liability or surplus rates, pre-SLGRP liability rate charges or offsets, or member redirect offsets). Collar Width: The rate pool's new UAL Rate component will generally not increase or decrease from the prior biennium's collared UAL Rate component by more than the following amount: • Tier 1/Tier 2 SLGRP and Tier 1/Tier 2 School Districts Pool: 3% of payroll • OPSRP: 1% of payroll • Tier 1/Tier 2 rates for independent employers: greater of 4% of payroll or one-third of the difference between the collared and uncollared UAL Rate at the prior rate-setting valuation. In addition, the UAL Rate will not be allowed to be less than 0.00% of payroll for any Tier 1/Tier 2 independent employer with a funded status (excluding side accounts) less than 100%. UAL Rate decrease restrictions**:** The UAL Rate component for any rate pool will not decrease from the prior biennium's collared UAL Rate component if the pool's funded status (excluding side accounts) is 87% or lower; the allowable decrease will phase into the full collar width for rate pools between 87% and 90% funded.
Offset for Member Redirect Contributions	Under Senate Bill 1049, a portion of the 6% of pay member contribution otherwise made to the IAP is redirected to fund Tier 1/Tier 2 and OPSRP defined benefits beginning July 1, 2020. For Tier 1/Tier 2 members, the redirected amount is 2.50% of pay, and for OPSRP it is 0.75% of pay. Members with less than $2,500 in monthly pay (indexed in future years) are exempt from the redirection. House Bill 2906 subsequently increased this amount to $3,333 per month effective in 2022. For employer contribution rates shown in this valuation, member redirect contributions are assumed to offset total contribution rates. Reflecting the effect of the monthly pay level-based exemption noted above, the offset is assumed to be 2.40% of total payroll for Tier 1/Tier 2 and 0.65% of total payroll for OPSRP.
Allocation of Liability for Service Segments	For active Tier 1/Tier 2 members who have worked for multiple PERS employers over their career, the calculated actuarial accrued liability is allocated among the employers based on a weighted average of the Money Match methodology, which uses account balance, and the Full Formula methodology, which uses service. The allocation is 10% (0% for police & fire) based on account balance with each employer and 90% (100% for police & fire) based on service with each employer. The entire normal cost is allocated to the current employer.
Allocation of Benefits-In-Force (BIF) Reserve	The BIF reserve is allocated to each rate pool in proportion to the retiree liability attributable to the rate pool.

Census Data	PERS staff provided the data on plan members and beneficiaries upon which this valuation is based. Milliman did not audit the data, but did review it for reasonableness and consistency with data provided for previous years, in accordance with Actuarial Standard of Practice No. 23. PERS staff assisted in resolving questions and inconsistencies discovered in the data review, and provided updated records or direction for adjusting data as needed. The final census data is expected to be sufficiently accurate and complete for purposes of the actuarial valuation, and we are not aware of any significant concerns or unresolved issues that would materially affect results.
Internal Revenue Code 415 Benefit Limits	Annual benefit limits under Internal Revenue Code 415 are not explicitly reflected in the valuation. In accordance with ORS 238.488, we understand that members whose benefits are restricted by IRC 415 benefit limits are paid the difference between the unrestricted benefit and the IRC 415-restricted benefit from the Public Employee Benefit Equalization Fund.

Economic Assumptions

The Board adopted the following economic assumptions for the December 31, 2020 and 2021 actuarial valuations. All assumptions were reviewed and adopted in conjunction with the 2020 Experience Study, published in July 2021. The assumption selection process and rationale is described in detail in that report.

Investment return	6.90% compounded annually
Pre-2014 Interest crediting	8.00% compounded annually on members' regular account balances 8.25% compounded annually on members' variable account balances
Post-2013 Interest crediting	6.90% compounded annually on members' regular account balances 6.90% compounded annually on members' variable account balances
Inflation	2.40% compounded annually
Administrative expenses	$59.0 million per year is added to the total system normal cost and allocated between Tier 1/Tier 2 and OPSRP based on valuation payroll.
Payroll growth	3.40% compounded annually. This assumption represents the sum of the inflation assumption and a real wage growth assumption of 100 basis points.
Healthcare cost trend	Healthcare cost trend rates are used to estimate increases in the RHIPA Maximum Subsidy. The healthcare cost trends are based on the Society of Actuaries (SOA) periodically updated report on long-term medical trends. These rates were developed reflecting the repeal of the Affordable Care Act excise tax by the Further Consolidated Appropriations Act passed in December 2019. Given the substantial uncertainty regarding the impact of COVID-19 on plan costs, including whether the pandemic will increase or decrease costs during the term of our projections, we have chosen not to make an adjustment in the expected plan costs or in the trend assumptions. It is possible that the COVID-19 pandemic could have a material impact on the projected costs.

Year[1]	Rate	Year	Rate
2021	5.9%	2052 – 2060	4.7%
2022	5.5	2061 – 2064	4.6
2023	5.1	2065 – 2066	4.5
2024	5.0	2067	4.4
2025 – 2026	4.9	2068	4.3
2027	4.8	2069 – 2070	4.2
2028 – 2036	4.7	2071	4.1
2037 – 2045	4.8	2072 – 2073	4.0
2045 – 2049	4.9	2074+	3.9
2050 – 2051	4.8		

[1] *For valuation purposes, the health cost trend rates are assumed to be applied at the beginning of the plan year.*

Demographic Assumptions

The Board adopted the following demographic assumptions for the December 31, 2020 and 2021 actuarial valuations. All assumptions were reviewed and adopted in conjunction with the 2020 Experience Study, published in July 2021. The study relied on data from an observation period of January 1, 2017 to December 31, 2020, with the exception of the merit scale assumption, which relied on data from 2012 through 2020 (with certain exclusions due to one-off events that are not expected to be indicative of future experience, as detailed in the 2020 Experience Study). Assumptions selected from the study represent an estimate of future experience based on relevant recent experience and reasonable expectations about the future.

Mortality

Healthy Retired Members and Beneficiaries

The following healthy annuitant mortality tables were first adopted in the December 31 valuation of the years shown.

Basic Table	Pub-2010 Healthy Retiree, Sex Distinct, Generational Projection with Unisex Social Security Data Scale	Valuation Year Adopted
School District male	Blend 80% Teachers and 20% General Employees, no set back	2020
Other General Service male*	General Employees, set back 12 months	2018
Police & Fire male	Public Safety, no set back	2018
School District female	Teachers, no set back	2018
Other General Service female**	General Employees, no set back	2018
Police & Fire female	Public Safety, set back 12 months	2018

** including male beneficiaries of members of all classes*
*** including female beneficiaries of members of all classes*

Disabled Retired Members

The following disabled retiree mortality rates were first adopted for the December 31, 2018 actuarial valuation.

Basic Table	Pub-2010 Disabled Retiree, Sex Distinct, Generational Projection with Unisex Social Security Data Scale
Police & Fire male	Blended 50% Public Safety, 50% Non-Safety, no set back
Other General Service male	Non-Safety, set forward 24 months
Police & Fire female	Blended 50% Public Safety, 50% Non-Safety, no set back
Other General Service female	Non-Safety, set forward 12 months

Non-Annuitant Members

The following non-annuitant mortality tables were first adopted in the December 31 valuation of the years shown.

Basic Table	Pub-2010 Employee, Sex Distinct, Generational Projection with Unisex Social Security Data Scale	Valuation Year Adopted
School District male	125% of Employee table with same job category and set back as Healthy Retiree assumption	2020
Other General Service male	115% of Employee table with same job category and set back as Healthy Retiree assumption	2018
Police & Fire male	100% of Employee table with same job category and set back as Healthy Retiree assumption	2018
School District female	100% of Employee table with same job category and set back as Healthy Retiree assumption	2018
Other General Service female	125% of Employee table with same job category and set back as Healthy Retiree assumption	2018
Police & Fire female	100% of Employee table with same job category and set back as Healthy Retiree assumption	2018

Retirement Assumptions

The retirement assumptions used in the actuarial valuation include the following:

- Retirement from active status/dormant status
- Probability a member will elect a lump sum option at retirement
- Percentage of members who elect to purchase credited service at retirement.

Rates of Retirement from Active Status

The following retirement rate assumptions were first adopted in the December 31, 2020 valuation.

	Police & Fire			General Service			School Districts			
Age	< 13 yrs	13-24 yrs	25+ yrs	< 15 yrs	15-29 yrs	30+ yrs	< 15 yrs	15-29 yrs	30+ yrs	Judges
Less than 50						15.0%			25.0%	
50	1.5%	3.0%	32.0%			15.0%			25.0%	
51	1.5%	3.0%	27.0%			15.0%			25.0%	
52	1.5%	3.0%	27.0%			15.0%			25.0%	
53	1.5%	3.0%	27.0%			15.0%			25.0%	
54	1.5%	3.5%	27.0%			15.0%			25.0%	
55	3.0%	15.5%	27.0%	1.5%	2.5%	15.0%	1.5%	3.5%	25.0%	
56	3.0%	10.0%	27.0%	1.5%	2.5%	15.0%	1.5%	3.5%	25.0%	
57	3.0%	10.0%	27.0%	1.5%	2.5%	15.0%	1.5%	3.5%	25.0%	
58	6.0%	10.0%	27.0%	1.5%	9.0%	21.0%	1.5%	11.0%	27.5%	
59	6.0%	10.0%	27.0%	3.5%	9.0%	21.0%	4.5%	11.0%	27.5%	

	Police & Fire			General Service			School Districts			
Age	< 13 yrs	13-24 yrs	25+ yrs	< 15 yrs	15-29 yrs	30+ yrs	< 15 yrs	15-29 yrs	30+ yrs	Judges
60	6.0%	12.0%	27.0%	6.0%	11.0%	21.0%	6.5%	12.5%	27.5%	12.0%
61	6.0%	14.0%	27.0%	6.0%	11.0%	21.0%	6.5%	12.5%	27.5%	12.0%
62	15.0%	25.0%	38.0%	13.0%	19.5%	28.5%	15.0%	21.0%	34.0%	12.0%
63	15.0%	15.0%	31.0%	11.5%	16.5%	23.0%	13.0%	19.5%	27.5%	12.0%
64	15.0%	15.0%	31.0%	12.5%	16.5%	23.0%	13.0%	19.5%	27.5%	12.0%
65	40.0%	40.0%	50.0%	19.5%	28.0%	37.5%	25.5%	33.5%	45.0%	12.0%
66	40.0%	40.0%	50.0%	27.5%	36.0%	40.5%	23.0%	36.5%	45.0%	12.0%
67	40.0%	40.0%	50.0%	22.5%	26.5%	34.0%	21.0%	34.5%	38.0%	20.0%
68	40.0%	40.0%	50.0%	19.5%	26.5%	28.5%	21.0%	28.0%	28.5%	20.0%
69	40.0%	40.0%	50.0%	19.5%	26.5%	28.5%	21.0%	28.0%	28.5%	20.0%
70	100.0%	100.0%	100.0%	25.0%	28.5%	28.5%	21.0%	28.0%	28.5%	30.0%
71	100.0%	100.0%	100.0%	25.0%	28.5%	28.5%	21.0%	28.0%	28.5%	30.0%
72	100.0%	100.0%	100.0%	25.0%	28.5%	28.5%	21.0%	28.0%	28.5%	30.0%
73	100.0%	100.0%	100.0%	25.0%	28.5%	28.5%	21.0%	28.0%	28.5%	30.0%
74	100.0%	100.0%	100.0%	25.0%	28.5%	28.5%	21.0%	28.0%	28.5%	30.0%
75 +	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Retirement from Dormant Status

Dormant members are assumed to retire at Normal Retirement Age (age 58 for Tier 1, age 60 for Tier 2, age 60 for Judges, and age 55 for Police & Fire) or at the first unreduced retirement age (30 years of service, or age 50 with 25 years of service for Police & Fire).

Lump Sum Option at Retirement

Members retiring may elect to receive a full or partial lump sum at retirement. The probability that a retiring member will elect a lump sum at retirement is summarized in the table below. Due to a continued decline in the number of members selection a total lump sum, this assumption was reduced to zero as part of the rates shown below, which were adopted effective December 31, 2020.

Lump Sum Option at Retirement	
Partial Lump Sum:	2.0% for all years
Total Lump Sum:	0.0% for all years
No Lump Sum:	98.0% for all years

Purchase of Credited Service at Retirement

The following percentages of members are assumed to purchase service credit at time of retirement for the six-month waiting period that occurs prior to establishing membership in the system. These rates were first adopted effective December 31, 2020.

Purchase of Credited Service at Retirement	
Money Match Retirements:	0%
Non-Money Match Retirements:	75%

The cost of the service purchase is estimated based on assumed salary and contribution rates at entry age.

State Judiciary Member Plan Election

All State Judiciary members are assumed to elect to retire under the provisions of Plan B.

Disability Assumptions

There are two disability assumptions used in the valuation - duty disability and ordinary (non-duty) disability. Duty disability rates are separated between Police & Fire and General Service, while ordinary disability is the same for all members. The rates for ordinary disability and for duty disability for General Service were first adopted effective December 31, 2020. The rates for duty disability for Police & Fire were first adopted effective December 31, 2012.

	Percentage of the 1985 Disability Class 1 Rates
Duty Disability Police & Fire	20%
Duty Disability General Service	0.7%
Ordinary Disability	25% with 0.16% cap

Ordinary disability rates are not applied until the minimum service requirement for non-duty disability benefits is met. Disability rates continue to be applied after retirement eligibility, but not after Normal Retirement Age.

Termination Assumptions

The General Service Female termination assumption was first adopted effective December 31, 2020. The General Service Male termination assumption was first adopted effective December 31, 2018. The School District termination assumptions were first adopted effective December 31, 2016. The Police & Fire termination assumption was first adopted effective December 31, 2014.

Sample termination rates are shown for each group below:

Duration from Hire Date	School District Male	School District Female	General Service Male	General Service Female	Police & Fire
0	16.63%	13.50%	15.00%	15.00%	10.00%
1	14.25%	12.50%	12.50%	14.00%	5.97%
5	6.86%	7.13%	7.19%	7.23%	3.31%
10	3.31%	3.85%	4.13%	4.77%	2.23%
15	2.30%	2.68%	2.93%	3.43%	1.50%
20	1.62%	1.95%	2.08%	2.47%	1.01%
25	1.20%	1.50%	1.47%	1.78%	0.80%
30+	1.20%	1.50%	1.40%	1.40%	0.80%

Termination rates are not applied after a member reaches retirement eligibility. For a complete table of rates, please refer to the 2020 Experience Study report for the System, published in July 2021.

Oregon Residency Post-Retirement

For purposes of determining eligibility for SB 656/HB 3349 benefit adjustments, 85% of retirees are assumed to remain Oregon residents after retirement. This assumption was first adopted effective December 31, 2012.

Police & Fire Unit Purchase

Police & Fire members retiring from active service prior to age 65 are assumed to purchase additional benefit units at an estimated employer matching cost of $4,000.

Salary Increase Assumptions

The salary increase assumptions reflected in the actuarial valuation include:

- Merit scale increases in addition to the payroll growth increase
- Unused Sick Leave adjustments
- Vacation Pay adjustments

Merit Scale Increases

Merit scale increases are based on duration of service for the following groups with sample rates shown in the following table. These rates were first adopted effective December 31, 2020.

Duration	School District	Other General Service	Police & Fire
0	4.15%	4.06%	5.13%
1	3.92%	3.73%	4.59%
5	2.98%	2.60%	2.87%
10	1.79%	1.52%	1.58%
15	0.72%	0.79%	0.98%
20	-0.11%	0.36%	0.79%
25	-0.55%	0.19%	0.72%
30+	-0.59%	0.18%	0.50%

The assumed merit scale increase for active State Judiciary members is 0.0%.

For a complete table of rates, please refer to the 2020 Experience Study for the System, published in July 2021.

Unused Sick Leave

Members covered by the provision allowing unused sick leave to be used to increase final average salary at time of retirement are assumed to receive increases in their final average salary in accordance with the table below. This adjustment is not applied to disability benefits. Effective dates for the current assumption are shown in the table.

Unused Sick Leave		Valuation year adopted
Actives		
• State General Service Male	8.25%	2020
• State General Service Female	5.00%	2020
• School District Male	9.50%	2020
• School District Female	6.50%	2020
• Local General Service Male	7.25%	2020
• Local General Service Female	4.50%	2020
• State Police & Fire	4.25%	2020
• Local Police & Fire	7.50%	2020
Dormant Members	5.00%	2020

Vacation Pay

Members eligible to include a lump sum payment of unused vacation pay in their final average salary calculation at time of retirement are assumed to receive increases in their final average salary in accordance with the table below. This adjustment is not applied to disability benefits. These rates were adopted December 31, 2020, except the school district assumption which was adopted effective December 31, 2012 and the state police & fire assumption, which was adopted effective December 31, 2018.

Vacation Pay	
Tier 1	
• State General Service	2.50%
• School District	0.25%
• Local General Service	3.50%
• State Police & Fire	2.75%
• Local Police & Fire	4.75%
Tier 2	0.00%

Retiree Healthcare Participation

The following percentages of eligible retiring members are assumed to elect RHIPA and RHIA coverage:

Retiree Healthcare Participation	
RHIPA	
• 8 – 9 years of service	10.0%
• 10 – 14 years of service	10.0%
• 15 – 19 years of service	11.0%
• 20 – 24 years of service	14.0%
• 25 – 29 years of service	22.0%
• 30+ years of service	27.0%
RHIA	
• Healthy Retired	27.5%
• Disabled Retired	15.0%

The participations rates were adopted December 31, 2020.

Spouse Assumptions

Non-annuitant death benefits are valued assuming all members are married. Future participants in RHIA and RHIPA are assumed to have eligible spouses. For these purposes, the spouse is assumed to be three years younger than a male member or three years older than a female member.

Actuarial Equivalence Assumptions

Early retirement factors and optional form conversion factors are assumed to remain level in all future years.

For members with pop-up annuities, the future amount payable if the spouse predeceases the member is estimated based on an assumed 0.90 optional form conversion factor for 100% contingent annuities and an assumed 0.94 optional form conversion factor for 50% contingent annuities.

OPSRP

Most of the methods and assumptions adopted for the OPSRP valuation are the same as those used for Tier 1/Tier 2. The methods and assumptions that differ for OPSRP are summarized below. The Board adopted the following methods, procedures and assumptions for the December 31, 2020 and December 31, 2021 actuarial valuations.

Actuarial Methods and Valuation Procedures

OPSRP UAL amortization	The UAL as of December 31, 2007 is amortized as a level percentage of projected combined valuation payroll (Tier 1/ Tier 2 plus OPSRP payroll) over a closed period 16 year period. Gains and losses between subsequent odd-year valuations are amortized as a level percentage of combined valuation payroll over 16 years from the valuation in which they are first recognized.

Economic Assumptions

Administrative expenses	$59.0 million per year is added to the total system normal cost and allocated between Tier 1/Tier 2 and OPSRP based on valuation payroll.

Demographic Assumptions

Rates of Retirement from Active Status

	Police & Fire			General Service			School Districts		
Age	< 13 yrs	13-24 yrs	25+ yrs	< 15 yrs	15-29 yrs	30+ yrs	< 15 yrs	15-29 yrs	30+ yrs
50	0.5%	1.5%	5.5%						
51	0.5%	1.5%	5.5%						
52	0.5%	1.5%	5.5%						
53	0.5%	1.5%	27.0%						
54	0.5%	1.5%	27.0%						
55	2.0%	5.0%	27.0%	1.0%	2.5%	5.0%	0.5%	2.5%	5.0%
56	2.0%	5.0%	27.0%	1.0%	2.5%	5.0%	0.5%	2.5%	5.0%
57	2.0%	5.0%	27.0%	1.0%	2.5%	7.5%	1.0%	2.5%	7.5%
58	5.0%	5.0%	27.0%	1.5%	3.0%	30.0%	1.5%	3.0%	30.0%
59	5.0%	5.0%	27.0%	2.0%	3.0%	25.0%	1.5%	3.0%	25.0%
60	5.0%	15.0%	27.0%	2.5%	3.75%	20.0%	2.5%	3.75%	20.0%
61	5.0%	8.5%	27.0%	2.5%	5.0%	20.0%	2.5%	5.0%	20.0%
62	10.0%	25.0%	38.0%	6.5%	12.0%	30.0%	6.0%	12.0%	30.0%
63	7.0%	15.0%	31.0%	6.5%	10.0%	20.0%	6.0%	10.0%	20.0%
64	7.0%	15.0%	31.0%	6.5%	10.0%	20.0%	6.0%	10.0%	20.0%
65	7.0%	35.0%	40.0%	15.5%	35.0%	20.0%	12.5%	35.0%	20.0%
66	7.0%	35.0%	40.0%	18.5%	33.0%	20.0%	12.5%	33.0%	20.0%
67	7.0%	35.0%	40.0%	17.0%	22.0%	30.0%	11.0%	22.0%	30.0%
68	7.0%	35.0%	40.0%	14.0%	20.0%	25.0%	9.0%	20.0%	25.0%
69	7.0%	35.0%	40.0%	14.0%	20.0%	25.0%	9.0%	20.0%	25.0%

	Police & Fire			General Service			School Districts		
Age	< 13 yrs	13-24 yrs	25+ yrs	< 15 yrs	15-29 yrs	30+ yrs	< 15 yrs	15-29 yrs	30+ yrs
70	100.0%	100.0%	100.0%	14.0%	20.0%	25.0%	9.0%	20.0%	25.0%
71	100.0%	100.0%	100.0%	14.0%	20.0%	25.0%	9.0%	20.0%	25.0%
72	100.0%	100.0%	100.0%	14.0%	20.0%	25.0%	9.0%	20.0%	25.0%
73	100.0%	100.0%	100.0%	14.0%	20.0%	25.0%	9.0%	20.0%	25.0%
74	100.0%	100.0%	100.0%	14.0%	20.0%	25.0%	9.0%	20.0%	25.0%
75 +	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Retirement from Dormant Status

Dormant members are assumed to retire at their Normal Retirement Age.

Disability Assumptions

Assumed disability rates are not applied to OPSRP members after they reach Normal Retirement Age.

Cost of living increases for the adjusted salary used to calculate retirement benefits for disabled OPSRP members are estimated based on the valuation inflation assumption.

Changes in Actuarial Methods and Assumptions — Tier 1/Tier 2 and OPSRP

A summary of key changes implemented since the December 31, 2019 valuation are described briefly below.

Changes in Actuarial Methods and Allocation Procedures

- The rate collar methodology was revised to only restrict changes in the UAL Rate component and to narrow the width of allowable changes. The collar width varies depending on the rate pool, and no decrease in UAL Rate is allowed unless a funded status threshold is met.
- The UAL Rate amortization methodologies for the RHIA and RHIPA programs were changed to allow a limited rate offset when a program is in an actuarial surplus position (over 100% funded).
- The assumed system-average level of member redirect contributions to Tier 1/Tier 2 and OPSRP was updated to 2.40% (Tier 1/Tier 2) and 0.65% (OPSRP) to reflect the projected effects of House Bill 2906.

Changes in Economic Assumptions

- The long-term inflation assumption was lowered from 2.50% to 2.40% and the system payroll growth assumption was lowered from 3.50% to 3.40%.
- Assumed average annual future long-term investment return was lowered from 7.20% to 6.90%.
- Interest crediting on regular and variable member accounts was also lowered to 6.90%.
- Assumed administrative expenses were updated and changed to a combined assumption for both Tier 1/Tier 2 and OPSRP.

Changes in Demographic Assumptions

- The base mortality assumption was changed for School District males.
- The mortality improvement projection scale applied to all groups is based on 60-year unisex average mortality improvement rates by age. The assumption was updated to reflect the most recent publicly available data at the time of the latest experience study. For a complete table of rates, please refer to the 2020 Experience Study for the System, published in July 2021.
- Termination, disability and retirement rates were updated for some groups to more closely match observed and anticipated future experience.
- Assumptions for merit increases, unused sick leave, and vacation pay were updated.
- The assumed healthcare cost trend rates for the RHIPA program as well as the participation assumptions for both RHIA and RHIPA were updated.

Summary of Plan Provisions

Summary of Plan Provisions

The following section summarizes the plan provisions considered in the actuarial valuation. A more detailed description of plan provisions is available from PERS.

Membership	All employees of public employers participating in this System who are in qualifying positions become members of the System after completing six months of service except those who are eligible for and have elected to participate in an optional retirement plan. Different benefit provisions of the plan apply based on date of hire.	
	Tier 1	Hired prior to 1996
	Tier 2	Hired after 1995 and before August 29, 2003
	OPSRP	Hired after August 28, 2003, and neither a judge nor a former Tier 1/Tier 2 member eligible to reestablish Tier 1/Tier 2 membership
	Judges	Members of the State Judiciary
Member Contributions	**Judges**	7% of salary
	All others	Prior to January 1, 2004, Tier 1/Tier 2 members contributed 6% of salary to member accounts. Effective July 1, 2020: 2.50% of salary for Tier 1/Tier 2 members and 0.75% of salary for OPSRP members (only applicable to members earning at least $2,500 per month, indexed for inflation and further increased to $3,333 per month effective in 2022) are contributed to Employee Pension Stability Accounts (EPSA). EPSA balances will not affect the calculation of Money Match or Formula Plus Annuity benefits.
Employer Contributions	Set by the PERS Board based on actuarial calculations that follow Board rate-setting policies for employers.	

Summary of Chapter 238 Provisions — Tier 1/Tier 2 and Judges

Normal Retirement Date	**Police and Fire**	Age 55
	Judges	Age 65
	Tier 1 General Service	Age 58
	Tier 2 General Service	Age 60

Normal Retirement Allowance

For Members who are not Judges, the greatest of the Full Formula benefit, the Money Match benefit, or the Formula Plus Annuity benefit (only available to Members who made contributions before August 21, 1981). For Members with 15 or more years of creditable service, the benefit will not be less than the minimum service retirement allowance of $100 per month, as described in ORS 238.310.

Full Formula The percentage multiplier from the table below multiplied by final average salary and years of creditable service plus a prior service pension, if applicable.

Percentage Multiplier	Membership Classification
2.00%	Fire, Police and Legislators
1.67%	All other members

Money Match The Member's account balance and a matching employer amount converted to an actuarially equivalent annuity.

Formula Plus Annuity The Member's account balance converted to an actuarially equivalent cash refund annuity plus the percentage multiplier from the table below multiplied by final average salary and years of creditable service, plus a prior service pension, if applicable.

Percentage Multiplier	Membership Classification
1.35%	Fire, Police and Legislators
1.00%	All other members

Judges Final average salary multiplied by the first percentage multiplier from the table below for up to 16 years of service plus the second percentage multiplier for any service in excess of 16 years, but not to exceed the maximum percentage of final average salary also shown below. Judges must elect Plan A or Plan B no later than age 60. A "Plan B" judge must serve as a pro tem judge for a total of 175 days postretirement.

Plan	Percentage Factor (up to 16 years)	Percentage Factor (after 16 years)	Maximum Percentage of Final Average Salary
A	2.8125%	1.67%	65%
B	3.75%	2.00%	75%

Final Average Salary	The greater of: • Average salary earned during the three calendar years in which the member was paid the highest salary, even if one of those years is less than a full calendar year. • Total salary earned over the last 36 months of employment divided by the actual months of service during that 36 month period. Covered salary for this purpose includes the value of member contributions assumed and paid by employers, any payment due to an employer's participation in the Unused Sick Leave program, and, for Tier 1 members, lump sum payment of unused vacation time. For Tier 2 members, covered salary is limited by Internal Revenue Code 401(a)(17). The limit was $280,000 in 2019. Tier 1 members are not subject to this limit. Under Senate Bill 1049, passed during the 2019 legislative session, the salary included in the determination of Final Average Salary will be limited for all members beginning in 2020. The limit will be equal to $195,000 in 2020, and will be indexed with inflation in later years. For this purpose, payment due to the unused sick leave program will not be affected by the Final Average Salary limit. However, lump sum payments of unused vacation time for Tier 1 members will be included in total salary subject to the limit.
Creditable Service	The number of years and months an active Member is paid a salary by a participating PERS employer and PERS benefits are being funded.
Prior Service Pension	Benefits payable on account of Prior Service Credit for a member's service with a participating employer prior to the employer's participation in PERS, as described in ORS 238.442.
SB 656/HB 3349 Adjustment	All members receive an increase to their monthly retirement benefit equal to the greater of the increase under Senate Bill 656 (SB 656) or House Bill 3349 (HB 3349). The adjustment for SB 656 only applies to members who established membership prior to July 14, 1995. Senate Bill 822, enacted in 2013, limits eligibility for these adjustments to only PERS beneficiaries who pay Oregon state income tax.

SB 656 Increase

Years of Service	General Service	Police & Fire
0-9	0.0%	0.0%
10-14	1.0	1.0
15-19	1.0	1.0
20-24	2.0	2.5
25-29	3.0	4.0
30 & Over	4.0	4.0

HB 3349 Increase

$$\left(\frac{1}{1 - \text{maximum Oregon personal income tax rate (limited to 9\%)}} - 1\right) \times \frac{\text{Service prior to October 1, 1991}}{\text{All Service}}$$

Early Retirement Eligibility	**Police and Fire**	Age 50 or 30 years of service
	Judges	Age 60
	General Service	Age 55 or 30 years of service
Early Retirement Allowance	Normal retirement allowance, actuarially reduced to early retirement age. However, there is no reduction applied if a member has completed 30 years of service (25 years for police & fire members) or for judges in Plan B.	
Vesting	Contributions made in any part of five calendar years or attainment of age 50 (45 for police & fire) while working in a qualifying position.	
Termination Benefits	**Non-Vested**	Payment of member's account balance.
	Vested	Same as normal (or early) retirement allowance, but commencement is deferred to normal (or early) retirement date.
Optional Forms of Retirement Allowance	The normal form of benefit is a cash refund annuity (joint and two-thirds survivor contingent annuity for a married judge). All optional amounts are adjusted to be actuarially equivalent. **Options Available** • Life annuity • Cash refund annuity • Life annuity guaranteed 15 years • Joint and 50% or 100% survivor contingent annuity, with or without pop-up feature • Partial Lump Sum: Refund of member contribution account balance plus a pension (under any optional form) of employer-paid portion of the Full Formula or Money Match annuity. • Total Lump Sum: Refund of member contribution account plus a matching employer amount.	
Preretirement Death Benefit Eligibility	**Judges**	Six or more years of service.
	All others	Death occurring while the member is an employee of a participating employer or within 120 days of termination provided the employee does not withdraw the account balance or retire, or a result of injuries received while in the service of a participating employer.
Preretirement Death Benefit	**Judges**	The spouse shall receive a life pension equal to two-thirds of the service retirement allowance. The beneficiary of an unmarried judge shall receive the member's accumulated contributions with interest.
	All others	The member's account balance plus a matching employer amount. If the beneficiary is the member's spouse, they may instead elect to receive the following benefit: • If the member was eligible for retirement, the actuarial equivalent of the retirement benefit the member was eligible to receive at date of death. • If the member was not eligible for retirement, 50% of the actuarial equivalent of the retirement benefit the member would have been eligible to receive if they had terminated employment on their date of death and retired at the earliest possible date.

Additional Police & Fire Death Benefits	Upon the death of a retired police officer or firefighter, the surviving spouse or dependent children under age 18 will receive a monthly benefit based on 25% of the cash refund retirement allowance due to police and fire service.
Disability Benefit Eligibility	**Duty** Disability occurring as a direct result of a job-related injury or illness, regardless of length of service. **Non-Duty** Disability occurring after ten years of service (six years, if a judge), but prior to normal retirement eligibility.
Disability Benefits	The normal retirement allowance calculated based on the service credit that would have been earned if the member had continued working to age 58 (age 55 for police and fire, age 65 for judge members) payable commencing immediately. **Fire and Police Members' Alternative** In lieu of the above, firefighters and police officers who qualify for duty disability may elect to receive a benefit of 50% of final average monthly salary at the time of disablement. **Minimum Monthly Retirement Allowance** **Judges** 45% of final average monthly salary. **All others** $100 for a member with at least 15 years of creditable service, actuarially reduced if an optional form of benefit is chosen. **Reduction of Benefits** Whenever a disabled employee's disability benefit and earned income for any month exceed the monthly salary received at the time of disablement or $400, if greater, the disability benefit will be reduced by the excess. For Tier Two members, the disability benefit may not exceed the member's salary at the time of disablement.
Waiting Time Service Purchases	Members with at least 10 years of combined credited and/or prior service under PERS may elect to purchase service credit for the six-month "waiting time" period worked prior to establishing membership in the system. The waiting time purchase is interest-free and must be purchased in one payment prior to retirement.
Police & Fire Unit Purchases	Police & fire members may purchase 60-month annuity benefits (up to $80 per month) that must be paid out by age 65 and cannot commence prior to the earliest retirement age. The amount purchased by the member is matched by the employer. In certain situations, such as termination of employment prior to retiring, or working beyond age 65, the employer's matching purchase is forfeited.
Automatic Postretirement Cost of Living Adjustments (COLAs)	All monthly pension and annuity benefits except unit purchases are eligible for postretirement adjustments. As a result of the Senate Bills 822 and 861 and the Oregon Supreme Court decision in *Moro v. State of Oregon*, automatic postretirement adjustments are based on a blended COLA as described below. **Automatic COLA prior to SB 822 and SB 861** Benefits were adjusted annually to reflect the increase or decrease in the Consumer Price Index (Portland area - all items) as published by the Bureau of Labor Statistics. The maximum adjustment to be made for any year was 2% of the previous year's benefit. Any CPI change in excess of the limit was accumulated for future benefit adjustments which would otherwise be less than the limit. No benefit was decreased below its original amount.

	Automatic Adjustments Provided by Senate Bills 822 and 861	This legislation, passed in 2013, provided for that benefits would be increased annually based on a marginal rate schedule. The increase is calculated as 1.25% on the first $60,000 of annual benefit and 0.15% on amounts above $60,000 of annual benefit.
	Blended COLA after *Moro* decision	The Supreme Court decision in *Moro* requires that members "will be entitled to receive during retirement a blended COLA rate that reflects the different COLA provisions applicable to benefits earned at different times." The Supreme Court did not articulate a specific methodology for determining the blended COLA. For purposes of this valuation, we have determined the blend based on creditable service earned before and after October 2013. This approach is consistent with OAR 459-005-0510 adopted by the PERS Board in September 2015.
Ad Hoc Adjustments	From time to time, as granted by the Legislature, retired members and beneficiaries have received increases in their monthly benefits.	
Variable Annuity Program	**Contributions**	Prior to January 1, 2004, members could elect to have 25, 50 or 75 percent of their contributions invested in the variable account.
	Benefit	At retirement, members may elect to receive a variable annuity with the funds accumulated in their variable account. Alternatively, members may elect to have all or a portion of the funds in their variable account transferred back to the regular account and receive an annuity from the System as though no variable annuity program existed. The employer-provided benefit, however, is based on the earnings the member would have received in the regular account.
Interest Credit on Member Accounts	**Tier 1 Regular**	Actuarially assumed rate of return until the rate guarantee reserve has been fully funded for three consecutive years and the Board elects to credit additional interest.
	Tier 2 Regular	Amount determined by the Board based on actual investment earnings of the regular account.
	Variable	Actual earnings in variable account.
Retiree Healthcare – Medicare Supplement (RHIA)	**Retiree Eligibility**	All of the following must be met: (a) Currently receiving a retirement allowance from the System, (b) Covered for eight years before retirement, (c) Enrolled in a PERS-sponsored health plan, and (d) Enrolled in both Medicare Part A and Part B.

	Surviving Spouse or Dependent Eligibility	A surviving spouse or dependent of a deceased RHIA-eligible retiree is eligible for RHIA benefits if they are enrolled in both Medicare Part A and Part B, and *either* of the following criteria are met: (a) Currently receiving a retirement allowance from the System, or (b) The surviving spouse or dependent was covered under the eligible retiree's PERS-sponsored health insurance at the time of the retiree's death and the deceased retiree retired before May 1, 1991.
	Benefit Amount	A monthly contribution of up to $60 per retiree is applied to PERS-sponsored Medicare supplemental insurance costs.
Retiree Healthcare – Under Age 65 (RHIPA)	**Retiree Eligibility**	Retired PERS members who were state employees at the time of retirement, are enrolled in a PERS-sponsored health plan, and are not eligible for Medicare.
	Surviving Spouse or Dependent Eligibility	A surviving spouse or dependent of a deceased RHIPA-eligible retiree is eligible for RHIPA benefits if they are not yet eligible for Medicare, and *either* of the following criteria are met: (a) Currently receiving a retirement allowance from the System, or (b) The surviving spouse or dependent was covered under the eligible retiree's PERS-sponsored health plan at the time of the retiree's death and the deceased retiree retired on or after September 29, 1991.
	Benefit	A percentage (as shown in the table below) of the maximum monthly subsidy based on years of service. The maximum monthly subsidy is calculated annually as the average difference between the health insurance premiums paid by active state employees and the premium retirees would pay if they were rated separately from active state employees. The maximum monthly subsidy for 2020 is $428.17 per month.

Years of Service with State Employer	Subsidized Amount
Under 8	0%
8-9	50%
10-14	60%
15-19	70%
20-24	80%
25-29	90%
30 & Over	100%

Changes in Plan Provisions	Senate Bill 111, signed on June 1, 2021, increased the optional death benefit available to a surviving spouse when a retirement-eligible member dies. Previously, this benefit was based on 50% of the actuarial equivalent value of the member's retirement benefit, but this was increased to 100% of the actuarial equivalent value.

Summary of Chapter 238A Provisions — OPSRP

Normal Retirement Date	**Police & Fire**	Age 60 or age 53 with 25 years of retirement credit
	General Service	Age 65 or age 58 with 30 years of retirement credit
	School Districts	Age 65 or age 58 with 30 calendar years of active membership
Normal Retirement Allowance	A single life annuity equal to final average salary times years of retirement credit attributable to service as fire and police times 1.8% plus final average salary times all other years of retirement credit times 1.5%.	
Final Average Salary	The greater of: • Average salary earned during the three calendar years in which the member was paid the highest salary, even if one of those years is less than a full calendar year. • Total salary earned over the last 36 months of employment divided by the actual months of service during that 36 month period. Covered salary for this purpose includes base pay, plus overtime up to an average amount, plus bonuses, plus member contributions paid by the employer on a salary reduction basis. Excludes payments of unused vacation or accumulated sick leave at retirement, and member contributions "assumed and paid" by the employer. For OPSRP members, covered salary is limited by Internal Revenue Code 401(a)(17) The limit was $280,000 in 2019. Under Senate Bill 1049 passed during the 2019 legislative session, the salary included in the determination of Final Average Salary will be limited for all members beginning in 2020. The limit will be equal to $195,000 in 2020, and will be indexed with inflation in later years.	
Early Retirement Eligibility	**Police & Fire**	Age 50 and 5 years of vesting service
	General Service	Age 55 and 5 years of vesting service
Early Retirement Allowance	Normal retirement allowance, actuarially reduced to early retirement age.	
Vesting	Five years or attainment of normal retirement age.	
Vested Termination Benefit	Same as normal (or early) retirement allowance, but commencement is deferred to normal (or early) retirement date.	
Optional Forms of Retirement Benefit	The normal form of benefit is a life annuity. All optional amounts are adjusted to be actuarially equivalent. **Options Available** • Life annuity • Joint and 50% or 100% survivor contingent benefit, with or without pop-up feature • Lump sum if monthly normal retirement benefit is less than $200 or if lump sum value is less than $5,000.	
Preretirement Death Benefit Eligibility	Death of a vested member before retirement benefits begin.	

Preretirement Death Benefit	If the member was eligible for retirement, the actuarial equivalent of the retirement benefit the member was eligible to receive at date of death. If the member was not eligible for retirement, 50% of the actuarial equivalent of the retirement benefit the member would have been eligible to receive if they had terminated employment on their date of death and retired at the earliest possible date.	
Disability Benefit Eligibility	**Duty**	Disablement occurring as a direct result of a job-related injury or illness, regardless of length of service.
	Non-Duty	Disablement occurring after ten years of service, but prior to normal retirement eligibility.
Disability Benefit Amounts	**Preretirement Benefit**	45% of salary during last full month of employment before disability, reduced if the total benefit exceeds 75% of salary. Benefit is payable monthly until normal retirement age.
	Retirement Benefit	Same formula as Normal Retirement Benefit, except: Final average salary is adjusted to reflect cost-of-living increases from date of disability to normal retirement age, and Retirement credits continue to accrue from date of disability to normal retirement age.
Postretirement Adjustments	All monthly pension and annuity benefits except unit purchases are eligible for postretirement adjustments. As a result of the Senate Bills 822 and 861 and the Oregon Supreme Court decision in *Moro v. State of Oregon*, automatic postretirement adjustments are based on a blended COLA as described below.	
	Automatic COLA prior to SB 822 and SB 861	Benefits were adjusted annually to reflect the increase or decrease in the Consumer Price Index (Portland area - all items) as published by the Bureau of Labor Statistics. The maximum adjustment to be made for any year was 2% of the previous year's benefit. Any CPI change in excess of the limit was accumulated for future benefit adjustments which would otherwise be less than the limit. No benefit was decreased below its original amount.
	Automatic Adjustments Provided by Senate Bills 822 and 861	This legislation, passed in 2013, provided for that benefits would be increased annually based on a marginal rate schedule. The increase is calculated as 1.25% on the first $60,000 of annual benefit and 0.15% on amounts above $60,000 of annual benefit.
Changes in Plan Provisions	Senate Bill 111, signed on June 1, 2021, increased the death benefit payable to a surviving spouse when a retirement-eligible member dies. Previously, the benefit was based on 50% of the actuarial equivalent value of the member’s retirement benefit, but this was increased to 100% of the actuarial equivalent value.	

Risk Disclosure

Risk Disclosure

The purpose of this appendix is to identify, assess, and provide illustrations of risks that are significant to Oregon PERS, and in some cases to PERS members.

The results of any actuarial valuation are based on one set of assumptions. Although we believe the current assumptions for the System provide a reasonable estimate of future expectations, it is almost certain that future experience will differ from the assumptions to some extent. It is therefore important to consider the potential impacts of these potential differences between assumptions and experience when making decisions that may affect the future financial health of the System, or of the System's members.

Actuarial Standard of Practice No. 51 (ASOP 51) addresses these issues by providing actuaries with guidance for assessing and disclosing the risk associated with measuring pension liabilities and the determination of pension plan contributions. Specifically, it directs the actuary to:

- Identify risks that may be significant to the plan.
- Assess the risks identified as significant to the plan. The assessment does not need to include numerical calculations.
- Disclose plan maturity measures and historical information that are significant to understanding the plan's risks.

ASOP 51 states that if in the actuary's professional judgment, a more detailed assessment would be significantly beneficial in helping the individuals responsible for the plan to understand the risks identified by the actuary, then the actuary should recommend that such an assessment be performed.

This Section uses the framework of ASOP 51 to communicate important information about significant risks to the System, the System's maturity, and relevant historical data.

Identification of Risks

There are a number of factors that affect future valuation results. To the extent actual experience for these factors varies from the assumptions, this will likely cause either increases or decreases in the System's future funding level and calculated contribution rates. Examples of factors that can have a significant impact on valuation results are:

- Investment return, as this will impact the level of assets available to pay benefits
- Change in combined (Tier 1/Tier 2 and OPSRP) valuation payroll, as this will impact the size of contributions received and the ability to finance unfunded amounts as a percent of future pay
- Legislative changes and judicial rulings, as these can impact both benefit levels and contribution rates
- Individual member salary variation, as this will impact the size of benefits members receive as a percent of final earnings
- Mortality, as this will impact how long retirees receive benefits
- Service retirement, as this will impact how long retirees receive benefits, the size of retiree benefits, the amount of time over which employer and employee contributions are received, and the amount of time for investment earnings to accumulate on those contributions
- Termination (members leaving active employment for reasons other than death, disability or service retirement), as this will impact the size of benefits for those members

Investment Return

Of the factors listed above, we believe the factor with the greatest potential risk is future investment returns. For this reason, we prepare a financial modeling analysis for the PERS Board each year that illustrates a wide range of potential future investment returns. In that analysis, we perform both deterministic and stochastic projections to study the impact of various investment return scenarios on future system-average contribution rates and funded status compared to the case in which the actual investment rate of return matches the assumed investment rate of return.

System Payroll Growth

Under the current funding policy, UAL amounts are amortized as a level percentage of projected combined valuation payroll over the selected amortization period. If the System's payroll grows at the assumed rate, and all other assumptions are met, this would produce a UAL contribution rate that remains level as a percentage of payroll during the amortization period. However, if payroll grows less than assumed, the dollar amount of contributions will be less than projected, and the UAL contribution rate in subsequent valuations would have to increase to make up for those UAL losses.

Legislative Changes and Judicial Rulings

Legislative changes and judicial rulings can affect both benefit levels and contribution rates. Examples include 2013 legislative changes, which reduced COLA levels and directed the PERS Board to reduce previously-adopted contribution rates; a 2015 judicial ruling, which overturned much of the previous reduction to COLA levels; and 2019 legislative changes, which directed the PERS Board to re-amortize Tier 1/Tier 2 UAL over a new 22-year period and redirected a portion of Member IAP contributions to offset future employer contribution rates. If future legislative changes limit or reduce short-term contributions, then contribution rates may need to be increased in future to make up the shortfall. And if future judicial rulings overturn past benefit changes, then future contribution rates may need to be increased to cover the resulting impact on liabilities.

Demographic Experience

While future investment returns will likely cause the greatest deviation from expected experience, there are many other assumptions made in an actuarial valuation. For these assumptions, differences between actual and assumed experience will also result in actuarial gains and losses. The executive summary of this report provides a look at the impact in the past year of actual experience deviating from assumed.

Maturity Measures and Historical Information

The remainder of this section contains historical information concerning the System's Asset Volatility Ratio (AVR) and Liability Volatility Ratio (LVR). Additional historical information can be found in the executive summary and the *Accounting/ACFR Exhibits* section.

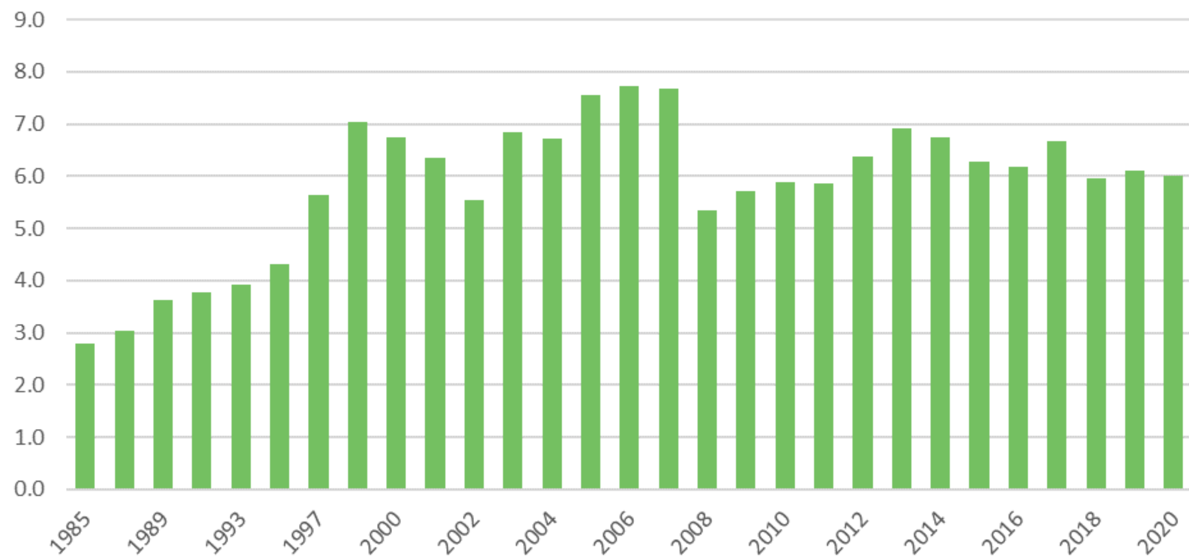
Asset Volatility Ratios and Liability Volatility Ratios

The magnitude of any contribution rate increase or decrease is affected by the System's maturity level. As a system matures, its liabilities and assets tend to grow relative to the size of its covered payroll. This creates more volatility in the contributions needed to fund the system.

One indicator of this potential volatility is the Asset Volatility Ratio (AVR), which is equal to the market value of assets divided by total valuation payroll. As assets grow compared to valuation payroll, any percentage gain or loss on those assets will be larger compared to valuation payroll. This causes any resulting changes in required contributions from those gains or losses to also be larger when measured as a percentage of valuation payroll. Therefore, plans with a high AVR will be subject to a greater level of volatility in required contributions. The AVR is a current measure since it is based on the current level of assets and will vary from year to year.

The current AVR on a combined basis for Tier 1/Tier 2 and OPSRP (including side accounts) is 6.1. The AVR grew from 2.8 at December 31, 1985 to a high of 7.7 at December 31, 2006. The graph below shows how the System matured during the last 35 years, as represented by the increasing AVR.

Asset Volatility Ratio (Market Value of Assets ÷ Valuation Payroll)



The following chart provides an illustration of how increases in the AVR increase the volatility of contributions due to the larger relative size of asset gains and losses.

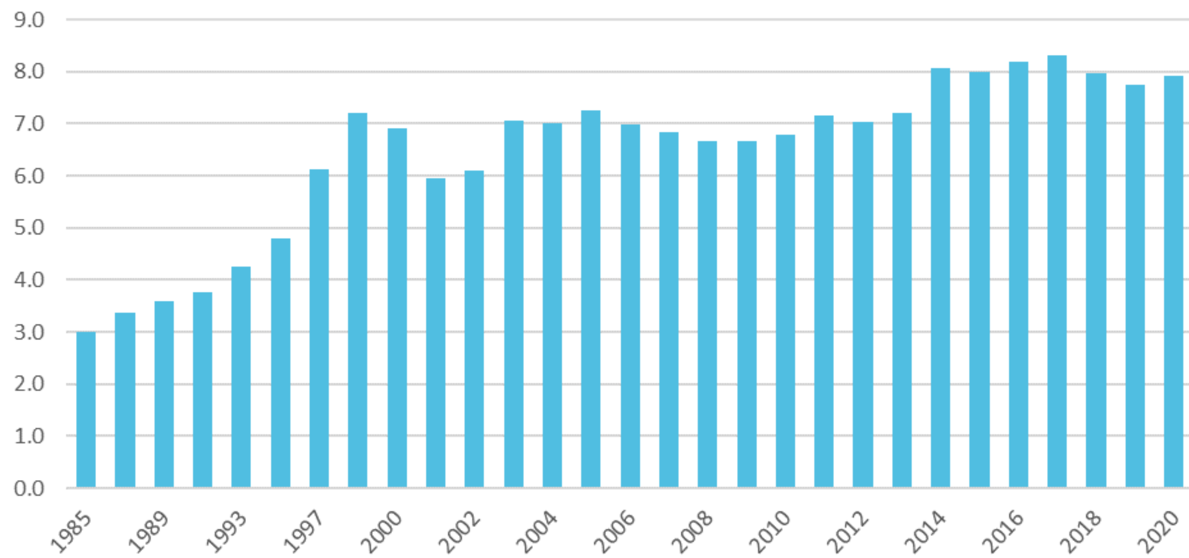
Illustrative effect of 10% asset loss (compared to assumed rate) with 20 year amortization using PERS assumptions	
Asset Volatility Ratio	**Uncollared Contribution Rate Increase**
3.0	2.08%
4.0	2.78%
5.0	3.47%
6.0	4.17%
7.0	4.86%

A one-year return of negative 3.10% is approximately a 10% asset loss for Oregon PERS because it is 10% below the 6.90% investment return assumption. As shown in the chart, if a return of negative 3.10% is not offset by future gains and the AVR was 3.0, the loss is expected to increase the uncollared contribution rate by 2.08% of pay if amortized over 20 years. However, with an AVR of 6.0, the same return is expected to increase contributions by 4.17% of valuation payroll if amortized over 20 years.

Another measure of a system's maturity is the Liability Volatility Ratio (LVR), which is equal to the AL divided by the total valuation payroll. This ratio provides an indication of the longer-term potential for contribution volatility for any given level of investment volatility. In addition, this ratio provides an indication of the potential contribution volatility due to demographic experience (gains and losses) and liability re-measurements (assumption changes). For Oregon PERS, the current LVR is 7.9.

The graph below shows the historical LVR since December 31, 1985. It follows a similar pattern to the Asset Volatility Ratio, except the increase is more gradual and the year-to-year variance is significantly less.

Liability Volatility Ratio (Actuarial Accrued Liability ÷ Valuation Payroll)



Glossary

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 Value of Assets. The value of assets used in calculating the required contributions. The actuarial value of assets 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 accrued liability. Ordinarily, the annual contribution to the plan comprises the normal cost and an amount for amortization of the unfunded 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 Tier 1, Tier 2 and OPSRP active members. This payroll is used to calculate UAL rates.

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

Fundamental Cost Equation. An expression of the long-term cost of a pension plan, which states that:

Benefits + Expenses = Contributions + Investment Earnings

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.

Pre-SLGRP Liability/(Surplus). The sum of Pre-SLGRP Pooled Liabilities and Transition Liabilities.

Pre-SLGRP Pooled Liability/(Surplus). 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.

Present Value of Future Normal Cost (PVFNC). The present value (as of the valuation date) of all future annual normal costs for current members expected to be allocated to future years in accordance with the actuarial cost method in use. By definition, this is equal to the difference between the total actuarial present value of benefits less the actuarial accrued liability under the actuarial cost method.

Rate Collar. A methodology that defines the maximum permissible period-to-period change in the UAL contribution rate.

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. 67 of the Governmental Accounting Standards Board (GASB 67). The accounting standard establishing financial reporting standards for defined benefit pension plans. The standard replaced GASB Statement 25 for plan fiscal years beginning after June 15, 2013.

Statement No. 68 of the Governmental Accounting Standards Board (GASB 68). The accounting standard governing a governmental employer's accounting for pensions. The standard replaced GASB Statement 27 for employer fiscal years beginning after June 15, 2014.

Statement No. 74 of the Governmental Accounting Standards Board (GASB 74). The accounting standard establishing financial reporting standards for post-employment benefits other than pensions. The standard replaced GASB Statement 43 for plan fiscal years beginning after June 15, 2016.

Statement No. 75 of the Governmental Accounting Standards Board (GASB 75). The accounting standard governing a governmental employer's accounting for post-employment benefits other than pensions. The standard replaced GASB Statement 45 for employer 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 Tier 1/Tier 2 normal cost rates.

Total Actuarial Present Value of Benefits. Sometimes referred to simply as "Present Value of Benefits" (PVB) or "Total Liability", the present value of all prospective benefits projected to be paid to current plan members. This amount is equal to the sum of the actuarial accrued liability and the present value of future normal costs, and is unaffected by the choice of actuarial cost method.

Transition Liability/(Surplus). 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. The initial balance of liability or surplus is calculated at the time employer joins the pool. That balance is then amortized over time via employer contribution rate charges (for a liability) or rate offsets (for a surplus).

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.