# Year-End 2022 Actuarial Valuation Results

## OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM


**Presented by:**

**Matt Larrabee, FSA, EA**
**Scott Preppernau, FSA, EA**


September 29, 2023

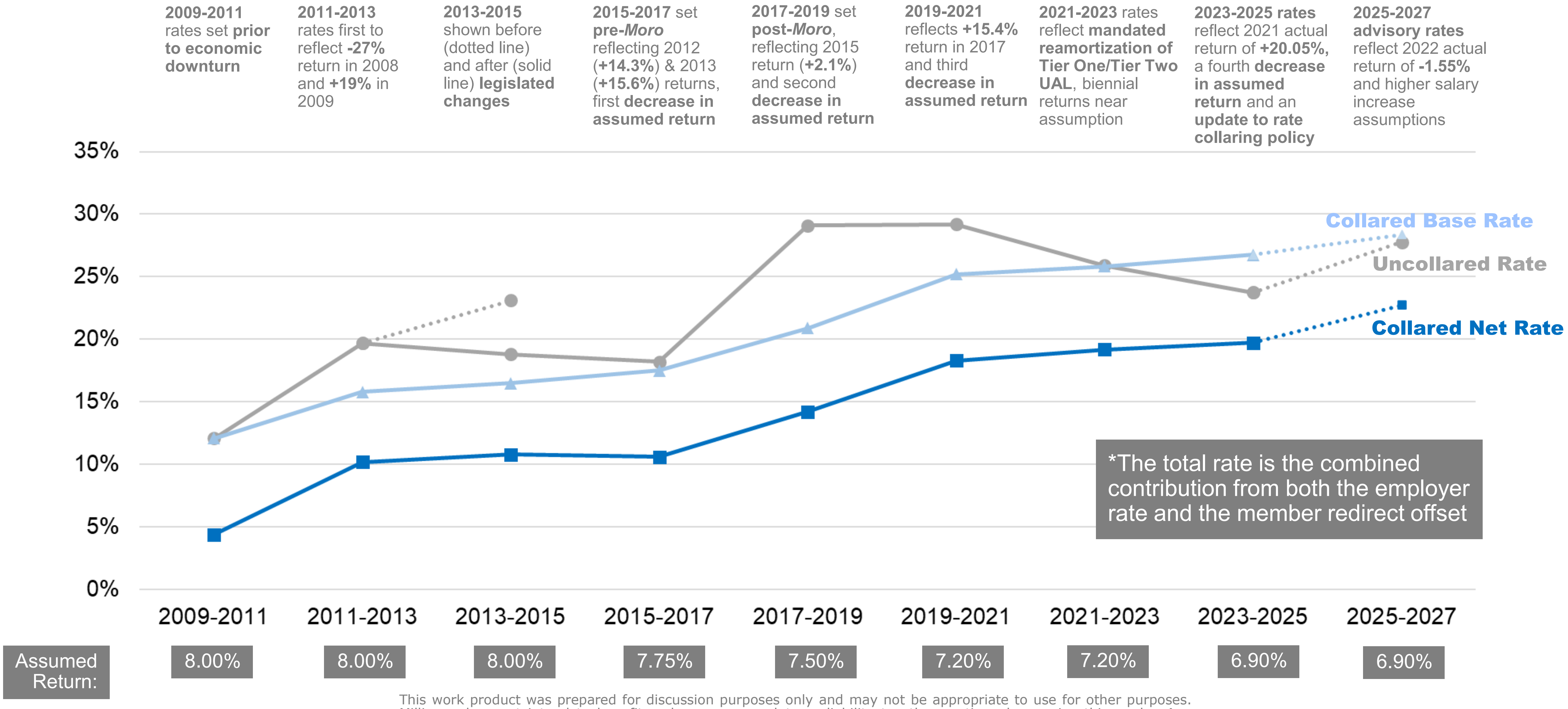
# Executive Summary

- The December 31, 2022 advisory valuation provides an update on System funded status and an illustration of contribution rates for the 2025-2027 biennium as if they were set by this valuation
  - Actual 2025-2027 contribution rates will be calculated in the December 31, 2023 valuation, based on asset and demographic information as of that valuation date

- **Year-end 2022** funded status is **73% excluding side accounts**, down from 80% at year-end 2021
- **Year-end 2022** funded status is **79% including side accounts**, down from 86% at year-end 2021
  - Funded status decrease primarily due to 2022 investment returns less than the long-term assumed level

- Average advisory collared **base** employer contribution rates **increased 1.68% of pay compared to the prior valuation**
  - Collared base rate increase was due to normal cost rate increases for all tiers and an OPRSP UAL amortization rate increase, driven mostly by updates to the individual member pay increase assumption
  - The collared Tier One/Tier Two UAL rate is unchanged for School Districts and nearly level for SLGRP
- Average advisory collared **net** employer contribution rates **increased 3.08% of pay**
  - Larger increase than for collared base rates since side accounts **leverage** the effect of investment returns

# System-Average Weighted Total* Pension-Only Rates



# Funded Status & Unfunded Actuarial Liability (UAL)

| System-Total Pension Funded Status ($ billions) | | | |
|---|---|---|---|
| Valuation date: | 12/31/2020 | 12/31/2021 | 12/31/2022 |
| Assumed return: | 6.90% | 6.90% | 6.90% |
| Actuarial liability | $ 95.3 | $ 98.4 | $ 102.9 |
| Assets (excluding side accounts) | 67.3 | 78.4 | 74.9 |
| **UAL (excluding side accounts)** | **$ 28.0** | **$ 20.0** | **$ 28.0** |
| **Funded status (excluding side accounts)** | **71%** | **80%** | **73%** |
| Side account assets | $ 5.1 | $ 6.6 | $ 6.2 |
| UAL (including side accounts) | $ 22.9 | $ 13.4 | $ 21.8 |
| **Funded status (including side accounts)** | **76%** | **86%** | **79%** |

# Overview

- Today we will review summary valuation results as of December 31, 2022 for:
  - Tier One/Tier Two & OPSRP retirement programs
  - Retiree Health Insurance Account (RHIA), and
  - Retiree Health Insurance Premium Account (RHIPA)
- Formal, detailed results will be presented in our forthcoming December 31, 2022 System-Wide Actuarial Valuation Report
- Results are advisory in nature
  - Indicate where 2025 – 2027 contribution rates would be if set today
  - Assess program funded status and unfunded actuarial liability (UAL) as of December 31, 2022
- All work is based on:
  - Asset levels and member demographics at year-end 2022
  - Updates to methods and assumptions from the 2022 Experience Study
- PERS will deliver employer-specific advisory reports this fall

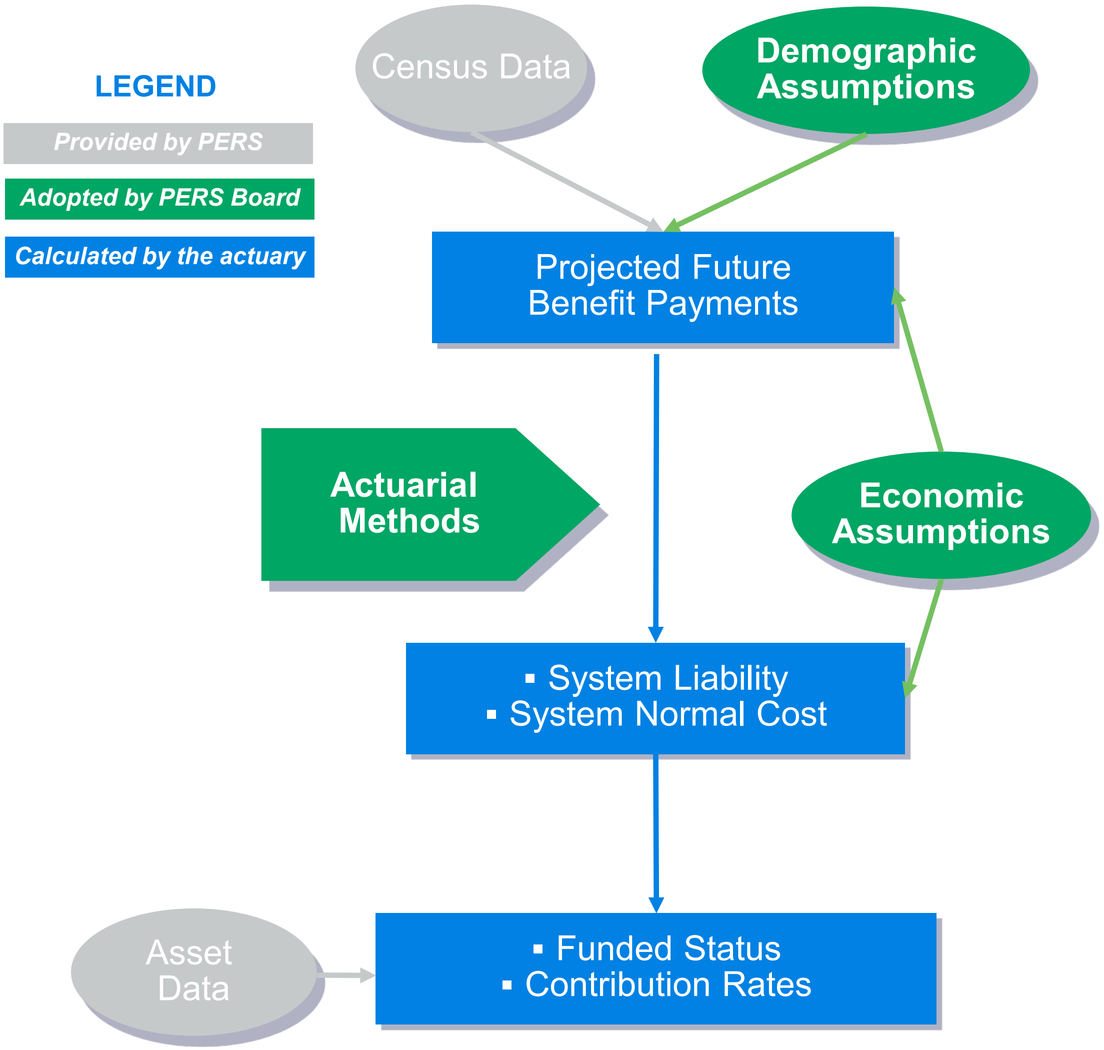
# Valuation Process and Timeline

- Actuarial valuations are conducted annually
  - Alternate between “rate-setting” and “advisory” valuations
  - This valuation as of 12/31/2022 is advisory
- Board adopts contribution rates developed in rate-setting valuations, and those rates go into effect 18 months after the valuation date

| Rate-Setting Valuation Date | Employer Contribution Rates |
|---|---|
| 12/31/2019 → | July 2021 – June 2023 |
| 12/31/2021 → | July 2023 – June 2025 |
| 12/31/2023 → | July 2025 – June 2027 |

# Two-Year Rate-Setting Cycle

- July 2023: Assumptions & methods adopted by Board in consultation with the actuary
- **September 2023: System-wide 12/31/22 actuarial valuation results**
- December 2023: Advisory 2025-2027 employer-specific contribution rates
- July 2024: System-wide 12/31/23 actuarial valuation results
- September 2024: Disclosure & adoption of employer-specific **2025-2027 contribution rates**



# Guiding Objectives - Methods & Assumptions

- Transparent
- Predictable and stable rates
- Protect funded status
- Equitable across generations
- Actuarially sound
- GASB compliant

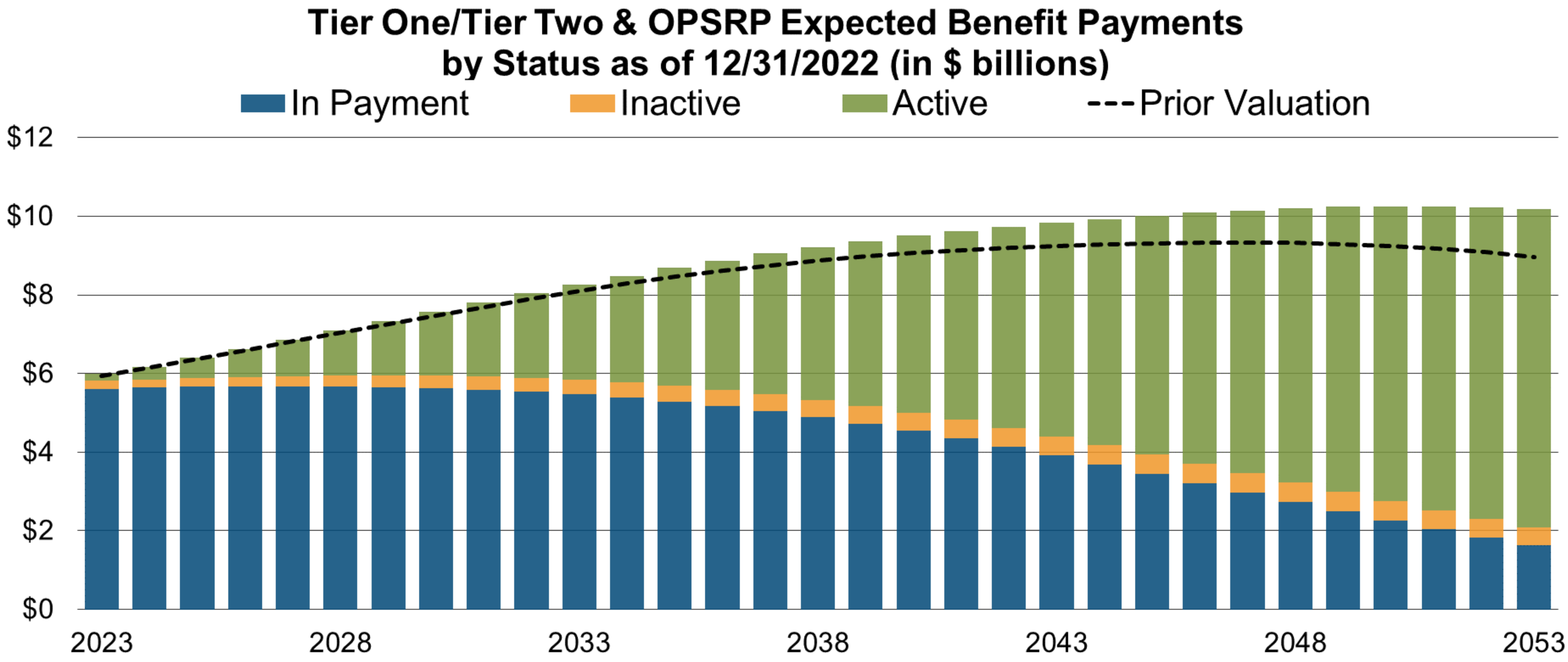
Some of the objectives can conflict, particularly in periods with significant volatility in investment return or projected benefit levels. Overall system funding policies should seek an appropriate balance between conflicting objectives.

# Changes Since the Last Valuation

- The 12/31/2021 rate-setting valuation developed 2023-2025 contribution rates
- Since the 12/31/2021 rate-setting valuation:
  - The PERS Board adopted new assumptions and methods from the 2022 Experience Study
  - 2022 asset returns were significantly less than the long-term assumption, with a regular account return of -1.55% compared to the assumed rate of 6.90%
    - Year-to-date returns through July 2023 of +3.79% are not reflected in this advisory valuation, but will be reflected in next year's rate-setting valuation
  - System projected payroll increased over 9%

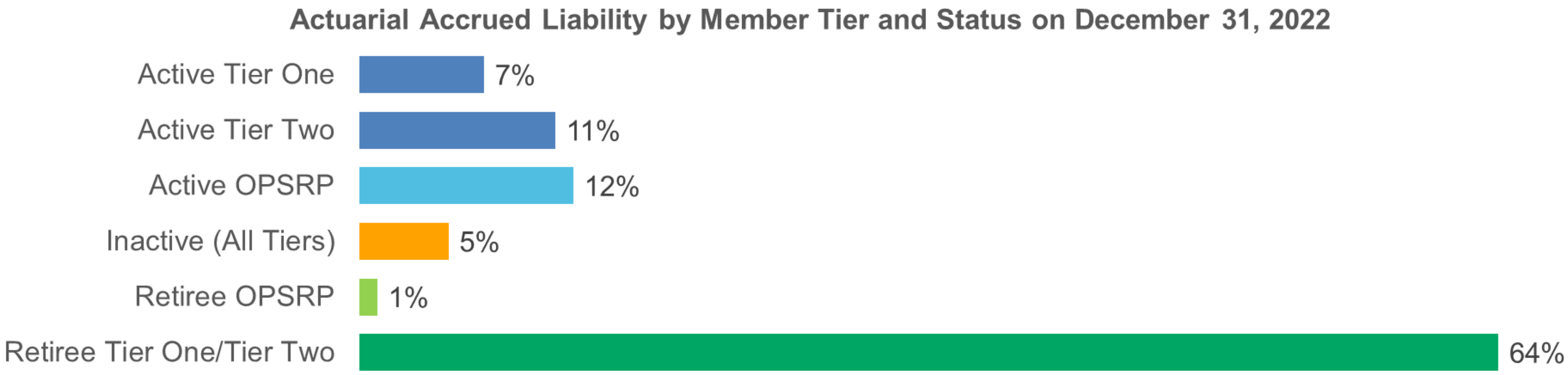
# Projected Benefit Payments for Members as of 12/31/2022

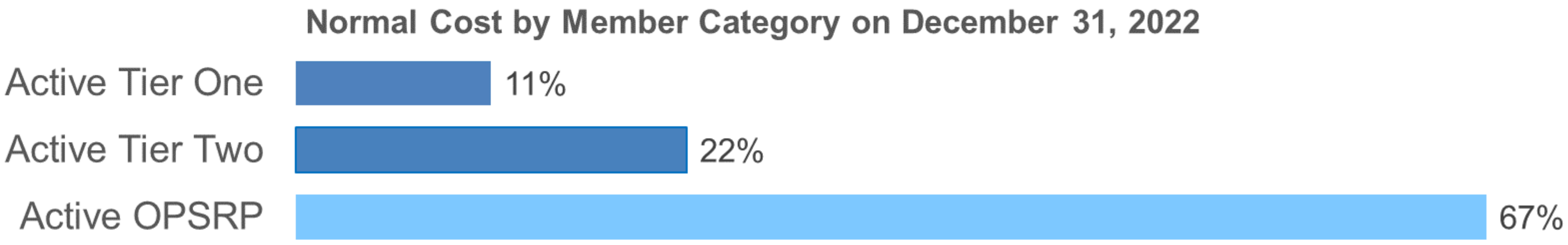
## Does Not Include Projected Benefit Payments for Anyone Joining OPSRP After 12/31/2022



# Actuarial Accrued Liability and Normal Cost by Category

## 12/31/2022 Tier One/Tier Two and OPSRP Actuarial Accrued Liability and Normal Cost




Accrued Actuarial Liability is the value of benefits allocated to service prior to 2023
Normal Cost is the value of benefits allocated to projected service during 2023

# Sources of 2022 UAL (Excluding Side Accounts) Change

| ($ billions) | UAL Increase |
|---|---|
| Expected UAL increase/(decrease) during 2022 | ($ 0.6) |
| 2022 actual investment performance | 6.6 |
| Increased salary growth assumptions | 1.1 |
| Other assumption changes | 0.1 |
| Actual demographic experience different than assumed | 0.8 |
| Actual UAL increase/(decrease) during 2022 | $ 8.0 |

- The ***expected UAL increase/(decrease)*** is the UAL change, based on 12/31/2021 valuation results, projected to occur during 2022 if actual 2022 experience followed that valuation's assumptions
- The 2022 investment loss (i.e., actual versus assumed return) reflects actual 2022 OPERF returns of -1.55% compared to the assumed 6.90% return
- The increase from actual demographic experience different than assumed was largely due to individual member salary increase experience during 2022 higher than the long-term assumption

# Tier One/Tier Two Rate Pool Funded Status and UAL
## Amounts Shown as of December 31, 2022

| ($ billions) *Totals may not add due to rounding* | SLGRP | School Districts |
|---|---|---|
| Tier One/Tier Two actuarial liability | $ 48.1 | $ 32.5 |
| Tier One/Tier Two assets (excluding side accounts) | 34.0 | 24.6 |
| **Tier One/Tier Two UAL (excluding side accounts)** | **$ 14.1** | **$ 7.9** |
| **Tier One/Tier Two funded status (excluding side accounts)** | **71%** | **76%** |
| Projected 2023 Tier One/Tier Two + OPSRP payroll | $ 8.0 | $ 4.6 |
| Assets to payroll ratio (excluding side accounts) | 4.3x | 5.3x |
| UAL to payroll ratio (excluding side accounts) | 1.8x | 1.7x |
| | | |
| Side account assets | $ 2.5 | $ 3.3 |
| **Tier One/Tier Two UAL (including side accounts)** | **$ 11.6** | **$ 4.6** |
| **Tier One/Tier Two funded status (including side accounts)** | **76%** | **86%** |

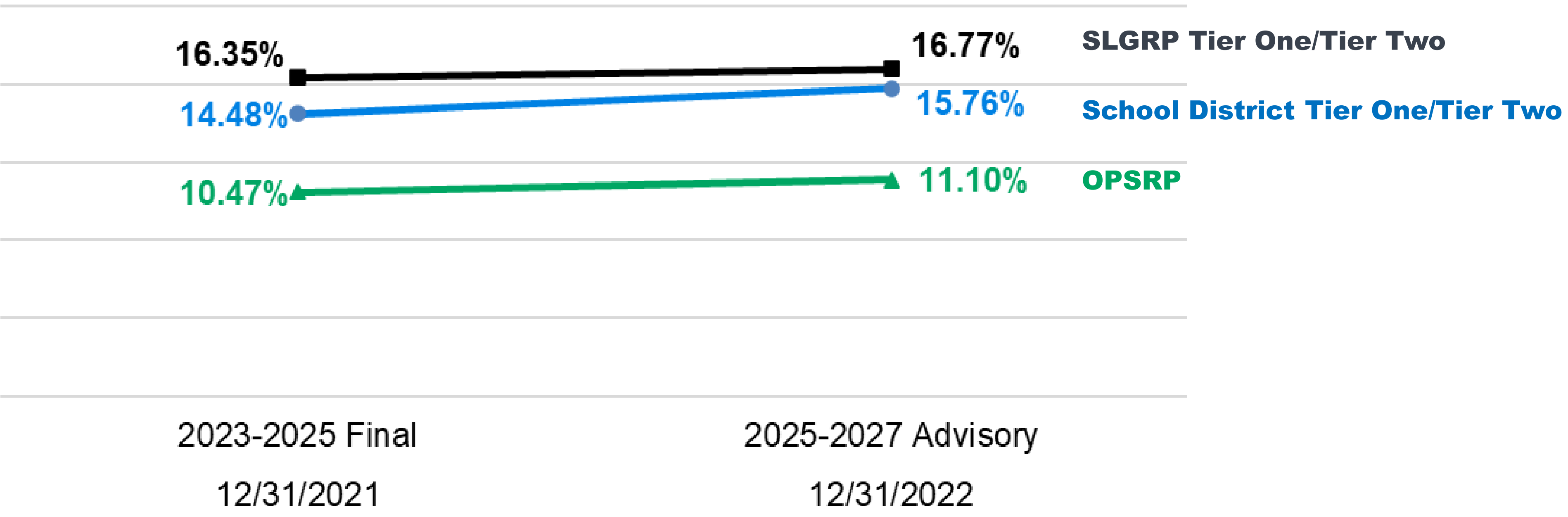
# Effect of 2023 Experience on Final 2025-27 Rates

- The advisory valuation uses assets and liabilities as of 12/31/2022
  - For the two large Tier One/Tier Two experience-sharing rate pools, advisory 2025-2027 rates show projected increases in the collared base and net contribution rates
- Final 2025-2027 rates will be based on assets and liabilities as of 12/31/2023, including actual full-year 2023 investment returns and the level of system payroll as of 12/31/2023
- Through July 31, OPERF year-to-date regular account returns are +3.79%
  - If returns end the year near the long-term average return assumption of 6.90%, actual 2025-27 rate changes may be similar to those shown in this year's advisory employer reports
  - If actual year-to-date 2023 returns end up below the assumed return at year-end, the actual 2025-2027 rate increases could be larger than those shown in this year's advisory employer reports

# Comments on Advisory 2025 – 2027 Rates

- No single employer pays the system-wide average rate
  - Individual employer rates reflect either rate pool or independent employer-specific results, not the system-wide average
  - Relative proportion of Tier One/Tier Two vs. OPSRP payroll also varies by employer
- Employers in a rate pool do not pay the pool average rate
  - Actual rates reflect employer-specific side account rate offsets and/or any remaining SLGRP charges/offsets
  - SLGRP normal cost rates are specific to an employer's workforce mix of member tier and job classification
- Rates shown on the next several slides do not include the effects of:
  - Individual Account Plan (IAP) contributions
  - Rates for the RHIA & RHIPA retiree healthcare programs
  - Debt service payments on pension obligation bonds

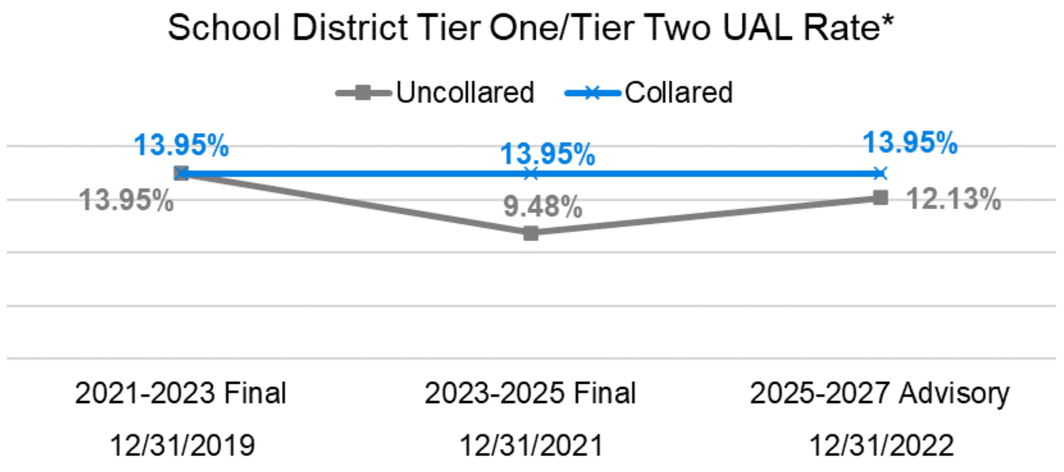
# Changes in Total Normal Cost Rate

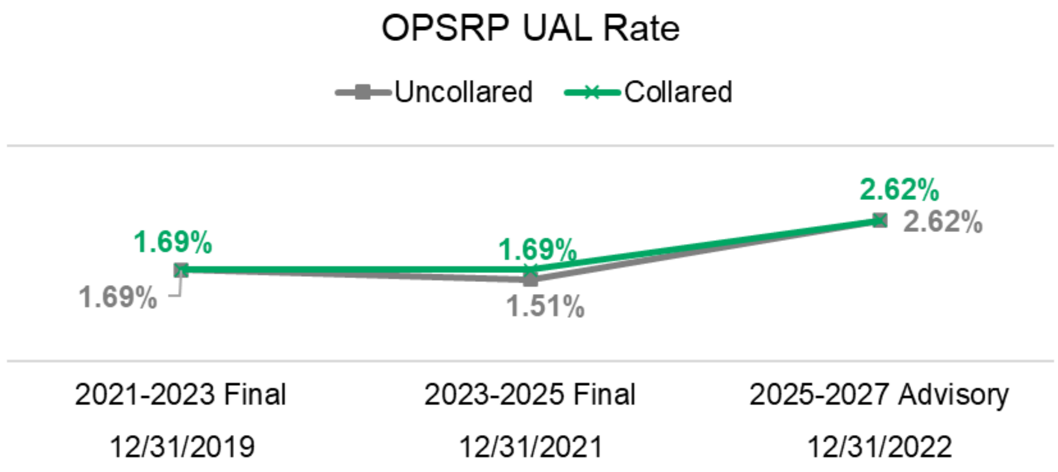


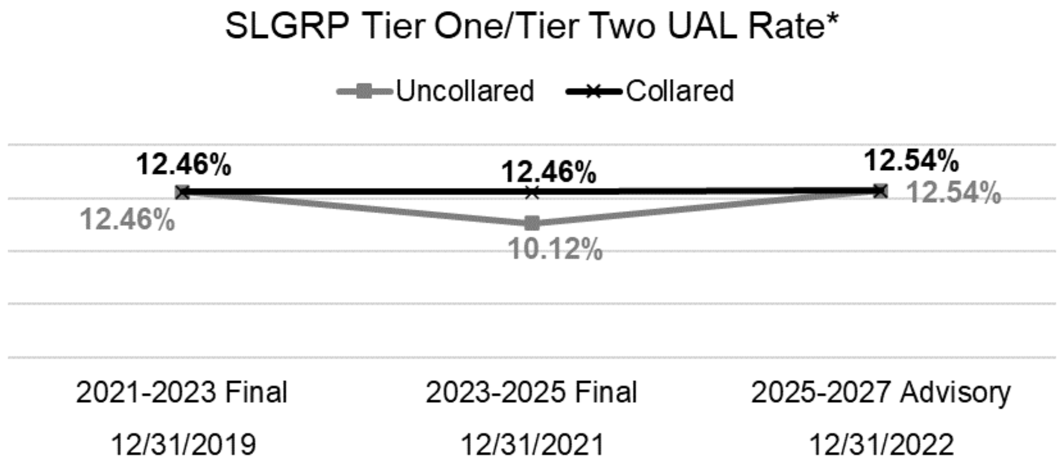

- Normal cost rates increased in the current valuation primarily due to higher future salary increase assumptions adopted with the recent experience study
  - School Districts had larger assumption increases, which led to larger normal cost change

# Changes in UAL Rates

- The rate collar policy helped stabilize the level of collared UAL rates during recent pattern of investment gains followed by losses
  - Maintaining the collared 2023-2025 UAL Rate above the uncollared rate provides some cushion to absorb losses without immediately increasing rates paid by employers

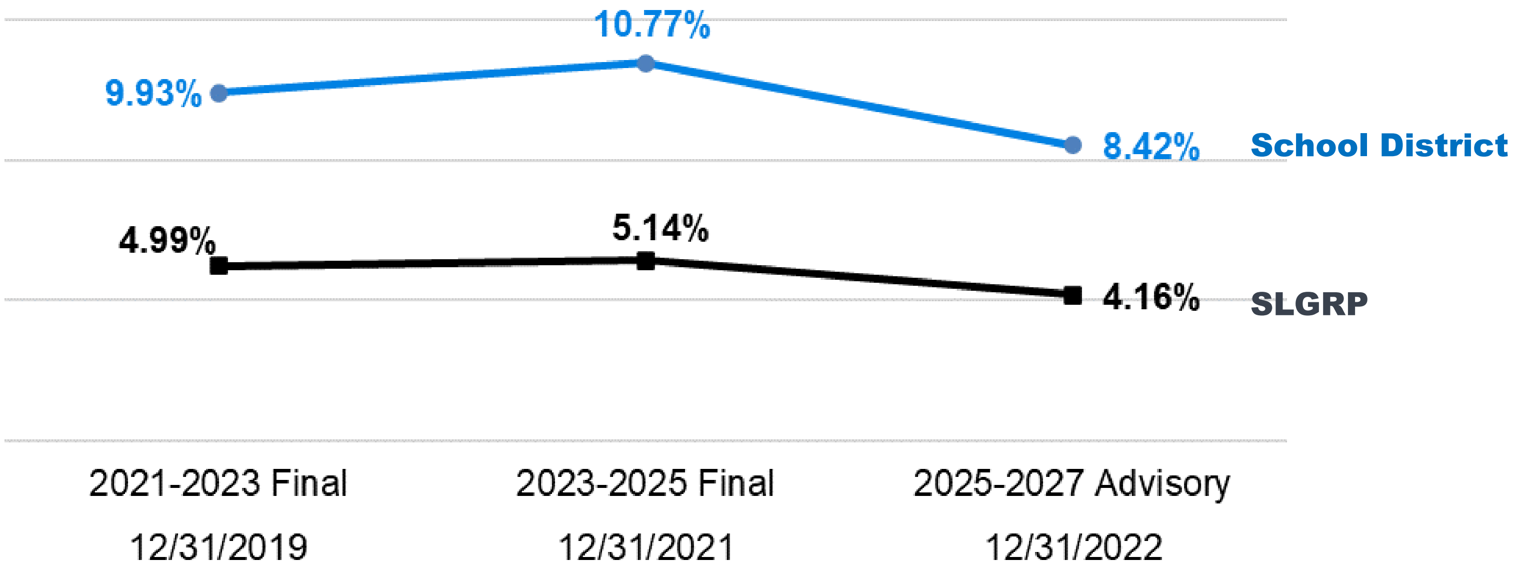



*Excludes rate for Multnomah Fire District #10

# Changes in Average Side Account Offset




- Average side account offset decreased in the current valuation, due to:
  - Lower than assumed investment returns in 2022
  - Higher than assumed payroll growth, which accelerates the spend-down of the side account balance using the offset rate currently in effect

# School Districts Rate Summary

## Weighted Average Total Rates (Tier One/Tier Two and OPSRP)

| | Final 2023 - 2025 | Advisory 2025 - 2027 | Increase/ (Decrease) |
|---|---|---|---|
| Uncollared Total Base Rate | 22.38% | 26.73% | 4.35% |
| Collared Total Base Rate | 27.03% | 28.55% | 1.52% |
| Collared Base Employer Rate | 25.93% | 27.50% | 1.57% |
| Collared Net Employer Rate | 15.16% | 19.08% | 3.92% |

- The uncollared total base rate increase was primarily due to investment losses, but also reflects higher recent and assumed future salary growth
- The collared total base rate for School Districts is greater than the uncollared total base rate because the collar does not allow the UAL rate to decrease when the rate pool funded status excluding side accounts is less than 87%
- The collared net employer rate increase was larger than the increase in the collared base employer rate due to the reduction in the average side account offset

# SLGRP Rate Summary
## Weighted Average Total Rates (Tier One/Tier Two and OPSRP)

| | Final 2023 - 2025 | Advisory 2025 - 2027 | Increase/ (Decrease) |
|---|---|---|---|
| Uncollared Total Base Rate | 23.89% | 27.71% | 3.82% |
| Collared Total Base Rate | 26.41% | 27.71% | 1.30% |
| Collared Base Employer Rate | 25.31% | 26.66% | 1.35% |
| Collared Net Employer Rate | 19.51% | 22.07% | 2.56% |

- The uncollared total base rate increase was primarily due to investment losses, but also reflects higher recent and assumed future salary growth
- The advisory collared total base rate for the SLGRP is equal to the uncollared total base rate
- The collared net employer rate increase was larger than the increase in the collared base employer rate due to the reduction in the average side account offset

# System-Wide Rate Summary
## Weighted Average Total Rates (Tier One/Tier Two and OPSRP)

| | Final 2023 - 2025 | Advisory 2025 - 2027 | Increase/ (Decrease) |
|---|---|---|---|
| Uncollared Total Base Rate | 23.73% | 27.76% | 4.03% |
| Collared Total Base Rate | 26.74% | 28.37% | 1.63% |
| Collared Base Employer Rate | 25.64% | 27.32% | 1.68% |
| Collared Net Employer Rate | 18.61% | 21.69% | 3.08% |

- System-wide rates are the payroll-weighted average of rates for School Districts, the SLGRP, and independent employers that do not pool their Tier One/Tier Two liability experience
- At a system-wide level, the uncollared total base rate of 27.76% is 0.61% of pay lower than the collared total base rate of 28.37%, reflecting that for some employers the rate collar prevents a decrease in the 2025-2027 UAL rate that would otherwise have occurred compared to the current level

# Projected 2025-2027 Total (Employer + Member) Contributions

| ($ millions) | Projected 2023-25 Payroll* | (A) Projected 2023-25 Total Contribution | Projected 2025-27 Payroll* | (B) Projected 2025-27 Total Contribution | (B - A) Projected Total Contribution Increase / (Decrease) |
|---|---|---|---|---|---|
| State Agencies | $ 8,360 | **$ 1,820** | $ 9,395 | **$ 2,160** | **$ 340** |
| School Districts | 8,860 | **1,530** | 10,210 | **2,020** | **490** |
| All Others | 9,910 | **2,210** | 11,040 | **2,680** | **470** |
| Total | $27,130 | **$ 5,560** | $30,645 | **$ 6,860** | **$ 1,300** |

- Collared net rates are used to project 2025-2027 contributions
  - Projections do not reflect the effects of 2023 investment returns
- Projected 2023-25 contributions increased by $285 million compared to prior estimate (based on the 12/31/2021 valuation) as a result of a larger-than-expected increase in system payroll

* Assumes total payroll grows at 3.40% annually based on 12/31/2022 active member census. The collared net rate applied to this payroll reflects the projected change over time in payroll composition as new OPSRP members are hired to replace retiring Tier One/Tier Two members

# Factors Driving the Projected Contribution Increase

- The projected $1.3 billion 2025 - 2027 total contribution increase consists of:
  - $0.9 billion due to system-wide average increase in collared net employer contribution rates
    - Primarily driven by 2022 investment losses along with higher liabilities due to recent and assumed future salary growth
    - Includes impact on average contribution rate of projected change over time in payroll distribution between Tier One/Tier Two and OPSRP
  - $0.4 billion due to projected system payroll growth between 2023-2025 and 2025-2027
    - Assumed system payroll growth of 3.4% per year / 6.9% per biennium means the collared net employer rate increase is applied to a larger payroll base in non-inflation-adjusted dollars
    - Does not reflect projected change in payroll distribution between Tier One/Tier Two and OPSRP
- In 2025-2027, redirected member EPSA contributions expected to continue to pay a portion of total contribution rates
  - An estimate of this effect is shown on the next slide

# Projected Split of 2025-2027 Total Contributions

| ($ millions) | Estimated 2023-25 Member Redirect Contributions* | Estimated 2025-27 Member Redirect Contributions* | | Projected 2023-25 Employer Contribution | Projected 2025-27 Employer Contribution |
|---|---|---|---|---|---|
| State Agencies | $ 90 | **$ 90** | | $1,730 | **$ 2,070** |
| School Districts | 100 | **100** | | 1,430 | **1,920** |
| All Others | 110 | **105** | | 2,100 | **2,575** |
| Total | $ 300 | **$ 295** | | $ 5,260 | **$ 6,565** |

* Reflects member redirect offset of 2.40% of payroll for Tier One and Tier Two, and 0.65% for OPSRP for 2023-25 and 2025-2027; the statutory 2.50% and 0.75% redirection levels were adjusted downward to estimate the anticipated effect of members below the statutory pay threshold who will not have contributions redirected

# 12/31/2022 Retiree Health Care Valuations

- Cumulative retiree health liabilities are less than 1% of the pension liability
- Two separate retiree health care benefit subsidies are valued:
  - RHIA provides a $60 per month subsidy toward healthcare premiums for Medicare-eligible Tier One/Tier Two retirees
  - RHIPA provides Tier One/Tier Two state employees who retire prior to age 65 with an alternative to PEBB coverage until they reach Medicare eligibility
- OPSRP retirees are not eligible for either subsidy
- The combination of a shortened UAL amortization period and recent experience has improved both RHIA and RHIPA funded status to over 100%
- The Board policy applies a special amortization method when these programs are over 100% funded
  - Amortizes the actuarial surplus over Tier One/Tier Two payroll using a rolling 20-year amortization, and allows the subsequent negative UAL rate to offset the normal cost, but not below a total contribution rate of 0.0%

# 12/31/2022 Retiree Health Care Valuations

## UAL and Advisory 2025-27 Contribution Rates

| | RHIA | | RHIPA* | |
|---|---|---|---|---|
| ($ millions) | 12/31/2021 | 12/31/2022 | 12/31/2021 | 12/31/2022 |
| Actuarial Liability | $ 369 | $ 345 | $ 46 | $ 41 |
| Assets | 763 | 720 | 83 | 86 |
| UAL | $ (394) | $ (375) | $ (37) | $ (45) |
| Funded Status | 207% | 209% | 180% | 208% |
| Normal Cost Rate (Tier One/Tier Two payroll only) | 0.04% | 0.04% | 0.09% | 0.09% |
| UAL Rate applied to Tier One/Tier Two payroll** | (0.04%) | (0.04%) | (0.09%) | (0.09%) |
| **Total Rate** | **0.00%** | **0.00%** | **0.00%** | **0.00%** |

* State Agencies, OUS, and State Judiciary are the only employers who pay RHIPA rates
** UAL Rate applied to OPSRP payroll is limited to a minimum of 0.00%

# Valuation Next Steps

- Between now and the December 1, 2023 meeting we will:
  - Assist PERS in preparing financial reporting schedules
  - Prepare system-wide and employer-specific December 31, 2022 actuarial valuation reports
- At the December meeting, we will:
  - Provide listings of employer-specific advisory 2025-2027 contribution rates
    - PERS to distribute employer-specific reports to employers after the meeting
  - Update long-term contribution rate and funded status projections

# Contribution Rate & Funded Status Projections

- In December, we will return with contribution rate and funded status projections based on this valuation
  - That analysis will use the latest year-to-date investment return information at the time the projections are made
- Projections will be developed using two types of models
  - Steady return
    - Individual lines reflecting a small number of steady future actual investment return scenarios
  - Variable return
    - Probability distributions reflecting a wide variety of noisy scenarios for possible actual future investment returns
    - The modeling will include updates to the risk metrics we have used in projection studies conducted in previous years

Milliman

# Appendix

# Certification

This presentation summarizes key preliminary results of an actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2022, for the Plan Year ending December 31, 2022. The results are preliminary in nature and may not be relied upon to, for example, prepare the System's Annual Comprehensive Financial Report. The reliance document will be the forthcoming formal December 31, 2022 System-Wide Actuarial Valuation Report.

Actuarial computations presented in this report are for purposes of presenting advisory contribution rates consistent with the adopted funding policy of the System. The computations prepared for other 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 policy. The calculations in this report have been made on a basis consistent with our understanding of the plan provisions described in the appendix of this report. 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.

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, statutory provisions, 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.

Actuarial assumptions, including discount rates, mortality tables, and others identified in this report, and actuarial cost methods are adopted by the PERS Board, which is responsible for selecting the plan's funding policy, actuarial valuation methods, asset valuation methods, and assumptions. The policies, methods, and assumptions used in this valuation are those that have been so adopted and are described in this report. The System is solely responsible for communicating to Milliman any changes required thereto. 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 experience affecting the System and are expected to have no significant bias . 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.

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. Determining results using alternative assumptions is outside the scope of our engagement.

# Certification

Future actuarial measurements may differ significantly from the current measurements presented in this report due to factors such as, but not limited to, the following: plan 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 plan's funded status); and changes in plan provisions or applicable law. Due to the limited scope of our assignment, we did not perform an analysis of the potential range of future measurements. Our annual financial modeling presentation to the PERS Board should be referenced for additional analysis of the potential variation in future measurements. Our forthcoming December 31, 2022 Actuarial Valuation Report will provide additional discussion of the System's risks. The PERS Board has the final decision regarding the selection of the assumptions and actuarial cost methods.

Milliman's work is prepared solely for the internal business use of the Oregon Public Employees Retirement System. Milliman does not intend to benefit or create a legal duty to any third-party recipient of this report. No third-party recipient of Milliman's work product should rely upon this report. Such recipients should engage qualified professionals for advice appropriate to their own specific needs. No third-party recipient of Milliman's work product should rely upon Milliman's work product. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel. The actuaries are independent of the plan sponsors. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices which are consistent with the principles prescribed by the Actuarial Standards Board and the *Code of Professional Conduct* and *Qualification Standards for Actuaries Issuing Statements of Actuarial Opinion in the United States,* published by the American Academy of Actuaries. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein. Assumptions related to the claims costs and healthcare trend (cost inflation) rates for the retiree healthcare program discussed in this report were determined by Milliman actuaries qualified in such matters.

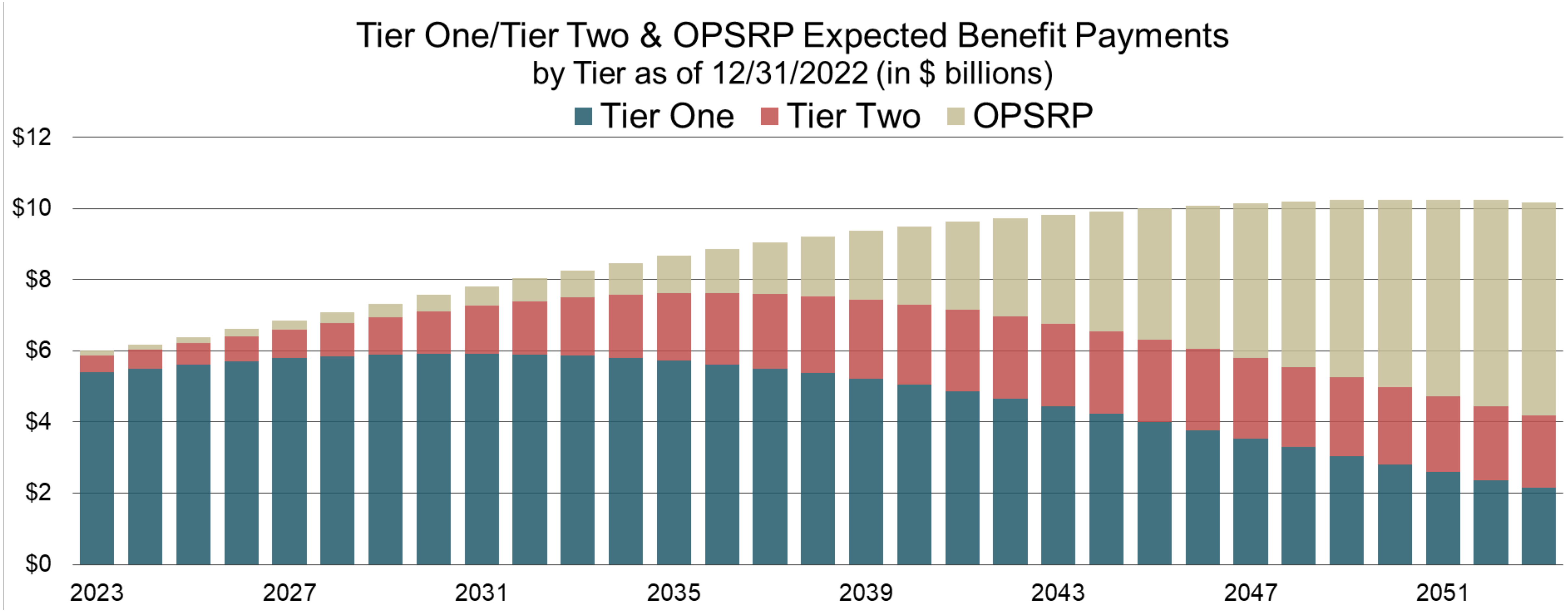
# Data Exhibits

| | 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 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 Members**[1] | | | | | |
| 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 Benefit | $ 2,459 | $ 988 | $ 520 | $ 958 | $ 959 |
| **Retired Members and Beneficiaries**[1] | | | | | |
| 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.*

# Projected Benefit Payments by Tier for Members as of 12/31/2022

## Does Not Include Projected Benefit Payments for Anyone Joining OPSRP After 12/31/2022



# School District Weighted Total* Pension-Only Rates

**2009-2011** rates set **prior to economic downturn**

**2011-2013** rates first to reflect **-27%** return in 2008 and **+19%** in 2009

**2013-2015** shown before (dotted line) and after (solid line) **legislated changes**

**2015-2017** set **pre-*Moro*** reflecting 2012 (**+14.3%**) & 2013 (**+15.6%**) returns, **first decrease in assumed return**

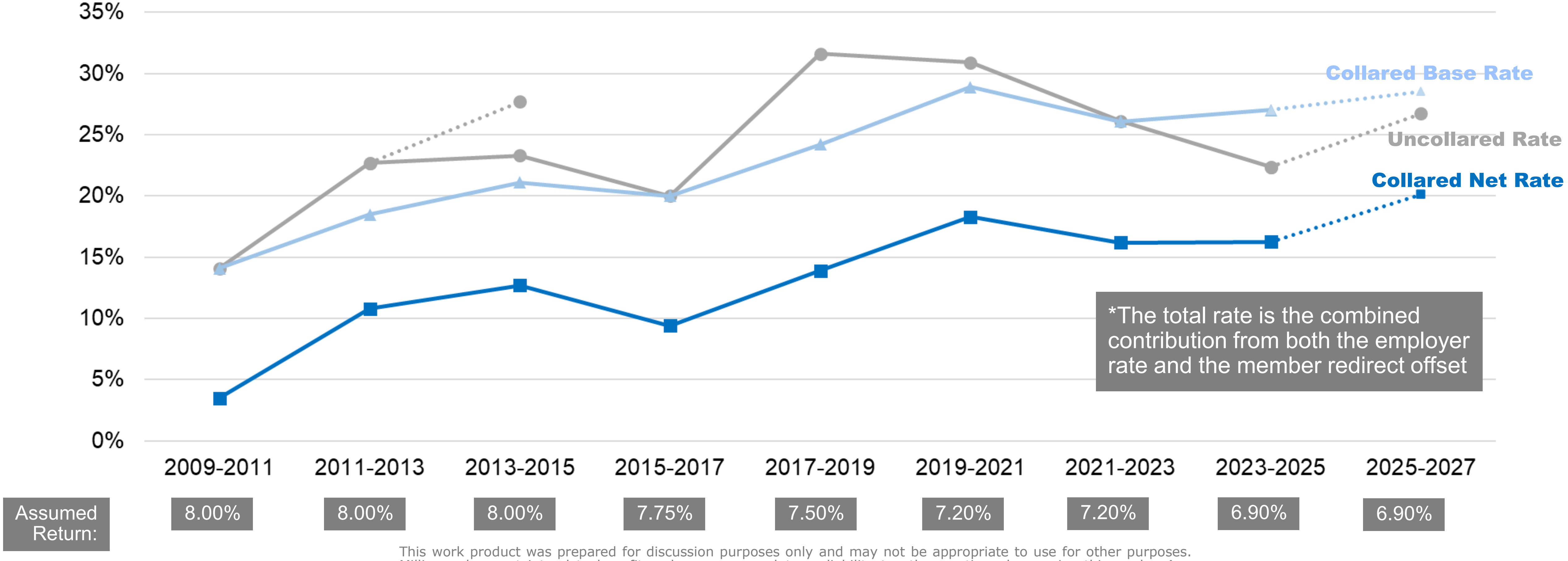
**2017-2019** set **post-*Moro***, reflecting 2015 return (**+2.1%**) and **second decrease in assumed return**

**2019-2021** reflects **+15.4%** return in 2017 and **third decrease in assumed return**

**2021-2023** rates **reflect mandated reamortization of Tier One/Tier Two UAL**, biennial returns near assumption

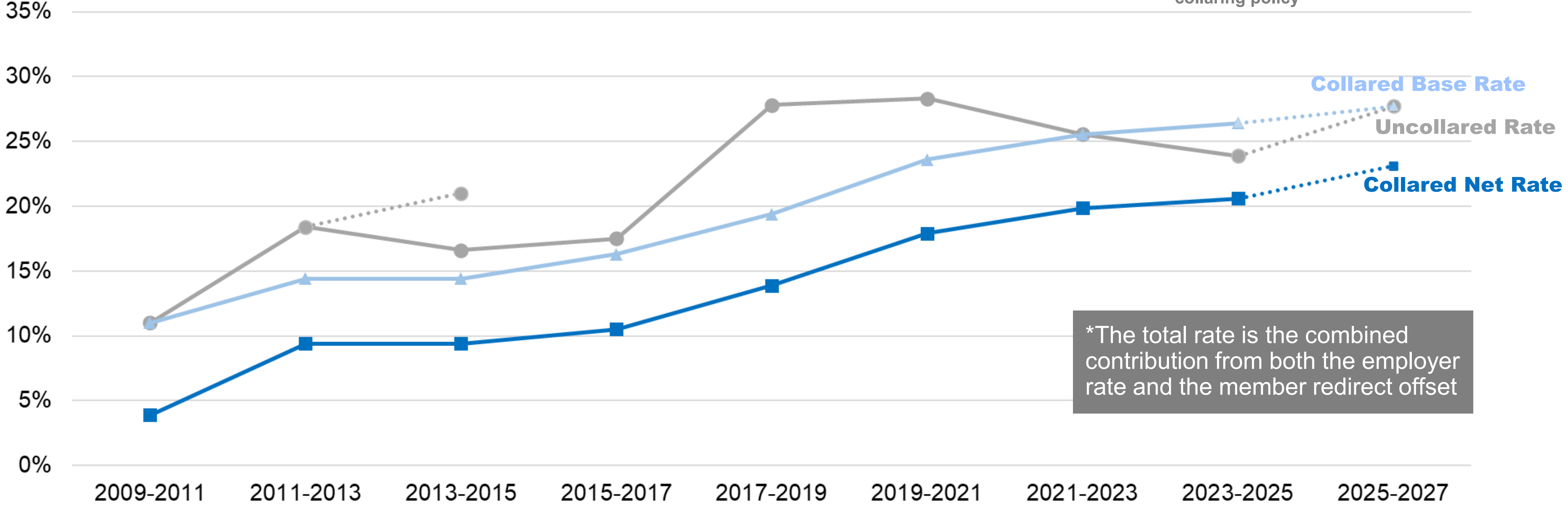
**2023-2025 rates** reflect 2021 actual return of **+20.05%, a fourth decrease in assumed return** and an **update to rate collaring policy**

**2025-2027 advisory rates** reflect 2022 actual return of **-1.55%**



# SLGRP Weighted Total* Pension-Only Rates

| 2009-2011 | 2011-2013 | 2013-2015 | 2015-2017 | 2017-2019 | 2019-2021 | 2021-2023 | 2023-2025 | 2025-2027 |
|---|---|---|---|---|---|---|---|---|
| **2009-2011** rates set **prior to economic downturn** | **2011-2013** rates first to reflect **-27%** return in 2008 and **+19%** in 2009 | **2013-2015** shown before (dotted line) and after (solid line) **legislated changes** | **2015-2017** set **pre-*Moro*** reflecting 2012 (**+14.3%**) & 2013 (**+15.6%**) returns, first **decrease in assumed return** | **2017-2019** set **post-*Moro***, reflecting 2015 return (**+2.1%**) and second **decrease in assumed return** | **2019-2021** reflects **+15.4%** return in 2017 and third **decrease in assumed return** | **2021-2023** rates reflect **mandated reamortization of Tier One/Tier Two UAL**, biennial returns near assumption | **2023-2025 rates** reflect 2021 actual return of **+20.05%**, a fourth **decrease in assumed return** and an **update to rate collaring policy** | **2025-2027 advisory rates** reflect 2022 actual return of **-1.55%** |




*The total rate is the combined contribution from both the employer rate and the member redirect offset

| Assumed Return: | 8.00% | 8.00% | 8.00% | 7.75% | 7.50% | 7.20% | 7.20% | 6.90% | 6.90% |
|---|---|---|---|---|---|---|---|---|---|

Milliman

# Funded Status and UAL by Program

| Pension Funded Status ($ billions) at 12/31/2022<br>*totals may not add due to rounding* | | | |
|---|---|---|---|
| | Tier One/ Tier Two | OPSRP | Combined |
| Actuarial liability | $ 88.4 | $ 14.5 | $ 102.9 |
| Assets (excluding side accounts) | $ 63.8 | $ 11.1 | $ 74.9 |
| UAL (excluding side accounts) | $ 24.6 | $ 3.5 | $ 28.0 |
| Funded status (excluding side accounts) | 72% | 76% | 73% |
| | | | |
| Side account assets | | | $ 6.2 |
| UAL (including side accounts) | | | $21.8 |
| Funded status (including side accounts) | | | 79% |

Milliman

# Uncollared Total Pension Rates – School Districts

## Excludes Retiree Health Care, IAP Contributions, Rate Collar, Side Accounts

| | 12/31/2021 Valuation 2023 – 2025 Final Rates | | | 12/31/2022 Valuation 2025 – 2027 Advisory Rates | | |
|---|---|---|---|---|---|---|
| | Payroll | | | Payroll | | |
| | Tier One / Tier Two | OPSRP | Weighted Average[1] | Tier One / Tier Two | OPSRP | Weighted Average[1] |
| Total Normal Cost | 14.48% | 9.89% | 11.24% | 15.76% | 10.55% | 11.90% |
| Tier One/Tier Two UAL | 9.63% | 9.63% | 9.63% | 12.21% | 12.21% | 12.21% |
| OPSRP UAL | 1.51% | 1.51% | 1.51% | 2.62% | 2.62% | 2.62% |
| **Uncollared Total Rate** | **25.62%** | **21.03%** | **22.38%** | **30.59%** | **25.38%** | **26.73%** |
| **Increase/(Decrease)** | | | | **4.97%** | **4.35%** | **4.35%** |

[1] Weighting based on pool payroll levels (Tier One/Tier Two, OPSRP) as of the valuation date

The pool-average advisory collared base and net rates for 2025-2027 are shown on subsequent slides

Rates shown on this slide are “total” rates and include the member EPSA contribution component of the normal cost

# Collared Total Pension Base Rates – School Districts

## Excludes Retiree Health Care & IAP Contributions, Side Account Offsets

| | 12/31/2021 Valuation 2023 – 2025 Final Rates | | | 12/31/2022 Valuation 2025 – 2027 Advisory Rates | | |
|---|---|---|---|---|---|---|
| | Payroll | | | Payroll | | |
| | Tier One / Tier Two | OPSRP | Weighted Average[1] | Tier One / Tier Two | OPSRP | Weighted Average[1] |
| **Uncollared Total Rate** | **25.62%** | **21.03%** | **22.38%** | **30.59%** | **25.38%** | **26.73%** |
| Effect of Rate Collar | 4.65% | 4.65% | 4.65% | 1.82% | 1.82% | 1.82% |
| **Collared Total Base Rate** | **30.27%** | **25.68%** | **27.03%** | **32.41%** | **27.2%** | **28.55%** |
| **Increase/(Decrease)** | | | | **2.14%** | **1.52%** | **1.52%** |

[1] Weighting based on pool payroll levels (Tier One/Tier Two, OPSRP) as of the valuation date

The 2025 – 2027 collared total base rates increased due to the combined effects of the higher recent and assumed future salary increases and the rate collar's restriction on collared UAL rate decreases prior to satisfaction of funded status thresholds

If actual 2023 investment returns are near assumption, final 2025-2027 total base rates are anticipated to be similar to the advisory 2025-2027 total base rates shown in this presentation

Rates shown on this slide are "total" rates and include the member EPSA contribution

# Collared Employer Pension Rates – School Districts

## Excludes Retiree Health Care & IAP Contributions

| | 12/31/2021[1] Valuation 2023 – 2025 Final Rates | | | 12/31/2023[1] Valuation 2025 – 2027 Advisory Rates | | |
|---|---|---|---|---|---|---|
| | Payroll | | | Payroll | | |
| | Tier One / Tier Two | OPSRP | Weighted Average[2] | Tier One / Tier Two | OPSRP | Weighted Average[2] |
| **Collared Total Base Rate** | **30.27%** | **25.68%** | **27.03%** | **32.41%** | **27.20%** | **28.55%** |
| Member Redirect Offset | (2.40%) | (0.65%) | (1.10%) | (2.40%) | (0.65%) | (1.05%) |
| **Collared Base Employer Rate** | **27.87%** | **25.03%** | **25.93%** | **30.01%** | **26.55%** | **27.50%** |
| Side Account Rate (Offset) | (10.77%) | (10.77%) | (10.77%) | (8.42%) | (8.42%) | (8.42%) |
| **Collared Net Employer Rate** | **17.10%** | **14.26%** | **15.16%** | **21.59%** | **18.13%** | **19.08%** |
| **Increase/(Decrease)** | | | | **4.49%** | **3.87%** | **3.92%** |

1 For this exhibit, adjustments are assumed not to be limited due to an individual employer reaching a 0.00% contribution rate
2 Weighting based on pool payroll levels (Tier One/Tier Two, OPSRP) as of the valuation date, OPRSP's payroll weighting increased between valuation dates

Rates vary by employer, as only some employers have side accounts

Weighted-average net employer rates increased more than collared base employer rates, due to a decrease in the average side account offset as an outcome of low actual investment returns and high payroll growth during 2022

# Uncollared Total Pension Rates – SLGRP Average

## Excludes Retiree Health Care, IAP Contributions, Rate Collar, Side Accounts

| | 12/31/2021 Valuation 2023 – 2025 Final Rates | | | 12/31/2022 Valuation 2025 – 2027 Advisory Rates | | |
|---|---|---|---|---|---|---|
| | Payroll | | | Payroll | | |
| | Tier One / Tier Two | OPSRP | Weighted Average[1] | Tier One / Tier Two | OPSRP | Weighted Average[1] |
| Normal Cost | 16.35% | 10.47% | 12.04% | 16.77% | 11.10% | 12.43% |
| Tier One/Tier Two UAL | 10.34% | 10.34% | 10.34% | 12.66% | 12.66% | 12.66% |
| OPSRP UAL | 1.51% | 1.51% | 1.51% | 2.62% | 2.62% | 2.62% |
| **Uncollared Total Rate** | **28.20%** | **22.32%** | **23.89%** | **32.05%** | **26.38%** | **27.71%** |
| **Increase** | | | | **3.85%** | **4.06%** | **3.82%** |

[1] Weighting based on pool payroll levels (Tier One/Tier Two, OPSRP) as of the valuation date.

The pool-average advisory collared net rates which employers would be charged are shown on subsequent slides

Rates shown on this slide are "total" rates and include the member EPSA contribution component of the normal cost

Rates vary, sometimes widely among employers in the SLGRP

# Collared Total Pension Base Rates – SLGRP Average
## Excludes Retiree Health Care & IAP Contributions, Side Account Offsets

| | 12/31/2021[1] Valuation 2023 – 2025 Final Rates | | | 12/31/2022[1] Valuation 2025 – 2027 Advisory Rates | | |
|---|---|---|---|---|---|---|
| | Payroll | | | Payroll | | |
| | Tier One / Tier Two | OPSRP | Weighted Average[2] | Tier One / Tier Two | OPSRP | Weighted Average[2] |
| **Uncollared Total Rate** | **28.20%** | **22.32%** | **23.89%** | **32.05%** | **26.38%** | **27.71%** |
| Effect of Rate Collar | 2.52% | 2.52% | 2.52% | 0.00% | 0.00% | 0.00% |
| **Collared Total Base Rate** | **30.72%** | **24.84%** | **26.41%** | **32.05%** | **26.38%** | **27.71%** |
| **Increase** | | | | **1.33%** | **1.54%** | **1.30%** |

[1] For this exhibit, adjustments are assumed not to be limited due to an individual employer reaching a 0.00% contribution rate.
[2] Weighting based on pool payroll levels (Tier One/Tier Two, OPSRP) as of the valuation date

Rates shown on this slide are “total” rates and include the member EPSA contribution

# Collared Employer Pension Rates – SLGRP Average

## Excludes Retiree Health Care & IAP Contributions

| | 12/31/2021[1] Valuation 2023 – 2025 Final Rates | | | 12/31/2022[1] Valuation 2025 – 2027 Advisory Rates | | |
|---|---|---|---|---|---|---|
| | Payroll | | | Payroll | | |
| | Tier One / Tier Two | OPSRP | Weighted Average[2] | Tier One / Tier Two | OPSRP | Weighted Average[2] |
| **Collared Total Base Rate** | **30.72%** | **24.84%** | **26.41%** | **32.05%** | **26.38%** | **27.71%** |
| Member Redirect Offset | (2.40%) | (0.65%) | (1.10%) | (2.40%) | (0.65%) | (1.05%) |
| **Collared Base Employer Rate** | **28.32%** | **24.19%** | **25.31%** | **29.65%** | **25.73%** | **26.66%** |
| Side Account (Offset) | (5.14%) | (5.14%) | (5.14%) | (4.16%) | (4.16%) | (4.16%) |
| SLGRP Charge/(Offset) | (0.66%) | (0.66%) | (0.66%) | (0.43%) | (0.43%) | (0.43%) |
| **Collared Net Rate** | **22.52%** | **18.39%** | **19.51%** | **25.06%** | **21.14%** | **22.07%** |
| **Increase** | | | | **2.54%** | **2.75%** | **2.56%** |

1 For this exhibit, adjustments are assumed not to be limited due to an individual employer reaching a 0.00% contribution rate.
2 Weighting based on pool payroll levels (Tier One/Tier Two, OPSRP) as of the valuation date

Rates vary by employer, sometimes significantly, as only some employers have side accounts and the SLGRP charge/(offset) varies by employer



Milliman

# Uncollared Total Pension Rates – System-Wide

## Excludes Retiree Health Care, IAP Contributions, Rate Collar, Side Accounts

| | 12/31/2021 Valuation 2023 – 2025 Final Rates | | | 12/31/2022 Valuation 2025 – 2027 Advisory Rates | | |
|---|---|---|---|---|---|---|
| | Payroll | | | Payroll | | |
| | Tier One / Tier Two | OPSRP | Weighted Average[1] | Tier One / Tier Two | OPSRP | Weighted Average[1] |
| Normal Cost | 15.91% | 10.47% | 11.98% | 16.63% | 11.10% | 12.45% |
| Tier One/Tier Two UAL | 10.24% | 10.24% | 10.24% | 12.69% | 12.69% | 12.69% |
| OPSRP UAL | 1.51% | 1.51% | 1.51% | 2.62% | 2.62% | 2.62% |
| **Uncollared Total Rate** | **27.66%** | **22.22%** | **23.73%** | **31.94%** | **26.41%** | **27.76%** |
| **Increase** | | | | **4.28%** | **4.19%** | **4.03%** |

[1] Weighting based on system-wide payroll levels (Tier One/Tier Two, OPSRP) as of the valuation date.

Rates shown on this slide are "total" rates and include the member EPSA contribution component of the normal cost

# Collared Total Pension Base Rates – System-Wide
## Excludes Retiree Health Care & IAP Contributions, Side Account Offsets

| | 12/31/2021 Valuation 2023 – 2025 Final Rates | | | 12/31/2022 Valuation 2025 – 2027 Advisory Rates | | |
|---|---|---|---|---|---|---|
| | | Payroll | | | Payroll | |
| | Tier One / Tier Two | OPSRP | Weighted Average[1] | Tier One / Tier Two | OPSRP | Weighted Average[1] |
| **Uncollared Total Rate** | **27.66%** | **22.22%** | **23.73%** | **31.94%** | **26.41%** | **27.76%** |
| Effect of Rate Collar | 3.01% | 3.01% | 3.01% | 0.61% | 0.61% | 0.61% |
| **Collared Total Base Rate** | **30.67%** | **25.23%** | **26.74%** | **32.55%** | **27.02%** | **28.37%** |
| **Increase** | | | | **1.88%** | **1.79%** | **1.63%** |

[1] Weighting based on system-wide payroll levels (Tier One/Tier Two, OPSRP) as of the valuation date.

Rates shown on this slide are “total” rates and include the member EPSA contribution

# Collared Employer Pension Rates – System-Wide

## Excludes Retiree Health Care & IAP Contributions

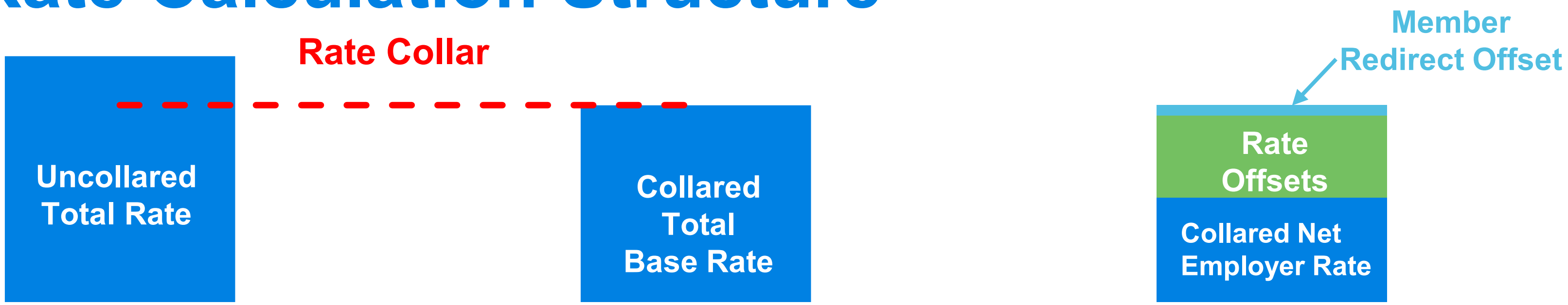
| | 12/31/2021[1] Valuation 2023 – 2025 Final Rates | | | 12/31/2022[1] Valuation 2025 – 2027 Advisory Rates | | |
|---|---|---|---|---|---|---|
| | Payroll | | | Payroll | | |
| | Tier One / Tier Two | OPSRP | Weighted Average[2] | Tier One / Tier Two | OPSRP | Weighted Average[2] |
| **Collared Base Rate** | **30.67%** | **25.23%** | **26.74%** | **32.55%** | **27.02%** | **28.37%** |
| Member Redirect Offset | (2.40%) | (0.65%) | (1.10%) | (2.40%) | (0.65%) | (1.05%) |
| **Collared Base Employer Rate** | **28.27%** | **24.58%** | **25.64%** | **30.15%** | **26.37%** | **27.32%** |
| Side Account (Offset) | (6.64%) | (6.64%) | (6.64%) | (5.38%) | (5.38%) | (5.38%) |
| SLGRP Charge/(Offset) | (0.39%) | (0.39%) | (0.39%) | (0.25%) | (0.25%) | (0.25%) |
| **Collared Net Rate** | **21.24%** | **17.55%** | **18.61%** | **24.52%** | **20.74%** | **21.69%** |
| **Increase** | | | | **3.28%** | **3.19%** | **3.08%** |

1 For this exhibit, adjustments are assumed not to be limited due to an individual employer reaching a 0.00% contribution rate.
2 Weighting based on system-wide payroll levels (Tier One/Tier Two, OPSRP) as of the valuation date

Rates vary by employer, as only some employers have side accounts

Changes in side account offsets are not collared

# Overview of Rate Calculation Structure

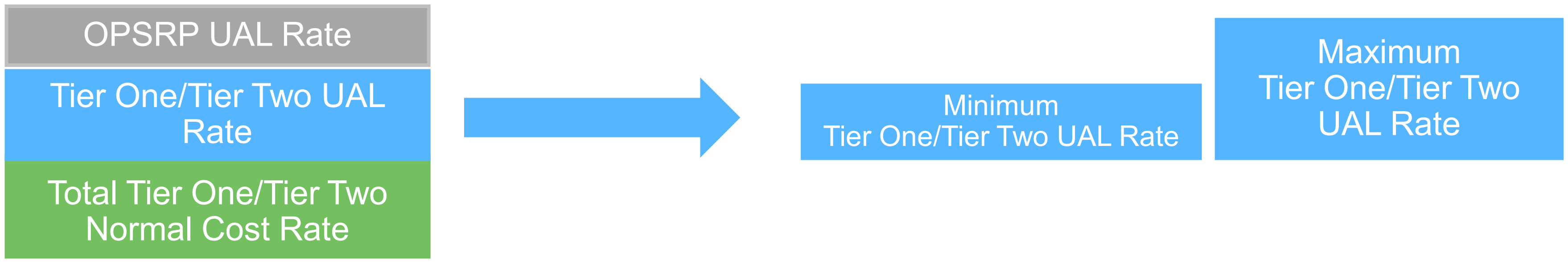



- The ***uncollared total rate*** is the theoretical contribution rate to reach 100% funded status over a specified amortization period if:
  - Contributions at that rate started on the actuarial valuation date, and
  - Actual future experience mirrors the actuarial valuation's assumptions, and
  - The normal cost rate does not change in subsequent years
- The rate collar sets a biennium's ***collared total base rate***, limiting the base rate change for a single biennium when there is a large change in the uncollared rate
- ***Member redirect offset*** reflects estimated portion of collared total base rate paid by redirected member contributions
- Employers pay the ***collared net employer rate***, which reflects the member redirect offset and any rate offset adjustments from:
  - Side account rate offsets for employers with side accounts
  - SLGRP charges/offsets (e.g., Transition Liability/Surplus)

# Rate Collar Design

- Rate collar focuses on the biennium-to-biennium change in the UAL Rate component
  - Normal Cost Rate component is always paid in full and is not subject to a rate collar limitation
- The maximum biennium to biennium change in UAL Rate permitted by the rate collar is:
  - **SLGRP and School District Pools Tier One/Tier Two UAL Rates**: 3% of pay
  - **OPSRP UAL rate**: 1% of pay
  - **Tier One/Tier Two UAL Rates of Independent Employers**: greater of 4% of pay or 1/3rd of the difference between the collared and uncollared Tier One/Tier Two UAL Rates at the last rate-setting valuation
- UAL Rate is not allowed to decrease at all unless funded status excluding side accounts is at least 87%, and a full collar width decrease is not allowed unless funded status is at least 90%

**Illustration of Rate Collar for Tier One/Tier Two UAL Rate**




**Pension Rate in Current Biennium**

**Potential Pension Rate in Next Biennium**

# Retirement System Risks

- Oregon PERS, like all defined benefit systems, is subject to various risks that will affect future system liabilities and contribution requirements, including:
  - **Investment risk**: the potential that investment returns will be different than assumed
  - **Demographic risks**: the potential that mortality experience, retirement behavior, or other demographic experience for the system membership will be different than assumed
  - **Contribution risk**: the potential that actual future contributions will be materially different than expected, for example if there are material changes in the system's covered payroll
- The results of an actuarial valuation are based on one set of reasonable assumptions, but it is almost certain that future experience will not exactly match the assumptions.
- Further discussion of system risks and historical information regarding system experience are shown in our annual actuarial valuations. In addition, our annual financial modeling presentation to the PERS Board illustrates future outcomes under a wide range of future scenarios reflecting variation in key risk factors.

# Actuarial Basis

## Data

We have based our calculation of the liabilities on the data supplied by the Oregon Public Employees Retirement System and summarized in the data exhibits on the preceding slides.

Assets as of December 31, 2022, were based on values provided by Oregon PERS reflecting the Board's earnings crediting decisions for 2022.

## Methods / Policies

*Actuarial Cost Method*: Entry Age Normal, adopted effective December 31, 2012.

*UAL Amortization:* The UAL for OPSRP and Retiree Health Care as of December 31, 2007 were amortized as a level percentage of combined valuation payroll over a closed 16 year period for OPSRP and a closed 10 year period for Retiree Health Care. For the Tier One/Tier Two UAL, the amortization period was reset at 20 years as of December 31, 2013.  Senate Bill 1049 was signed into law in June 2019 and requires a one-time re-amortization of Tier One/Tier Two UAL over a closed 22 year period at the December 31, 2019 rate-setting valuation which will set actuarially determined contribution rates for the 2021-2023 biennium.  Gains and losses between subsequent odd-year valuations are amortized as a level percentage of combined valuation payroll over the amortization period (20 years for Tier One/Tier Two, 16 years for OPSRP, 10 years for Retiree Health Care) from the odd-year valuation in which they are first recognized.

For the Retiree Health Care programs (RHIA and RHIPA), beginning with the December 31, 2021 rate-setting valuation the amortization policy when a program is over 100% funded status will be to amortize the actuarial surplus over Tier One/Tier Two payroll using a rolling 20-year amortization basis.  The resulting negative UAL Rate will offset the normal cost rate for the program, but not below 0.0%. If either program subsequently fell below 100%, the UAL would be amortized over combined payroll following the 10-year closed, layered amortization policy.

# Actuarial Basis

## Methods / Policies (cont'd)

***Contribution rate stabilization method**:* The UAL Rate contribution 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 contribution rate component (prior to consideration of side account offsets, SLGRP transition liability or surplus rates, or pre-SLGRP liability rate charges or offsets).

Collar Width: the rate pool's new UAL Rate contribution rate component will generally not increase or decrease from the prior biennium's collared UAL Rate contribution rate component by more than the following amount:

- Tier One/Tier Two SLGRP and Tier One/Tier Two School District 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%.

UAL Rate decrease restrictions**:** the UAL Rate for any rate pool will not be allowed to decrease if the pool's funded status is 87% (excluding side accounts) or lower; the allowable decrease will phase into the full collar width from 87% funded to 90% funded.

***Expenses**:* System-wide administration expenses are assumed to be equal to $59.0M. The assumed expenses are allocated between Tier One/Tier Two and OPSRP based on projected payroll and are added to the respective normal costs.

***Actuarial Value of Assets**:* Equal to Market Value of Assets excluding Contingency and Tier One Rate Guarantee Reserves. The Tier One Rate Guarantee Reserve is not excluded from assets if it is negative (i.e., in deficit status). The Actuarial Value of Assets includes the value of Employee Pension Stability Accounts (EPSA).

## Assumptions

Assumptions for valuation calculations are as described in the 2022 Experience Study for Oregon PERS and presented to the PERS Board in July 2023.

## Provisions

Provisions valued are as detailed in the forthcoming 2022 Valuation Report.