



OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

TIER ONE/TIER TWO AND OPSRP PENSION BENEFITS RHA/RHIPA RETIREE MEDICAL BENEFITS

December 31, 2022 Actuarial Valuation

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December 7, 2023

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, 2022. Our findings are set forth in this actuarial valuation report. This report reflects the benefit provisions in effect as of December 31, 2022, as described in this report.

Some of the actuarial computations presented in this report are for purposes of determining the advisory July 2025 to June 2027 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.

Actuarial assumptions, including discount rates, mortality tables, and others identified in this report, and actuarial cost methods are adopted by the Board. The Board is responsible for selecting the System’s funding policy, actuarial valuation methods, asset valuation methods, and assumptions. The policies, methods, and assumptions used in the valuation are those that have been so adopted and are described in this report. All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which, in our professional opinion, are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated future experience affecting the System and are expected to have no significant bias.

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, but not limited to, the following: System



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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 modifications to contribution calculations 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 selection of the assumptions and actuarial cost methods and adopted them as indicated herein at the September 2023 Board Meeting.

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.

Milliman's work has been prepared solely for the use and benefit of the Oregon Public Employees Retirement System for a specific and limited purpose. Milliman does not intend to benefit or create a legal duty to any third-party recipient of this work. It is a complex, technical analysis that assumes a high level of knowledge concerning the System's operations, and uses the System's data, which Milliman has not audited. 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 valuation results were developed using models intended for valuations that use standard actuarial techniques. We have reviewed the models, including their inputs, calculations, and outputs, for consistency, reasonableness, and appropriateness to the intended purpose and in compliance with generally accepted actuarial practice and relevant actuarial standards of practice.

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



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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 One/Tier Two 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, 2022 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, 2022.

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.

A key result of this advisory valuation is that the system-average collared “net” employer contribution rate for the 2025-2027 biennium is projected to increase compared to the rate currently in effect for the 2023-2025 biennium. The increase is primarily due to actual investment returns for 2022 less than the long-term assumption, along with changes to actuarial assumptions adopted with the 2022 Experience Study. Further discussion and explanation of the change in collared rates can be found in our September 2023 presentation materials to the PERS Board.

For more information on projections of potential future contribution rate changes, we encourage readers of this report to review our annual financial modeling presentations to the PERS Board. The most recent such presentation was given at the December 2023 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 allocated to past, present, and projected future service according to the actuarial cost allocation method. The portion allocated to past service is called the **actuarial accrued liability***, while the portion allocated to current year service is referred to as the **normal cost**.

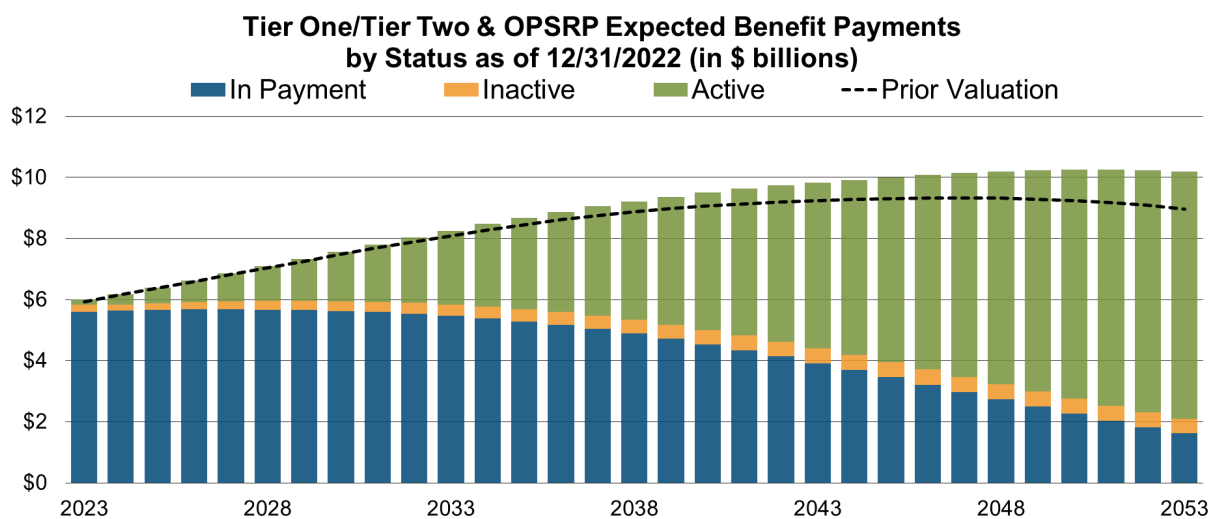
Actuarial valuations provide a tool for measuring a System’s progress towards pre-funding its benefit obligations and adjusting budgeted contributions as appropriate to reflect changing circumstances. Even though they affect actuarial funded status and contribution rate calculations, assumptions regarding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

$$\text{Benefits} + \text{Expenses} = \text{Contributions} + \text{Investment Earnings}$$

**Bolted 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 System 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 a December 31, 2021 actuarial valuation date. As shown in the graph, there is initially little change in the projected benefits calculated in the current valuation compared to the prior valuation, though the combined effect of changes to actuarial assumptions adopted with the 2022 Experience Study along with benefits accruals associated with members who were hired in 2022 eventually produces higher projected benefit payments in later years of the graph for 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, 2022. These rates are advisory only. The December 31, 2023 valuation will determine employer contribution rates that will be presented for PERS Board adoption to be effective July 1, 2025. The December 31, 2021 valuation presented the employer contribution rates effective from July 1, 2023 through June 30, 2025 that were adopted by the PERS Board on September 30, 2022.

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 One/Tier Two, OPSRP general service and OPSRP police and fire payrolls. UAL rates are calculated separately for Tier One/Tier Two 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 contribution rates for each type of payroll calculated for this valuation to the rates in effect from July 1, 2023 through June 30, 2025. 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)						
Payroll	Advisory July 1, 2025			Effective July 1, 2023		
	Tier One/ Tier Two	OPSRP General Service	OPSRP Police & Fire	Tier One/ Tier Two	OPSRP General Service	OPSRP Police & Fire
Normal Cost Rate	16.62%	10.55%	15.14%	15.91%	9.89%	14.68%
Tier One/Tier Two UAL Rate ¹	13.30%	13.30%	13.30%	13.07%	13.07%	13.07%
OPSRP UAL Rate	2.62%	2.62%	2.62%	1.69%	1.69%	1.69%
Total Pension Rate	32.54%	26.47%	31.06%	30.67%	24.65%	29.44%
Average Adjustment ²	(5.63%)	(5.63%)	(5.63%)	(7.03%)	(7.03%)	(7.03%)
Member Redirect Offset ³	(2.40%)	(0.65%)	(0.65%)	(2.40%)	(0.65%)	(0.65%)
Net Employer Pension Rate	24.51%	20.19%	24.78%	21.24%	16.97%	21.76%

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 One/Tier Two and 0.75% of payroll for OPSRP) offset employer contribution rates. Redirect does not apply to members with monthly pay below a threshold. The values shown in the table incorporate an estimate of the effect of this limitation, taking into account the changes enacted in Senate Bill 111.

Average collared UAL rates calculated in this valuation increased compared to the contribution rates calculated in the December 31, 2021 valuation, which developed contribution rates first effective July 1, 2023. This is primarily due to the 2022 investment underperformance, along with increased assumptions for future

salary growth that were adopted with the 2022 Experience Study. A portion of the collared 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 One/Tier Two rate pool. This report calculates the specific rates for each rate pool. Tier One/Tier Two rates for independent employers (employers that do not participate in a Tier One/Tier Two rate pool) are calculated in separate reports for each employer. Changes from biennium to biennium in UAL rates for each rate pool (and independent employer) are confined to a **rate collar** depending on **funded status**. The table below shows the employer pension contribution rates for each Tier One/Tier Two rate pool calculated in this valuation compared to the rates in effect as of July 1, 2023, along with the average adjustment to those rates for side account rate offsets, pre-SLGRP and Transition Liability/(Surplus) charges and credits, and the effect of the employer contribution rate offset for redirected member contributions.

Tier One/Tier Two Collared Pension Contribution Rates (Excludes IAP, OPSRP UAL Rates)				
	Advisory July 1, 2025		Effective July 1, 2023	
	SLGRP	School Districts	SLGRP	School Districts
Tier One/Tier Two Normal Cost Rate	16.77%	15.76%	16.35%	14.48%
Tier One/Tier Two UAL Rate ¹	12.66%	14.03%	12.68%	14.10%
Total Tier One/Tier Two Pension Rate²	29.43%	29.79%	29.03%	28.58%
Average Adjustment ³	(4.59%)	(8.42%)	(5.80%)	(10.77%)
Member Redirect Offset ⁴	(2.40%)	(2.40%)	(2.40%)	(2.40%)
Net Employer Tier One/Tier Two Pension Rate²	22.44%	18.97%	20.83%	15.41%

¹ Includes Multnomah Fire District #10

² Excludes OPSRP UAL rate, which is also charged on Tier One/Tier Two payroll

³ Adjustments shown are for side accounts, pre-SLGRP liabilities, and transition liabilities or surpluses, 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 One/Tier Two) offset employer contribution rates starting July 1, 2021. Redirect does not apply to members with monthly pay below a threshold. The values shown in the table reflect an estimate of the effect of this limitation.

The Tier One/Tier Two contribution rates shown here are after reflecting the effects of the rate collar. In the December 31, 2021 rate-setting valuation, the contribution rates for both the SLGRP and the School District rate pool were increased by the collar. In this advisory December 31, 2022 valuation, the effect of the rate collar for these rate pools was to increase the final contribution rate for the School District Pool but not for the SLGRP, as shown below. In general, any contribution rate increases or decreases deferred by the rate collar will be reflected in future rate-setting periods. For the School District pools, since the rate collar is preventing a decrease in the contribution rate calculated in this valuation, there currently are deferred decreases that would take effect in a subsequent biennium, if all experience subsequent to 2022 matched the valuation’s actuarial assumptions. As noted in the table above, the “average adjustment” in the table below quantifies the effects of side accounts and pre-SLGRP liabilities, and transition liabilities or surpluses on a rate pool average basis.

Collar Impact on Tier One/Tier Two Pension Contribution Rates (Excludes IAP, OPSRP UAL Rates)		
	Advisory July 1, 2025	
	SLGRP	School Districts
Total Tier One/Tier Two Pension Rate Before Collar¹	29.43%	27.97%
Collar Adjustment	0.00%	1.82%
Total Tier One/Tier Two Pension Rate After Collar¹	29.43%	29.79%
Average Adjustment	(4.59%)	(8.42%)
Member Redirect Offset	(2.40%)	(2.40%)
Net Employer Tier One/Tier Two Pension Rate¹	22.44%	18.97%

¹ Excludes OPSRP UAL rate, which is also charged on Tier One/Tier Two 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 One and Tier Two members are eligible for these benefits, so the normal cost rates are only charged to Tier One/Tier Two payroll, but the UAL rates (if positive) 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, 2023 through June 30, 2025. 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 schedule for the retiree healthcare programs that allows an actuarial surplus to be amortized over a rolling 20-year period, with the negative UAL rate offsetting the normal cost rate that would otherwise be paid on Tier One/Tier Two payroll (but not reducing it below 0.00%). Based on the current funded status of the programs and the amortization methodology described above, this valuation resulted in a 0.00% total rate for both RHIA and RHIPA.

Retiree Healthcare Contribution Rates						
Payroll	Advisory July 1, 2025			Effective July 1, 2023		
	Tier One/Tier Two	OPSRP General	OPSRP Police & Fire	Tier One/Tier Two	OPSRP General	OPSRP Police & Fire
RHIA Normal Cost Rate	0.04%	0.00%	0.00%	0.04%	0.00%	0.00%
RHIA UAL Rate	(0.04%)	0.00%	0.00%	(0.04%)	0.00%	0.00%
Total RHIA rate	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
RHIPA Normal Cost Rate	0.09%	0.00%	0.00%	0.09%	0.00%	0.00%
RHIPA UAL Rate	(0.09%)	0.00%	0.00%	(0.09%)	0.00%	0.00%
Total RHIPA rate	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

System-Average Total Pension Contribution Rates

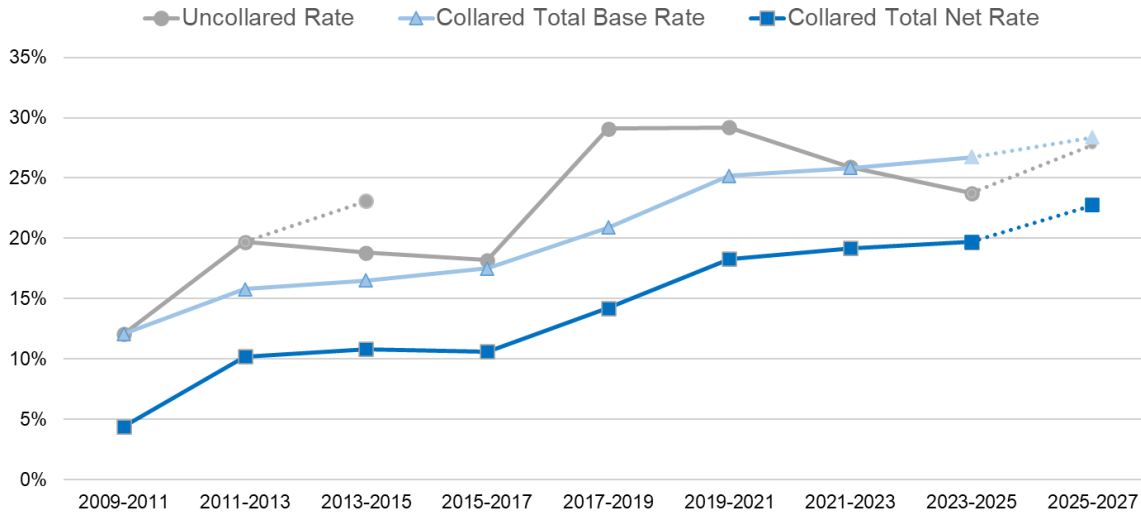
The system-wide weighted average pension contribution rates are shown below for each period since the July 1, 2009 to June 30, 2011 biennium, the rates for which were based on the December 31, 2007 rate-setting valuation. The rates shown reflect a blend of Tier One/Tier Two and OPSRP normal costs based 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 calculated uncollared UAL rate is well above (or below) the collared UAL rate being paid for the current biennium, the contribution rate stabilization method (the “rate collar”) may limit the increase (or decrease) in the rate paid in the next biennium. Further, if the uncollared UAL rate is below the collared UAL rate being paid for the current biennium, the rate collar methodology will not allow a decrease in the collared UAL rate unless specified funded status criteria are satisfied. As a result, the collared rate may temporarily be below (or above) the uncollared rate, as the rate collar methodology can a) systematically spread large UAL rate adjustments over multiple periods and/or b) restrict decreases in the collared UAL rate if funded status criteria are not satisfied.

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 base pension rate via a transfer from its side account. As of December 31, 2022, the system has approximately \$6.2 billion in unamortized side accounts, compared to \$6.6 billion in the prior year. At a system-average level, side accounts now offset employer contribution rates by 5.38% 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 cumulative actuarial asset losses (actual return less than assumed return) 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 projected biennial 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 assumption 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 the current level of 6.90% 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 2025-2027 biennium. At a system-average level, the advisory valuation shows an increase in the collared total base rate and a collared base rate that is only modestly higher than the uncollared rate. The increase in the total collared base contribution rate is due to the combined effect of the investment underperformance during 2022 and increased expectations for future salary increases adopted with the 2022 Experience Study.

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 Tier One/Tier Two UAL rates that can become effective July 1, 2025 for each Tier One/Tier Two 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 One/Tier Two 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 and pre-SLGRP and Transition Liability/(Surplus) charges and credits. These adjustments are not limited by the rate collar. Changes in the Tier One/Tier Two normal cost rate are also not limited by the rate collar.

The size of the UAL rate collar depends on the whether the employer is independent or part of a rate pool. The collar width is 3% of pay for the two large Tier One/Tier Two experience-sharing pools (the SLGRP and School District rate pool) and is 1% of pay for OPSRP. For independent employers, the collar width for the Tier One/Tier Two 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 independent 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 between 87% and 90%.

Limits on Tier One/Tier Two UAL Rates		
Effective July 1, 2025		
	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%

Limits vary linearly between those shown above if between 87% and 90% funded. Tier One/Tier Two normal cost rate and OPSRP UAL rate are also charged on Tier One/Tier Two payroll, but not shown above. Normal cost rate changes are not limited between biennia.

Funded Status

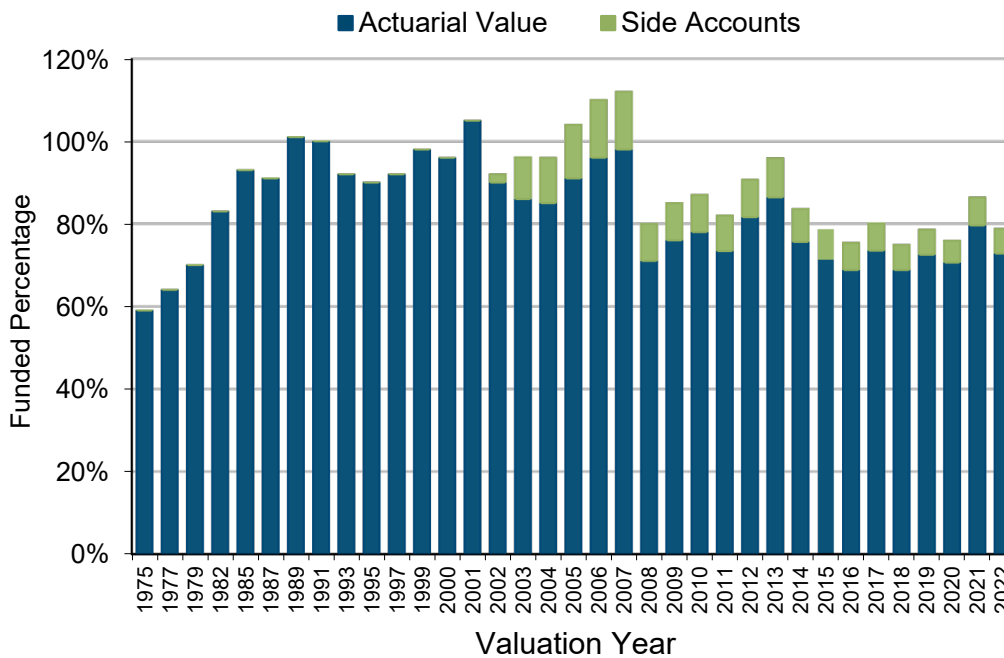
The table below shows the funded status of the various pension rate pools both on the basis used to calculate the contribution rate for each rate pool and after adjustment for side accounts (assuming side accounts offset Tier One/Tier Two liabilities). For this exhibit, all independent employers, including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

	SLGRP	School Districts	Independent Employers	OPSRP	Pension System Totals ¹
December 31, 2022					
Actuarial accrued liability	\$48,119.5	\$32,457.6	\$7,743.0	\$14,544.9	\$102,908.8
Actuarial value of assets	\$33,992.6	\$24,603.8	\$5,277.2	\$11,060.9	\$74,875.9
Funded status	70.6%	75.8%	68.2%	76.0%	72.8%
Side accounts	\$2,524.4	\$3,275.5	\$398.2	\$0.0	\$6,198.1
Funded status reflecting side accounts	75.9%	85.9%	73.3%	76.0%	78.8%
December 31, 2021					
Actuarial accrued liability	\$47,155.1	\$31,865.4	\$7,528.6	\$11,806.2	\$98,401.4
Actuarial value of assets	\$36,315.8	\$26,208.7	\$5,668.7	\$10,251.2	\$78,363.2
Funded status	77.0%	82.2%	75.3%	86.8%	79.6%
Side accounts	\$2,817.2	\$3,682.1	\$138.9	\$0.0	\$6,638.1
Funded status reflecting side accounts	83.0%	93.8%	77.1%	86.8%	86.4%

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, with increases at December 31, 2017 and December 31, 2019 due to investment gains in those years. It decreased in the December 31, 2020 valuation due to the reduction in the investment return assumption to 6.90%, then increased due to significant investment gains during 2021. In the current valuation, it decreased due to investment losses during 2022 and increased expectations for future salary increases.



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 to investment gains, the effects of employer contributions, and actual member plan coverage election experience.

	December 31, 2022			December 31, 2021		
	RHIA	RHIPA	Total	RHIA	RHIPA	Total
Actuarial accrued liability	\$345.0	\$41.3	\$386.3	\$369.2	\$45.9	\$415.1
Actuarial value of assets	\$720.0	\$85.9	\$805.8	\$763.2	\$82.9	\$846.1
Funded status	208.7%	208.0%	208.6%	206.7%	180.4%	203.8%

Amounts in millions

Asset Changes

Since December 31, 2021, contributions (including supplemental deposits but excluding side account rate offset transfers) for pension benefits have increased assets by 3.4% while benefit payments decreased assets by about 6.4%. On the whole, assets decreased by 4.9%, due to the negative investment return for the year (approximately -1.9% of beginning of year market value) and the system's negative non-investment-related cash flow position.

	Amount	Percentage of Beginning Market Value
Market Value of Assets, December 31, 2021	\$87,451.6	
Contributions	3,004.8	3.4%
Investment Income (less administrative expenses)	(1,655.9)	(1.9%)
Benefit Payments	(5,632.1)	(6.4%)
Market Value of Assets, December 31, 2022	\$83,168.4	95.1%

The Tier One Rate Guarantee Reserve that is used to pay for the interest crediting rate guarantee on active Tier One member accounts when actual investment earnings are below the assumed rate has decreased from a reserve of \$961 million as of December 31, 2021 to a reserve of \$737 million as of December 31, 2022 due to investment performance and Tier One retirement patterns in 2022. Tier One non-retired member accounts that are linked to the Rate Guarantee Reserve decreased from \$2.7 billion on December 31, 2021 to \$2.4 billion on December 31, 2022 due to retirements during the year of Tier One 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

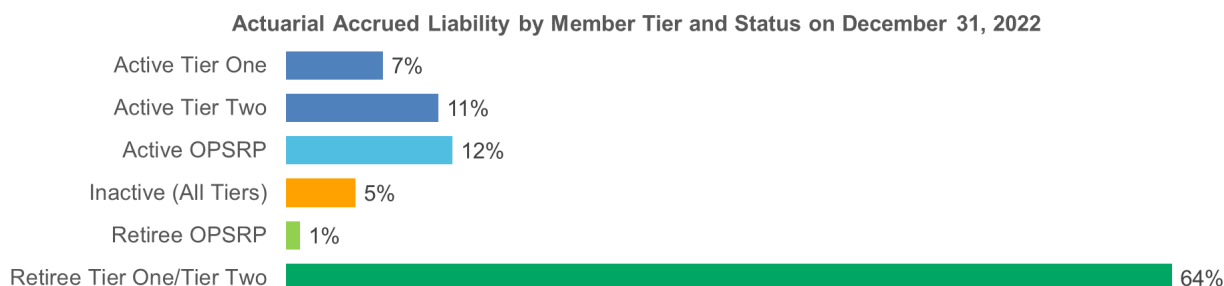
Since December 31, 2021, the system-wide actuarial accrued liability has increased primarily due to interest on the liability as current active members get closer to retirement and assumption changes made as part of the 2022 Experience Study. The normal cost for 2022, or the present value of projected 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. The remaining increase in the actuarial accrued liability was 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. The increase due to demographic experience effects was primarily due to pay increases greater than assumption and new members entering the system. These liability increases were partially offset by liability decreases resulting from interest crediting on member account balances different from assumption, a greater number of retiree and beneficiary deaths than expected under the valuation assumption, and levels of active termination of employment prior to retirement eligibility different from assumption.

	Amount	Percentage of Beginning AAL
Actuarial Accrued Liability, December 31, 2021	\$98,816.5	
Normal Cost	1,463.0	1.5%
Benefit Payments	(5,632.1)	(5.7%)
Interest	6,674.5	6.8%
Assumption & Method Changes	1,176.9	1.2%
Plan Changes	0.0	0.0%
Demographic Experience	796.3	0.8%
Actuarial Accrued Liability, December 31, 2022	\$103,295.1	104.5%

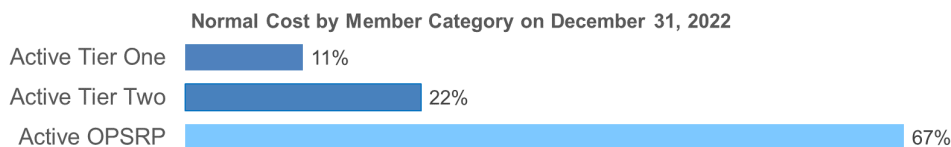
Amounts in millions

The Oregon Public Employees Retirement System is a mature system. There are currently 1.13 active members in the system for every annuitant (including retired members and beneficiaries). By comparison, the average ratio in NASRA’s October 2022 Public Fund Survey is 1.28. 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 amongst tiers, with OPSRP now representing the largest share of active liability. However, about 70% of the system’s actuarial accrued liability is due to members who are no longer actively working in covered employment, and that liability is primarily associated with Tier One and Tier Two members.



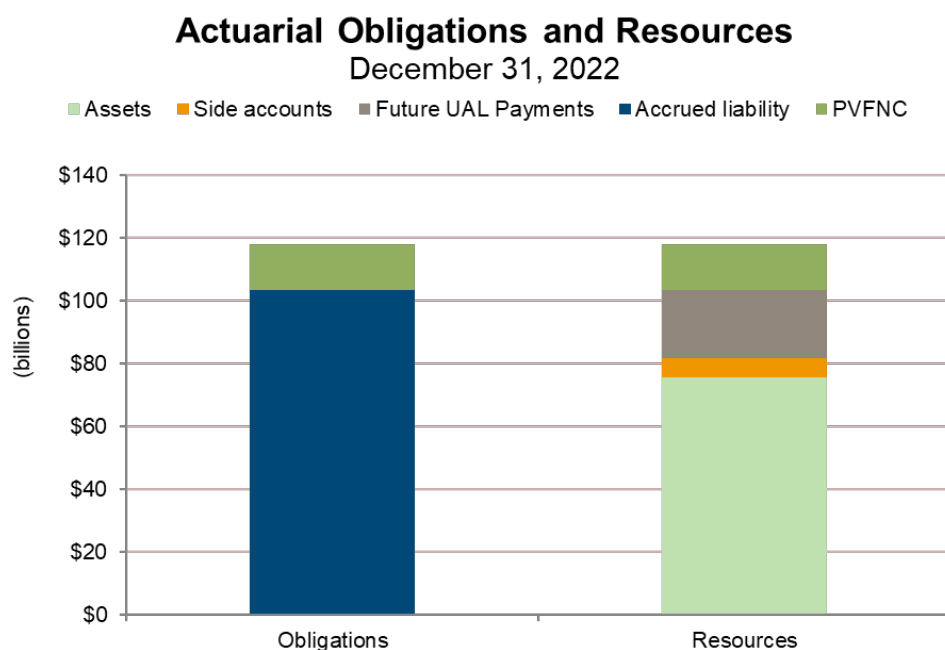
The following chart illustrates the system’s normal cost. Active Tier Two members account for 22% of the system’s normal cost compared to about 11% of the system’s actuarial accrued liability. Active OPSRP members account for 67% of the normal cost compared to 12% of the actuarial accrued liability.



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, 2022, the total actuarial present value of benefits for the system was \$118.1 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 costs 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 One/Tier Two	\$3,388.6	\$18,625.2
OPSRP General Service	9,200.3	100,761.8
OPSRP Police & Fire	1,267.8	15,269.3
Total	\$13,856.6	\$134,656.2

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 One/Tier Two payroll plus OPSRP payroll for the calendar year subsequent to the actuarial valuation date.

	Actuarial Valuation as of		
	December 31, 2022	December 31, 2021	Percent Change
Tier One/Tier Two Pension			
Actuarial accrued liability	\$88,363.9	\$86,595.2	2%
Actuarial value of assets	\$63,815.0	\$68,112.0	(6%)
Unfunded actuarial accrued liability	\$24,548.8	\$18,483.2	33%
Funded status	72%	79%	
UAL as a percentage of combined payroll	177%	146%	
Normal cost	\$563.3	\$559.8	1%
Tier One/Tier Two valuation payroll	\$3,388.6	\$3,518.8	(4%)
Normal cost rate	16.62%	15.91%	
OPSRP Pension			
Actuarial accrued liability	\$14,544.9	\$11,806.2	23%
Actuarial value of assets	\$11,060.9	\$10,251.2	8%
Unfunded actuarial accrued liability	\$3,484.1	\$1,555.0	124%
Funded status	76%	87%	
UAL as a percentage of combined payroll	25%	12%	
Normal cost	\$1,162.4	\$959.7	21%
OPSRP valuation payroll	\$10,468.0	\$9,165.3	14%
Normal cost rate	11.10%	10.47%	
Combined Pension			
Actuarial accrued liability	\$102,908.8	\$98,401.4	5%
Actuarial value of assets	\$74,875.9	\$78,363.2	(4%)
Unfunded actuarial accrued liability	\$28,032.9	\$20,038.2	40%
Funded status	73%	80%	
Combined valuation payroll	\$13,856.6	\$12,684.1	9%
UAL as a percentage of combined payroll	202%	158%	
Normal cost	\$1,725.7	\$1,519.6	14%
Combined valuation payroll	\$13,856.6	\$12,684.1	9%
Normal cost rate	12.45%	11.98%	

Amounts in millions

	Actuarial Valuation as of		
	December 31, 2022	December 31, 2021	Percent Change
RHIA			
Actuarial accrued liability	\$345.0	\$369.2	(7%)
Actuarial asset value	\$720.0	\$763.2	(6%)
Unfunded actuarial accrued liability	(\$374.9)	(\$394.0)	(5%)
Funded status	209%	207%	
Combined valuation payroll	\$13,856.6	\$12,684.1	9%
UAL as a percentage of payroll	(3%)	(3%)	
Normal cost	\$1.3	\$1.5	(13%)
Tier One/Tier Two valuation payroll	\$3,388.6	\$3,518.8	(4%)
Normal cost rate	0.04%	0.04%	
RHIPA			
Actuarial accrued liability	\$41.3	\$45.9	(10%)
Actuarial asset value	\$85.9	\$82.9	4%
Unfunded actuarial accrued liability	(\$44.6)	(\$37.0)	21%
Funded status	208%	180%	
Combined valuation payroll	\$4,278.2	\$3,938.0	9%
UAL as a percentage of payroll	(1%)	(1%)	
Normal cost	\$0.9	\$0.9	(8%)
Tier One/Tier Two valuation payroll	\$1,008.9	\$1,053.3	(4%)
Normal cost rate	0.09%	0.09%	

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 increased about 3.3%, while the system's total member population increased by about 2.9%. The data section of this report provides additional detail. State Judiciary is included in the Tier One counts.

	December 31, 2022				December 31, 2021
	Tier One	Tier Two	OPSRP	Total	Total
Active Members					
Count	10,176	26,040	147,426	183,642	177,739
Average age	58.1	53.5	43.6	45.8	46.0
Average total service	28.3	21.5	7.6	10.7	11.0
Average prior year covered salary	\$96,476	\$91,552	\$66,360	\$71,601	\$68,120
Inactive Members¹					
Count	8,694	13,097	30,722	52,513	50,741
Average age	62.6	56.1	48.4	52.7	52.8
Average monthly deferred benefit	\$2,459	\$988	\$520	\$958	\$959
Retired Members and Beneficiaries¹					
Count	129,603	22,079	11,514	163,196	159,585
Average age	74.1	69.1	68.6	73.1	72.8
Average monthly benefit	\$3,287	\$1,433	\$667	\$2,852	\$2,795
Total Members	148,473	61,216	189,662	399,351	388,065

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, 2022 actuarial valuation the following changes were made:

Assumption Changes

- The merit/longevity component assumption of individual member salary increases were updated for all groups, including adding a select assumption of an additional 2% for all members for two years.
- Assumed administrative expenses were updated and changed to a combined assumption of \$64 million for Tier One/Tier Two and OPSRP.
- The assumed healthcare cost trend rates for the RHIPA program were updated.
- 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 2022 Experience Study for the System, published in July 2023.
- Termination, disability and retirement rates were updated for some groups to more closely match observed and anticipated future experience.
- Assumptions for unused sick leave and vacation pay were updated.
- Participation assumptions for both RHIA and RHIPA were updated.

Method Changes

- An adjustment was added to the side account amortization calculations and Pre-SLGRP liability and surplus calculations to reflect the delay between when a rate is calculated and when it takes effect.
- The timing of the amortization period for Pre-SLGRP liabilities and surpluses for SLGRP employers was revised to align the biennial rate-setting cycle.

Plan Changes

There were no changes to plan provisions valued since the December 31, 2021 actuarial valuation.

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 One/ Tier Two	OPSRP	Side Accounts	Contingency and Capital Preservation Reserve	Rate Guarantee Reserve	RHIA and RHIPA	System Totals
Amount reported by PERS December 31, 2022	\$64,317.1	\$11,060.9	\$6,198.1	\$50.0	\$736.5	\$805.8	\$83,168.4
Adjustment for Recognized Transition Liability Receivable	(272.4)	0.0	0.0	0.0	0.0	0.0	(272.4)
Adjustment for Negative Rate Guarantee Reserve	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Net Pre-SLGRP Liabilities	(229.7)	0.0	0.0	0.0	0.0	0.0	(229.7)
December 31, 2022 Actuarial Value of Assets	\$63,815.0	\$11,060.9	\$6,198.1	\$50.0	\$736.5	\$805.8	\$82,666.3

Amounts in millions

PERS calculates the amount that should be transferred from side accounts to employer reserves in Tier One/ Tier Two 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 One Rate Guarantee Reserve (RGR). As shown above, at December 31, 2022 the RGR was in surplus status of \$737 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 One Rate Guarantee Reserve.

Tier One/Tier Two 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, 2021 to December 31, 2022. The reconciliation of assets is provided by PERS.

	Tier One/ Tier Two	OPSRP	Side Accounts	Contingency Reserve	Capital Preservation Reserve	Rate Guarantee Reserve	RHIA and RHIPA	System Totals
Additions								
1. Contributions								
a. Employer	\$1,116.7	\$1,045.4	\$669.9	-	-	-	\$10.6	\$2,842.6
b. Transfer from side accounts ¹	\$993.4	-	(\$993.4)	-	-	-	-	-
c. Judge member contributions	\$2.2	-	-	-	-	-	-	\$2.2
d. EPSA contributions	\$85.4	\$68.5	-	-	-	-	-	\$153.8
e. Member service purchases	\$6.2	-	-	-	-	-	-	\$6.2
f. Total	\$2,203.9	\$1,113.8	(\$323.4)	-	-	-	\$10.6	\$3,004.8
2. Net investment income								
a. Transfers	\$215.7	-	-	-	-	(\$215.7)	-	-
b. From investments	(\$1,252.4)	(\$201.8)	(\$116.4)	(\$0.0)	-	(\$8.5)	(\$14.9)	(\$1,594.0)
c. Total	(\$1,036.7)	(\$201.8)	(\$116.4)	(\$0.0)	-	(\$224.2)	(\$14.9)	(\$1,594.0)
3. Other ²	\$2.2	\$0.0	-	-	-	-	-	\$2.2
4. Total additions	\$1,169.4	\$912.0	(\$439.8)	(\$0.0)	-	(\$224.2)	(\$4.4)	\$1,413.0
Deductions								
5. Retirement and survivor benefits	(\$5,490.3)	(\$88.9)	-	-	-	-	(\$33.5)	(\$5,612.8)
6. Death Benefits	(\$5.1)	-	-	-	-	-	-	(\$5.1)
7. Refund of contributions	(\$14.2)	-	-	-	-	-	-	(\$14.2)
9. Administrative expenses	(\$48.1)	(\$13.4)	(\$0.2)	-	-	-	(\$2.4)	(\$64.1)
10. Total deductions	(\$5,557.8)	(\$102.4)	(\$0.2)	-	-	-	(\$35.9)	(\$5,696.2)
11. Net change	(\$4,388.4)	\$809.6	(\$440.0)	(\$0.0)	-	(\$224.2)	(\$40.2)	(\$4,283.2)
12. Net assets held in trust for pension benefits								
a. Beginning of year	\$68,705.4	\$10,251.2	\$6,638.1	\$50.0	-	\$960.7	\$846.1	\$87,451.6
b. End of year	\$64,317.1	\$11,060.9	\$6,198.1	\$50.0	-	\$736.5	\$805.8	\$83,168.4

Amounts in millions

¹ Side account transfers shown in this exhibit are all credited to Tier One/Tier Two 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, 2021 to December 31, 2022, 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, 2021	\$2,817.2	\$3,682.1	\$138.9	\$6,638.1
Deposits during 2022	198.2	182.0	289.7	669.9
Interest	(48.8)	(63.9)	(3.7)	(116.4)
Administrative expenses	(0.1)	(0.1)	(0.0)	(0.2)
Transfers to employer reserves	(442.1)	(524.6)	(26.8)	(993.4)
Side Accounts, December 31, 2022	\$2,524.4	\$3,275.5	\$398.2	\$6,198.1

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, 2022			
	SLGRP	School Districts	Independent Employers	System Totals
1. Side Account	\$2,524.4	\$3,275.5	\$398.2	\$6,198.1
2. Combined valuation payroll	\$8,046.3	\$4,617.1	\$1,193.2	\$13,856.6
3. Average Amortization Factor ¹	7.547	8.421	12.301	8.314
4. Average Side Account Rate Relief (1. ÷ 2. ÷ 3.)	4.16%	8.42%	2.71%	5.38%

Amounts in millions

¹ Weighted average. Effective 12/31/2022, includes adjustment for contribution lag.

Pension Plan Valuation

Tier One/Tier Two Pension Assets

Summary of Actuarial Value of Assets

This section summarizes the Tier One/Tier Two pension valuation assets as of the current and prior actuarial valuation. For valuation purposes, Tier One/Tier Two 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 One/Tier Two Totals ¹
December 31, 2022				
Member reserves	\$2,226.6	\$1,184.3	\$296.7	\$3,707.6
Employer reserves	22,249.4	16,526.1	3,411.0	42,115.8
Benefit in force reserves	9,621.0	6,820.1	1,550.9	18,004.1
EPSA reserves	125.4	73.2	18.6	217.2
Net outstanding pre-SLGRP liabilities	(229.7)			(229.7)
Total actuarial value of assets	\$33,992.6	\$24,603.8	\$5,277.2	\$63,815.0
December 31, 2021				
Member reserves	\$2,569.4	\$1,378.2	\$346.3	\$4,293.9
Employer reserves	22,567.9	16,595.8	3,487.9	42,554.9
Benefit in force reserves	11,351.7	8,184.6	1,821.2	21,372.9
EPSA reserves	89.5	50.1	13.3	153.0
Net outstanding pre-SLGRP liabilities	(262.7)			(262.7)
Total actuarial value of assets	\$36,315.8	\$26,208.7	\$5,668.7	\$68,112.0

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 aggregate net impact of side accounts is shown in a separate section of this report. The net impact of side accounts for each individual employer is shown in the respective employer's 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 One/Tier Two Totals ¹
Actuarial value of assets, December 31, 2021	\$36,315.8	\$26,208.7	\$5,668.7	\$68,112.0
Contributions				
Employer	\$815.3	\$247.3	\$146.7	\$1,209.4
Side account transfers	442.1	524.6	26.8	993.4
Member	49.3	28.8	9.6	87.6
Total contributions	\$1,306.7	\$800.7	\$183.0	\$2,290.3
Investment income	(584.6)	(425.0)	(91.7)	(1,099.2)
Benefit payments and expenses	(2,970.1)	(2,105.4)	(478.8)	(5,558.0)
Adjustments ²	(75.2)	124.9	(4.0)	69.8
Actuarial value of assets, December 31, 2022	\$33,992.6	\$24,603.8	\$5,277.2	\$63,815.0

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 \$17.2 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 net 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, 2022	\$312.2	(\$136.2)	(\$438.6)	(\$262.6)
Employer contributions	(70.7)	28.3	90.2	47.9
Supplemental payments	0.0	0.0	0.0	0.0
Interest	16.7	(7.4)	(24.1)	(14.9)
Employer mergers/adjustments	0.0	0.0	(0.0)	(0.0)
Pre-SLGRP liability/(surplus), December 31, 2022	\$258.2	(\$115.3)	(\$372.6)	(\$229.7)

Amounts in millions

Tier One/Tier Two 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, plus expected administrative expenses for the next year. 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 and cover administrative expenses 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 One/Tier Two pension benefits.

	December 31, 2022	December 31, 2021	Percent Change
Normal Cost			
Service Retirement	\$414.0	\$407.2	1.7%
Withdrawal	118.3	119.3	(0.9%)
Duty Disability	1.9	1.8	8.0%
Nonduty Disability	6.2	7.7	(19.5%)
Death	7.3	7.4	(1.4%)
Administrative Expenses	15.6	16.4	(4.4%)
Total Normal Cost	\$563.3	\$559.8	0.6%

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 One/Tier Two members as members retire from the closed Tier One/Tier Two group.

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

	Tier One/Tier Two Pension
Normal Cost, December 31, 2021	\$559.8
Expected increase (decrease)	(37.7)
Assumption and method changes	47.3
Plan changes	0.0
Deviations from expected experience	
Pay increases	\$8.7
Interest crediting experience	(4.5)
All other sources	(10.2)
Total demographic (gains) and losses	(\$6.1)
Normal Cost, December 31, 2022	\$563.3

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, 2022			December 31, 2021		Percent Change
	SLGRP	School Districts	Independent Employers	Tier One/Tier Two Totals	Tier One/Tier Two Totals	
Normal Cost¹						
Tier One General Service	\$91.5	\$57.6	\$17.0	\$166.1	\$176.1	(5.7%)
Tier Two General Service	145.7	130.0	17.3	293.0	275.3	6.5%
Tier One Police & Fire	14.9	0.1	3.9	18.9	24.0	(21.2%)
Tier Two Police & Fire	63.8	0.5	21.0	85.3	84.5	1.0%
Total Normal Cost	\$315.9	\$188.3	\$59.1	\$563.3	\$559.8	0.6%

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 One/Tier Two pension benefits.

	December 31, 2022	December 31, 2021	Percent Change
Active Members	\$18,640.0	\$18,457.7	1.0%
Inactive Members	4,219.9	4,414.4	(4.4%)
Retired Members and Beneficiaries	65,503.9	63,723.1	2.8%
Total Actuarial Accrued Liability	\$88,363.9	\$86,595.2	2.0%

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, 2022			December 31, 2021		Percent Change
	SLGRP	School Districts	Independent Employers	Tier One/Tier Two Totals ¹	Tier One/Tier Two Totals ¹	
Active Members						
Tier One General Service	\$3,611.7	\$2,281.8	\$448.2	\$6,341.7	\$6,926.1	(8.4%)
Tier One Police & Fire	499.9	1.9	154.0	655.8	847.8	(22.6%)
Tier One Total	4,111.6	2,283.7	602.2	6,997.6	7,773.9	(10.0%)
Tier Two General Service	4,628.2	4,028.7	580.2	9,237.2	8,392.3	10.1%
Tier Two Police & Fire	1,792.1	7.7	605.5	2,405.3	2,291.5	5.0%
Tier Two Total	6,420.3	4,036.4	1,185.7	11,642.4	10,683.7	9.0%
Total Active Members	\$10,531.9	\$6,320.1	\$1,788.0	\$18,640.0	\$18,457.7	1.0%
Inactive Members	2,583.6	1,324.0	312.3	4,219.9	4,414.4	(4.4%)
Retired Members and Beneficiaries	35,003.9	24,813.6	5,642.7	65,503.9	63,723.1	2.8%
Total Tier One/Tier Two Pension Liability, December 31,	\$48,119.5	\$32,457.6	\$7,743.0	\$88,363.9	\$86,595.2	2.0%

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 One/Tier Two Pension
Actuarial Accrued Liability December 31, 2021	\$86,595.2
Expected change	837.5
Assumption and method changes	582.1
Plan changes	0.0
Deviations from expected experience	
Retirements from active status	\$24.5
Disability retirements	7.7
Active mortality and withdrawal	(25.2)
Pay increases	450.6
Interest crediting experience	(130.6)
Inactive mortality	(33.3)
Data corrections	15.7
Other	37.6
Total demographic (gains) and losses	\$346.9
New Entrants (State Judiciary)	2.2
Actuarial Accrued Liability December 31, 2022	\$88,363.9

Amounts in millions

Tier One/Tier Two Pension Unfunded Accrued Liability (UAL)

Calculation of UAL Excluding Side Accounts

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 One/Tier Two Totals ¹
December 31, 2022				
1. Actuarial accrued liability	\$48,119.5	\$32,457.6	\$7,743.0	\$88,363.9
2. Actuarial value of assets	\$33,992.6	\$24,603.8	\$5,277.2	\$63,815.0
3. Unfunded accrued liability (2. - 1.)	\$14,126.8	\$7,853.8	\$2,465.7	\$24,548.8
4. Funded percentage (2. ÷ 1.)	70.6%	75.8%	68.2%	72.2%
5. Combined valuation payroll	\$8,046.3	\$4,617.1	\$1,193.0	\$13,856.4
6. Unfunded accrued liability as % of combined valuation payroll (3. ÷ 5.)	175.6%	170.1%	206.7%	177.2%
December 31, 2021				
1. Actuarial accrued liability	\$47,155.1	\$31,865.4	\$7,528.6	\$86,595.2
2. Actuarial value of assets	\$36,315.8	\$26,208.7	\$5,668.7	\$68,112.0
3. Unfunded accrued liability (2. - 1.)	\$10,839.3	\$5,656.7	\$1,859.8	\$18,483.2
4. Funded percentage (2. ÷ 1.)	77.0%	82.2%	75.3%	78.7%
5. Combined valuation payroll	\$7,439.5	\$4,141.8	\$1,102.8	\$12,684.1
6. Unfunded accrued liability as % of combined valuation payroll (3. ÷ 5.)	145.7%	136.6%	168.6%	145.7%

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 One/Tier Two UAL over a 20-year period, with each subsequent odd-year valuation establishing a new 20-year closed-period amortization schedule for new Tier One/Tier Two UAL amounts based on the total Tier One/Tier Two UAL as of that valuation date less the remaining unamortized balance of previously established Tier One/Tier Two 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 One/Tier Two UAL over 22 years. This means that effective with the December 31, 2019 rate-setting valuation, the entire unamortized Tier One/Tier Two 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 and again with the 2022 Experience Study, the PERS Board confirmed the policy of 20-year closed-period amortization schedules for Tier One/Tier Two 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, 2023, with the estimate based on experience during 2022.

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, 2021	Payment	Interest	UAL December 31, 2022	Years Remaining	Next Year's Payment
December 31, 2019	\$12,772.0	\$886.9	\$848.6	\$12,733.7	19	\$917.1
December 31, 2021	(\$1,932.7)	(\$134.2)	(\$128.4)	(\$1,926.9)	19	(\$138.8)
December 31, 2022	N/A	N/A	N/A	\$3,320.0	20	\$230.6
Total				\$14,126.8		\$1,008.9

Amounts in millions

School Districts						
Amortization Base	UAL December 31, 2021	Payment	Interest	UAL December 31, 2022	Years Remaining	Next Year's Payment
December 31, 2019	\$7,901.4	\$548.7	\$525.0	\$7,877.7	19	\$567.4
December 31, 2021	(\$2,244.7)	(\$155.9)	(\$149.1)	(\$2,238.0)	19	(\$161.2)
December 31, 2022	N/A	N/A	N/A	\$2,214.1	20	\$153.8
Total				\$7,853.8		\$559.9

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 One/Tier Two pension benefits for the year ending December 31, 2022. For this exhibit, all independent employers, including State Judiciary, have been grouped together.

	SLGRP	School Districts	Independent Employers	Tier One/Tier Two Totals ¹
1. Expected actuarial accrued liability				
a. Actuarial accrued liability at January 1, 2022	\$47,155.1	\$31,865.4	\$7,528.6	\$86,595.2
b. Normal cost (excluding expenses) at January 1, 2022	314.6	171.0	57.9	543.5
c. Benefit payments (excluding expenses) for year ending December 31, 2022	(2,944.2)	(2,087.1)	(474.6)	(5,509.6)
d. Interest	3,163.0	2,132.6	505.1	5,803.7
e. Expected actuarial accrued liability before changes (a. + b. + c. + d.)	\$47,688.5	\$32,081.9	\$7,616.9	\$87,432.7
f. Change in actuarial accrued liability at December 31, 2022, due to assumption, method, and plan changes	275.7	261.5	44.8	582.1
g. Expected actuarial accrued liability at December 31, 2022 (e. + f.)	\$47,964.2	\$32,343.4	\$7,661.7	\$88,014.8
2. Actuarial accrued liability at December 31, 2022	\$48,119.5	\$32,457.6	\$7,743.0	\$88,363.9
3. Liability gain/(loss) (1.g. - 2)	(\$155.2)	(\$114.2)	(\$81.3)	(\$349.1)
4. Expected actuarial value of assets				
a. Actuarial value of assets at January 1, 2022	\$36,315.8	\$26,208.7	\$5,668.7	\$68,112.0
b. Actual contributions for 2022	1,306.7	800.7	183.0	2,290.3
c. Benefit payments and expenses for year ending December 31, 2022	(2,970.1)	(2,105.4)	(478.8)	(5,558.0)
d. Assumed investment return	2,448.4	1,763.4	380.9	4,587.0
e. Expected actuarial value of assets before changes (a. + b. + c. + d.)	\$37,100.8	\$26,667.4	\$5,753.9	\$69,431.3
f. Change in actuarial value of assets at December 31, 2022, due to assumption changes	0.0	0.0	0.0	0.0
g. Expected actuarial value of assets at December 31, 2022 (e. + f.)	\$37,100.8	\$26,667.4	\$5,753.9	\$69,431.3
5. Actuarial value of assets as of December 31, 2022	\$33,992.6	\$24,603.8	\$5,277.2	\$63,815.0
6. Asset gain/(loss) (5. - 4.g.)	(\$3,108.2)	(\$2,063.5)	(\$476.7)	(\$5,616.3)
7. Net actuarial gain/(loss) (3. + 6.)	(\$3,263.4)	(\$2,177.8)	(\$558.0)	(\$5,965.4)

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 One/Tier Two Totals ¹
UAL, December 31, 2021	\$10,839.3	\$5,656.7	\$1,859.8	\$18,483.2
Normal cost	314.6	171.0	57.9	543.5
Administrative expenses ²	25.8	18.3	4.2	48.3
Contributions	(1,306.7)	(800.7)	(183.0)	(2,290.3)
Liability (gain) or loss	155.2	114.2	81.3	349.1
Asset (gain) or loss	3,108.2	2,063.5	476.7	5,616.3
Assumption, method, and plan changes	275.7	261.5	44.8	582.1
Interest at 6.90%	714.6	369.2	124.2	1,216.7
UAL, December 31, 2022	\$14,126.8	\$7,853.8	\$2,465.7	\$24,548.8

Amounts in millions

¹ Includes Multnomah Fire District #10.

² Reduced by EPSA interaccount transfers of \$17.2 million.

Tier One/Tier Two Pension Contribution Rate Development

Normal Cost Rates

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

	December 31, 2022	December 31, 2021	Percent Change
Normal Cost			
a. Service Retirement	\$414.0	\$407.2	1.7%
b. Withdrawal	118.3	119.3	(0.9%)
c. Duty Disability	1.9	1.8	8.0%
d. Nonduty Disability	6.2	7.7	(19.5%)
e. Death	7.3	7.4	(1.4%)
f. Administrative Expenses	15.6	16.4	(4.4%)
g. Total Normal Cost	\$563.3	\$559.8	0.6%
Tier One/Tier Two Valuation Payroll	\$3,388.6	\$3,518.8	(3.7%)
Average Normal Cost Rate			
a. Service Retirement	12.22%	11.57%	
b. Withdrawal	3.49%	3.39%	
c. Duty Disability	0.06%	0.05%	
d. Nonduty Disability	0.18%	0.22%	
e. Death	0.22%	0.21%	
f. Administrative Expenses	0.46%	0.47%	
g. Average Normal Cost Rate	16.62%	15.91%	

Amounts in millions

The table below shows the development of the Tier One/Tier Two 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 One/Tier Two Totals
Normal Cost				
Tier One General Service	\$91.5	\$57.6	\$17.0	\$166.1
Tier Two General Service	145.7	130.0	17.3	293.0
Tier One Police & Fire	14.9	0.1	3.9	18.9
Tier Two Police & Fire	63.8	0.5	21.0	85.3
Total Normal Cost	\$315.9	\$188.3	\$59.1	\$563.3
Tier One/Tier Two Valuation Payroll				
Tier One General Service	\$501.0	\$320.9	\$78.5	\$900.5
Tier Two General Service	1,029.0	871.4	120.5	2,020.9
Tier One Police & Fire	63.1	0.5	16.0	79.7
Tier Two Police & Fire	290.2	2.1	95.1	387.5
Total Valuation Payroll	\$1,883.4	\$1,195.0	\$310.2	\$3,388.6
Average Normal Cost Rates				
Tier One General Service	18.26%	17.96%	21.58%	18.44%
Tier Two General Service	14.16%	14.92%	14.32%	14.50%
Tier One Police & Fire	23.64%	22.21%	24.25%	23.76%
Tier Two Police & Fire	21.98%	22.78%	22.13%	22.02%
Average Rates				
Tier One Average	18.86%	17.96%	22.04%	18.87%
Tier Two Average	15.88%	14.94%	17.77%	15.71%
General Service Average	15.50%	15.74%	17.19%	15.71%
Police & Fire Average	22.28%	22.67%	22.43%	22.32%
System Average	16.77%	15.76%	19.07%	16.62%
Judiciary Member Contributions			0.71%	0.06%
Adjusted System Average	16.77%	15.76%	18.36%	16.56%

Amounts in millions

UAL Rates Prior to Application of the Rate Collar

The Tier One/Tier Two 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 One/Tier Two UAL as a percentage of combined (Tier One/Tier Two plus OPSRP) valuation payroll.

The following table develops the Tier One/Tier Two 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 One/Tier Two Totals ¹
December 31, 2022				
1. Total UAL	\$14,126.8	\$7,853.8	\$2,465.7	\$24,548.8
2. Next year's UAL payment	\$1,008.9	\$559.9	\$176.0	\$1,744.8
3. Combined valuation payroll	\$8,046.3	\$4,617.1	\$1,193.2	\$13,856.6
4. UAL rate (2 ÷ 3)	12.54%	12.13%	14.75%	12.59%
December 31, 2021				
1. Total UAL	\$10,839.3	\$5,656.7	\$1,859.8	\$18,483.2
2. Next year's UAL payment	\$752.7	\$392.8	\$129.2	\$1,274.7
3. Combined valuation payroll	\$7,439.5	\$4,141.8	\$1,102.8	\$12,684.1
4. UAL rate (2 ÷ 3)	10.12%	9.48%	11.71%	10.05%

Amounts in millions

¹ While the Tier One/Tier Two 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 One/Tier Two UAL attributable to the State and Community Colleges and the LGRP at the time the SLGRP was formed is maintained separately from the Tier One/Tier Two 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 was set to amortize over a fixed period ending December 31, 2027 and expressed as a percentage of the pool’s combined (Tier One/Tier Two plus OPSRP) valuation payroll. Under the actuarial methods adopted with the 2022 Experience Study, the amortization period used in the rate calculation was extended by 18 months to align with the end of the associated biennial rate-setting period and was adjusted for the “contribution lag” between the valuation date when a rate is calculated and the date which it first takes effect.

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

	December 31, 2022	December 31, 2021
State and Community College Pool		
1. Total pre-SLGRP pooled liability	\$258.2	\$312.2
2. Combined valuation payroll	\$4,729.9	\$4,376.0
3. Amortization Factor ¹	6.664	5.363
4. Pre-SLGRP pooled rate (1. ÷ 2. ÷ 3.)	0.82%	1.33%
Local Government Rate Pool		
1. Total pre-SLGRP pooled liability	(\$115.3)	(\$136.2)
2. Combined valuation payroll	\$1,983.7	\$1,822.7
3. Amortization Factor ¹	6.599	5.363
4. Pre-SLGRP pooled rate (1. ÷ 2. ÷ 3.)	(0.88%)	(1.39%)

Amounts in millions

¹ Effective 12/31/2022, reflects amortization to end of 2027-2029 biennium and includes adjustment for contribution lag.

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 One/Tier Two UAL for the SLGRP. The Transition Liability or Surplus is amortized over a fixed period and is expressed as a percentage of the employer's combined (Tier One/Tier Two plus OPSRP) valuation payroll. For employers joining the SLGRP prior to December 31, 2009 the fixed period was set to end December 31, 2027 and for all others, the fixed period was set to 18 years after the date the employer joined the SLGRP. Under the actuarial methods adopted with the 2022 Experience Study, the amortization period used in the rate calculation was extended by 18 months to align with the end of the associated biennial rate-setting period and was adjusted for the "contribution lag" between the valuation date when a rate is calculated and the date which it first takes effect.

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, 2022	December 31, 2021
1. Total transition liability/(surplus)	(\$372.6)	(\$438.7)
2. Combined valuation payroll	\$2,803.0	\$2,576.9
3. Average Amortization Factor ¹	6.627	5.478
4. Average transition liability/(surplus) rate (1. ÷ 2. ÷ 3.)	(2.01%)	(3.11%)

Amounts in millions

¹ Weighted average. Effective 12/31/2022, reflects alignment of amortization period with biennial rate changes and includes adjustment for contribution lag.

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. Under the actuarial methods adopted with the 2022 Experience Study, the amortization period used in the rate calculation was extended by 18 months to align with the end of the associated biennial rate-setting period and was adjusted for the "contribution lag" between the valuation date when a rate is calculated and the date which it first takes effect.

As part of 2003 legislation, the Multnomah Fire District #10 UAL was allocated to all Tier One/Tier Two 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 One/Tier Two 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 One/Tier Two employers, shown below in item 4.b., includes twice the valuation payroll for those four employers.

	December 31, 2022	December 31, 2021
1. Actuarial accrued liability		
a. Active members	\$0.0	\$0.0
b. Inactive members	0.0	0.0
c. Retired members and beneficiaries	43.8	46.1
d. Total actuarial accrued liability	\$43.8	\$46.1
2. Actuarial value of assets		
a. Employer reserve	(\$70.7)	(\$96.7)
b. Members reserve	0.0	0.0
c. Benefits in force reserve	12.0	15.5
d. Total actuarial value of assets	(\$58.7)	(\$81.3)
3. Multnomah FD #10 UAL (1.d. - 2.d.)	\$102.4	\$127.4
a. Portion allocated to City of Portland (21.8743% x 3.)	\$22.4	\$27.9
b. Portion allocated to all Tier One/Tier Two employers (78.1257% x 3.)	\$80.0	\$99.5
4. Combined valuation payroll		
a. City of Portland	\$567.1	\$501.9
b. All employers ¹	\$13,923.0	\$12,746.9
5. Amortization factor ²	6.931	5.363
6. Multnomah FD #10 UAL Rate		
a. City of Portland (3.a. ÷ 4.a. ÷ 5.)	0.57%	1.04%
b. All Tier One/Tier Two employers (3.b. ÷ 4.b. ÷ 5.)	0.08%	0.15%
7. Total Multnomah FD #10 UAL Rate		
a. City of Portland (6.a. + 6.b.)	0.65%	1.19%
b. City of Gresham, City of Fairview, City of Wood Village, City of Troutdale (2 x 6.b.)	0.16%	0.30%
c. All other Tier One/Tier Two employers (6.b.)	0.08%	0.15%

Amounts in millions

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

² Effective 12/31/2022, reflects amortization to end of 2027-2029 biennium and includes adjustment for contribution lag.

Calculated Employer Contribution Rate Summary (Pre-Rate Collar)

The following table summarizes the development of the total Tier One/Tier Two contribution rate for each rate pool as of the valuation date. The normal cost rates apply to Tier One/Tier Two payroll only, but all other rates are applied to combined (Tier One/Tier Two 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, 2025 Rates Calculated as of December 31, 2022				
	SLGRP	School Districts	Independent Employers	Tier One/Tier Two Totals
Tier One/Tier Two pension contribution rates				
Normal cost rate	16.77%	15.76%	18.37%	16.57%
Judiciary member contributions			0.71%	0.06%
Uncollared UAL rate	12.54%	12.13%	14.75%	12.59%
Multnomah FD #10 rate	0.12%	0.08%	0.08%	0.10%
Uncollared total Tier One/Tier Two pension rate	29.43%	27.97%	33.91%	29.32%
Average adjustments				
Pre-SLGRP liability/(surplus) rate	(0.43%)	N/A	N/A	(0.25%)
Side account rate	(4.16%)	(8.42%)	(2.71%)	(5.38%)
Total average adjustment	(4.59%)	(8.42%)	(2.71%)	(5.63%)
Member redirect offset¹	(2.40%)	(2.40%)	(2.40%)	(2.40%)
Uncollared net employer Tier One/Tier Two pension rate	22.44%	17.15%	28.80%	21.29%

¹ Redirected member contributions under Senate Bill 1049 (2.50% of payroll for Tier One/Tier Two) began offsetting employer contribution rates effective 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 Tier One/Tier Two UAL rate for a rate pool or employer is confined to a collared range based on the prior biennium’s collared Tier One/Tier Two UAL rate component. For the SLGRP and School District Pool, the Tier One/Tier Two UAL rate will not change by more than 3% of payroll. For an independent employer, the collar width for the Tier One/Tier Two UAL rate is the greater of 4% of payroll or one-third of the difference between the collared and uncollared Tier One/Tier Two UAL rate at the prior rate-setting valuation. Also, for independent employers the Tier One/Tier Two UAL rate will not be allowed to be less than 0.00% of payroll if the employer’s funded percentage (excluding side accounts) is less than 100%.

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

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 both of the Tier One/Tier Two rate pools. While the calculation is performed individually for independent employers, the table shows the calculation as if independent employers were a single rate pool for illustrative purposes.

Advisory July 1, 2025 Tier One/Tier Two Rates Calculated as of December 31, 2022				
Calculation of Collar Adjustments	SLGRP	School Districts	Independent Employers	Tier One/Tier Two Totals
1. Current Tier One/Tier Two UAL rate ¹	12.46%	13.95%	11.61%	12.88%
2. Size of rate collar				
a. Impact of rate collar, prior rate-setting valuation	2.34%	4.47%	0.00%	2.83%
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	71%	76%	68%	72%
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, 2025 Minimum UAL rate (1. - 2.d.)	12.46%	13.95%	11.61%	
4. July 1, 2025 Maximum UAL rate (1. + 2.b.)	15.46%	16.95%	15.61%	
5. Advisory July 1, 2025 UAL rate before collar	12.54%	12.13%	14.75%	
6. July 1, 2025 UAL rate after collar (5., but not less than 3. or more than 4.)	12.54%	13.95%	14.75%	
7. Impact of collar (6. - 5.)²	0.00%	1.82%	0.00%	0.61%

¹ The average Tier One/Tier Two and Independent Employers rates have 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, 2025 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, 2025 Rates Calculated as of December 31, 2022				
	SLGRP	School Districts	Independent Employers	Tier One/Tier Two Totals
Tier One/Tier Two pension contribution rates				
Normal cost rate	16.77%	15.76%	18.37%	16.57%
Judiciary member contributions			0.71%	0.06%
Collared UAL rate	12.54%	13.95%	14.75%	13.20%
Multnomah FD #10 rate	0.12%	0.08%	0.08%	0.10%
Collared total Tier One/Tier Two pension rate	29.43%	29.79%	33.91%	29.93%
Average adjustments				
Pre-SLGRP liability/(surplus) rate	(0.43%)	N/A	N/A	(0.25%)
Side account rate	(4.16%)	(8.42%)	(2.71%)	(5.38%)
Total average adjustment	(4.59%)	(8.42%)	(2.71%)	(5.63%)
Member redirect offset¹	(2.40%)	(2.40%)	(2.40%)	(2.40%)
Collared net employer Tier One/Tier Two pension rate	22.44%	18.97%	28.80%	21.90%

¹ Redirected member contributions under Senate Bill 1049 (2.50% of payroll for Tier One/Tier Two) began offsetting employer contribution rates effective 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, 2022, the actuarial value of assets for OPSRP is \$11,060.9 million.

OPSRP Liabilities

Normal Cost

The normal cost represents the present value of benefits allocated to the next year of service by the actuarial cost method, plus expected administrative expenses for the next year. 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 and cover administrative expenses during each member's 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, 2022			December 31, 2021		
	General Service	Police & Fire	Total	General Service	Police & Fire	Total
Pre-Retirement Disability						
Duty	\$1.0	\$2.5	\$3.4	\$1.0	\$1.8	\$2.7
Non-Duty	10.6	1.2	11.7	10.7	1.2	12.0
Total Pre-Retirement Disability	\$11.5	\$3.6	\$15.2	\$11.7	\$3.0	\$14.7
Other Benefits						
Service Retirement	\$805.0	\$166.3	\$971.3	\$653.3	\$143.3	\$796.6
Withdrawal	87.2	10.6	97.8	72.5	7.4	79.9
Death	15.6	2.2	17.8	12.9	1.6	14.5
Duty Disability Retirement	0.5	2.1	2.6	0.5	1.5	2.0
Non-Duty Disability Retirement	8.1	1.2	9.4	8.0	1.3	9.3
Total Other Benefits	\$916.5	\$182.4	\$1,098.9	\$747.2	\$155.1	\$902.4
Assumed Administrative Expenses	42.5	5.9	48.4	37.5	5.2	42.6
Total Normal Cost	\$970.5	\$191.9	\$1,162.4	\$796.4	\$163.3	\$959.7

Amounts in millions

Reconciliation of Change in Normal Cost

The increase in the normal cost since the prior valuation is primarily attributable to new entrants to the OPSRP program and pay increases greater than assumed. The table below reconciles the normal cost from the prior valuation to the current valuation.

	OPSRP
Normal Cost, December 31, 2021	\$959.7
Expected increase (decrease)	(9.3)
Assumption and method changes	80.4
Plan changes	0.0
New entrants	106.1
Deviations from expected experience	
Pay increases	\$34.3
All other sources	(8.8)
Total demographic (gains) and losses	\$25.5
Normal Cost, December 31, 2022	\$1,162.4

Amounts in millions

Actuarial Accrued Liability

The actuarial accrued liability represents the present value of 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, 2022			December 31, 2021		
	General Service	Police & Fire	Total	General Service	Police & Fire	Total
Active Members						
Pre-retirement Duty Disability	\$2.0	\$6.1	\$8.2	\$2.0	\$4.1	\$6.1
Pre-retirement Non-Duty Disability	94.7	9.2	103.9	98.3	9.7	108.0
Service Retirement	9,565.0	1,949.3	11,514.3	7,724.1	1,560.3	9,284.4
Withdrawal	389.6	37.3	427.0	339.2	27.6	366.8
Death	167.9	23.7	191.6	138.1	16.1	154.3
Duty Disability Retirement	3.3	13.9	17.3	3.3	9.3	12.6
Non-Duty Disability Retirement	83.8	11.4	95.2	83.7	11.7	95.4
Total Active Members	\$10,306.3	\$2,051.0	\$12,357.4	\$8,388.7	\$1,638.9	\$10,027.6
Inactive Members			989.8			828.3
Retired Members and Beneficiaries			1,197.7			950.3
Total Actuarial Accrued Liability			\$14,544.9			\$11,806.2

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, 2021	\$11,806.2
Expected change	1,671.4
Assumption and method changes	605.1
Plan changes	0.0
Deviations from expected experience	
Retirements from active status	\$8.9
Disability retirements	(1.7)
Active mortality and withdrawal	(67.1)
Pay increases	381.2
Inactive mortality	(12.2)
Data corrections	3.0
Other	6.8
Total demographic (gains) and losses	\$318.9
New entrants	143.3
Actuarial Accrued Liability December 31, 2022	\$14,544.9

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 One/Tier Two and OPSRP) valuation payroll. The table below shows the OPSRP UAL, funded status, and UAL as a percentage of combined valuation payroll.

	December 31, 2022	December 31, 2021
1. Actuarial accrued liability	\$14,544.9	\$11,806.2
2. Actuarial value of assets	\$11,060.9	\$10,251.2
3. Unfunded accrued liability (2. - 1.)	\$3,484.1	\$1,555.0
4. Funded percentage (2. ÷ 1.)	76.0%	86.8%
5. Combined valuation payroll	\$13,856.6	\$12,684.1
6. Unfunded accrued liability as % of combined valuation payroll (3. ÷ 5.)	25.1%	12.3%

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, 2019 to December 31, 2021 is amortized based on a 16-year amortization schedule beginning December 31, 2021.

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, 2023, with the estimate based on experience during 2022.

Reconciliation of UAL Bases						
Amortization Base	UAL December 31, 2021	Payment	Interest	UAL December 31, 2022	Years Remaining	Next Year's Payment
December 31, 2007	(\$19.0)	(\$9.9)	(\$0.9)	(\$10.0)	1	(\$10.3)
December 31, 2009	\$75.5	\$20.4	4.5	59.5	3	21.1
December 31, 2011	\$35.7	\$6.7	2.2	31.2	5	6.9
December 31, 2013	\$354.7	\$51.2	22.6	326.1	7	53.0
December 31, 2015	\$643.2	\$76.7	41.6	608.1	9	79.3
December 31, 2017	\$203.2	\$20.8	13.3	195.6	11	21.5
December 31, 2019	\$450.8	\$40.9	29.6	439.6	13	42.2
December 31, 2021	(\$189.2)	(\$15.5)	(12.5)	(186.2)	15	(16.0)
December 31, 2022	N/A	N/A	N/A	2,020.1	16	165.1
Total				\$3,484.1		\$362.9

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, 2022.

	OPSRP
1. Expected actuarial accrued liability	
a. Actuarial accrued liability at January 1, 2022	\$11,806.2
b. Normal cost (excluding expenses) at January 1, 2022	917.1
c. Benefit payments (excluding expenses) for year ending December 31, 2022	(88.9)
d. Interest	843.2
e. Expected actuarial accrued liability before changes (a. + b. + c. + d.)	\$13,477.6
f. Change in actuarial accrued liability at December 31, 2022, due to assumption and method changes	605.1
g. Change in actuarial accrued liability at December 31, 2022, due to plan changes	0.0
h. Expected actuarial accrued liability at December 31, 2022 (e. + f. + g.)	\$14,082.7
2. Actuarial accrued liability at December 31, 2022	\$14,544.9
3. Liability gain/(loss) (1.h. - 2)	(\$462.2)
4. Expected actuarial value of assets	
a. Actuarial value of assets at January 1, 2022	\$10,251.2
b. Actual contributions for 2022	1,113.8
c. Benefit payments and expenses for year ending December 31, 2022	(102.4)
d. Assumed investment return	742.2
e. Expected actuarial value of assets at December 31, 2022 (a. + b. + c. + d.)	\$12,004.9
5. Actuarial value of assets as of December 31, 2022	\$11,060.9
6. Asset gain/(loss) (5. - 4.e.)	(\$944.0)
7. Net actuarial gain/(loss) (3. + 6.)	(\$1,406.3)

Amounts in millions

Reconciliation of the UAL

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

The 2022 liability loss shown is primarily due to pay increases greater than assumed and 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, 2021	\$1,555.0
Normal cost (including actual administrative expenses)	930.5
Contributions	(1,113.8)
Liability (gain) or loss	462.2
Asset (gain) or loss	944.0
Assumption and method changes	605.1
Plan changes	0.0
Interest at 6.90%	101.0
UAL, December 31, 2022	\$3,484.1

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, 2022			December 31, 2021		
	General Service	Police & Fire	Total	General Service	Police & Fire	Total
Normal Cost						
Pre-retirement Disability Benefits	\$11.5	\$3.6	\$15.2	\$11.7	\$3.0	\$14.7
All Other Benefits	916.5	182.4	1,098.9	747.2	155.1	902.4
Assumed Administrative Expenses	42.5	5.9	48.4	37.5	5.2	42.6
Total Normal Cost	\$970.5	\$191.9	\$1,162.4	\$796.4	\$163.3	\$959.7
OPSRP Valuation Payroll	\$9,200.3	\$1,267.8	\$10,468.0	\$8,052.6	\$1,112.7	\$9,165.3
Normal Cost Rate						
Pre-retirement Disability Benefits	0.13%	0.29%	0.15%	0.15%	0.27%	0.16%
All Other Benefits	9.96%	14.39%	10.50%	9.28%	13.94%	9.85%
Assumed Administrative Expenses	0.46%	0.46%	0.46%	0.47%	0.47%	0.47%
Total Normal Cost Rate	10.55%	15.14%	11.10%	9.89%	14.68%	10.47%

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 One/Tier Two and OPSRP) valuation payroll.

	December 31, 2022	December 31, 2021
1. Total UAL	\$3,484.1	\$1,555.0
2. Next year's UAL payment	\$362.9	\$191.3
3. Combined valuation payroll	\$13,856.6	\$12,684.1
4. UAL rate (2 ÷ 3)	2.62%	1.51%

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 One/Tier Two and OPSRP) valuation payroll. These rates, after the application of the rate collar, are combined with each employer’s Tier One/Tier Two rates (other than Tier One/Tier Two normal cost rate) to determine each employer’s pension contribution rate on OPSRP payroll.

Advisory July 1, 2025 Rates Calculated as of December 31, 2022			
	General Service	Police & Fire	Average Rate
OPSRP pension contribution rates			
Normal cost rate	10.55%	15.14%	11.10%
Uncollared UAL rate	2.62%	2.62%	2.62%
Uncollared total OPSRP pension rate	13.17%	17.76%	13.72%
Member redirect offset¹	(0.65%)	(0.65%)	(0.65%)
Uncollared net employer OPSRP pension rate	12.52%	17.11%	13.07%

¹ Redirected member contributions under Senate Bill 1049 (0.75% of payroll for OPSRP) began offsetting employer contribution rates effective 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 percentage of the rate pool. The OPSRP UAL Rate will not be allowed to decrease if OPSRP’s funded percentage is 87% or lower. The OPSRP UAL rate may decrease by the full 1% of payroll collar width if the OPSRP funded percentage is 90% or greater, and the allowable decrease amount is phased in for OPSRP funded percentages between 87% and 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 OPSRP UAL rate collar.

Advisory July 1, 2025 Rates Calculated as of December 31, 2022	
	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	76%
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, 2025 Minimum OPSRP UAL rate (1. - 2.c.)	1.69%
4. July 1, 2025 Maximum OPSRP UAL rate (1. + 2.a.)	2.69%
5. Advisory July 1, 2025 OPSRP UAL rate before collar	2.62%
6. July 1, 2025 OPSRP UAL rate after collar (5., but not less than 3. or more than 4.)	2.62%
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, 2025 Rates Calculated as of December 31, 2022			
	General Service	Police & Fire	Average Rate
OPSRP pension contribution rates			
Normal cost rate	10.55%	15.14%	11.10%
Collared UAL rate	2.62%	2.62%	2.62%
Collared total OPSRP pension rate	13.17%	17.76%	13.72%
Member redirect offset¹	(0.65%)	(0.65%)	(0.65%)
Collared net employer OPSRP pension rate	12.52%	17.11%	13.07%

¹ Redirected member contributions under Senate Bill 1049 (0.75% of payroll for OPSRP) began offsetting employer contribution rates effective 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	\$2.2	\$8.4	\$10.6
2. Net investment income	(13.4)	(1.5)	(14.9)
3. Other	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
4. Total additions	(\$11.3)	\$6.9	(\$4.4)
Deductions			
5. Healthcare Premium Subsidies	(\$30.3)	(\$3.2)	(\$33.5)
6. Administrative expenses	<u>(1.6)</u>	<u>(0.7)</u>	<u>(2.4)</u>
7. Total deductions	(\$31.9)	(\$4.0)	(\$35.9)
8. Net change	(\$43.2)	\$3.0	(\$40.2)
9. Net assets held in trust for benefits			
a. Beginning of year	\$763.2	\$82.9	\$846.1
b. End of year	\$720.0	\$85.9	\$805.8

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, 2022	December 31, 2021	Percent Change	December 31, 2022	December 31, 2021	Percent Change
Normal Cost						
Service Retirement	\$0.9	\$1.1		\$0.8	\$0.9	
Withdrawal	0.4	0.4		0.0	0.0	
Disability	0.0	0.0		0.0	0.0	
Death	<u>0.0</u>	<u>0.0</u>		<u>0.0</u>	<u>0.0</u>	
Total Normal Cost	\$1.3	\$1.5	(13.2%)	\$0.9	\$0.9	(8.1%)

Amounts in millions

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

	RHIA	RHIPA
Normal Cost December 31, 2021	\$1.5	\$0.9
Expected increase (decrease)	(0.1)	(0.0)
Assumption and method changes	(0.0)	(0.0)
Plan changes	0.0	0.0
Deviations from expected experience		
Demographic (gains) or losses	(0.1)	(0.0)
Normal Cost December 31, 2022	\$1.3	\$0.9

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, 2022	December 31, 2021	Percent Change	December 31, 2022	December 31, 2021	Percent Change
Actives	\$36.1	\$43.6	(17.2%)	\$32.4	\$35.7	(9.4%)
Inactive Members	14.5	16.7	(13.3%)	0.0	0.0	0.0%
Retired Members and Beneficiaries	294.5	308.9	(4.7%)	8.9	10.2	(12.8%)
Total Actuarial Accrued Liability	\$345.0	\$369.2	(6.5%)	\$41.3	\$45.9	(10.1%)

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, 2021	\$369.2	\$45.9	\$415.1
Expected change	(4.3)	0.8	(3.5)
Assumption and method changes	(8.8)	(1.5)	(10.3)
Plan changes	0.0	0.0	0.0
Deviations from expected experience			
Demographic (gains) or losses	(11.1)	(4.0)	(15.0)
Actuarial Accrued Liability December 31, 2022	\$345.0	\$41.3	\$386.3

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, 2022	December 31, 2021	Percent Change	December 31, 2022	December 31, 2021	Percent Change
1. Actuarial accrued liability	\$345.0	\$369.2	(6.5%)	\$41.3	\$45.9	(10.1%)
2. Actuarial value of assets	\$720.0	\$763.2	(5.7%)	\$85.9	\$82.9	3.6%
3. Unfunded accrued liability	(\$374.9)	(\$394.0)	(4.8%)	(\$44.6)	(\$37.0)	20.6%
4. Funded percentage (2. ÷ 1.)	208.7%	206.7%	0.9%	208.0%	180.4%	15.3%
5. Combined valuation payroll	\$13,856.4	\$12,684.1	9.2%	\$4,278.2	\$3,938.0	8.6%
6. Unfunded accrued liability as % of combined valuation payroll (3. ÷ 5.)	(2.7%)	(3.1%)		(1.0%)	(0.9%)	

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 percentage is to amortize the actuarial surplus over Tier One/Tier Two payroll using a 20-year amortization basis. The resulting negative UAL rate will offset the normal cost for the program, but not below a 0.0% overall retiree healthcare contribution rate.

In the current valuation, both RHIA and RHIPA are over 100% funded percentage. As a result, the tables below show the elimination of the previous amortization bases and an estimate of the new actuarial surplus amortization base that would be established in the December 31, 2023 rate-setting valuation, with that estimate based on experience during 2022.

RHIA						
Amortization Base	UAL December 31, 2021	Payment	Interest	UAL December 31, 2022	Years Remaining	Next Year's Payment
December 31, 2022	N/A	N/A	N/A	(\$374.9)	20	(\$26.0)
Total				(\$374.9)		(\$26.0)

Amounts in millions

RHIPA						
Amortization Base	UAL December 31, 2021	Payment	Interest	UAL December 31, 2022	Years Remaining	Next Year's Payment
December 31, 2022	N/A	N/A	N/A	(\$44.6)	20	(\$3.1)
Total				(\$44.6)		(\$3.1)

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, 2022.

	RHIA	RHIPA	Retiree Healthcare Totals
1. Expected actuarial accrued liability			
a. Actuarial accrued liability at January 1, 2022	\$369.2	\$45.9	\$415.1
b. Normal cost at January 1, 2022	1.5	0.9	2.5
c. Benefit payments for year ending December 31, 2022	(30.3)	(3.2)	(33.5)
d. Interest	24.5	3.1	27.6
e. Expected actuarial accrued liability before changes (a. + b. + c. + d.)	\$364.9	\$46.7	\$411.6
f. Change in actuarial accrued liability at December 31, 2022, due to assumption and method changes	(8.8)	(1.5)	(10.3)
g. Change in actuarial accrued liability at December 31, 2022, due to plan changes	0.0	0.0	0.0
h. Expected actuarial accrued liability at December 31, 2022 (e. + f. + g.)	\$356.1	\$45.2	\$401.3
2. Actuarial accrued liability at December 31, 2022	\$345.0	\$41.3	\$386.3
3. Liability gain/(loss) (1.h. - 2.)	\$11.1	\$4.0	\$15.0
4. Expected actuarial value of assets			
a. Actuarial value of assets at January 1, 2022	\$763.2	\$82.9	\$846.1
b. Actual contributions for 2022	2.2	8.4	10.6
c. Benefit payments and expenses for year ending December 31, 2022	(31.9)	(4.0)	(35.9)
d. Assumed investment return	51.6	5.9	57.5
e. Expected actuarial value of assets before changes (a. + b. + c. + d.)	\$785.1	\$93.2	\$878.3
f. Change in actuarial value of assets at December 31, 2022, due to assumption changes	0.0	0.0	0.0
g. Change in actuarial value of assets at December 31, 2022, due to plan changes	0.0	0.0	0.0
h. Expected actuarial value of assets at December 31, 2022 (e. + f. + g.)	\$785.1	\$93.2	\$878.3
5. Actuarial value of assets at December 31, 2022	\$720.0	\$85.9	\$805.8
6. Actuarial asset gain/(loss) (5. - 4.h.)	(\$65.1)	(\$7.4)	(\$72.4)
7. Net actuarial gain/(loss) (3. + 6.)	(\$54.0)	(\$3.4)	(\$57.4)

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 asset gains, employer contributions, and lower retiree participation than assumed.

	RHIA	RHIPA
UAL, December 31, 2021	(\$394.0)	(\$37.0)
Normal Cost (including actual administrative expenses)	3.2	1.7
Contributions	(2.2)	(8.4)
Liability (gain) or loss	(11.1)	(4.0)
Asset (gain) or loss	65.1	7.4
Assumption and method changes	(8.8)	(1.5)
Interest	(27.2)	(2.8)
UAL, December 31, 2022	(\$374.9)	(\$44.6)

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, 2022	December 31, 2021	December 31, 2022	December 31, 2021
Normal Cost	\$1.3	\$1.5	\$0.9	\$0.9
Tier One/Tier Two Valuation Payroll	\$3,388.6	\$3,518.8	\$1,008.9	\$1,053.3
Normal Cost Rate	0.04%	0.04%	0.09%	0.09%

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, 2022			
	SLGRP	School Districts	Independent Employers	Retiree Healthcare Total
1. Tier One/ Tier Two Valuation Payroll				
a. All Employers' Payroll	\$1,883.4	\$1,195.0	\$310.2	\$3,388.6
b. RHIPA Employers' Payroll	\$977.6	\$0.0	\$31.3	\$1,008.9
2. Normal Cost Rate				
a. RHIA	0.04%	0.04%	0.04%	0.04%
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]	0.09%	0.04%	0.05%	0.07%

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 One/Tier Two 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 retiree healthcare program is over 100% funded percentage is to amortize the actuarial surplus over Tier One/Tier Two payroll using a 20-year amortization basis. The resulting negative UAL rate will offset the normal cost for the program, but not below a cumulative 0.00% retiree healthcare contribution rate.

	RHIA		RHIPA	
	December 31, 2022	December 31, 2021	December 31, 2022	December 31, 2021
1. Total UAL	(\$374.9)	(\$394.0)	(\$44.6)	(\$37.0)
2. Next year's UAL payment	(\$26.0)	(\$27.4)	(\$3.1)	(\$2.6)
3. Applicable payroll				
a. Combined valuation payroll	\$13,856.6	\$12,684.1	\$4,278.2	\$3,938.0
b. Tier One/Tier Two valuation payroll	\$3,388.6	\$3,518.8	\$1,008.9	\$1,053.3
c. Applicable payroll <i>(a. if 1. ≥ \$0; otherwise b.)</i>	\$3,388.6	\$3,518.8	\$1,008.9	\$1,053.3
4. UAL rate				
a. Preliminary UAL rate <i>(2. ÷ 3.c.)</i>	(0.77%)	(0.78%)	(0.31%)	(0.24%)
b. Normal cost rate	0.04%	0.04%	0.09%	0.09%
c. Final UAL rate <i>(greater of a. or -b.)</i>	(0.04%)	(0.04%)	(0.09%)	(0.09%)

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, 2022				
	SLGRP	School Districts	Independent Employers	Retiree Healthcare Total
1. All Employers' Payroll				
a. Combined Valuation Payroll	\$8,046.3	\$4,617.1	\$1,193.2	\$13,856.6
b. Tier One/Tier Two Valuation Payroll	\$1,883.4	\$1,195.0	\$310.2	\$3,388.6
c. RHIA UAL				(\$374.9)
d. Applicable Payroll <i>(a. if c. ≥ \$0; otherwise b.)</i>	\$1,883.4	\$1,195.0	\$310.2	\$3,388.6
2. RHIPA Employers' Payroll				
a. Combined Valuation Payroll	\$4,246.9	\$0.0	\$31.3	\$4,278.2
b. Tier One/Tier Two Valuation Payroll	\$977.6	\$0.0	\$31.3	\$1,008.9
c. RHIPA UAL				(\$44.6)
d. Applicable Payroll <i>(a. if c. ≥ \$0; otherwise b.)</i>	\$977.6	\$0.0	\$31.3	\$1,008.9
3. UAL Rate				
a. RHIA	(0.04%)	(0.04%)	(0.04%)	(0.04%)
b. RHIPA	(0.09%)	0.00%	(0.09%)	(0.09%)
4. Weighted Average UAL Rate				
Combined Valuation Payroll <i>(1.d. x 3.a + 2.d. x 3.b.) / 1.a.</i>	(0.02%)	(0.01%)	(0.01%)	(0.02%)
Tier One/Tier Two Valuation Payroll <i>(1.b. x 3.a + 2.b. x 3.b.) / 1.b.</i>	(0.09%)	(0.04%)	(0.05%)	(0.07%)

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 One/Tier Two payroll. The UAL rates are typically applied against all payroll, except when a retiree healthcare program is above 100% funded percentage, in which case that program’s UAL rate is applied against Tier One/Tier Two payroll only. For RHIPA, valuation payroll is for the State of Oregon and the State Judiciary only.

Advisory July 1, 2025 Rates Calculated as of December 31, 2022			
	State Agencies and Judiciary	All Other Employers	Retiree Healthcare Total
Normal Cost Rates			
RHIA	0.04%	0.04%	0.04%
RHIPA	0.09%	0.00%	0.03%
Total normal cost rate	0.13%	0.04%	0.07%
UAL Rates			
RHIA	(0.04%)	(0.04%)	(0.04%)
RHIPA	(0.09%)	0.00%	(0.03%)
Total UAL rate	(0.13%)	(0.04%)	(0.07%)
Total retiree healthcare rate	0.00%	0.00%	0.00%

Accounting / ACFR Exhibits

Accounting/ACFR Exhibits

The following information as of December 31, 2022 has been prepared and provided to Oregon PERS for inclusion in the Actuarial Section of the 2023 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. 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, 2022 measurement date in letters dated November 16, 2022 and January 20, 2023, respectively. The results for a measurement date of June 30, 2023 will be provided separately.

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, 2022 measurement date in letters dated November 16, 2022 and January 20, 2023, respectively. The results for a measurement date of June 30, 2023 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	
12/31/2021	177,739	\$12,684,124	\$71,364	7.1%	798	
12/31/2022	183,642	\$13,856,583	\$75,454	5.7%	796	

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
12/31/2021	8,264	\$337,090	4,837	\$125,758	159,688	\$5,351,880	4.1%	\$33,515
12/31/2022	8,597	\$370,754	4,973	\$138,227	163,312	\$5,584,406	4.3%	\$34,195

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 (amounts in millions)

Actuarial Valuation Date	Actuarial Value of Assets ^{1,2} (a)	Actuarial 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 One/Tier Two State & Local Government Rate Pool						
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%
12/31/2021 ⁴	\$39,133.0	\$47,155.1	\$8,022.1	83.0%	\$1,981.7	404.8%
12/31/2022	\$36,517.0	\$48,119.5	\$11,602.4	75.9%	\$1,883.4	616.0%
Tier One/Tier Two School District Rate Pool						
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%
12/31/2021	\$29,890.8	\$31,865.4	\$1,974.7	93.8%	\$1,216.3	162.3%
12/31/2022	\$27,879.3	\$32,457.6	\$4,578.3	85.9%	\$1,195.0	383.1%
Tier One/Tier Two Independent Employers and Judiciary						
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%
12/31/2021 ⁴	\$5,807.6	\$7,528.6	\$1,720.9	77.1%	\$320.8	536.5%
12/31/2022	\$5,675.4	\$7,743.0	\$2,067.5	73.3%	\$310.2	666.6%
OPSRP Rate Pool						
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%
12/31/2020	\$7,548.8	\$10,008.1	\$2,459.3	75.4%	\$8,355.4	29.4%
12/31/2021	\$10,251.2	\$11,806.2	\$1,555.0	86.8%	\$9,165.3	17.0%
12/31/2022	\$11,060.9	\$14,544.9	\$3,484.1	76.0%	\$10,468.0	33.3%
Postemployment Healthcare Benefits - Retirement Health Insurance Account						
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%)
12/31/2021	\$763.2	\$369.2	(\$394.0)	206.7%	\$3,518.8	(11.2%)
12/31/2022	\$720.0	\$345.0	(\$374.9)	208.7%	\$3,388.6	(11.1%)
Postemployment Healthcare Benefits - Retiree Health Insurance Premium Account						
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%)
12/31/2021	\$82.9	\$45.9	(\$37.0)	180.4%	\$1,053.3	(3.5%)
12/31/2022	\$85.9	\$41.3	(\$44.6)	208.0%	\$1,008.9	(4.4%)

Notes:

¹ Side account assets are included with Tier One/Tier Two assets.

² Excludes effect of Multnomah Fire District (net UAAL of \$102 million as of 12/31/2022).

³ Covered payroll shown is for members of the rate pool benefiting from the specified program. For example, Tier One/Tier Two School District payroll is only payroll for Tier One/Tier Two members and excludes OPSRP. However, UAL is amortized using combined Tier One/Tier Two 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 One/Tier Two, OPSRP, and retiree healthcare. Note that the defined benefit pension plan constitutes over 99% of the consolidated assets and liabilities.

Valuation Date ²	Actuarial Accrued Liability ¹			Valuation Assets ^{1,3}	Portion of Actuarial Accrued Liabilities Covered by Assets		
	Active Member Contributions (1)	Retired Members and Beneficiaries (2)	Other Members (3)		(1)	(2)	(3)
	12/31/2013 ⁴	\$7,120.1	\$39,531.5		\$16,476.8	\$60,372.9	100%
12/31/2014 ⁵	\$6,950.4	\$46,576.7	\$20,470.8	\$61,798.3	100%	100%	40%
12/31/2015 ⁴	\$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 ⁴	\$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 ⁴	\$4,907.4	\$59,461.0	\$25,540.5	\$71,008.3	100%	100%	26%
12/31/2020 ⁶	\$4,583.7	\$63,068.9	\$28,079.3	\$73,102.1	100%	100%	19%
12/31/2021 ⁴	\$4,557.6	\$64,992.6	\$29,266.3	\$85,847.4	100%	100%	56%
12/31/2022	\$4,099.4	\$67,005.1	\$32,190.6	\$81,879.8	100%	100%	33%

¹ Includes effect of Multnomah Fire District (net UAAL of \$102 million as of 12/31/2022).

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

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.

⁶ Results for 12/31/2020 and later include Employee Pension Stability Accounts (EPSA) balances as member contributions.

Actuarial Schedules

Solvency Test

Tier One/Tier Two Pension

(dollar amounts in millions)

Valuation Date ²	Actuarial Accrued Liability ¹			Valuation Assets ^{1,3}	Portion of Actuarial Accrued Liabilities Covered by Assets		
	Active Member Contributions (1)	Retired Members and Beneficiaries (2)	Other Members (3)		(1)	(2)	(3)
	12/31/2013 ⁴	\$7,120.1	\$39,116.2		\$14,114.1	\$58,384.0	100%
12/31/2014 ⁵	\$6,950.4	\$46,113.5	\$17,331.0	\$59,370.6	100%	100%	36%
12/31/2015 ⁴	\$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 ⁴	\$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 ⁴	\$4,907.4	\$58,567.8	\$17,888.4	\$64,121.8	100%	100%	4%
12/31/2020 ⁶	\$4,557.6	\$62,012.8	\$18,721.9	\$64,829.5	100%	97%	0%
12/31/2021	\$4,446.8	\$63,723.1	\$18,425.2	\$74,750.1	100%	100%	36%
12/31/2022	\$3,924.8	\$65,503.9	\$18,935.1	\$70,013.1	100%	100%	3%

¹ Includes effect of Multnomah Fire District (net UAAL of \$102 million as of 12/31/2022).

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

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.

⁶ Results for 12/31/2020 and later include Employee Pension Stability Accounts (EPSA) balances as member contributions.

OPSRP Pension

(dollar amounts in millions)

Valuation Date ¹	Actuarial Accrued Liability			Valuation Assets	Portion of Actuarial Accrued Liabilities Covered by Assets		
	Active Member Contributions (1)	Retired Members and Beneficiaries (2)	Other Members (3)		(1)	(2)	(3)
	12/31/2013	\$0.0	\$51.2		\$2,192.1	\$1,630.2	100%
12/31/2014 ²	\$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 ³	\$26.1	\$726.1	\$9,255.9	\$7,548.8	100%	100%	73%
12/31/2021	\$110.8	\$950.3	\$10,745.1	\$10,251.2	100%	100%	86%
12/31/2022	\$174.6	\$1,197.7	\$13,172.6	\$11,060.9	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 12/31/2014 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.

³ Results for 12/31/2020 and later include Employee Pension Stability Accounts (EPSA) balances as member contributions.

Retiree Healthcare (RHIA and RHIPA)

(dollar amounts in millions)

Retiree Health Insurance Account (RHIA)							
Valuation Date ¹	Actuarial Accrued Liability			Valuation Assets	Portion of Actuarial Accrued Liabilities Covered by Assets		
	Active Member Contributions (1)	Retired Members and Beneficiaries (2)	Other Members (3)		(1)	(2)	(3)
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%
12/31/2021	\$0.0	\$308.9	\$60.2	\$763.2	100%	100%	754%
12/31/2022	\$0.0	\$294.5	\$50.5	\$720.0	100%	100%	842%

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

Retiree Health Insurance Premium Account (RHIPA)							
Valuation Date ¹	Actuarial Accrued Liability			Valuation Assets	Portion of Actuarial Accrued Liabilities Covered by Assets		
	Active Member Contributions (1)	Retired Members and Beneficiaries (2)	Other Members (3)		(1)	(2)	(3)
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%
12/31/2021	\$0.0	\$10.2	\$35.7	\$82.9	100%	100%	203%
12/31/2022	\$0.0	\$8.9	\$32.4	\$85.9	100%	100%	238%

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

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	
	2022	2021
Type of Activity		
Retirements from Active Status	(\$39.4)	(\$89.9)
Active Mortality and Withdrawal	92.4	74.0
Pay Increases	(831.7)	(676.2)
Contributions	222.5	341.3
Interest Crediting Experience	130.6	(72.3)
Investment Income	(6,632.8)	8,739.5
Retirement, Mortality and Lump Sums from Inactive Status	12.1	14.0
Retiree and Beneficiary Mortality	33.4	137.7
New Entrants ¹	(145.5)	(106.0)
Other	(48.2)	142.5
Gain (or Loss) During Year from Financial Experience	(\$7,206.7)	\$8,504.6
Non-Recurring Items		
Assumption Changes	(1,176.9)	0.0
Plan Changes	0.0	0.0
Composite Gain (or Loss) During Year	(\$8,383.5)	\$8,504.6

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 One/Tier Two 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 One/Tier Two Pension Program	\$ Gain (or Loss) for Year	
	2022	2021
Type of Activity		
Retirements from Active Status	(\$32.2)	(\$87.2)
Active Mortality and Withdrawal	25.2	19.7
Pay Increases	(450.6)	(412.7)
Contributions	160.4	255.6
Interest Crediting Experience	130.6	(72.3)
Investment Income	(5,616.3)	7,445.1
Retirement, Mortality and Lump Sums from Inactive Status	1.7	8.1
Retiree and Beneficiary Mortality	31.7	136.8
New Entrants	(2.2)	(2.2)
Other	(53.3)	126.5
Gain (or Loss) During Year from Financial Experience	(\$5,805.0)	\$7,417.5
Non-Recurring Items		
Assumption Changes	(582.1)	0.0
Plan Changes	0.0	0.0
Composite Gain (or Loss) During Year	(\$6,387.1)	\$7,417.5

OPSRP Pension Program	\$ Gain (or Loss) for Year	
	2022	2021
Type of Activity		
Retirements from Active Status	(\$7.2)	(\$2.6)
Active Mortality and Withdrawal	\$67.1	54.3
Pay Increases	(\$381.2)	(263.6)
Contributions	\$61.1	84.3
Investment Income	(\$944.0)	1,197.5
Retirement, Mortality and Lump Sums from Inactive Status	\$10.5	5.9
Retiree and Beneficiary Mortality	\$1.7	0.9
New Entrants ¹	(\$143.3)	(103.7)
Other	(\$9.9)	2.7
Gain (or Loss) During Year from Financial Experience	(\$1,345.2)	\$975.6
Non-Recurring Items		
Assumption Changes	(\$605.1)	0.0
Plan Changes	\$0.0	0.0
Composite Gain (or Loss) During Year	(\$1,950.3)	\$975.6

¹ Accrued liability associated with newentrants is shown. For a full assessment of the newentrant effect on UAL, this would need to be combined with contributions associated with newentrants.

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)

Retiree Healthcare Programs	\$ Gain (or Loss) for Year			
	RHIA		RHIPA	
	2022	2021	2022	2021
Type of Activity				
Contributions	\$0.4	\$0.6	\$0.6	\$0.7
Investment Income	(65.1)	88.3	(7.4)	8.6
Other	11.1	10.6	4.0	2.7
Gain (or Loss) During Year from Financial Experience	(\$53.6)	\$99.5	(\$2.8)	\$12.0
Non-Recurring Items				
Assumption Changes	8.8	0.0	1.5	0.0
Plan Changes	0.0	0.0	0.0	0.0
Composite Gain (or Loss) During Year	(\$44.8)	\$99.5	(\$1.3)	\$12.0

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 One/Tier Two and OPSRP²						
12/31/2013 ³	\$60,014.1	\$62,593.6	\$2,579.5	95.9%	\$8,671.8	29.7%
12/31/2014 ⁴	\$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%
12/31/2021 ³	\$85,001.3	\$98,401.4	\$13,400.1	86.4%	\$12,684.1	105.6%
12/31/2022	\$81,074.0	\$102,908.8	\$21,834.8	78.8%	\$13,856.6	157.6%
Postemployment Healthcare Benefits - Retirement Health Insurance Account						
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%)
12/31/2021	\$763.2	\$369.2	(\$394.0)	206.7%	\$12,684.1	(3.1%)
12/31/2022	\$720.0	\$345.0	(\$374.9)	208.7%	\$13,856.6	(2.7%)
Postemployment Healthcare Benefits - Retiree Health Insurance Premium Account						
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%)
12/31/2021	\$82.9	\$45.9	(\$37.0)	180.4%	\$3,938.0	(0.9%)
12/31/2022	\$85.9	\$41.3	(\$44.6)	208.0%	\$4,278.2	(1.0%)

Notes:

¹ Side account assets are included with pension assets.² Includes UAAL for Multnomah Fire District (\$102 million as of 12/31/2022).³ Reflects the transfer in assets and liabilities for new employers that joined the SLGRP effective January 1 following the valuation date.⁴ The 12/31/2014 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, 2022.

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 One	\$501.0	\$63.1	\$564.1
Tier Two	1,029.0	290.2	1,319.3
Tier One/Tier Two Valuation Payroll	1,530.0	353.4	1,883.4
OPSRP Valuation Payroll	5,148.2	1,014.7	6,162.9
Combined Valuation Payroll	\$6,678.2	\$1,368.1	\$8,046.3

Amounts in millions

	December 31				
	2022				2021
	Tier One	Tier Two	OPSRP	Total	Total
Active Members in the Pool					
General Service	4,975	10,805	66,529	82,309	80,258
Police & Fire	513	2,386	10,001	12,900	12,813
Total	5,488	13,191	76,530	95,209	93,071
Average Age	58.7	53.9	43.9	46.1	46.3
Average Service	29.2	21.7	7.7	10.9	11.0
Average prior year Covered Salary	\$102,736	\$98,496	\$75,243	\$80,050	\$75,899
Active Members outside the Pool with previous Segments in the Pool					
General Service	1,165	2,062		3,227	3,484
Police & Fire	93	284		377	422
Total	1,258	2,346		3,604	3,906
Average Age	57.2	51.7		53.6	53.3
Average Service in the Pool	3.6	3.5		3.5	3.3
Inactive Members¹					
General Service	5,362	6,957	15,161	27,480	26,888
Police & Fire	411	657	1,407	2,475	2,402
Total	5,773	7,614	16,568	29,955	29,290
Average Age	62.1	56.0	48.0	52.8	52.8
Average Monthly Benefit	\$2,334	\$981	\$583	\$1,022	\$1,012
Retired Members and Beneficiaries¹					
General Service	69,350	11,361	6,458	87,169	85,305
Police & Fire	10,649	2,111	694	13,454	12,856
Total	79,999	13,472	7,152	100,623	98,161
Average Age	73.7	69.2	68.6	72.7	72.4
Average Monthly Benefit	\$2,789	\$1,468	\$723	\$2,465	\$2,408
Grand Total Number of Members	92,518	36,623	100,250	229,391	224,428

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 One	\$320.9	\$0.5	\$321.5
Tier Two	871.4	2.1	873.5
Tier One/Tier Two Valuation Payroll	1,192.3	2.7	1,195.0
OPSRP Valuation Payroll	3,418.7	3.4	3,422.1
Combined Valuation Payroll	\$4,611.1	\$6.1	\$4,617.1

Amounts in millions

	December 31				
	2022				2021
	Tier One	Tier Two	OPSRP	Total	Total
Active Members					
General Service	3,894	10,816	59,890	74,600	71,185
Police & Fire	5	22	44	71	71
Total	3,899	10,838	59,934	74,671	71,256
Average Age	57.6	53.1	43.5	45.6	45.9
Average Service	27.7	21.1	7.6	10.6	11.0
Average prior year Covered Salary	\$82,485	\$80,083	\$53,477	\$58,853	\$55,972
Active Members outside the Pool with previous Segments in the Pool					
General Service	569	1,100		1,669	1,751
Police & Fire	4	7		11	11
Total	573	1,107		1,680	1,762
Average Age	58.2	52.5		54.4	54.1
Average Service	6.6	5.1		5.6	5.4
Inactive Members¹					
General Service	3,334	5,710	12,021	21,065	20,246
Police & Fire	7	19	8	34	38
Total	3,341	5,729	12,029	21,099	20,284
Average Age	62.9	55.9	49.0	53.1	53.3
Average Monthly Benefit	\$1,961	\$762	\$418	\$756	\$764
Retired Members and Beneficiaries¹					
General Service	62,511	8,499	3,471	74,481	73,431
Police & Fire	205	47	13	265	254
Total	62,716	8,546	3,484	74,746	73,685
Average Age	74.9	68.8	68.6	73.9	73.6
Average Monthly Benefit	\$2,684	\$1,040	\$535	\$2,396	\$2,353
Grand Total Number of Members	70,529	26,220	75,447	172,196	166,987

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 One	\$78.5	\$16.0	\$94.6
Tier Two	120.5	95.1	215.6
Tier One/Tier Two Valuation Payroll	199.0	111.2	310.2
OPSRP Valuation Payroll	633.3	249.7	883.0
Combined Valuation Payroll	\$832.3	\$360.8	\$1,193.2

Amounts in millions

	December 31				
	2022				2021
	Tier One	Tier Two	OPSRP	Total	Total
Active Members					
General Service	684	1,328	8,626	10,638	10,305
Police & Fire	105	683	2,336	3,124	3,107
Total	789	2,011	10,962	13,762	13,412
Average Age	56.9	52.8	42.4	44.7	45.0
Average Service	24.4	21.7	7.4	10.5	10.7
Average prior year Covered Salary	\$122,070	\$107,813	\$74,785	\$82,322	\$78,687
Active Members outside the Pool with previous Segments in the Pool					
General Service	470	969		1,439	1,541
Police & Fire	105	236		341	376
Total	575	1,205		1,780	1,917
Average Age	56.9	51.8		53.4	53.0
Average Service	4.9	4.8		4.9	4.7
Inactive Members¹					
General Service	697	1,076	1,865	3,638	3,491
Police & Fire	133	195	260	588	538
Total	830	1,271	2,125	4,226	4,029
Average Age	61.2	55.5	48.0	52.9	53.1
Average Monthly Benefit	\$1,643	\$869	\$600	\$886	\$873
Retired Members and Beneficiaries¹					
General Service	9,779	1,950	794	12,523	12,150
Police & Fire	3,537	403	84	4,024	3,885
Total	13,316	2,353	878	16,547	16,035
Average Age	72.2	68.2	68.5	71.4	71.1
Average Monthly Benefit	\$2,597	\$1,260	\$729	\$2,308	\$2,261
Grand Total Number of Members	15,510	6,840	13,965	36,315	35,393

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 One	\$900.5	\$79.7	\$980.1
Tier Two	2,020.9	387.5	2,408.4
Tier One/Tier Two Valuation Payroll	2,921.4	467.2	3,388.6
OPSRP Valuation Payroll	9,200.3	1,267.8	10,468.0
Combined Valuation Payroll	\$12,121.6	\$1,734.9	\$13,856.6

Amounts in millions

	December 31				
	2022				2021
	Tier One	Tier Two	OPSRP	Total	Total
Active Members					
General Service	9,553	22,949	135,045	167,547	161,748
Police & Fire	623	3,091	12,381	16,095	15,991
Total	10,176	26,040	147,426	183,642	177,739
Average Age	58.1	53.5	43.6	45.8	46.0
Average Service	28.3	21.5	7.6	10.7	11.0
Average prior year Covered Salary	\$96,476	\$91,552	\$66,360	\$71,601	\$68,120
Inactive Members¹					
General Service	9,393	13,743	29,047	52,183	50,625
Police & Fire	551	871	1,675	3,097	2,978
Total	9,944	14,614	30,722	55,280	53,603
Average Age	62.3	55.9	48.4	52.9	53.0
Average Monthly Benefit	\$2,151	\$885	\$520	\$910	\$908
Retired Members and Beneficiaries¹					
General Service	141,640	21,810	10,723	174,173	170,886
Police & Fire	14,391	2,561	792	17,744	16,995
Total	156,031	24,371	11,515	191,917	187,881
Average Age	74.1	69.0	68.6	73.1	72.8
Average Monthly Benefit	\$2,731	\$1,298	\$667	\$2,425	\$2,374
Grand Total Number of Members	176,151	65,025	189,663	430,839	419,223

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 One 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	4	0	0	0	0	0	0	0	0	4
\$	138,060	0	0	0	0	0	0	0	0	138,060
40-44	15	0	0	0	1	2	0	0	0	18
\$	149,886	0	0	0	171,410	113,370	0	0	0	147,024
45-49	15	15	9	11	34	167	7	0	0	258
\$	164,861	156,529	100,773	105,753	100,549	92,204	114,061	0	0	102,738
50-54	13	42	68	90	209	1,631	262	3	0	2,318
\$	153,753	102,680	78,460	81,717	92,627	99,931	96,499	97,169	0	97,895
55-59	7	21	79	98	234	1,642	926	143	4	3,154
\$	152,711	107,140	85,210	76,309	82,648	97,098	98,607	93,642	112,446	95,579
60-64	6	27	49	80	163	1,028	789	333	51	2,526
\$	148,206	91,450	81,672	78,578	91,787	85,683	93,509	97,922	81,170	89,951
65-69	2	4	17	28	38	382	333	117	60	981
\$	171,410	128,364	86,461	79,423	81,303	83,393	95,114	105,839	94,395	90,943
70-74	1	1	1	12	6	70	61	34	30	216
\$	171,410	26,096	171,410	96,330	115,261	86,935	94,581	105,149	120,723	98,464
75+	0	0	0	0	3	15	27	17	16	78
\$	0	0	0	0	69,950	63,703	94,213	92,466	110,056	90,282
Total	63	110	223	319	688	4,937	2,405	647	161	9,553
\$	154,678	108,356	83,484	80,446	89,013	94,192	96,115	98,641	97,117	94,507

Tier Two 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	2	3	43	17	0	0	0	0	67
\$	34,029	122,881	61,235	80,682	75,392	0	0	0	0	78,336
40-44	2	24	80	813	570	7	0	0	0	1,496
\$	6,888	47,050	65,914	92,369	88,486	95,080	0	0	0	88,646
45-49	5	94	222	1,457	3,385	214	0	0	0	5,377
\$	23,704	49,153	68,912	91,533	96,063	97,694	0	0	0	92,892
50-54	7	79	178	1,182	3,851	719	0	0	0	6,016
\$	29,071	53,336	68,893	89,981	94,224	97,372	0	0	0	92,404
55-59	5	32	105	909	3,296	562	0	0	0	4,909
\$	13,669	56,279	70,231	83,235	86,199	90,884	0	0	0	85,576
60-64	1	18	68	622	2,408	424	0	0	0	3,541
\$	65,955	49,108	69,787	73,534	77,924	82,069	0	0	0	77,343
65-69	3	7	22	239	824	147	0	0	0	1,242
\$	16,900	28,787	72,547	72,212	75,618	88,108	0	0	0	75,981
70-74	0	6	6	41	147	22	0	0	0	222
\$	0	35,132	70,795	59,946	73,944	77,421	0	0	0	70,570
75+	1	2	5	12	53	6	0	0	0	79
\$	57,206	47,703	38,138	86,375	66,428	74,662	0	0	0	67,702
Total	26	264	689	5,318	14,551	2,101	0	0	0	22,949
\$	24,848	50,763	68,722	86,581	88,530	91,651	0	0	0	87,263

Tier One 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	0	0	0	0	0	0
\$	0	0	0	0	0	0	0	0	0	0
45-49	0	0	0	3	6	61	0	0	0	70
\$	0	0	0	94,737	120,817	145,342	0	0	0	141,071
50-54	0	1	2	0	16	205	28	0	0	252
\$	0	186,401	87,501	0	112,552	133,973	137,885	0	0	132,887
55-59	0	2	3	2	11	97	73	7	0	195
\$	0	112,006	71,716	73,714	124,713	123,765	123,891	111,064	0	121,975
60-64	0	1	0	2	1	27	31	11	2	75
\$	0	120,774	0	69,902	197,230	112,791	115,840	116,846	144,177	115,572
65-69	0	1	1	1	0	7	10	4	1	25
\$	0	55,840	122,174	145,775	0	93,184	105,621	100,128	61,016	99,752
70-74	0	0	0	0	1	2	0	1	1	5
\$	0	0	0	0	61,788	81,401	0	81,900	135,454	88,389
75+	0	0	0	0	0	0	0	0	1	1
\$	0	0	0	0	0	0	0	0	162,396	162,396
Total	0	5	6	8	35	399	142	23	5	623
\$	0	117,405	85,388	89,652	118,760	130,817	123,606	110,660	129,444	126,667

Tier Two 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	7	1	0	0	0	0	8
\$	0	0	0	105,133	103,282	0	0	0	0	104,901
40-44	0	1	8	122	146	1	0	0	0	278
\$	0	41,681	114,586	123,739	127,378	120,033	0	0	0	125,078
45-49	0	1	10	184	881	91	0	0	0	1,167
\$	0	76,955	101,444	127,475	127,781	129,307	0	0	0	127,583
50-54	0	1	1	109	766	140	0	0	0	1,017
\$	0	20,988	113,393	119,483	127,114	126,902	0	0	0	126,149
55-59	0	0	1	59	292	63	0	0	0	415
\$	0	0	110,690	109,297	114,125	122,703	0	0	0	114,733
60-64	0	0	1	22	104	31	0	0	0	158
\$	0	0	85,891	97,379	101,150	98,857	0	0	0	100,079
65-69	0	0	0	5	23	9	0	0	0	37
\$	0	0	0	93,430	110,756	112,852	0	0	0	108,924
70-74	0	0	0	1	7	1	0	0	0	9
\$	0	0	0	109,300	96,328	98,866	0	0	0	98,052
75+	0	0	0	0	2	0	0	0	0	2
\$	0	0	0	0	141,726	0	0	0	0	141,726
Total	0	3	21	509	2,222	336	0	0	0	3,091
\$	0	46,541	106,719	120,783	124,210	123,698	0	0	0	123,396

All Tier One/Tier Two 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	6	2	3	50	18	0	0	0	0	79
\$	103,383	122,881	61,235	84,105	76,941	0	0	0	0	84,050
40-44	17	25	88	935	717	10	0	0	0	1,792
\$	133,063	46,835	70,339	96,462	96,521	101,233	0	0	0	94,885
45-49	20	110	241	1,655	4,306	533	7	0	0	6,872
\$	129,572	64,048	71,452	95,629	102,623	106,824	114,061	0	0	99,644
50-54	20	123	249	1,381	4,842	2,695	290	3	0	9,603
\$	110,114	71,004	71,834	91,771	99,419	103,239	100,494	97,169	0	98,366
55-59	12	55	188	1,068	3,833	2,364	999	150	4	8,673
\$	94,777	77,725	76,765	84,021	88,221	97,398	100,455	94,455	112,446	91,427
60-64	7	46	118	726	2,676	1,510	820	344	53	6,300
\$	136,456	75,519	74,859	74,802	79,716	85,424	94,353	98,527	83,548	83,424
65-69	5	12	40	273	885	545	343	121	61	2,285
\$	78,704	64,234	79,701	73,610	76,775	85,277	95,421	105,650	93,848	83,198
70-74	1	7	7	54	161	95	61	35	31	452
\$	171,410	33,841	85,169	68,945	76,382	84,741	94,581	104,484	121,199	84,644
75+	1	2	5	12	58	21	27	17	17	160
\$	57,206	47,703	38,138	86,375	69,207	66,834	94,213	92,466	113,135	80,227
Total	89	382	939	6,154	17,496	7,773	2,547	670	166	36,216
\$	116,750	68,187	73,184	89,096	93,141	96,661	97,648	99,053	98,090	92,936

Age/Service and Prior Year Covered Payroll by Rate Pool

Tier One/Tier Two 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	1	1	1	34	13	0	0	0	0	50
\$	24,877	222,048	74,928	87,125	84,680	0	0	0	0	87,698
40-44	0	11	30	377	443	8	0	0	0	869
\$	0	50,812	84,123	98,046	98,634	107,269	0	0	0	97,352
45-49	1	37	81	687	2,020	358	6	0	0	3,190
\$	29,226	62,231	81,560	99,125	106,372	109,370	119,728	0	0	104,006
50-54	4	46	83	627	2,506	1,324	205	3	0	4,798
\$	38,878	67,984	75,823	99,708	103,472	108,685	100,079	97,169	0	103,397
55-59	2	23	93	493	1,978	1,266	581	112	4	4,552
\$	19,694	74,510	82,867	95,282	97,550	102,997	104,553	97,064	112,446	99,264
60-64	0	16	65	359	1,384	847	509	208	35	3,423
\$	0	76,272	84,466	84,624	92,599	97,132	101,741	104,605	86,865	94,684
65-69	0	4	16	155	499	337	241	88	43	1,383
\$	0	64,628	99,219	79,802	89,310	98,207	104,404	110,809	101,303	94,826
70-74	0	2	3	36	108	60	40	29	23	301
\$	0	25,582	83,521	75,874	84,090	96,309	107,690	112,574	131,871	94,680
75+	0	2	2	9	40	12	19	15	14	113
\$	0	47,703	51,346	84,509	80,953	82,010	113,300	101,025	126,534	93,986
Total	8	142	374	2,777	8,991	4,212	1,601	455	119	18,679
\$	31,125	67,253	81,914	94,979	99,762	103,617	103,303	104,289	106,308	99,742

Tier One/Tier Two 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	1	1	1	9	4	0	0	0	0	16
\$	43,180	23,715	88,114	59,919	43,335	0	0	0	0	54,226
40-44	2	13	53	488	184	1	0	0	0	741
\$	6,888	46,261	60,111	92,621	82,154	61,327	0	0	0	86,610
45-49	4	57	145	854	1,895	109	0	0	0	3,064
\$	22,323	40,349	63,890	90,012	94,762	86,690	0	0	0	90,583
50-54	4	58	150	654	1,937	1,203	60	0	0	4,066
\$	18,710	52,228	63,518	82,306	90,277	94,844	94,529	0	0	88,809
55-59	3	21	74	505	1,539	946	363	28	0	3,479
\$	9,653	48,737	55,404	70,250	74,054	87,337	92,531	80,261	0	78,486
60-64	2	20	40	322	1,114	583	258	113	13	2,465
\$	49,073	38,047	48,936	61,111	61,822	67,216	77,002	87,059	65,524	65,358
65-69	3	6	16	100	327	179	85	22	17	755
\$	16,900	28,245	43,679	58,136	55,136	59,888	66,876	84,785	77,749	58,746
70-74	0	5	2	14	43	25	16	4	6	115
\$	0	37,145	44,552	44,081	46,783	57,170	55,730	59,079	72,487	51,268
75+	0	0	3	0	15	7	6	2	3	36
\$	0	0	29,333	0	37,348	49,502	41,246	28,277	50,609	40,294
Total	19	181	484	2,946	7,058	3,053	788	169	39	14,737
\$	20,994	44,717	59,916	80,795	81,208	84,478	83,694	84,279	70,777	80,718

Tier One/Tier Two 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	0	0	0	0	0	0	0
\$	0	0	0	0	0	0	0	0	0	0
35-39	4	0	1	7	1	0	0	0	0	13
\$	138,060	0	20,664	100,539	110,771	0	0	0	0	106,726
40-44	15	1	5	70	90	1	0	0	0	182
\$	149,886	10,570	96,049	114,708	115,495	92,854	0	0	0	116,791
45-49	15	16	15	114	391	66	1	0	0	618
\$	164,861	152,681	89,959	116,643	121,352	126,270	80,056	0	0	122,047
50-54	12	19	16	100	399	168	25	0	0	739
\$	164,328	135,631	129,103	103,906	118,348	120,421	118,219	0	0	118,285
55-59	7	11	21	70	316	152	55	10	0	642
\$	152,711	139,788	125,009	104,065	98,816	113,376	109,464	104,972	0	105,990
60-64	5	10	13	45	178	80	53	23	5	412
\$	171,410	149,256	106,587	94,417	91,537	94,147	107,864	99,907	107,187	97,961
65-69	2	2	8	18	59	29	17	11	1	147
\$	171,410	171,410	112,709	106,253	90,700	91,734	110,794	106,115	46,978	99,382
70-74	1	0	2	4	10	10	5	2	2	36
\$	171,410	0	128,257	93,605	120,412	84,263	114,029	78,001	144,600	107,346
75+	1	0	0	3	3	2	2	0	0	11
\$	57,206	0	0	91,972	71,896	36,442	71,791	0	0	69,570
Total	62	59	81	431	1,447	508	158	46	8	2,800
\$	157,143	142,432	112,160	107,929	110,204	112,201	109,937	101,540	109,014	111,830

OPSRP Active General Service Members

	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20	110	0	0	0	0	0	0	0	0	110
\$	18,077	0	0	0	0	0	0	0	0	18,077
20-24	2,986	35	0	0	0	0	0	0	0	3,021
\$	32,696	37,750	0	0	0	0	0	0	0	32,755
25-29	9,230	1,634	16	0	0	0	0	0	0	10,880
\$	46,202	53,211	57,489	0	0	0	0	0	0	47,271
30-34	8,993	6,454	728	25	0	0	0	0	0	16,200
\$	52,418	63,130	68,682	65,334	0	0	0	0	0	57,436
35-39	8,190	7,457	3,735	1,010	0	0	0	0	0	20,392
\$	55,734	68,841	77,508	79,317	0	0	0	0	0	65,683
40-44	7,369	7,102	4,372	4,204	0	0	0	0	0	23,047
\$	56,929	70,356	81,196	86,664	0	0	0	0	0	71,094
45-49	5,514	5,902	3,736	3,595	0	0	0	0	0	18,747
\$	56,381	68,060	79,204	87,210	0	0	0	0	0	70,518
50-54	4,505	4,941	3,333	3,342	0	0	0	0	0	16,121
\$	57,197	67,525	77,490	81,812	0	0	0	0	0	69,661
55-59	3,214	3,278	2,675	2,961	0	0	0	0	0	12,128
\$	55,046	64,956	70,943	72,980	0	0	0	0	0	65,609
60-64	2,373	2,540	1,978	2,379	0	0	0	0	0	9,270
\$	52,353	62,348	68,676	67,624	0	0	0	0	0	62,493
65-69	931	1,104	819	877	0	0	0	0	0	3,731
\$	46,399	57,340	66,235	67,959	0	0	0	0	0	59,058
70-74	328	321	210	181	0	0	0	0	0	1,040
\$	32,472	47,234	56,514	63,139	0	0	0	0	0	47,220
75+	124	120	61	53	0	0	0	0	0	358
\$	27,750	32,710	46,298	51,817	0	0	0	0	0	36,136
Total	53,867	40,888	21,663	18,627	0	0	0	0	0	135,045
\$	51,988	65,979	75,896	79,656	0	0	0	0	0	63,875

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	2	0	0	0	0	0	0	0	0	2
\$	22,930	0	0	0	0	0	0	0	0	22,930
20-24	339	4	0	0	0	0	0	0	0	343
\$	60,043	47,841	0	0	0	0	0	0	0	59,900
25-29	1,168	366	1	0	0	0	0	0	0	1,535
\$	73,796	89,350	63,328	0	0	0	0	0	0	77,498
30-34	995	1,239	168	4	0	0	0	0	0	2,406
\$	76,497	96,364	105,507	84,263	0	0	0	0	0	88,766
35-39	598	910	677	244	0	0	0	0	0	2,429
\$	76,789	98,597	109,148	111,386	0	0	0	0	0	97,454
40-44	372	565	613	707	0	0	0	0	0	2,257
\$	77,346	93,934	110,673	115,756	0	0	0	0	0	102,582
45-49	258	319	379	518	0	0	0	0	0	1,474
\$	78,849	93,904	107,704	110,844	0	0	0	0	0	100,770
50-54	170	189	261	322	0	0	0	0	0	942
\$	91,787	90,817	101,849	108,493	0	0	0	0	0	100,091
55-59	104	147	155	156	0	0	0	0	0	562
\$	88,444	91,348	96,356	103,189	0	0	0	0	0	95,478
60-64	61	78	66	111	0	0	0	0	0	316
\$	83,668	89,778	95,892	95,353	0	0	0	0	0	91,834
65-69	20	18	22	30	0	0	0	0	0	90
\$	84,764	80,793	85,954	89,579	0	0	0	0	0	85,866
70-74	3	4	4	9	0	0	0	0	0	20
\$	112,604	52,862	109,540	105,933	0	0	0	0	0	97,041
75+	0	1	3	1	0	0	0	0	0	5
\$	0	210,582	123,429	81,502	0	0	0	0	0	132,474
Total	4,090	3,840	2,349	2,102	0	0	0	0	0	12,381
\$	75,717	94,925	106,807	110,424	0	0	0	0	0	93,465

All OPSRP Active Members

	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
<20	112	0	0	0	0	0	0	0	0	112
\$	18,164	0	0	0	0	0	0	0	0	18,164
20-24	3,325	39	0	0	0	0	0	0	0	3,364
\$	35,484	38,785	0	0	0	0	0	0	0	35,522
25-29	10,398	2,000	17	0	0	0	0	0	0	12,415
\$	49,301	59,824	57,833	0	0	0	0	0	0	51,008
30-34	9,988	7,693	896	29	0	0	0	0	0	18,606
\$	54,816	68,482	75,587	67,945	0	0	0	0	0	61,487
35-39	8,788	8,367	4,412	1,254	0	0	0	0	0	22,821
\$	57,167	72,078	82,363	85,557	0	0	0	0	0	69,065
40-44	7,741	7,667	4,985	4,911	0	0	0	0	0	25,304
\$	57,910	72,094	84,820	90,852	0	0	0	0	0	73,903
45-49	5,772	6,221	4,115	4,113	0	0	0	0	0	20,221
\$	57,386	69,385	81,828	90,187	0	0	0	0	0	72,723
50-54	4,675	5,130	3,594	3,664	0	0	0	0	0	17,063
\$	58,455	68,383	79,259	84,156	0	0	0	0	0	71,341
55-59	3,318	3,425	2,830	3,117	0	0	0	0	0	12,690
\$	56,093	66,088	72,334	74,492	0	0	0	0	0	66,932
60-64	2,434	2,618	2,044	2,490	0	0	0	0	0	9,586
\$	53,138	63,165	69,554	68,860	0	0	0	0	0	63,461
65-69	951	1,122	841	907	0	0	0	0	0	3,821
\$	47,205	57,716	66,751	68,674	0	0	0	0	0	59,690
70-74	331	325	214	190	0	0	0	0	0	1,060
\$	33,198	47,304	57,505	65,166	0	0	0	0	0	48,160
75+	124	121	64	54	0	0	0	0	0	363
\$	27,750	34,180	49,913	52,366	0	0	0	0	0	37,463
Total	57,957	44,728	24,012	20,729	0	0	0	0	0	147,426
\$	53,662	68,464	78,920	82,776	0	0	0	0	0	66,360

Inactive Member Data Exhibits

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

Total Tier One/Tier Two

Inactive Members			Retirees and Beneficiaries		
	Count	Average Deferred Monthly Benefit		Count	Average Monthly Benefit
<20	0	\$0	<45	513	\$1,153
20-24	0	0	45-49	327	1,961
25-29	0	0	50-54	1,448	4,034
30-34	0	0	55-59	4,642	3,775
35-39	69	425	60-64	13,980	3,120
40-44	822	840	65-69	28,694	3,079
45-49	2,756	1,193	70-74	36,823	3,148
50-54	4,273	1,432	75-79	30,232	3,096
55-59	4,677	1,537	80-84	18,665	2,869
60-64	4,109	1,589	85-89	10,000	2,528
65-69	2,647	2,026	90-94	4,582	2,155
70-74	1,323	1,887	95-99	1,560	1,705
75+	1,115	2,349	100+	216	1,113
Total	21,791	\$1,575	Total	151,682	\$3,017

OPSRP

Inactive Members			Retirees and Beneficiaries		
	Count	Average Deferred Monthly Benefit		Count	Average Monthly Benefit
<20	0	\$0	<45	48	\$2,154
20-24	14	172	45-49	23	1,659
25-29	516	262	50-54	62	1,684
30-34	2,211	369	55-59	409	612
35-39	4,316	487	60-64	1,544	615
40-44	5,838	586	65-69	4,485	705
45-49	4,675	608	70-74	3,497	651
50-54	4,278	594	75-79	1,214	560
55-59	3,511	558	80-84	197	515
60-64	2,872	546	85-89	34	425
65-69	1,290	340	90-94	1	373
70-74	634	155	95-99	0	0
75+	567	80	100+	0	0
Total	30,722	\$520	Total	11,514	\$667

System-Wide Totals

Inactive Members			Retirees and Beneficiaries		
	Count	Average Deferred Monthly Benefit		Count	Average Monthly Benefit
<20	0	\$0	<45	561	\$1,239
20-24	14	172	45-49	350	1,941
25-29	516	262	50-54	1,510	3,938
30-34	2,211	369	55-59	5,051	3,519
35-39	4,385	486	60-64	15,524	2,871
40-44	6,660	618	65-69	33,179	2,758
45-49	7,431	825	70-74	40,320	2,931
50-54	8,551	1,013	75-79	31,446	2,998
55-59	8,188	1,117	80-84	18,862	2,845
60-64	6,981	1,160	85-89	10,034	2,521
65-69	3,937	1,473	90-94	4,583	2,155
70-74	1,957	1,326	95-99	1,560	1,705
75+	1,682	1,584	100+	216	1,113
Total	52,513	\$958	Total	163,196	\$2,852

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, 2022	As of December 31, 2021
Dormant members		
Number	10,762	11,481
Average Age	56.5	56.1
Retired members eligible for deferred RHIA benefits		
Number	20,419	21,231
Average Age	60.2	60.4
Retired members receiving RHIA benefits		
Number	41,568	42,750
Average Age	77.8	77.5

RHIPA Members

	As of December 31, 2022	As of December 31, 2021
Active Tier 1/Tier 2 employees of RHIPA employers		
Number	10,074	11,137
Average Age	55.7	55.4
Average Service	24.0	23.4
Retired members receiving RHIPA benefits		
Number	567	675
Average Age	62.0	61.9
Average Monthly Subsidy Amount	433	418

Actuarial Methods and Assumptions

Tier One/Tier Two (including Retiree Healthcare)

Actuarial Methods and Valuation Procedures

In September 2023 the Board adopted the following actuarial methods and valuation procedures for the December 31, 2022 and 2023 actuarial valuations of PERS Tier One/Tier Two 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.

<i>Tier One/Tier Two UAL amortization</i>	<p>The Tier One/Tier Two UAL amortization period was reset to 20 years as of December 31, 2013. Gains and losses between subsequent odd-year valuations were amortized as a level percentage of projected combined valuation payroll (Tier One/Tier Two plus OPSRP payroll) over a closed 20-year period from the valuation in which they are first recognized.</p> <p>Senate Bill 1049 was signed into law in June 2019 and required a one-time re-amortization of Tier One/Tier Two 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 One/Tier Two UAL gains or losses will be amortized over 20 years. The closed period amortization under Senate Bill 1049 will continue to decline and has 20 years remaining as of the December 31, 2022 rate-setting valuation.</p>
<i>Retiree Healthcare UAL amortization</i>	<p>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 One/Tier Two 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.</p> <p>If RHIA or RHIPA are in actuarial surplus (over 100% funded), the surplus is amortized over a rolling 20-year period over Tier One/Tier Two payroll. The resulting negative UAL rate will offset the normal cost of the program, but not below 0.00%.</p>
<i>Asset valuation method</i>	<p>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.</p> <p>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.</p>

<i>Contribution rate stabilization method</i>	<p>The UAL Rate component for a rate pool (e.g., Tier One/Tier Two SLGRP, Tier One/Tier Two 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).</p> <p><u>Collar Width:</u> 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:</p> <ul style="list-style-type: none"> • Tier One/Tier Two SLGRP and Tier One/Tier Two School Districts Pool: 3% of payroll • OPSRP: 1% of payroll • Tier One/Tier Two 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 One/Tier Two independent employer with a funded status (excluding side accounts) less than 100%. <p><u>UAL Rate decrease restrictions:</u> 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.</p>
<i>Offset for Member Redirect Contributions</i>	<p>Under Senate Bill 1049, a portion of the 6% of pay member contribution otherwise made to the IAP is redirected to fund Tier One/Tier Two and OPSRP defined benefits beginning July 1, 2020. For Tier One/Tier Two 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.</p> <p>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 One/Tier Two and 0.65% of total payroll for OPSRP.</p>
<i>Allocation of Liability for Service Segments</i>	<p>For active Tier One/Tier Two 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 5% (0% for police & fire) based on account balance with each employer and 95% (100% for police & fire) based on service with each employer.</p> <p>The entire normal cost is allocated to the current employer.</p>
<i>Allocation of Benefits-In-Force (BIF) Reserve</i>	<p>The BIF reserve is allocated to each rate pool in proportion to the retiree liability attributable to the rate pool.</p>

<i>Census Data</i>	<p>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.</p> <p>PERS staff assisted in resolving questions and inconsistencies discovered in the data review and provided updated records or direction for adjusting data as needed.</p> <p>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.</p>
<i>Internal Revenue Code 415 Benefit Limits</i>	<p>Annual benefit limits under Internal Revenue Code 415 are not explicitly reflected in the valuation.</p> <p>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.</p>

Economic Assumptions

The Board adopted the following economic assumptions for the December 31, 2022 and 2023 actuarial valuations. All assumptions were reviewed and adopted in conjunction with the 2022 Experience Study, published in July 2023. The assumption selection process and rationale is described in detail in that report.

<i>Investment return</i>	6.90% compounded annually
<i>Pre-2014 Interest crediting</i>	8.00% compounded annually on members' regular account balances 8.25% compounded annually on members' variable account balances
<i>Post-2013 Interest crediting</i>	6.90% compounded annually on members' regular account balances 6.90% compounded annually on members' variable account balances
<i>Inflation</i>	2.40% compounded annually
<i>Administrative expenses</i>	\$64.0 million per year is added to the total system normal cost and allocated between Tier One/Tier Two and OPSRP based on valuation payroll.
<i>Payroll growth</i>	3.40% compounded annually. This assumption represents the sum of the inflation assumption and a real wage growth assumption of 100 basis points.
<i>Healthcare cost trend</i>	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. That report includes detailed research performed by a committee of economists and actuaries (including a Milliman representative) utilizing the "Getzen Model" named after the professor who developed the model. We believe that the research and the model are fundamentally and technically sound and advance the body of knowledge available to actuaries to project long-term medical trends more accurately. Milliman uses the Getzen Model as the foundation for the trend that we recommend to our clients for OPEB valuations. The model produces long-range trend assumptions built on long-term relationships between certain key economic factors.

Year*	Rate	Year	Rate
2023	6.60%	2031	4.40%
2024	7.00%	2032-2054	4.20%
2025	6.40%	2055-2064	4.30%
2026	5.70%	2065-2066	4.20%
2027	5.10%	2067-2068	4.10%
2028	4.90%	2069-2070	4.00%
2029	4.80%	2071-2073	3.90%
2030	4.60%	2074+	3.80%

*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, 2022 and 2023 actuarial valuations. All assumptions were reviewed and adopted in conjunction with the 2022 Experience Study, published in July 2023. The study relied on data from an observation period of January 1, 2017 to December 31, 2022, with the exception of the merit scale assumption, which relied on data from 2012 through 2022 (with certain exclusions due to one-off events that are not expected to be indicative of future experience, as detailed in the 2022 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	125% of Employee table with same job category and set back as Healthy Retiree assumption	2022
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, 2022 valuation.

Age	Police & Fire			General Service			School Districts			Judges
	< 13 yrs	13-24 yrs	25+ yrs	< 15 yrs	15-29 yrs	30+ yrs	< 15 yrs	15-29 yrs	30+ yrs	
Less than 50						15.0%			25.0%	
50	1.5%	3.5%	38.0%			15.0%			25.0%	
51	1.5%	3.5%	28.0%			15.0%			25.0%	
52	1.5%	3.5%	28.0%			15.0%			25.0%	
53	1.5%	3.5%	28.0%			15.0%			32.0%	
54	1.5%	3.5%	28.0%			15.0%			25.0%	
55	3.0%	20.0%	28.0%	1.5%	2.5%	15.0%	1.5%	3.5%	25.0%	
56	3.0%	12.0%	28.0%	1.5%	2.5%	15.0%	1.5%	3.5%	25.0%	
57	3.0%	12.0%	28.0%	1.5%	2.5%	15.0%	1.5%	3.5%	25.0%	
58	6.0%	12.0%	28.0%	1.5%	8.0%	21.0%	1.5%	11.0%	27.5%	
59	6.0%	12.0%	28.0%	3.5%	8.0%	21.0%	4.5%	11.0%	27.5%	

Age	Police & Fire			General Service			School Districts			Judges
	< 13 yrs	13-24 yrs	25+ yrs	< 15 yrs	15-29 yrs	30+ yrs	< 15 yrs	15-29 yrs	30+ yrs	
60	6.0%	13.0%	32.0%	6.0%	12.0%	21.0%	6.5%	14.5%	27.5%	15.0%
61	6.0%	14.0%	28.0%	6.0%	11.0%	21.0%	6.5%	14.5%	27.5%	15.0%
62	15.0%	25.0%	38.0%	13.0%	18.5%	28.5%	15.0%	21.0%	34.0%	15.0%
63	15.0%	15.0%	31.0%	11.5%	16.5%	23.0%	13.0%	19.5%	29.0%	15.0%
64	15.0%	15.0%	31.0%	12.5%	16.5%	23.0%	13.0%	19.5%	29.0%	15.0%
65	40.0%	40.0%	45.0%	19.5%	28.0%	37.5%	25.5%	34.5%	45.0%	15.0%
66	40.0%	40.0%	45.0%	27.5%	36.0%	40.5%	23.0%	36.5%	45.0%	15.0%
67	40.0%	40.0%	45.0%	22.5%	26.5%	34.0%	21.0%	34.5%	38.0%	20.0%
68	40.0%	40.0%	45.0%	19.5%	26.5%	28.5%	21.0%	30.0%	28.5%	20.0%
69	40.0%	40.0%	45.0%	19.5%	26.5%	28.5%	21.0%	30.0%	28.5%	20.0%
70	100.0%	100.0%	100.0%	25.0%	28.5%	28.5%	21.0%	30.0%	28.5%	30.0%
71	100.0%	100.0%	100.0%	25.0%	28.5%	28.5%	21.0%	30.0%	28.5%	30.0%
72	100.0%	100.0%	100.0%	25.0%	28.5%	28.5%	21.0%	30.0%	28.5%	30.0%
73	100.0%	100.0%	100.0%	25.0%	28.5%	28.5%	21.0%	30.0%	28.5%	30.0%
74	100.0%	100.0%	100.0%	25.0%	28.5%	28.5%	21.0%	30.0%	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 One, age 60 for Tier Two, 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 selecting either a total or partial lump sum, both assumptions are now zero. The zero assumption was first adopted for total lump sums effective December 31, 2020 and for partial lump sums effective December 31, 2022.

Lump Sum Option at Retirement	
Partial Lump Sum:	0.0% for all years
Total Lump Sum:	0.0% for all years
No Lump Sum:	100.0% 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. All rates were first adopted effective December 31, 2022.

	Percentage of the 1985 Disability Class 1 Rates
Duty Disability Police & Fire	25%
Duty Disability General Service	0.6%
Ordinary Disability	20% with 0.14% 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 Male termination assumption was first adopted effective December 31, 2016. The School District Female termination assumption was first adopted effective December 31, 2022. The Police & Fire termination assumption was first adopted effective December 31, 2022.

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%	13.00%	12.50%	14.00%	7.00%
5	6.86%	7.91%	7.19%	7.23%	4.32%
10	3.31%	4.43%	4.13%	4.77%	2.87%
15	2.30%	3.17%	2.93%	3.43%	1.90%
20	1.62%	2.43%	2.08%	2.47%	1.26%
25	1.20%	1.75%	1.47%	1.78%	0.90%
30+	1.20%	1.75%	1.40%	1.40%	0.90%

Termination rates are not applied after a member reaches retirement eligibility. For a complete table of rates, please refer to the 2022 Experience Study report for the System, published in July 2023.

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, 2022.

Duration	School District	Other General Service	Police & Fire
0	5.54%	4.77%	6.12%
1	5.23%	4.39%	5.46%
5	4.02%	3.10%	3.38%
10	2.66%	1.93%	1.91%
15	1.53%	1.17%	1.30%
20	0.68%	0.73%	1.18%
25	0.17%	0.50%	1.15%
30+	0.06%	0.38%	0.80%

In addition to the merit scale increases shown above, an addition 2% annual merit salary increase assumption applies to salary increases from 2023 to 2024 and from 2024 to 2025.

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

For a complete table of rates, please refer to the 2022 Experience Study for the System, published in July 2023.

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	8.75% 2022
• State General Service Female	5.25% 2022
• School District Male	9.75% 2022
• School District Female	6.50% 2020
• Local General Service Male	6.50% 2022
• Local General Service Female	4.50% 2020
• State Police & Fire	4.75% 2022
• Local Police & Fire	7.25% 2022
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 state general service and local general services rates were adopted December 31, 2020. The school district assumption was adopted effective December 31, 2012. The state police & fire assumption and local police & fire assumptions were adopted effective December 31, 2022.

Vacation Pay	
Tier One	
• State General Service	2.50%
• School District	0.25%
• Local General Service	3.50%
• State Police & Fire	3.00%
• Local Police & Fire	4.25%
Tier Two	
	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	12.0%
• 25 – 29 years of service	20.0%
• 30+ years of service	25.0%
RHIA	
• Healthy Retired	25.0%
• Disabled Retired	15.0%

The participations rates were adopted December 31, 2022.

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 One/Tier Two. The methods and assumptions that differ for OPSRP are summarized below. The Board adopted the following methods, procedures and assumptions for the December 31, 2022 and December 31, 2023 actuarial valuations.

Actuarial Methods and Valuation Procedures

<i>OPSRP UAL amortization</i>	The UAL as of December 31, 2007 is amortized as a level percentage of projected combined valuation payroll (Tier One/Tier Two 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.
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Economic Assumptions

<i>Administrative expenses</i>	\$64.0 million per year is added to the total system normal cost and allocated between Tier One/Tier Two and OPSRP based on valuation payroll.
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Demographic Assumptions

Rates of Retirement from Active Status

Age	Police & Fire			General Service			School Districts		
	< 13 yrs	13-24 yrs	25+ yrs	< 15 yrs	15-29 yrs	30+ yrs	< 15 yrs	15-29 yrs	30+ yrs
50	0.50%	1.50%	5.50%						
51	0.50%	1.50%	5.50%						
52	0.50%	1.50%	5.50%						
53	0.50%	1.50%	28.00%						
54	0.50%	1.50%	28.00%						
55	2.00%	5.00%	28.00%	1.00%	2.50%	5.00%	0.50%	2.50%	5.00%
56	2.00%	5.00%	28.00%	1.00%	2.50%	5.00%	0.50%	2.50%	5.00%
57	2.00%	5.00%	28.00%	1.00%	2.50%	7.50%	1.00%	2.50%	7.50%
58	5.00%	5.00%	28.00%	1.50%	3.00%	30.00%	1.50%	3.00%	30.00%
59	5.00%	5.00%	28.00%	2.00%	3.00%	25.00%	1.50%	3.00%	25.00%
60	5.00%	15.00%	32.00%	2.50%	3.75%	20.00%	2.50%	3.75%	20.00%
61	5.00%	8.50%	28.00%	2.50%	5.00%	20.00%	2.50%	5.00%	20.00%
62	10.00%	25.00%	38.00%	6.50%	12.00%	30.00%	6.00%	12.00%	30.00%
63	10.00%	15.00%	31.00%	6.50%	10.00%	20.00%	6.00%	10.00%	20.00%
64	10.00%	15.00%	31.00%	6.50%	10.00%	20.00%	6.00%	10.00%	20.00%
65	20.00%	35.00%	40.00%	15.50%	35.00%	20.00%	12.50%	35.00%	20.00%
66	20.00%	35.00%	40.00%	18.50%	33.00%	20.00%	12.50%	33.00%	20.00%
67	20.00%	35.00%	40.00%	17.00%	22.00%	30.00%	11.00%	22.00%	30.00%
68	20.00%	35.00%	40.00%	14.00%	20.00%	25.00%	9.00%	20.00%	25.00%

Age	Police & Fire			General Service			School Districts		
	< 13 yrs	13-24 yrs	25+ yrs	< 15 yrs	15-29 yrs	30+ yrs	< 15 yrs	15-29 yrs	30+ yrs
69	20.00%	35.00%	40.00%	14.00%	20.00%	25.00%	9.00%	20.00%	25.00%
70	100.00%	100.00%	100.00%	14.00%	20.00%	25.00%	9.00%	20.00%	25.00%
71	100.00%	100.00%	100.00%	14.00%	20.00%	25.00%	9.00%	20.00%	25.00%
72	100.00%	100.00%	100.00%	14.00%	20.00%	25.00%	9.00%	20.00%	25.00%
73	100.00%	100.00%	100.00%	14.00%	20.00%	25.00%	9.00%	20.00%	25.00%
74	100.00%	100.00%	100.00%	14.00%	20.00%	25.00%	9.00%	20.00%	25.00%
75 +	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

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 One/Tier Two and OPSRP

A summary of key changes implemented since the December 31, 2021 valuation are described briefly below.

Changes in Actuarial Methods and Allocation Procedures

- An adjustment was added to the side account amortization calculations and Pre-SLGRP liability and surplus calculations to reflect the delay between when a rate is calculated and when it takes effect.
- The timing of the amortization period for Pre-SLGRP liabilities and surpluses for SLGRP employers was revised to align to the biennial rate-setting cycle.

Changes in Economic Assumptions

- Assumed administrative expenses were updated and changed to a combined assumption of \$64 million for Tier One/Tier Two and OPSRP.
- The assumed healthcare cost trend rates for the RHIPA program were updated.

Changes in Demographic Assumptions

- The merit/longevity component assumption of individual member salary increases were updated for all groups, including adding a select assumption of an additional 2% for all members for two years.
- 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 2022 Experience Study for the System, published in July 2023.
- Termination, disability and retirement rates were updated for some groups to more closely match observed and anticipated future experience.
- Assumptions for unused sick leave and vacation pay were updated.
- 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.

<i>Membership</i>	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 One	Hired prior to 1996
	Tier Two	Hired after 1995 and before August 29, 2003
	OPSRP	Hired after August 28, 2003, and neither a judge nor a former Tier One/Tier Two member eligible to reestablish Tier One/Tier Two membership
	Judges	Members of the State Judiciary
<i>Member Contributions</i>	Judges	7% of salary
	All others	Prior to January 1, 2004, Tier One/Tier Two members contributed 6% of salary to member accounts. Effective July 1, 2020: 2.50% of salary for Tier One/Tier Two 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.
<i>Employer Contributions</i>	Set by the PERS Board based on actuarial calculations that follow Board rate-setting policies for employers.	

Summary of Chapter 238 Provisions — Tier One/Tier Two and Judges

<i>Normal Retirement Date</i>	Police and Fire	Age 55
	Judges	Age 65
	Tier One General Service	Age 58
	Tier Two 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 One members, lump sum payment of unused vacation time. For Tier Two members, covered salary is limited by Internal Revenue Code 401(a)(17). The limit was \$280,000 in 2019. Tier One 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 One 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

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

<i>Early Retirement Eligibility</i>	Police and Fire Judges General Service	Age 50 or 30 years of service Age 60 Age 55 or 30 years of service
<i>Early Retirement Allowance</i>		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.
<i>Vesting</i>		Contributions made in any part of five calendar years or attainment of age 50 (45 for police & fire) while working in a qualifying position.
<i>Termination Benefits</i>	Non-Vested Vested	Payment of member’s account balance. Same as normal (or early) retirement allowance, but commencement is deferred to normal (or early) retirement date.
<i>Optional Forms of Retirement Allowance</i>		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 <ul style="list-style-type: none"> • 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.
<i>Preretirement Death Benefit Eligibility</i>	Judges All others	Six or more years of service. 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.
<i>Preretirement Death Benefit</i>	Judges All others	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. 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: <ul style="list-style-type: none"> • 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.

<i>Additional Police & Fire Death Benefits</i>	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.	
<i>Disability Benefit Eligibility</i>	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.
<i>Disability Benefits</i>	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.	
<i>Waiting Time Service Purchases</i>	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.	
<i>Police & Fire Unit Purchases</i>	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.	
<i>Automatic Postretirement Cost of Living Adjustments (COLAs)</i>	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 <i>Moro v. State of Oregon</i> , 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.

	<p>Automatic Adjustments Provided by Senate Bills 822 and 861</p> <p>Blended COLA after <i>Moro</i> decision</p>	<p>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.</p> <p>The Supreme Court decision in <i>Moro</i> 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.</p>
<p><i>Ad Hoc Adjustments</i></p>		<p>From time to time, as granted by the Legislature, retired members and beneficiaries have received increases in their monthly benefits.</p>
<p><i>Variable Annuity Program</i></p>	<p>Contributions</p> <p>Benefit</p>	<p>Prior to January 1, 2004, members could elect to have 25, 50 or 75 percent of their contributions invested in the variable account.</p> <p>At retirement, members may elect to receive a variable annuity with the funds accumulated in their variable account.</p> <p>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.</p> <p>The employer-provided benefit, however, is based on the earnings the member would have received in the regular account.</p>
<p><i>Interest Credit on Member Accounts</i></p>	<p>Tier One Regular</p> <p>Tier Two Regular</p> <p>Variable</p>	<p>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.</p> <p>Amount determined by the Board based on actual investment earnings of the regular account.</p> <p>Actual earnings in variable account.</p>
<p><i>Retiree Healthcare – Medicare Supplement (RHIA)</i></p>	<p>Retiree Eligibility</p>	<p>All of the following must be met:</p> <ul style="list-style-type: none"> (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	<p>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 <i>either</i> of the following criteria are met:</p> <ul style="list-style-type: none"> (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	<p>A monthly contribution of up to \$60 per retiree is applied to PERS-sponsored Medicare supplemental insurance costs.</p>

Retiree Healthcare – Under Age 65 (RHIPA)

Retiree Eligibility	<p>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.</p>
Surviving Spouse or Dependent Eligibility	<p>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 <i>either</i> of the following criteria are met:</p> <ul style="list-style-type: none"> (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	<p>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.</p> <p>The maximum monthly subsidy for 2023 is \$474.90 per month.</p>

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 There were no changes in the Tier One/Tier Two benefit provisions reflected since the December 31, 2021 actuarial valuation.

Summary of Chapter 238A Provisions — OPSRP

<i>Normal Retirement Date</i>	<p>Police & Fire Age 60 or age 53 with 25 years of retirement credit</p> <p>General Service Age 65 or age 58 with 30 years of retirement credit</p> <p>School Districts Age 65 or age 58 with 30 calendar years of active membership</p>
<i>Normal Retirement Allowance</i>	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%.
<i>Final Average Salary</i>	<p>The greater of:</p> <ul style="list-style-type: none"> • 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. <p>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.</p> <p>For OPSRP members, covered salary is limited by Internal Revenue Code 401(a)(17) The limit was \$280,000 in 2019.</p> <p>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.</p>
<i>Early Retirement Eligibility</i>	<p>Police & Fire Age 50 and 5 years of vesting service</p> <p>General Service Age 55 and 5 years of vesting service</p>
<i>Early Retirement Allowance</i>	Normal retirement allowance, actuarially reduced to early retirement age.
<i>Vesting</i>	Five years or attainment of normal retirement age.
<i>Vested Termination Benefit</i>	Same as normal (or early) retirement allowance, but commencement is deferred to normal (or early) retirement date.
<i>Optional Forms of Retirement Benefit</i>	<p>The normal form of benefit is a life annuity. All optional amounts are adjusted to be actuarially equivalent.</p> <p>Options Available</p> <ul style="list-style-type: none"> • 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.
<i>Preretirement Death Benefit Eligibility</i>	Death of a vested member before retirement benefits begin.

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 One/Tier Two 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 One/Tier Two 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

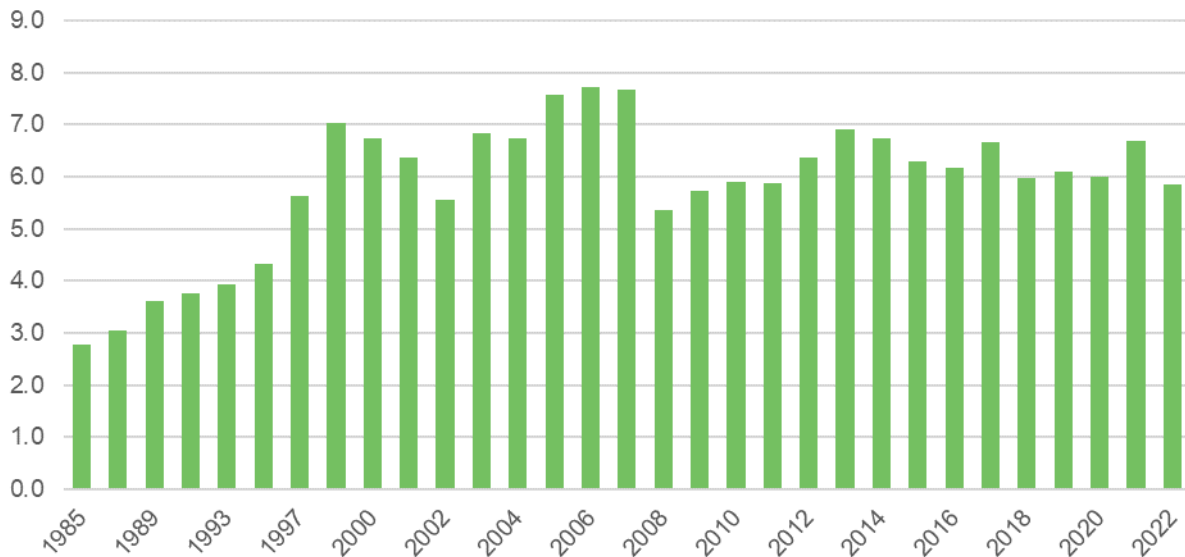
The magnitude of any contribution rate increase or decrease is affected by the System's maturity level. As a system matures, its liabilities and assets tend to grow relative to the size of its covered payroll. This creates more volatility in the contributions needed to fund the system.

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 One/Tier Two and OPSRP (including side accounts) is 5.9. 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 37 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 7.8.

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 One, Tier Two 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:

$$\text{Benefits} + \text{Expenses} = \text{Contributions} + \text{Investment Earnings}$$

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 One/Tier Two Valuation Payroll. Projected payroll subject to PERS employer contribution rates for the calendar year following the valuation date for Tier One and Tier Two active members. This payroll is used to calculate Tier One/Tier Two 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.