



# PERS Board Meeting

## OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

Presented by:

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October 1, 2021

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# Introduction

- Today we will review summary valuation results as of December 31, 2020 for:
  - Tier 1/Tier 2 & 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, 2020 System-Wide Actuarial Valuation Report
- Results are advisory in nature
  - Indicate where 2023 – 2025 contribution rates would be if set today
  - Assess program funded status and unfunded actuarial liability (UAL) as of December 31, 2020
- All work is based on:
  - Asset levels and member demographics at year-end 2020
  - Updates to methods and assumptions from the 2020 Experience Study
- PERS will deliver employer-specific advisory reports this fall

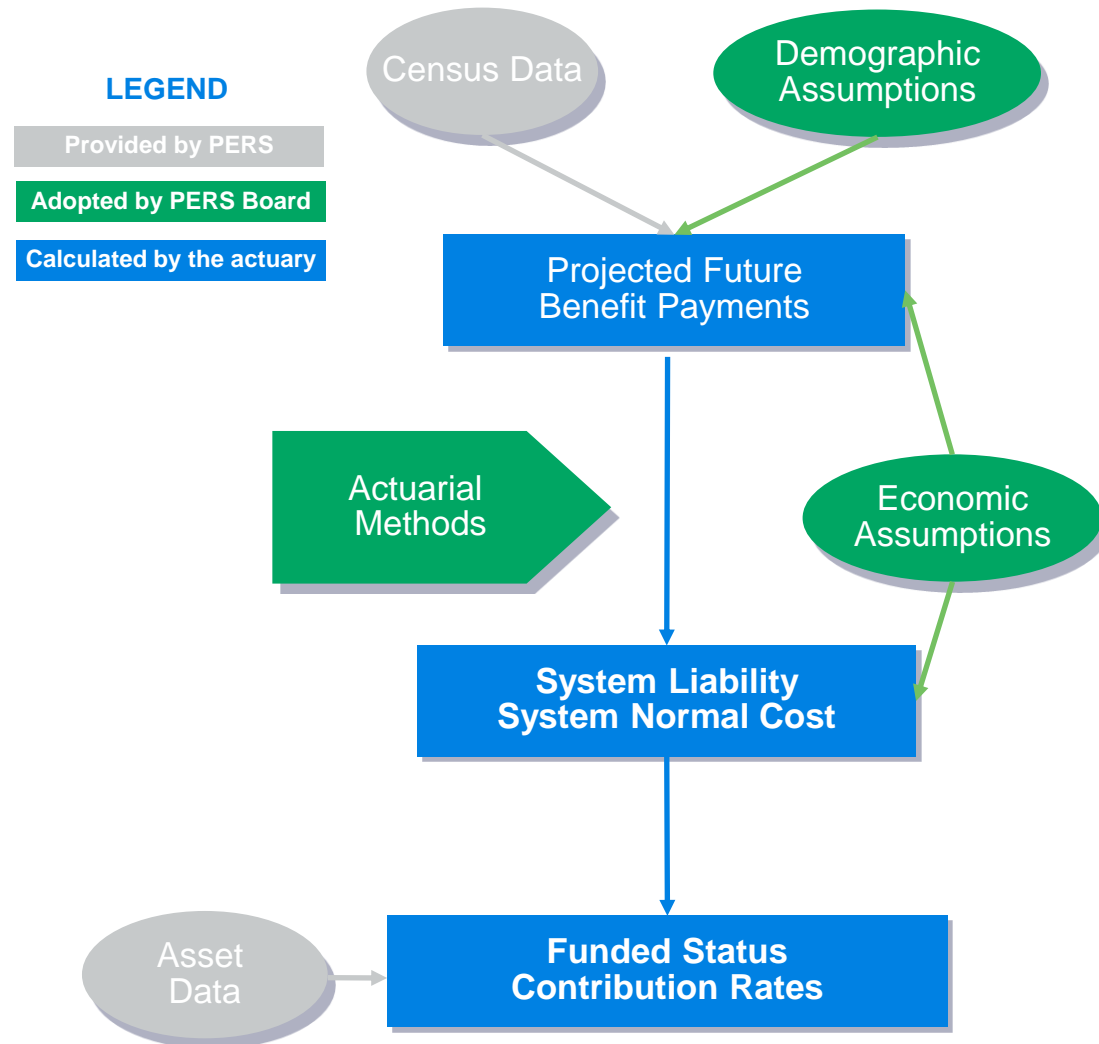
# Valuation Process and Timeline

- Actuarial valuations are conducted annually
  - Alternate between “rate-setting” and “advisory” valuations
  - This valuation as of 12/31/2020 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
12/31/2017 →	July 2019 – June 2021
12/31/2019 →	July 2021 – June 2023
12/31/2021 →	July 2023 – June 2025

# Two-Year Rate-Setting Cycle

- July 2021: Assumptions & methods adopted by Board in consultation with the actuary
- October 2021: System-wide advisory 12/31/20 actuarial valuation results**
- December 2021: Advisory 2023-2025 employer-specific contribution rates
- July 2022: System-wide 12/31/21 rate-setting actuarial valuation results
- September 2022: **Presentation and adoption of employer-specific 2023-2025 contribution rates**



# Guiding Objectives - Methods & Assumptions

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

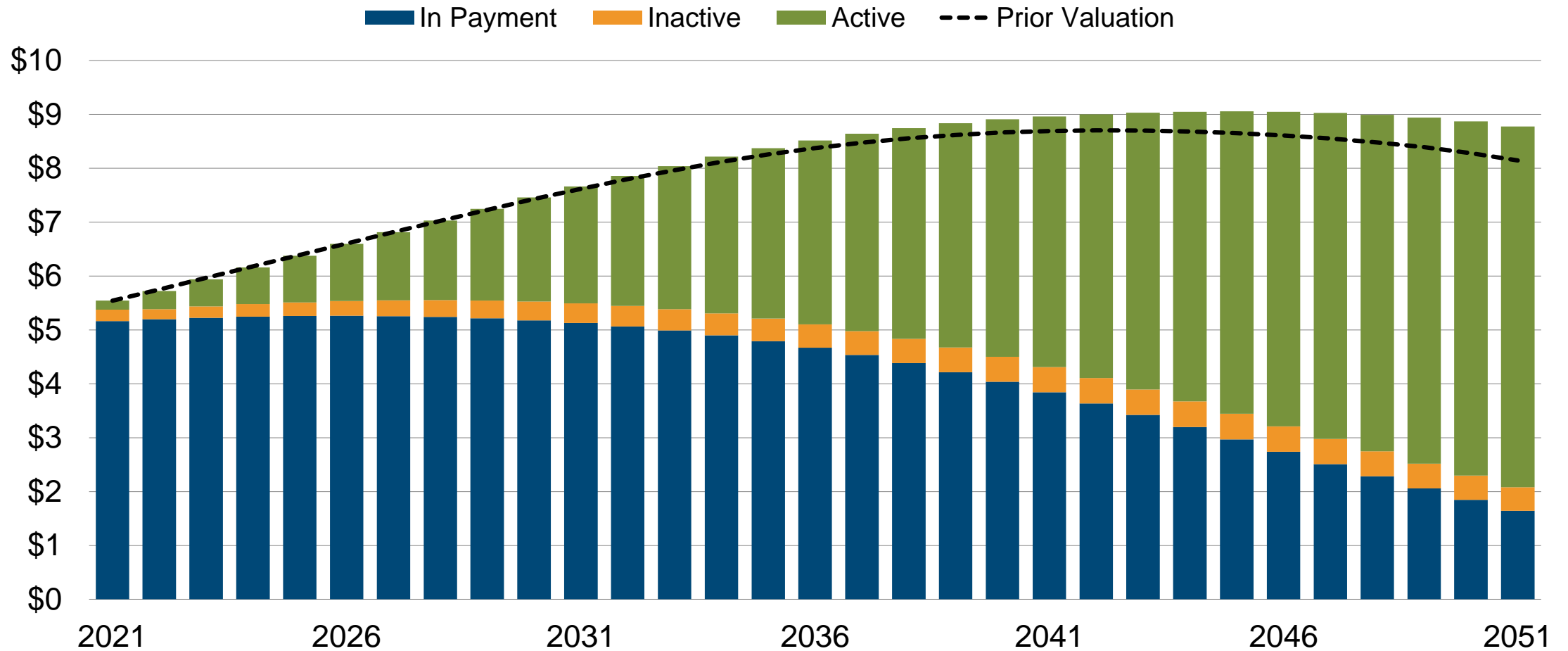
Some of the objectives can conflict, particularly in periods with significant volatility in investment return or projected benefit levels. Overall system funding policies should seek an appropriate balance between conflicting objectives.

# Changes Since the Last Valuation

- The 12/31/2019 rate-setting actuarial valuation developed 2021-2023 employer contribution rates
- Since the 12/31/2019 rate-setting valuation:
  - The PERS Board adopted new assumptions and methods from the 2020 Experience Study, including reducing the investment return assumption from 7.20% to 6.90%
  - 2020 asset returns were very close to assumed, with an actual single-year return of +7.18%
  - Year-to-date returns through August 31, 2021 of +16.45% are **not** reflected in this advisory valuation, but will be reflected in next year's rate-setting valuation
  - System payroll increased nearly 4.4%
  - Senate Bill 111 and House Bill 2906 were signed into law in June 2021
    - SB 111 provisions included increased death benefits
    - HB 2906 increased the salary threshold at which member EPSA contributions are required

# Projected Benefit Payments

Tier 1/Tier 2 & OPSRP Expected Benefit Payments  
by Status as of 12/31/2020 (in \$ billions)



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## Funded Status & Unfunded Actuarial Liability (UAL)

System-total Pension Funded Status			
Valuation date:	12/31/2018	12/31/2019	12/31/2020
Assumed return:	7.20%	7.20%	6.90%
Actuarial liability	\$ 86.6	\$ 89.4	\$ 95.3
Assets (excluding side accounts)	<u>59.6</u>	<u>64.8</u>	<u>67.3</u>
<b>UAL (excluding side accounts)</b>	<b>\$ 27.0</b>	<b>\$ 24.6</b>	<b>\$ 28.0</b>
<b>Funded status (excluding side accounts)</b>	<b>69%</b>	<b>72%</b>	<b>71%</b>
Side account assets	<u>\$ 5.2</u>	<u>\$ 5.5</u>	<u>\$ 5.1</u>
UAL (including side accounts)	\$ 21.8	\$ 19.1	\$ 22.9
<b>Funded status (including side accounts)</b>	<b>75%</b>	<b>79%</b>	<b>76%</b>



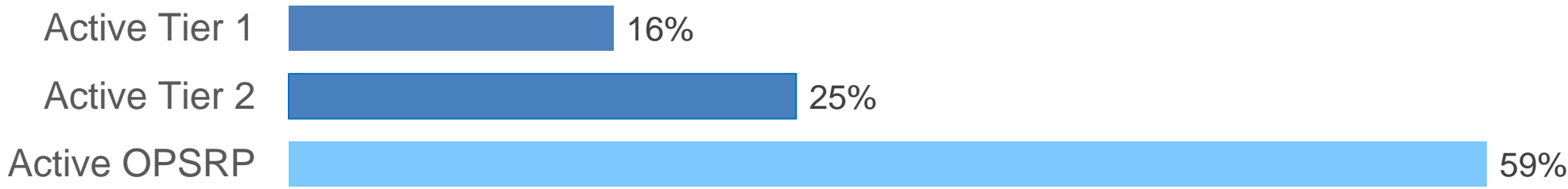
# Actuarial Accrued Liability and Normal Cost by Category

## 12/31/2020 Tier 1/Tier 2 and OPSRP Actuarial Accrued Liability and Normal Cost

Actuarial Accrued Liability by Member Tier and Status on December 31, 2020



Normal Cost by Member Category on December 31, 2020



Accrued Actuarial Liability is the value of benefits allocated to service prior to 2021  
 Normal Cost is the value of benefits allocated to projected service during 2021



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## Sources of 2020 UAL (Excluding Side Accounts) Change

(\$ billions)	UAL Increase
Expected UAL increase/(decrease) during 2020	\$ 0.0
2020 actual investment performance	0.0
Assumed rate reduced to 6.9%	2.9
Other assumption and plan changes	0.4
Actual demographic experience different than assumed	<u>0.1</u>
Actual UAL increase/(decrease) during 2020	\$ 3.4

- The **expected UAL increase/(decrease)** is the UAL change, based on 12/31/2019 valuation results, projected to occur during 2020 if actual 2020 experience followed that valuation’s assumptions; in recent years there has been an expected increase, but there was essentially no expected change in 2020
- The 2020 investment gain/loss (i.e., actual versus assumed return) was minimal, reflecting actual 2020 OPERF returns of approximately +7.18% compared to the assumed 7.20% return
- Reducing the assumed rate was the main cause of UAL increase in 2020
- Increased death benefits provided under SB 111 led to \$0.1 - \$0.2 billion of the \$0.4 billion increase shown as “other assumption and plan changes”

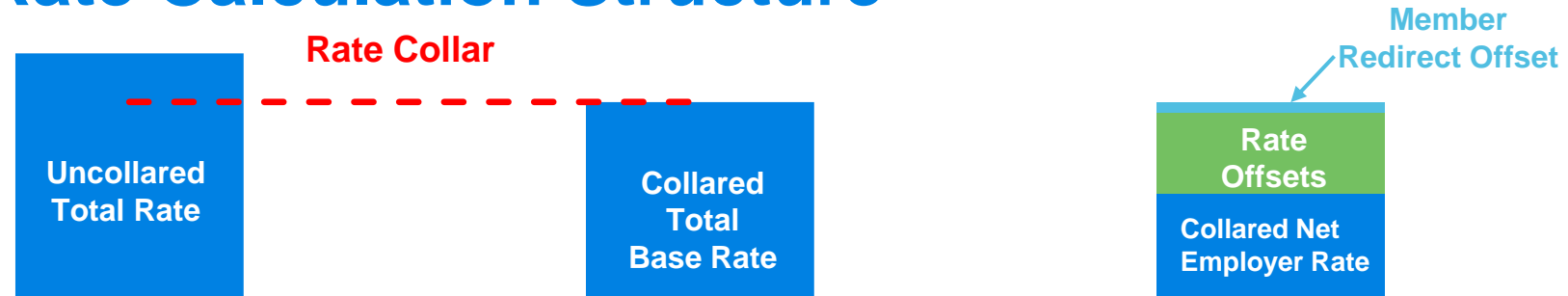
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# Tier 1/Tier 2 Rate Pool Funded Status and UAL

Amounts Shown as of December 31, 2020

(\$ billions) <i>totals may not add due to rounding</i>	SLGRP	School Districts
Tier 1/Tier 2 actuarial liability	\$ 46.4	\$ 31.5
Tier 1/Tier 2 assets (excluding side accounts)	<u>31.9</u>	<u>22.9</u>
<b>Tier 1/Tier 2 UAL (excluding side accounts)</b>	<b>\$ 14.5</b>	<b>\$ 8.6</b>
<b>Tier 1/Tier 2 funded status (excluding side accounts)</b>	<b>69%</b>	<b>73%</b>
Projected 2021 Tier 1/Tier 2 + OPSRP payroll	\$ 7.1	\$ 3.8
Assets to payroll ratio (excl. side accounts)	4.5x	6.0x
UAL to payroll ratio (excl. side accounts)	2.0x	2.3x
Side account assets	\$ 2.5	\$ 2.5
<b>Tier 1/Tier 2 UAL (including side accounts)</b>	<b>\$ 12.0</b>	<b>\$ 6.1</b>
<b>Tier 1/Tier 2 funded status (including side accounts)</b>	<b>74%</b>	<b>80%</b>

# Overview of Rate Calculation Structure



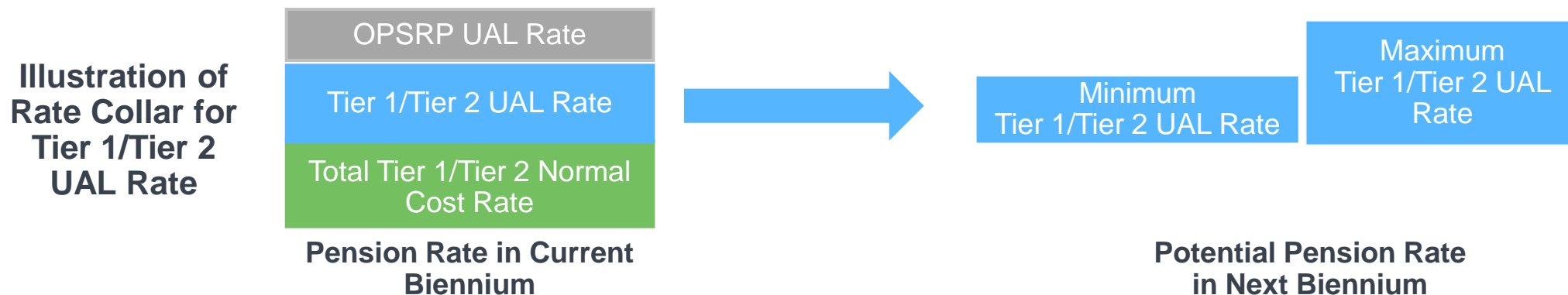
- The ***uncollared total rate*** is the theoretical contribution rate to reach 100% funded status over a specified amortization period if:
  - Contributions at that rate started on the actuarial valuation date, and
  - Actual future experience mirrors the actuarial valuation's assumptions, and
  - The 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)

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# Rate Collar Design

The rate collar structure was revised with the assumptions and methods adopted for the 2020 Experience Study

- 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 1/Tier 2 UAL Rates:** 3% of pay
  - **OPSRP UAL rate:** 1% of pay
  - **Tier 1/Tier 2 UAL Rates of Independent Employers:** greater of 4% of pay or 1/3rd of the difference between the collared and uncollared Tier 1/Tier 2 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%



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# Effect of 2021 Returns on Final 2023-25 Rates

- The advisory valuation uses 12/31/2020 assets and liabilities
  - For the two large Tier 1/Tier 2 experience-sharing rate pools, advisory 2023-2025 rates show projected increases in the collared base and net contribution rates, and project that based on returns through year-end 2020 the rate collar will not be limiting the size of those increases
- Final 2023-2025 rates will be based on assets and liabilities as of 12/31/2021, including actual full-year 2021 investment returns
- Through August 31, OPERF year-to-date regular account returns are +16.45%
  - If returns above the long-term average return assumption of 6.90% continue to year-end, actual 2023-25 increases for the two large rate pools likely will be lower than those shown in this year's advisory employer reports
    - If year-to-date 2021 returns were to hold at August's level until year-end, we estimate that in 2023-2025:
      - System-average UAL rates would remain steady from the 2021-2023 biennium, and
      - Normal cost rates would increase due to the update to the assumed rate
  - If actual year-to-date 2021 returns do not persist and end up near or below the assumed return at year-end, the actual 2023-2025 rate increases could be larger than those shown in this year's advisory employer reports

# Comments on Advisory 2023 – 2025 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 1/Tier 2 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 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

# 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

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

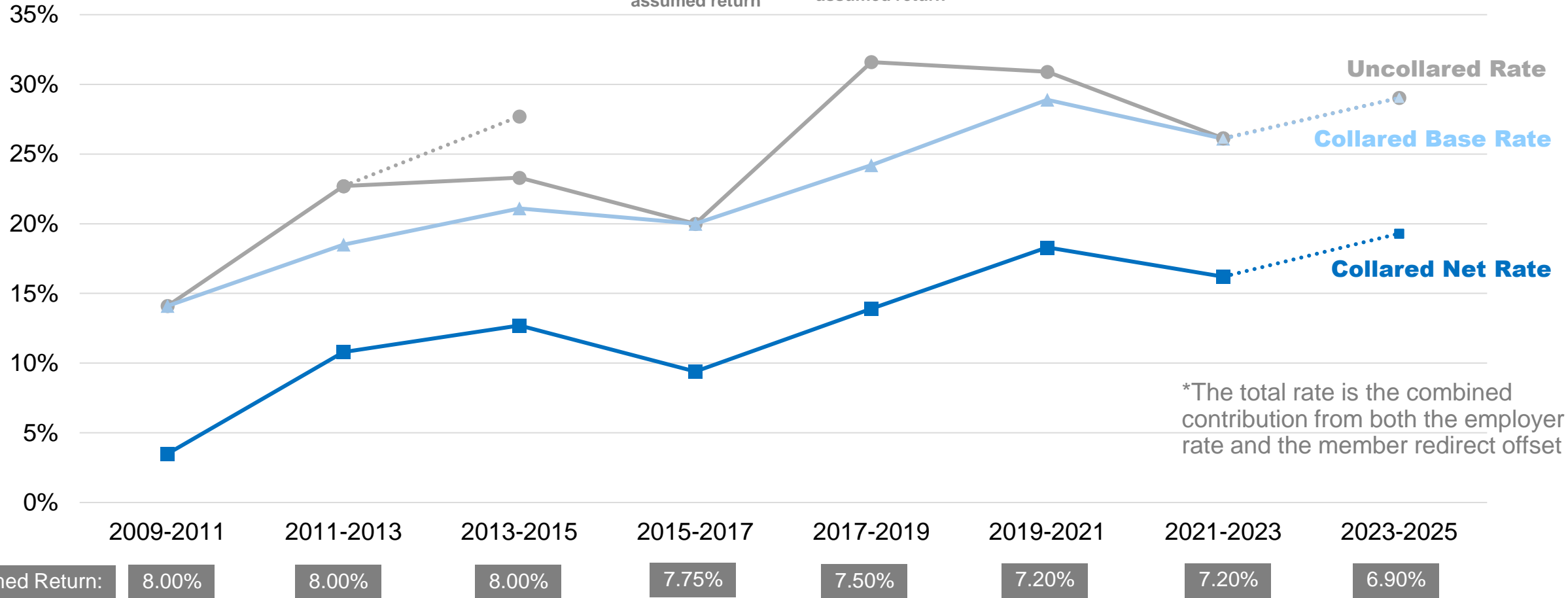
2015-2017  
set **pre-Moro**  
reflecting 2012  
(+14.3%) & 2013  
(+15.6%) returns,  
first decrease in  
assumed return

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

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

2021-2023  
reflects  
legislatively-  
mandated Tier  
1/Tier 2 UAL  
reamortization

2023-2025  
advisory rates  
reflect fourth  
decrease in  
assumed return, to  
6.90%



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



# Uncollared Total Pension Rates – School Districts

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

	12/31/2019 Valuation 2021 – 2023 Final Rates			12/31/2020 Valuation 2023 – 2025 Advisory Rates		
	Payroll			Payroll		
	Tier 1 / Tier 2	OPSRP	Weighted Average <sup>1</sup>	Tier 1 / Tier 2	OPSRP	Weighted Average <sup>1</sup>
Total Normal Cost	13.45%	8.64%	10.35%	15.01%	9.99%	11.63%
Tier 1/Tier 2 UAL	14.09%	14.09%	14.09%	15.31%	15.31%	15.31%
OPSRP UAL	<u>1.69%</u>	<u>1.69%</u>	<u>1.69%</u>	<u>2.09%</u>	<u>2.09%</u>	<u>2.09%</u>
<b>Uncollared Total Rate</b>	<b>29.23%</b>	<b>24.42%</b>	<b>26.13%</b>	<b>32.41%</b>	<b>27.39%</b>	<b>29.03%</b>
<b>Increase/(Decrease)</b>				<b>3.18%</b>	<b>2.97%</b>	<b>2.90%</b>

<sup>1</sup> Weighting based on pool payroll levels (Tier 1/Tier 2, OPSRP) as of the valuation date

The pool-average collared base and net advisory rates for 2023-2025 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

	12/31/2019 Valuation 2021 – 2023 Final Rates			12/31/2020 Valuation 2023 – 2025 Advisory Rates		
	Payroll			Payroll		
	Tier 1 / Tier 2	OPSRP	Weighted Average <sup>1</sup>	Tier 1 / Tier 2	OPSRP	Weighted Average <sup>1</sup>
<b>Uncollared Total Rate</b>	<b>29.23%</b>	<b>24.42%</b>	<b>26.13%</b>	<b>32.41%</b>	<b>27.39%</b>	<b>29.03%</b>
Collar Limitation	<u>0.00%</u>	<u>0.00%</u>	<u>0.00%</u>	<u>0.00%</u>	<u>0.00%</u>	<u>0.00%</u>
<b>Collared Total Base Rate</b>	<b>29.23%</b>	<b>24.42%</b>	<b>26.13%</b>	<b>32.41%</b>	<b>27.39%</b>	<b>29.03%</b>
<b>Increase/(Decrease)</b>				<b>3.18%</b>	<b>2.97%</b>	<b>2.90%</b>

<sup>1</sup> Weighting based on pool payroll levels (Tier 1/Tier 2, OPSRP) as of the valuation date

The 2023 – 2025 advisory total base rates increased primarily due to the reduction in the assumed rate from 7.20% to 6.90%.

If actual 2021 investment returns are near assumption, final 2023 – 2025 total base rates are anticipated to be similar to advisory 2023 – 2025 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

	12/31/2019 <sup>1</sup> Valuation 2021 – 2023 Final Rates			12/31/2020 <sup>1</sup> Valuation 2023 – 2025 Advisory Rates		
	Tier 1 / Tier 2	Payroll		Tier 1 / Tier 2	Payroll	
		OPSRP	Weighted Average <sup>2</sup>		OPSRP	Weighted Average <sup>2</sup>
<b>Collared Total Base Rate</b>	<b>29.23%</b>	<b>24.42%</b>	<b>26.13%</b>	<b>32.41%</b>	<b>27.39%</b>	<b>29.03%</b>
Member redirect offset	<u>(2.45%)</u>	<u>(0.70%)</u>	<u>(1.25%)</u>	<u>(2.40%)</u>	<u>(0.65%)</u>	<u>(1.15%)</u>
<b>Collared Base Employer Rate</b>	<b>26.78%</b>	<b>23.72%</b>	<b>24.88%</b>	<b>30.01%</b>	<b>26.74%</b>	<b>27.88%</b>
Side Account (Offset)	<u>(9.93%)</u>	<u>(9.93%)</u>	<u>(9.93%)</u>	<u>(9.74%)</u>	<u>(9.74%)</u>	<u>(9.74%)</u>
<b>Collared Net Employer Rate</b>	<b>16.85%</b>	<b>13.79%</b>	<b>14.95%</b>	<b>20.27%</b>	<b>17.00%</b>	<b>18.14%</b>
<b>Increase/(Decrease)</b>				<b>3.42%</b>	<b>3.21%</b>	<b>3.19%</b>

<sup>1</sup> For this exhibit, adjustments are assumed not to be limited due to an individual employer reaching a 0.00% contribution rate

<sup>2</sup> Weighting based on pool payroll levels (Tier 1/Tier 2, 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 total base rates, due to a decrease in the average member redirect offset

# School Districts Rate Summary

## Weighted Average Total Rates (Tier 1/Tier 2 and OPSRP)

	<b>Final 2021 - 2023</b>	<b>Advisory 2023 - 2025</b>	<b>Increase/ (Decrease)</b>
Uncollared Total Base Rate	26.13%	29.03%	2.90%
Collared Total Base Rate	26.13%	29.03%	2.90%
Collared Base Employer Rate	24.88%	27.88%	3.00%
Collared Net Employer Rate	14.95%	18.14%	3.19%

- The advisory collared total base rate for School Districts is equal to the uncollared total base rate
- The uncollared total base rate increase was primarily due to the reduction in the assumed rate from 7.20% to 6.90%
- The collared base employer rate increase was larger than the increase in the collared total base rate due to the reduction in assumed member EPSA redirect contributions based on the provisions of HB 2906

# SLGRP Rate Summary

## Weighted Average Total Rates (Tier 1/Tier 2 and OPSRP)

	<b>Final 2021 - 2023</b>	<b>Advisory 2023 - 2025</b>	<b>Change</b>
Uncollared Total Base Rate	25.54%	28.38%	2.84%
Collared Total Base Rate	25.54%	28.38%	2.84%
Collared Base Employer Rate	24.29%	27.23%	2.94%
Collared Net Employer Rate	18.61%	21.86%	3.25%

- The advisory collared total base rate for the SLGRP is equal to the uncollared total base rate
- The uncollared total base rate increase was primarily due to the reduction in the assumed rate from 7.20% to 6.90%
- The collared base employer rate increase was larger than the increase in the collared total base rate due to the reduction in assumed member EPSA redirect contributions based on the provisions of HB 2906

# System-Wide Rate Summary

## Weighted Average Total Rates (Tier 1/Tier 2 and OPSRP)

	<b>Final 2021 - 2023</b>	<b>Advisory 2023 - 2025</b>	<b>Change</b>
Uncollared Total Base Rate	25.91%	28.86%	2.95%
Collared Total Base Rate	25.82%	28.85%	3.03%
Collared Base Employer Rate	24.57%	27.70%	3.13%
Collared Net Employer Rate	17.93%	21.34%	3.41%

- System-wide rates are the payroll-weighted average of rates for School Districts, the SLGRP, and independent employers that do not pool their Tier 1/Tier 2 liability experience
- At a system-wide level the uncollared total base rate is 0.01% higher than the collared total base rate, reflecting that some independent employers have their advisory 2023-2025 rate increases limited by the rate collar

# Projected 2023-2025 Total Contributions

(\$ millions)	Projected 2021-23 Payroll*	(A) Projected 2021-23 Total Contribution	Projected 2023-25 Payroll*	(B) Projected 2023-25 Total Contribution	(B - A) Projected Total Contribution Increase / (Decrease)
State Agencies	\$ 7,620	\$ 1,520	\$ 8,150	\$ 1,885	\$ 365
School Districts	7,905	1,260	8,450	1,595	335
All Others	<u>9,385</u>	<u>1,915</u>	<u>10,035</u>	<u>2,390</u>	<u>475</u>
Total	\$24,910	\$ 4,695	\$26,635	\$ 5,870	\$ 1,175

- Collared net rates are used to project 2023-2025 contributions
  - Projections do not reflect the effects of 2021 investment returns
- Projected 2021-23 contributions increased by \$30 million compared to prior estimate (based on 12/31/2019 valuation) as a result of a larger-than-expected increase in system payroll

\* Assumes total payroll grows at 3.40% annually based on 12/31/2020 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 1/Tier 2 members

# Factors Driving the Projected Contribution Increase

- The projected \$1.2 billion 2023 - 2025 total contribution increase consists of:
  - \$0.9 billion - system-wide average increase in contribution rates
    - Primarily driven by the decrease in the assumed rate from 7.2% to 6.9%
    - Includes impact on average contribution rate of projected change over time in payroll distribution between Tier 1/Tier 2 and OPSRP
  - \$0.3 billion - projected system payroll growth between 2021-2023 and 2023-2025
    - Assumed system payroll growth of 3.4% per year / 6.9% per biennium means the collared net rate increase is applied to a larger payroll base
    - Does not reflect projected change in payroll distribution between Tier 1/Tier 2 and OPSRP
- Redirected member EPSA contributions will continue to offset employer contribution rates in the 2023-2025 biennium
  - An estimate of this effect is shown on the next slide



# Projected Split of 2023-2025 Total Contributions

(\$ millions)	(A) Projected 2021- 23 Total Contribution	(B) Projected 2023- 25 Total Contribution	(C) Estimated Member Redirected Contributions*	(B - C) Projected 2023- 25 Employer Contribution
State Agencies	\$ 1,520	\$ 1,885	\$ 85	\$ 1,800
School Districts	1,260	1,595	90	1,505
All Others	<u>1,915</u>	<u>2,390</u>	<u>105</u>	<u>2,285</u>
Total	\$ 4,695	\$ 5,870	\$ 280	\$ 5,590

\* Reflects member redirect offset of 2.40% of payroll for Tier 1 and Tier 2, and 0.65% for OPSRP; the statutory 2.50% and 0.75% redirection levels were adjusted downward by 0.10% to estimate the anticipated effect of members below the statutory pay threshold who will not have contributions redirected

# 12/31/2020 Retiree Health Care Valuations

- Retiree health liabilities combined 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 1/ Tier 2 retirees
  - RHIPA provides Tier 1/Tier 2 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%
- With the 2020 Experience Study, the Board adopted a new amortization policy for when these programs are over 100% funded
  - Amortizes the actuarial surplus over Tier 1/Tier 2 payroll using a rolling 20-year amortization, and allows the subsequent negative UAL rate to offset the normal cost, but not below a total rate of 0.0%

# 12/31/2020 Retiree Health Care Valuations

## UAL and Advisory 2023-25 Contribution Rates

	RHIA		RHIPA*	
	12/31/2019	12/31/2020	12/31/2019	12/31/2020
Actuarial Liability	\$ 404	\$ 384	\$ 59	\$ 48
Assets	<u>644</u>	<u>660</u>	<u>52</u>	<u>64</u>
UAL	\$ (240)	\$ (277)	\$ 7	\$ (16)
Funded Status	159%	172%	87%	133%
Normal Cost Rate (T1/T2 payroll only)	0.05%	0.05%	0.11%	0.09%
UAL Rate applied to T1/T2 payroll**	<u>0.00%</u>	<u>(0.05%)</u>	<u>0.17%</u>	<u>(0.09%)</u>
Total Rate	0.05%	0.00%	0.28%	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%

# 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
    - Straight lines reflecting steady future actual investment returns
  - 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

# Wrap Up / Valuation Next Steps

- Between now and the December meeting we will:
  - Assist PERS in preparing financial reporting schedules
  - Prepare system-wide and employer-specific December 31, 2020 actuarial valuation reports
- At the December meeting, we will:
  - Provide listings of employer-specific advisory 2023-2025 contribution rates
    - PERS to distribute employer-specific reports to employers after the meeting
  - Update long-term contribution rate and funded status projections



# Appendix

This work product was prepared for discussion purposes only and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work. Any recipient of this work product who desires professional guidance should engage qualified professionals for advice appropriate to its own specific needs.

# 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, 2020, for the Plan Year ending December 31, 2020. 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, 2020 System-Wide Actuarial Valuation Report.

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

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated experience affecting the System. The valuation results were developed using models intended for valuations that use standard actuarial techniques.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as 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 additional cost or contribution requirements 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, 2020 Actuarial Valuation Report will provide additional discussion of the System’s risks. The PERS Board has the final decision regarding the appropriateness of the assumptions.

Actuarial computations presented in this report are for purposes of presenting advisory contribution rates consistent with the adopted funding policy 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 requirements and goals. 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.

# Certification

Milliman's work is prepared solely for the internal business use of the Oregon Public Employees Retirement System. To the extent that Milliman's work is not subject to disclosure under applicable public records laws, Milliman's work may not be provided to third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third-party recipient of its work product. Milliman's consent to release its work product to any third party may be conditioned on the third party signing a Release, subject to the following exception(s):

- (a) The System may provide a copy of Milliman's work, in its entirety, to the System's professional service advisors who are subject to a duty of confidentiality and who agree to not use Milliman's work for any purpose other than to benefit the System.
- (b) The System may provide a copy of Milliman's work, in its entirety, to other governmental entities, as required by law.

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 of 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.



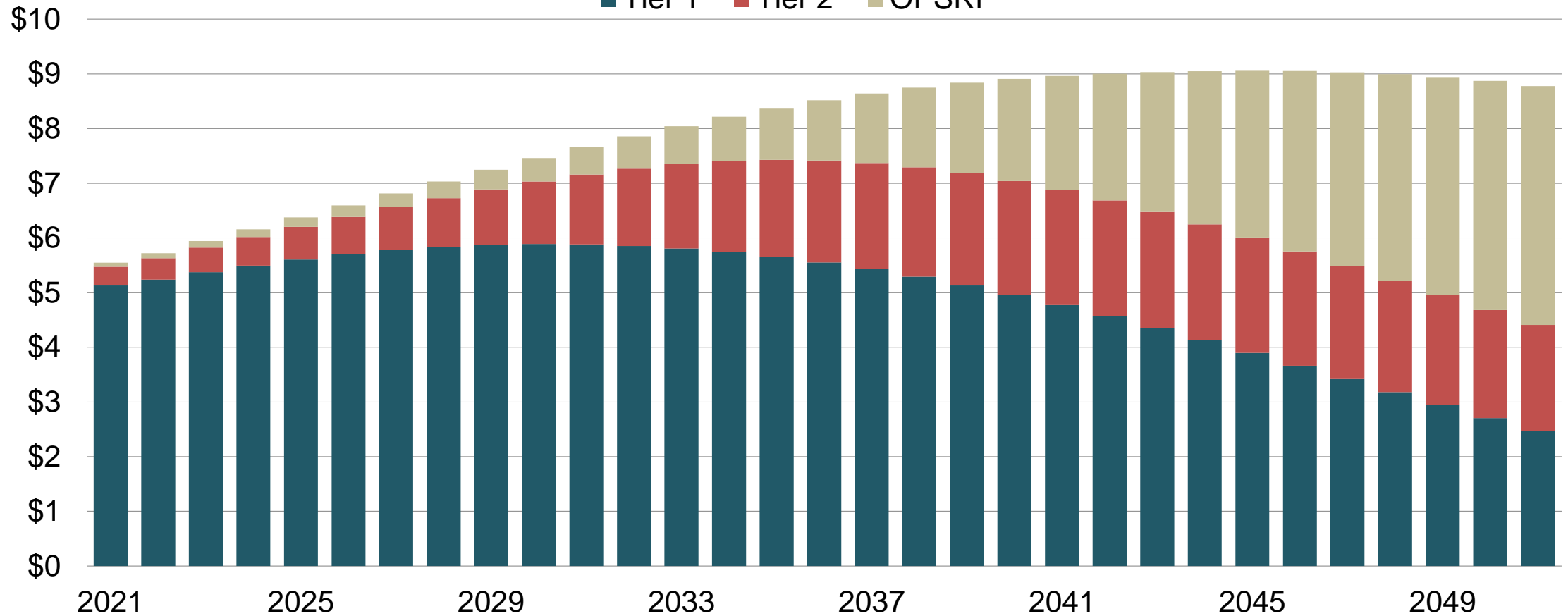
# Data Exhibits

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

<sup>1</sup> 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.

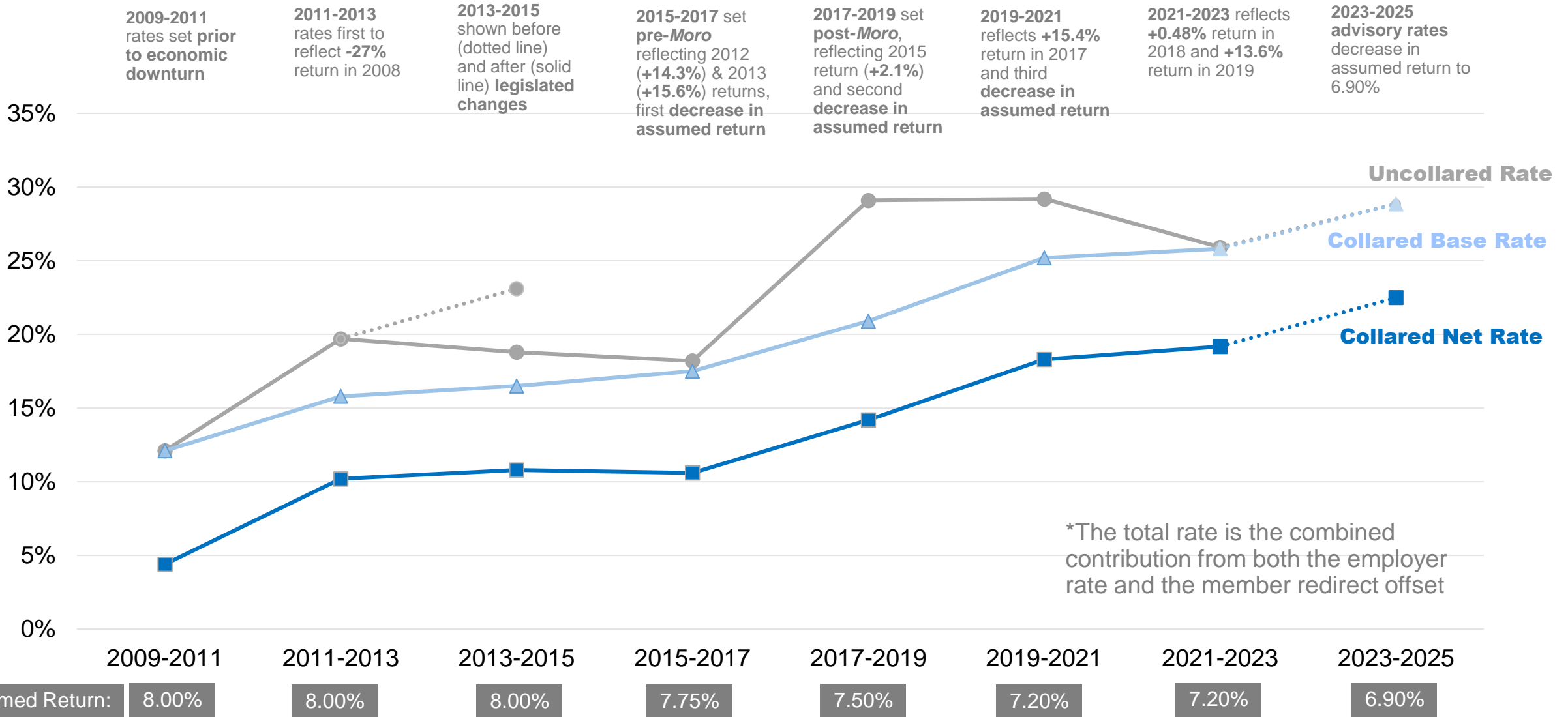
# Projected Benefit Payments by Tier

Tier 1/Tier 2 & OPSRP Expected Benefit Payments  
by Tier as of 12/31/2020 (in \$ billions)  
■ Tier 1 ■ Tier 2 ■ OPSRP



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# System-average Weighted Total\* Pension-Only rates



# SLGRP Weighted Total\* Pension-Only rates

2009-2011 rates set prior to economic downturn

2011-2013 rates first to reflect -27% return in 2008

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

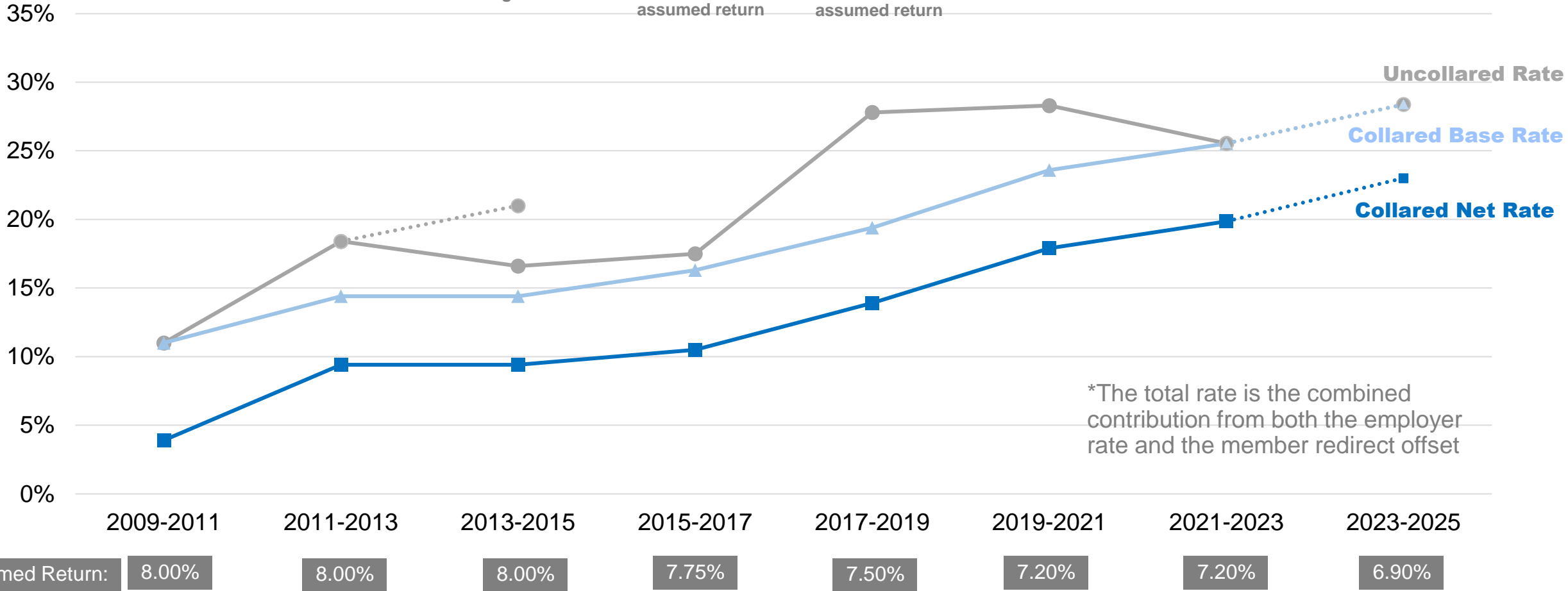
2015-2017 set pre-Moro reflecting 2012 (+14.3%) & 2013 (+15.6%) returns, first decrease in assumed return

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 reflects +0.48% return in 2018 and +13.6% return in 2019

2023-2025 advisory rates decrease in assumed return to 6.90%



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

## Funded Status and UAL by Program

Pension Funded Status (\$ billions) at 12/31/2020 <i>totals may not add due to rounding</i>			
	Tier 1/Tier 2	OPSRP	Combined
Actuarial liability	\$85.3	\$10.0	\$95.3
Assets (excluding side accounts)	<u>\$59.7</u>	<u>\$7.5</u>	<u>\$67.3</u>
UAL (excluding side accounts)	\$25.6	\$2.5	\$28.0
Funded status (excluding side accounts)	70%	75%	71%
Side account assets			<u>\$5.1</u>
UAL (including side accounts)			\$22.9
Funded status (including side accounts)			76%

# Uncollared Total Pension Rates – SLGRP Average

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

	12/31/2019 Valuation 2021 – 2023 Final Rates			12/31/2020 Valuation 2023 – 2025 Advisory Rates		
	Tier 1 / Tier 2	Payroll OPSRP	Weighted Average <sup>1</sup>	Tier 1 / Tier 2	Payroll OPSRP	Weighted Average <sup>1</sup>
Normal Cost	15.41%	9.16%	11.18%	16.78%	10.57%	12.39%
Tier 1/Tier 2 UAL	12.67%	12.67%	12.67%	13.90%	13.90%	13.90%
OPSRP UAL	<u>1.69%</u>	<u>1.69%</u>	<u>1.69%</u>	<u>2.09%</u>	<u>2.09%</u>	<u>2.09%</u>
<b>Uncollared Total Rate</b>	<b>29.77%</b>	<b>23.52%</b>	<b>25.54%</b>	<b>32.77%</b>	<b>26.56%</b>	<b>28.38%</b>
<b>Increase</b>				<b>3.00%</b>	<b>3.04%</b>	<b>2.84%</b>

<sup>1</sup> Weighting based on pool payroll levels (Tier 1/Tier 2, 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

	12/31/2019 <sup>1</sup> Valuation 2021 – 2023 Final Rates			12/31/2020 <sup>1</sup> Valuation 2023 – 2025 Advisory Rates		
	Payroll			Payroll		
	Tier 1 / Tier 2	OPSRP	Weighted Average <sup>2</sup>	Tier 1 / Tier 2	OPSRP	Weighted Average <sup>2</sup>
<b>Uncollared Total Rate</b>	<b>29.77%</b>	<b>23.52%</b>	<b>25.54%</b>	<b>32.77%</b>	<b>26.56%</b>	<b>28.38%</b>
Collar Limitation	<u>0.00%</u>	<u>0.00%</u>	<u>0.00%</u>	<u>0.00%</u>	<u>0.00%</u>	<u>0.00%</u>
<b>Collared Total Base Rate</b>	<b>29.77%</b>	<b>23.52%</b>	<b>25.54%</b>	<b>32.77%</b>	<b>26.56%</b>	<b>28.38%</b>
<b>Increase</b>				<b>3.00%</b>	<b>3.04%</b>	<b>2.84%</b>

<sup>1</sup> For this exhibit, adjustments are assumed not to be limited due to an individual employer reaching a 0.00% contribution rate.

<sup>2</sup> Weighting based on pool payroll levels (Tier 1/Tier 2, 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

	12/31/2019 <sup>1</sup> Valuation 2021 – 2023 Final Rates			12/31/2020 <sup>1</sup> Valuation 2023 – 2025 Advisory Rates		
	Tier 1 / Tier 2	Payroll OPSRP	Weighted Average <sup>2</sup>	Tier 1 / Tier 2	Payroll OPSRP	Weighted Average <sup>2</sup>
<b>Collared Total Base Rate</b>	<b>29.77%</b>	<b>23.52%</b>	<b>25.54%</b>	<b>32.77%</b>	<b>26.56%</b>	<b>28.38%</b>
Member redirect offset	(2.45%)	(0.70%)	(1.25%)	(2.40%)	(0.65%)	(1.15%)
<b>Collared Base Employer Rate</b>	<b>27.32%</b>	<b>22.82%</b>	<b>24.29%</b>	<b>30.37%</b>	<b>25.91%</b>	<b>27.23%</b>
Side Account (Offset)	(4.99%)	(4.99%)	(4.99%)	(4.70%)	(4.70%)	(4.70%)
SLGRP Charge/(Offset)	(0.69%)	(0.69%)	(0.69%)	(0.67%)	(0.67%)	(0.67%)
<b>Collared Net Rate</b>	<b>21.64%</b>	<b>17.14%</b>	<b>18.61%</b>	<b>25.00%</b>	<b>20.54%</b>	<b>21.86%</b>
<b>Increase</b>				<b>3.36%</b>	<b>3.40%</b>	<b>3.25%</b>

<sup>1</sup> For this exhibit, adjustments are assumed not to be limited due to an individual employer reaching a 0.00% contribution rate.

<sup>2</sup> Weighting based on pool payroll levels (Tier 1/Tier 2, 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



# Uncollared Total Pension Rates – System-Wide

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

	12/31/2019 Valuation 2021 – 2023 Final Rates			12/31/2020 Valuation 2023 – 2025 Advisory Rates		
	Payroll			Payroll		
	Tier 1 / Tier 2	OPSRP	Weighted Average <sup>1</sup>	Tier 1 / Tier 2	OPSRP	Weighted Average <sup>1</sup>
Normal Cost	14.92%	9.16%	11.09%	16.36%	10.57%	12.35%
Tier 1/Tier 2 UAL	13.13%	13.13%	13.13%	14.42%	14.42%	14.42%
OPSRP UAL	1.69%	1.69%	1.69%	2.09%	2.09%	2.09%
<b>Uncollared Total Rate</b>	<b>29.74%</b>	<b>23.98%</b>	<b>25.91%</b>	<b>32.87%</b>	<b>27.08%</b>	<b>28.86%</b>
<b>Increase</b>				<b>3.13%</b>	<b>3.10%</b>	<b>2.95%</b>

<sup>1</sup> Weighting based on system-wide payroll levels (Tier 1/Tier 2, 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

	12/31/2019 Valuation 2021 – 2023 Final Rates			12/31/2020 Valuation 2023 – 2025 Advisory Rates		
	Payroll			Payroll		
	Tier 1 / Tier 2	OPSRP	Weighted Average <sup>1</sup>	Tier 1 / Tier 2	OPSRP	Weighted Average <sup>1</sup>
<b>Uncollared Total Rate</b>	<b>29.74%</b>	<b>23.98%</b>	<b>25.91%</b>	<b>32.87%</b>	<b>27.08%</b>	<b>28.86%</b>
Collar Limitation	(0.09%)	(0.09%)	(0.09%)	(0.01%)	(0.01%)	(0.01%)
<b>Collared Total Base Rate</b>	<b>29.65%</b>	<b>23.89%</b>	<b>25.82%</b>	<b>32.86%</b>	<b>27.07%</b>	<b>28.85%</b>
<b>Increase</b>				<b>3.21%</b>	<b>3.18%</b>	<b>3.03%</b>

<sup>1</sup> Weighting based on system-wide payroll levels (Tier 1/Tier 2, 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

	12/31/2019 <sup>1</sup> Valuation 2021 – 2023 Final Rates			12/31/2020 <sup>1</sup> Valuation 2023 – 2025 Advisory Rates		
	Payroll		Weighted Average <sup>2</sup>	Payroll		Weighted Average <sup>2</sup>
	Tier 1 / Tier 2	OPSRP		Tier 1 / Tier 2	OPSRP	
<b>Collared Base Rate</b>	<b>29.65%</b>	<b>23.89%</b>	<b>25.82%</b>	<b>32.86%</b>	<b>27.07%</b>	<b>28.85%</b>
Member redirect offset	(2.45%)	(0.70%)	(1.25%)	(2.40%)	(0.65%)	(1.15%)
<b>Collared Base Employer Rate</b>	<b>27.20%</b>	<b>23.19%</b>	<b>24.57%</b>	<b>30.46%</b>	<b>26.42%</b>	<b>27.70%</b>
Side Account (Offset)	(6.24%)	(6.24%)	(6.24%)	(5.96%)	(5.96%)	(5.96%)
SLGRP Charge/(Offset)	(0.40%)	(0.40%)	(0.40%)	(0.40%)	(0.40%)	(0.40%)
<b>Collared Net Rate</b>	<b>20.56%</b>	<b>16.55%</b>	<b>17.93%</b>	<b>24.10%</b>	<b>20.06%</b>	<b>21.34%</b>
<b>Increase</b>				<b>3.54%</b>	<b>3.51%</b>	<b>3.41%</b>

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 1/Tier 2, 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

# 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, 2020, were based on values provided by Oregon PERS reflecting the Board's earnings crediting decisions for 2020.

## 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 1/Tier 2 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 1/Tier 2 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 1/Tier 2, 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 1/Tier 2 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 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) is confined to a collared range based on the prior biennium's collared UAL Rate 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 1/Tier 2 SLGRP and Tier 1/Tier 2 School District Pool: 3% of payroll
- OPSRP: 1% of payroll
- Tier 1/Tier 2 rates for independent employers: greater of 4% of payroll or one-third of the difference between the collared and uncollared UAL Rate at the prior rate-setting valuation. In addition, the UAL Rate will not be allowed to be less than 0.00% of payroll for any Tier 1/Tier 2 independent employer with a funded status (excluding side accounts) less than 100%.

**UAL Rate decrease restrictions:** the UAL Rate 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 in to 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 1/Tier 2 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 1 Rate Guarantee Reserves. The Tier 1 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 2020 Experience Study for Oregon PERS and presented to the PERS Board in July 2021.

## Provisions

Provisions valued are as detailed in the forthcoming 2020 Valuation Report.