



OVERVIEW OF CURRENT RATE SETTING POLICY

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

Presented by:

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April 1, 2019

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Two-Year Rate-Setting Cycle

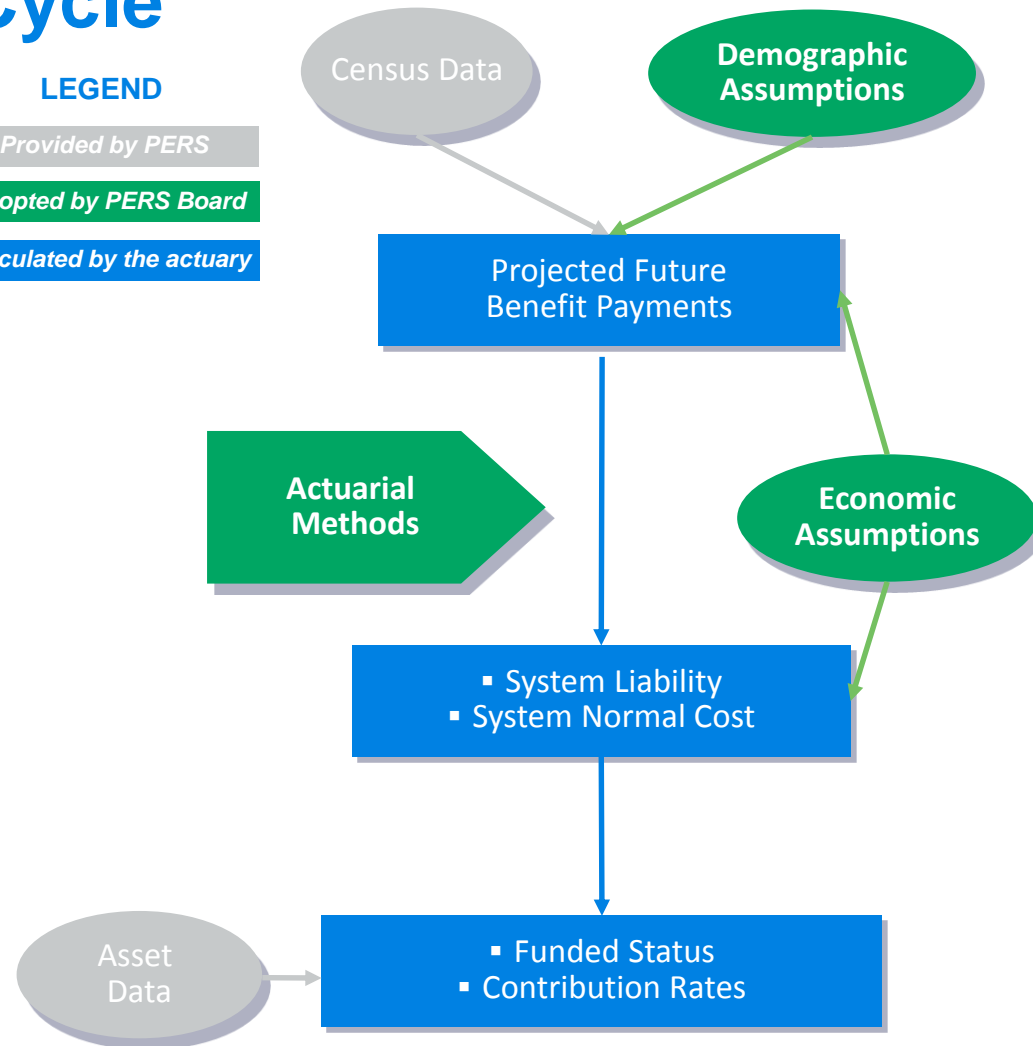
LEGEND

Provided by PERS

Adopted by PERS Board

Calculated by the actuary

- **July 2019: Assumptions & methods adopted by Board in consultation with the actuary**
- October 2019: System-wide 12/31/18 actuarial valuation results
- December 2019: Advisory 2021-2023 employer-specific contribution rates
- July 2020: System-wide 12/31/19 actuarial valuation results
- September 2020: Disclosure & adoption of employer-specific **2021-2023 contribution rates**



Valuation Process and Timeline

- Actuarial valuations are conducted annually
 - Alternate between “rate-setting” and “advisory” valuations
 - The next valuation as of 12/31/2018 will be advisory
- Board adopts contribution rates developed in rate-setting valuations, and those rates go into effect 18 months subsequent to the valuation date

Valuation Date	Employer Contribution Rates
12/31/2015	—————→ July 2017 – June 2019
12/31/2017	—————→ July 2019 – June 2021
12/31/2019	—————→ July 2021 – June 2023

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System-Average Weighted Pension-Only Rates

2009-2011 rates set prior to economic downturn

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

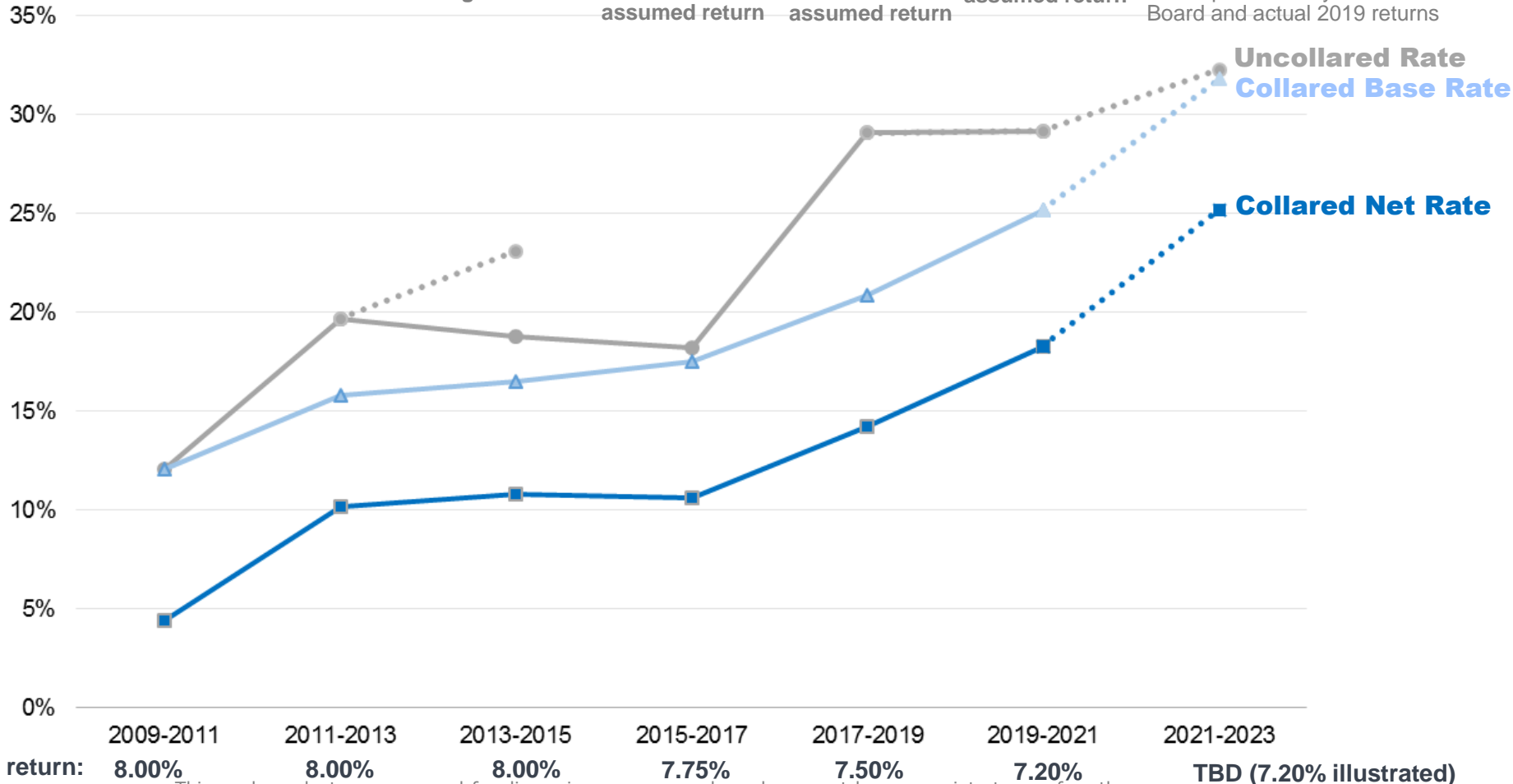
2013-2015 shown before (dotted line) and after (solid line) legislated changes

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 are preliminary estimates, based on published 2018 return of +0.48% and assumed 2019 return of 7.2%, final rates will depend on assumptions set by PERS Board and actual 2019 returns



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The Two Components of Employer Contribution Rates

▪ Normal cost rate

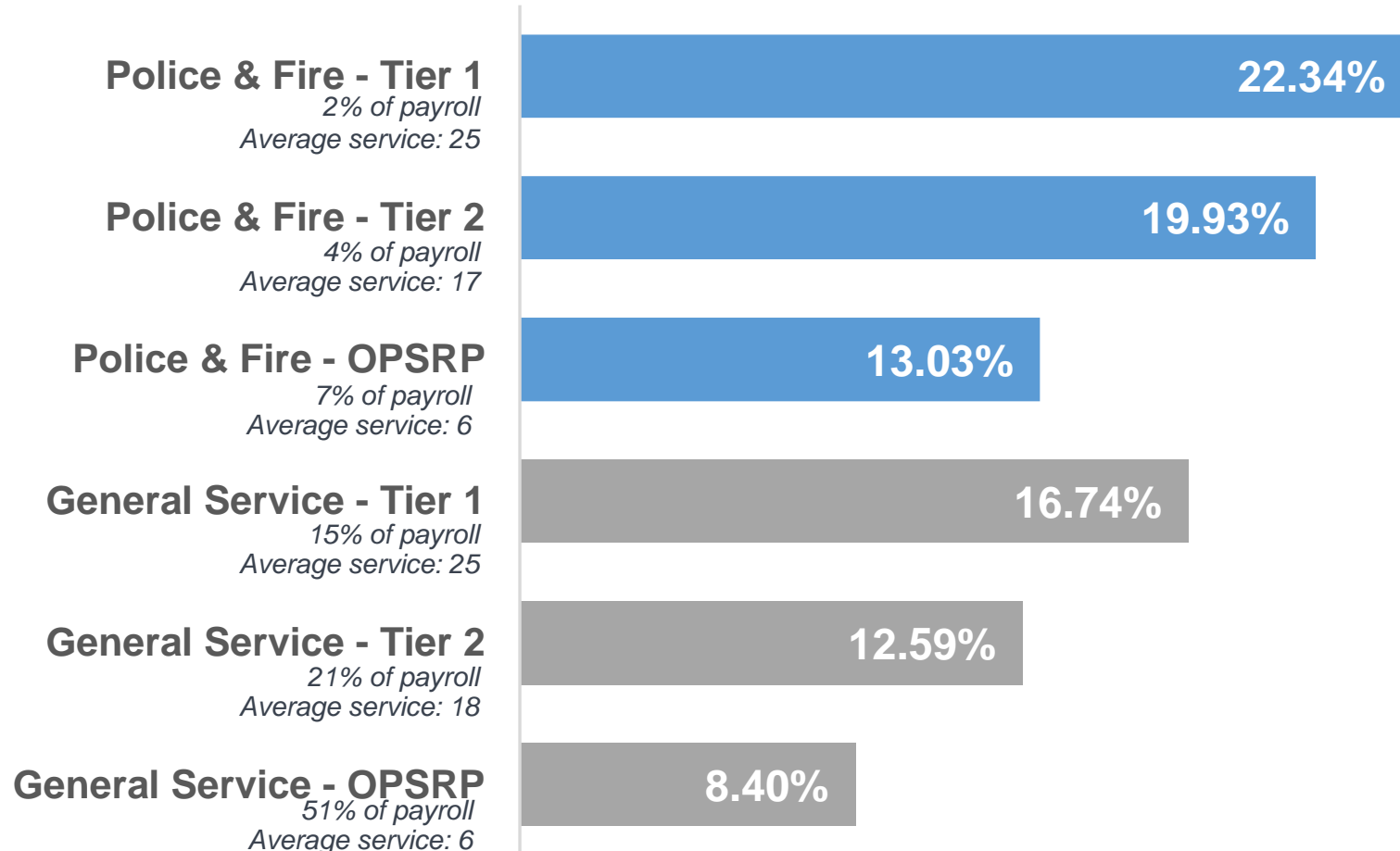
- Contribution cost of projected benefits allocated to the upcoming year's service
 - Calculated as a level percent of pay across the projected full working career
- Calculated at an individual member level, then averaged across rate groups
 - Different normal cost rate averages for general service versus police & fire members
 - Different normal cost rate averages for each membership tier
- Averaged rates differ by payroll type, and are only charged to applicable payroll
 - For example, OPSRP general service normal cost rate is only paid on OPSRP general service payroll

▪ UAL (unfunded actuarial liability) rate

- Set to systematically eliminate UAL over a specified amortization period, if actual future experience matches assumptions and assumptions remain unchanged
- Calculated at a rate pool level, not at an individual member level
- UAL rate for a given pool is charged on all of the pool's subject payroll
 - For example, Tier 1/Tier 2 UAL rate for the school district rate pool is charged on all school district subject payroll (i.e., both Tier 1/Tier 2 and OPSRP)

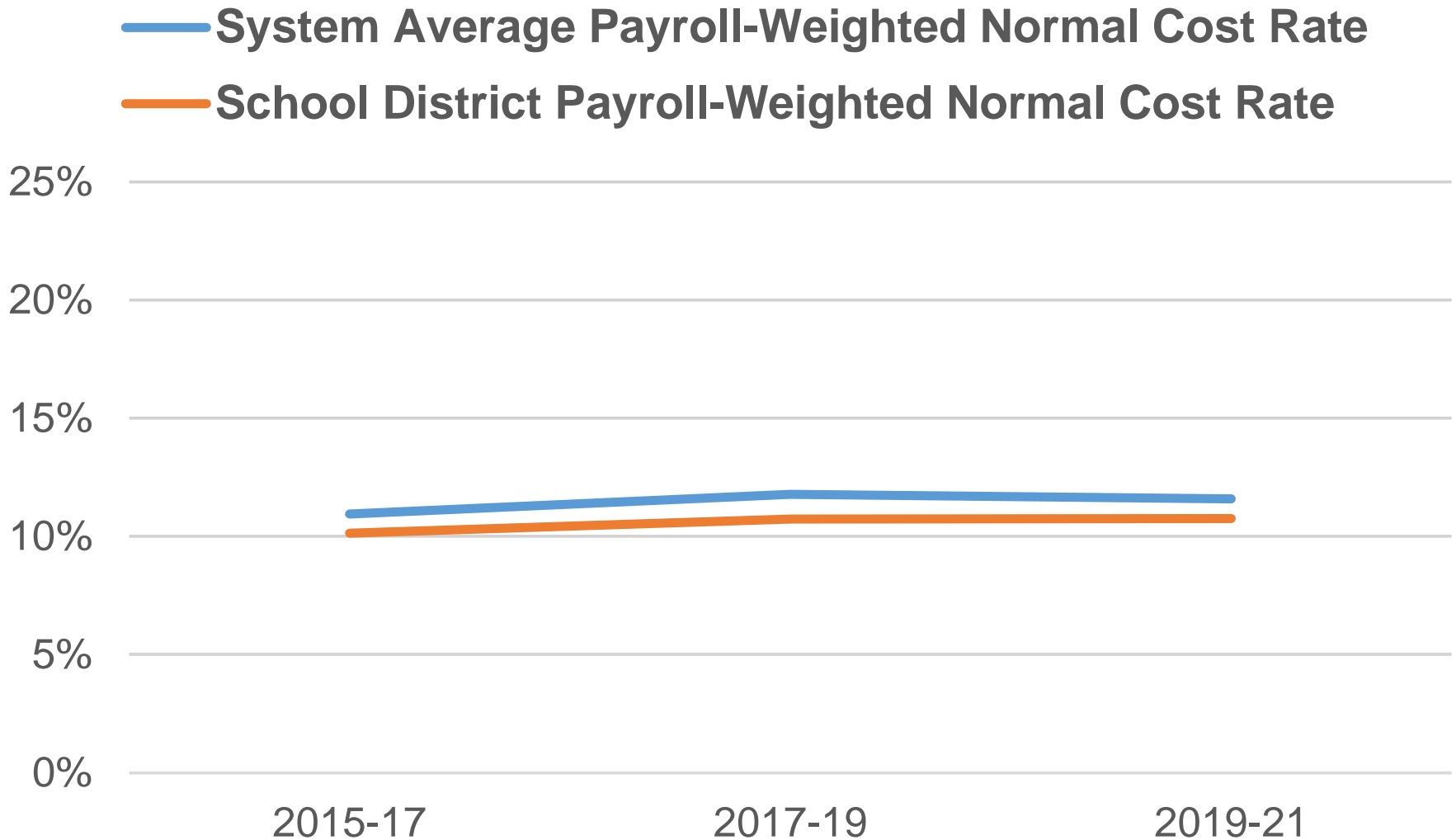
2019-21 Normal Cost Rates by Member Type and Tier

- The 2019-21 system average normal cost rate is **11.59%** of payroll
 - Contribution rates for the IAP, RHIA, and RHIPA programs are in addition to the normal cost rates shown below



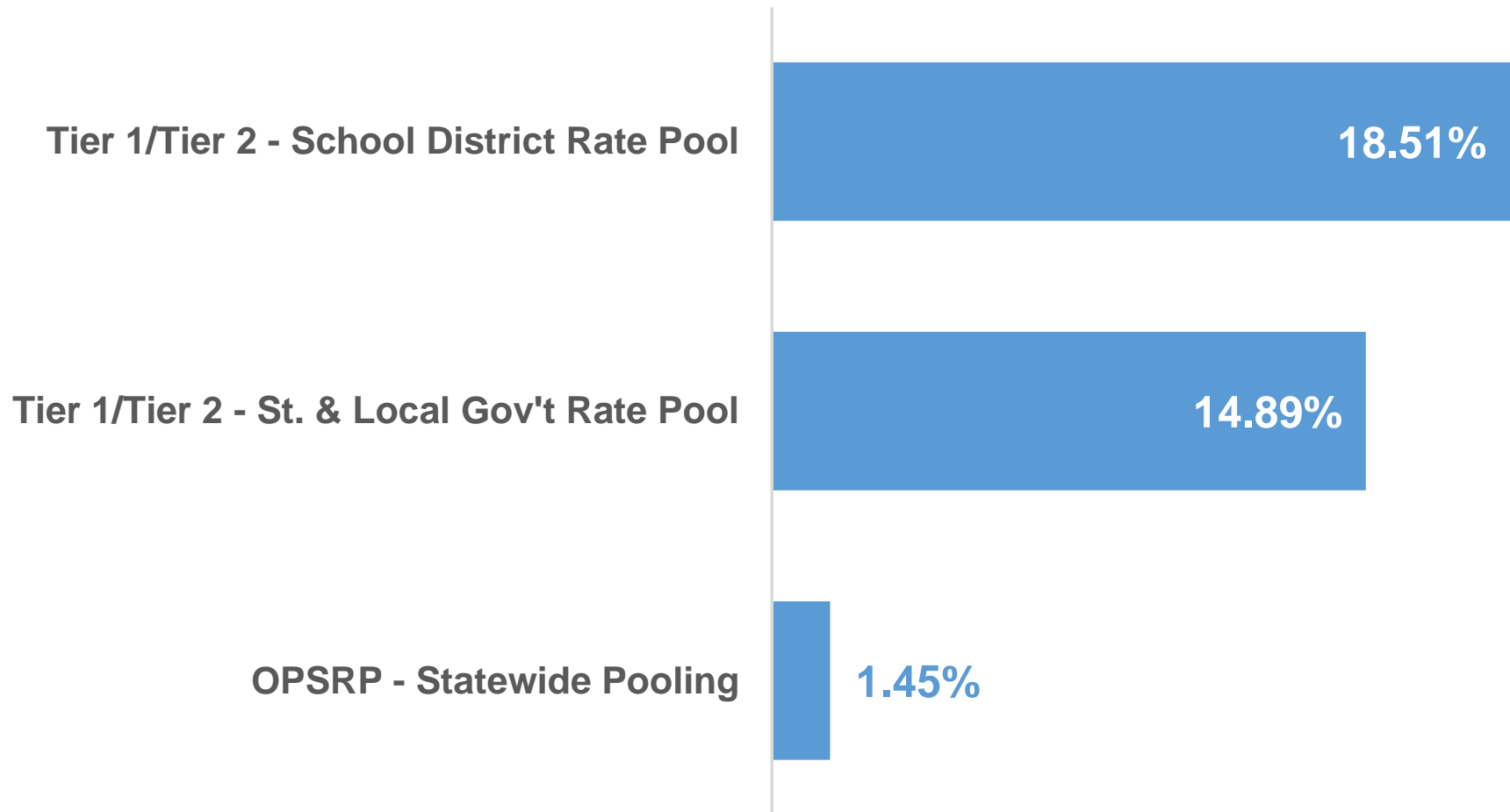
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Normal Cost Rates Are Comparatively Stable, Predictable



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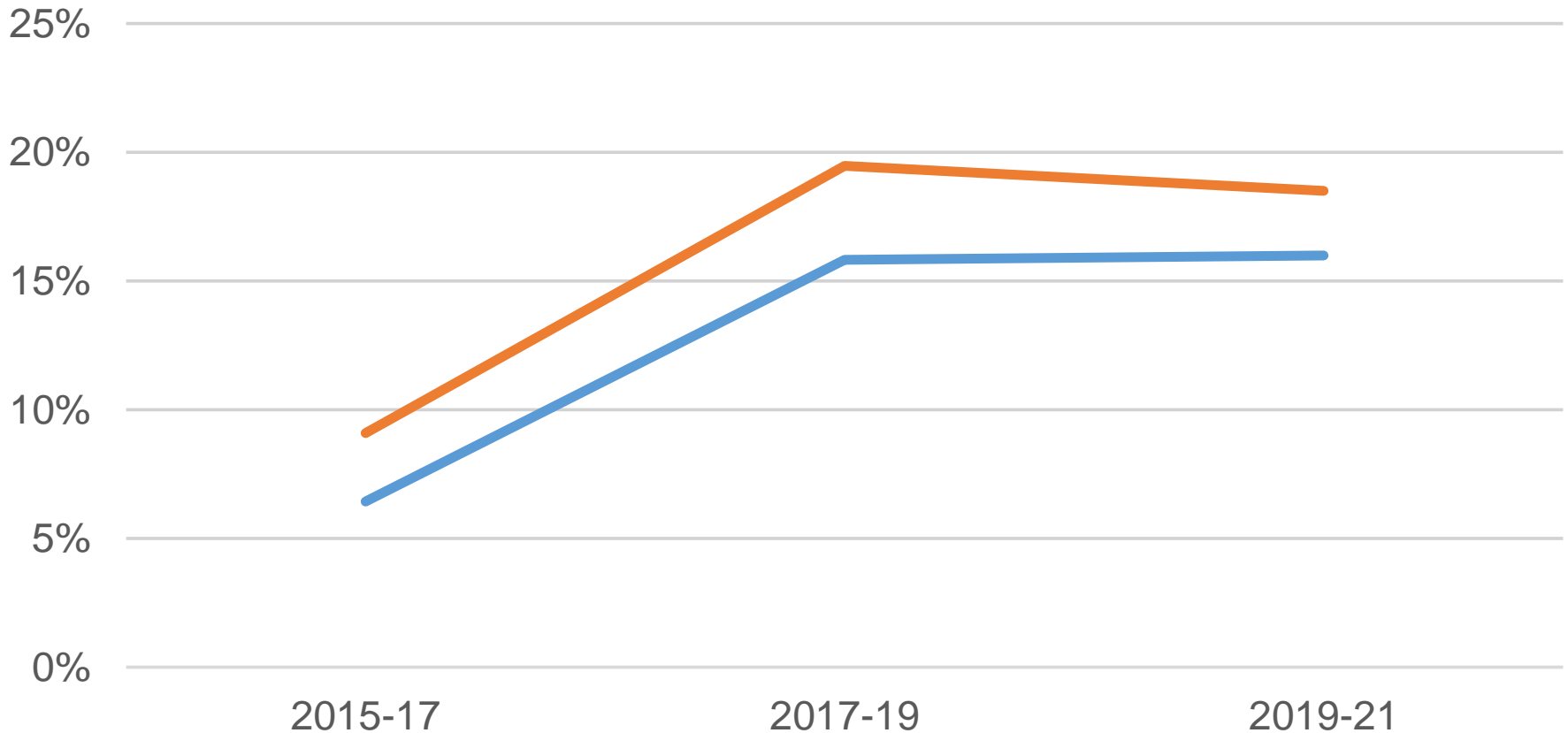
2019-21 Uncollared UAL Rates in the Large Rate Pools



- Rates above do not reflect the effects of collaring, the UAL rate for Multnomah Fire District #10 (0.15% of payroll for most employers), employer-specific side account rate offsets, or SLGRP employer-specific pre-pooling rate charges or offsets

Uncollared UAL Rates Change Much More Substantially

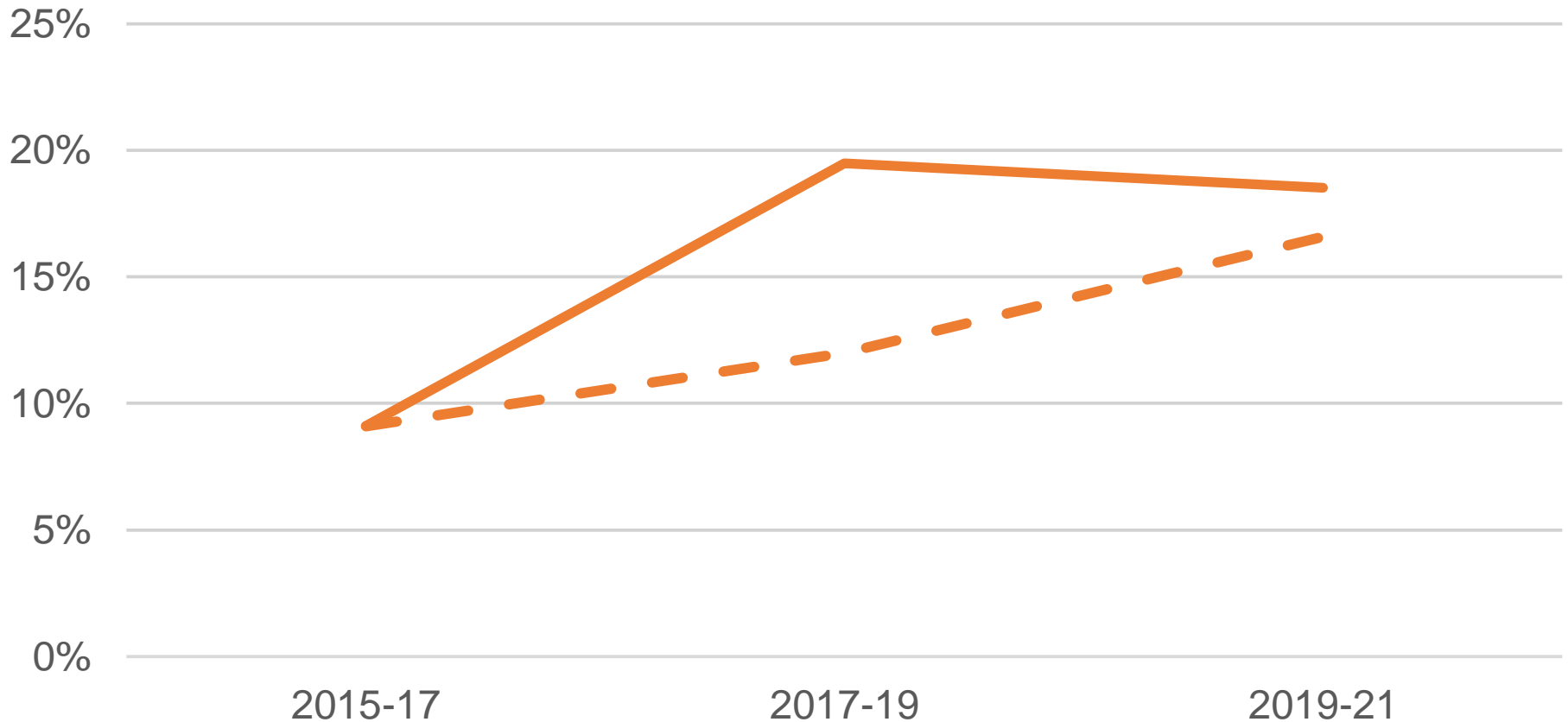
- School District Uncollared Tier 1/Tier 2 UAL Rate
- System Average Uncollared Tier 1/Tier 2 UAL Rate



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Collaring Spreads Large UAL Rate Increases Over Time

- School District Uncollared Tier 1/Tier 2 UAL Rate
- - School District Collared Tier 1/Tier 2 UAL Rate

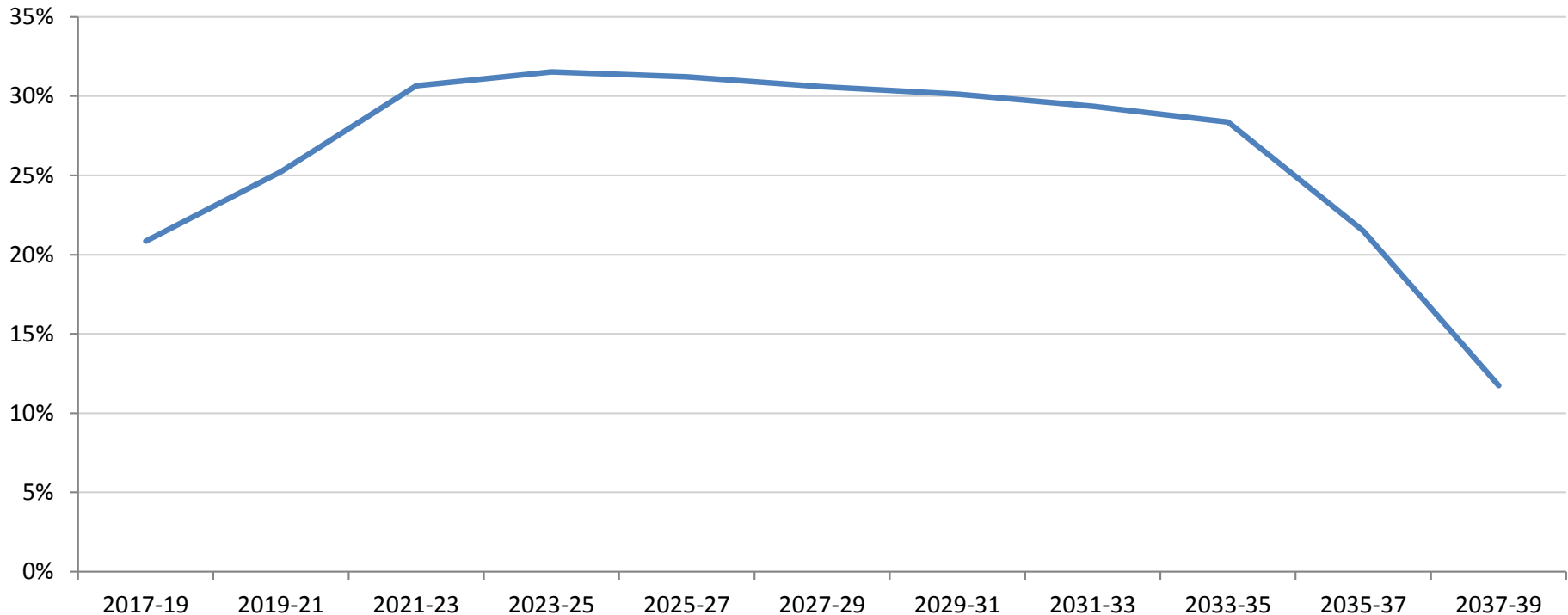


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Modeling Tests Actuarial Soundness of Adopted Methods

System Average Collared Base Pension Contribution Rates

— +7.20% Actual Future Return

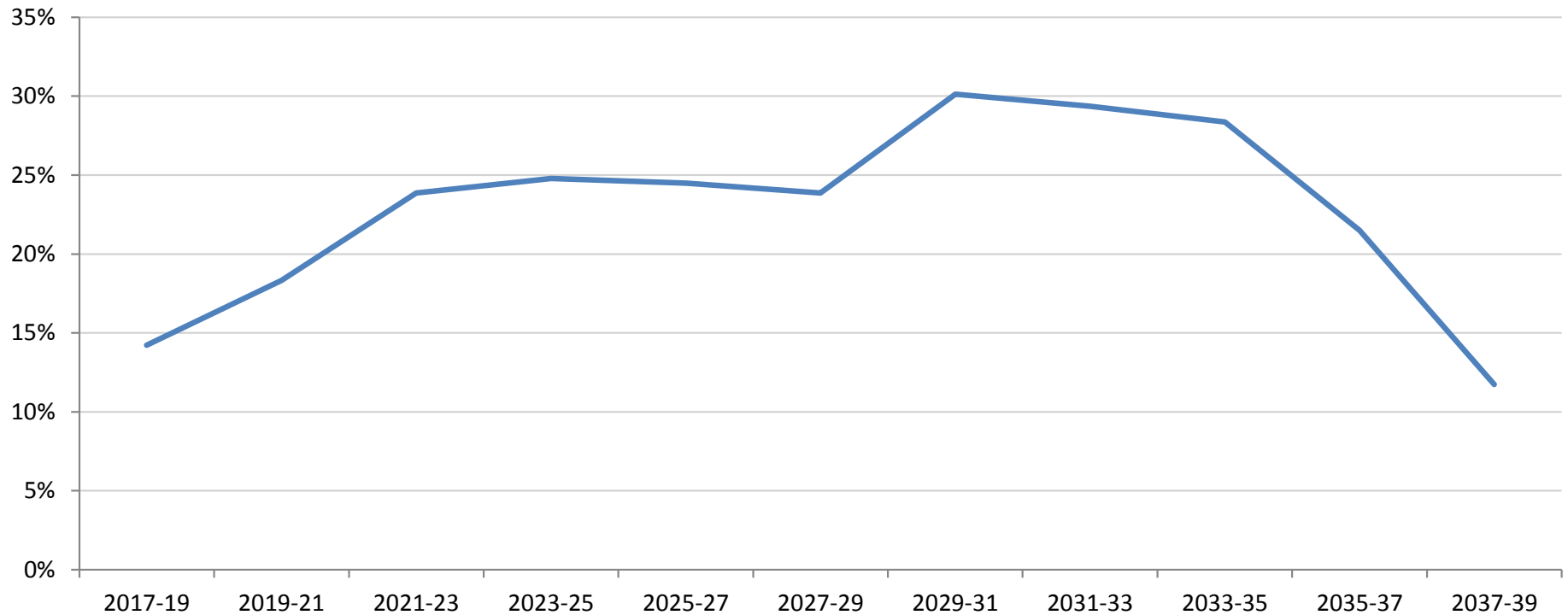


- This chart is an excerpt from the December 2018 financial modeling presentation to the PERS Board, which reflected published investment results through October 31, 2018

Modeling Tests Actuarial Soundness of Adopted Methods

System Average Collared Net Pension Contribution Rates

— +7.20% Actual Future Return

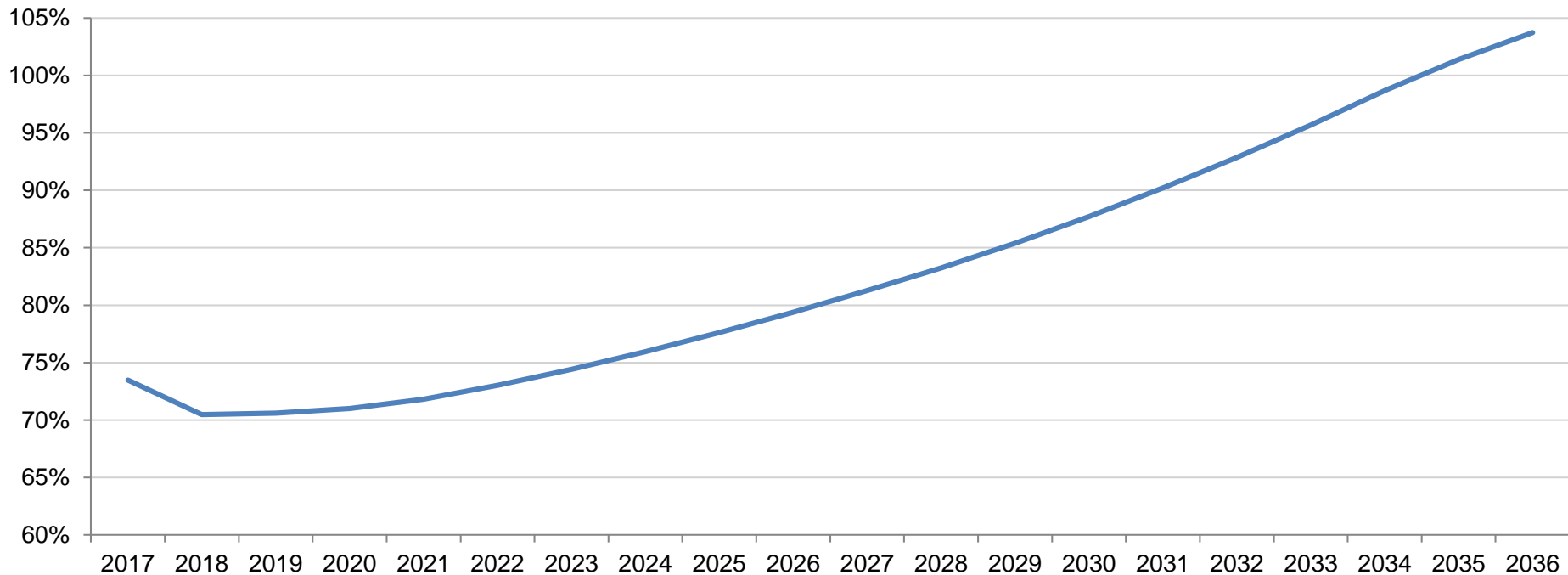


- This chart uses the same basis as the December 2018 financial modeling presentation to the PERS Board, which reflected published investment results through October 31, 2018

Modeling Tests Actuarial Soundness of Adopted Methods

System Average Funded Status (Excluding Side Accounts)

— +7.20% Actual Future Return

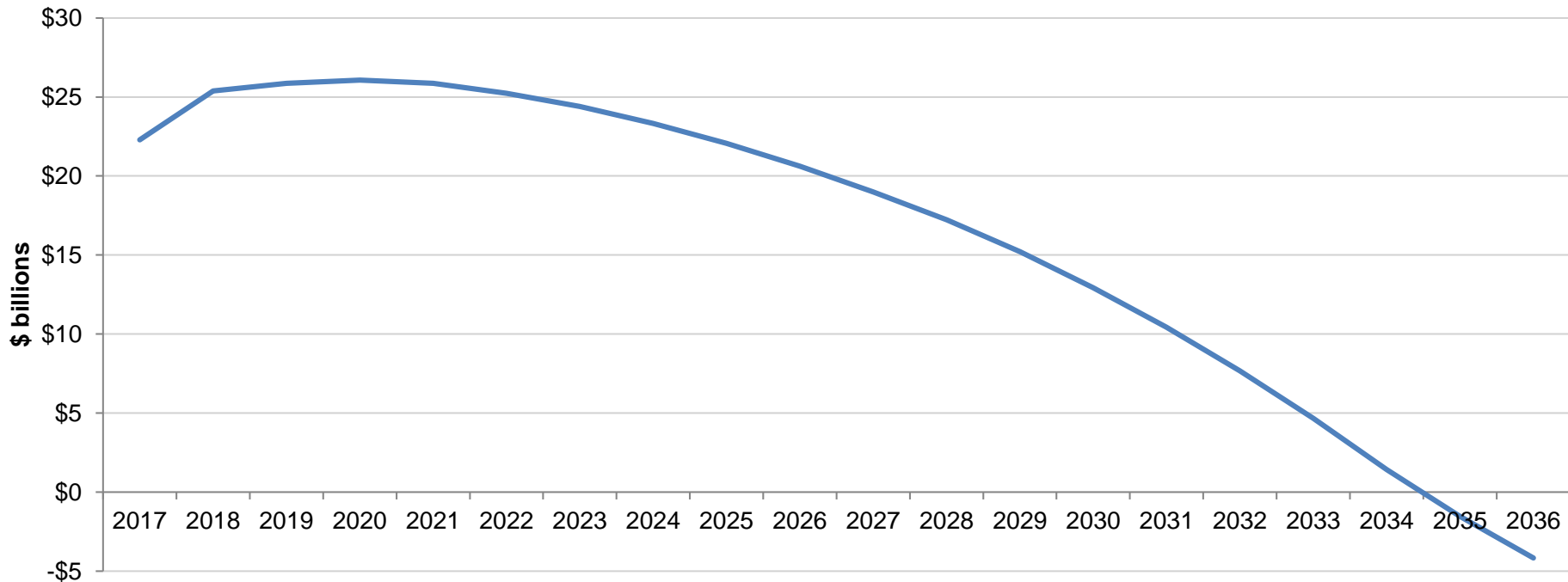


- This chart is an excerpt from the December 2018 financial modeling presentation to the PERS Board, which reflected published investment results through October 31, 2018

Modeling Tests Actuarial Soundness of Adopted Methods

Unfunded Actuarial Liability (Excluding Side Accounts)

— +7.20% Actual Future Return



- This chart is an excerpt from the December 2018 financial modeling presentation to the PERS Board, which reflected published investment results through October 31, 2018

Three-Meeting Process – Assumptions & Methods

- **Today – Background on current key assumptions and methods**
 - Assumed rate
 - Amortization period for unfunded actuarial liability (UAL)
 - Contribution rate collaring policy
- **May 31: Economic assumptions, rate-setting methods**
 - Assumed rate – data from Treasury’s consultants, Milliman’s model
 - Inflation and system payroll growth
 - Amortization and contribution rate collaring
- **July 26: Demographic assumptions, Board decisions**
 - Member-specific assumptions based on study of recent PERS experience
 - Assumptions and methods adopted will be used for:
 - 12/31/2018 actuarial valuation with advisory 2021-2023 contribution rates
 - 12/31/2019 actuarial valuation with 2021-2023 contribution rates proposed for adoption

Use of the Assumed Rate

The PERS Funding Equation

At the end of each calendar year, the PERS actuaries calculate the system's funded status using the following basic equation:

$$\begin{array}{ccc} \mathbf{B} & = & \mathbf{C} & + & \mathbf{E} \\ \mathbf{BENEFITS} & & \mathbf{CONTRIBUTIONS} & & \mathbf{EARNINGS} \\ \textit{Present value of} & & \textit{Employer funds to pay} & & \textit{Future returns on} \\ \textit{earned benefits} & & \textit{for pension benefits} & & \textit{investment funds} \\ \text{Set by: Oregon Legislature} & & \text{Set by: PERS Board} & & \text{Managed by: Oregon Investment Council} \end{array}$$

Every two years, the PERS Board adjusts contribution rates so that, over time, contributions will be sufficient to fund the benefits earned, if earnings follow assumptions.

- “B” is predictable with a relatively high degree of certainty
- “E” is the unpredictable **actual** future investment return on PERS assets
- “C” is the balancing item --- it must provide to “B” what “E” fails to cover
- The **assumed rate** is the Board's estimate of “E” to prudently set “C”
- The Board's decision on “E” does **not** affect actual future earnings

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Assumed Rate - Data Used in Prior Board Decision

- The table below is from the **May 2017** Board meeting
 - Median returns are geometric averages over the timeframe indicated

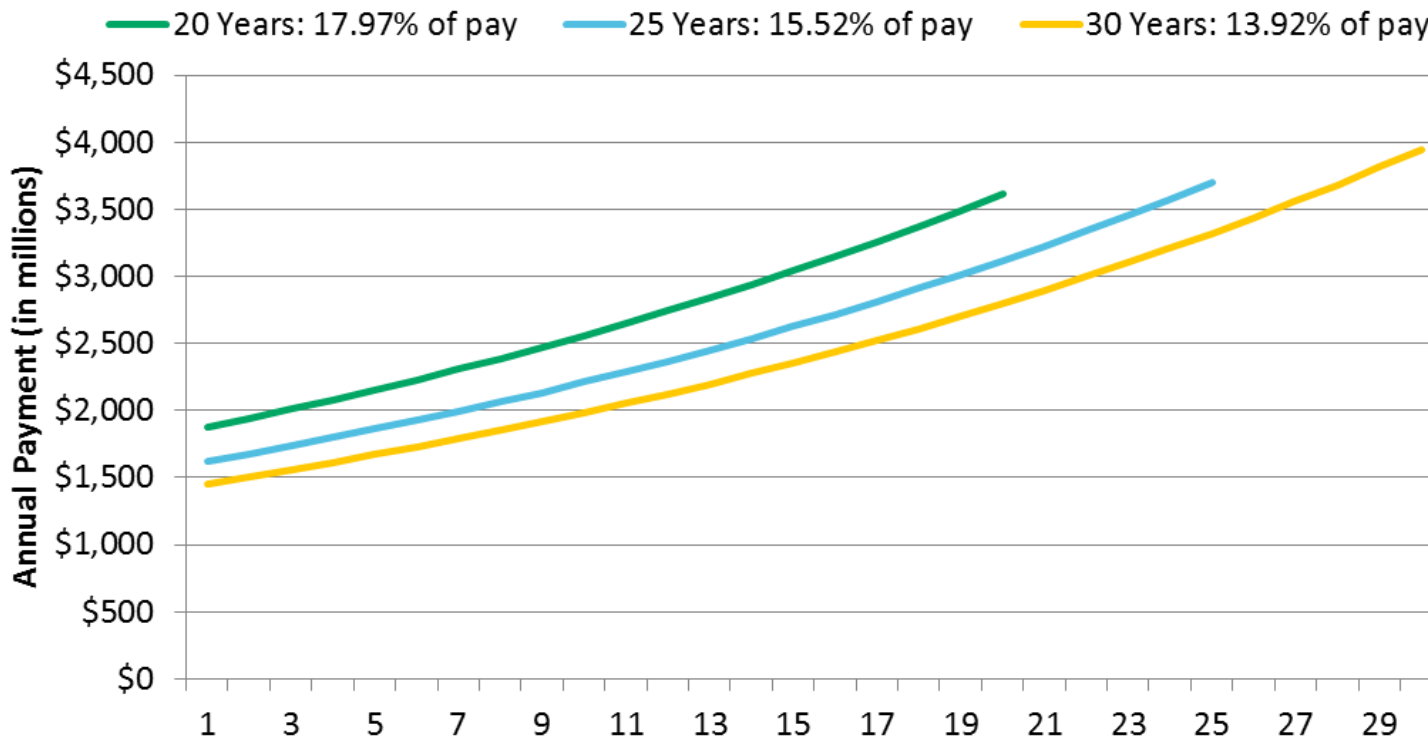
Consultant (or Survey*)	Milliman	Callan	PCA	Horizon*
Median Annualized Return	6.70%	7.05%	7.40%	7.24%
Assumed Inflation	2.50%	2.25%	2.25%	2.16%
Timeframe Modeled	20 years	10 years	10 years	10 years

- An updated table will be presented at the May 31st meeting
 - That table will reflect the most current capital market outlook models at that time
- Further, to avoid potential modified opinions GASB requires an assumption for financial reporting is not disclaimed by the actuary
 - A disclaimer would be required under Actuarial Standards of Practice (ASOPs) if the assumption “*significantly conflicts*” with what the actuary considers reasonable
- Callan’s opinion is important in our reasonability assessment

Illustration of UAL Amortization Periods

Annual UAL Payments by Selected Amortization Period

Level % of pay amortization, 7.20% interest, 3.50% payroll growth



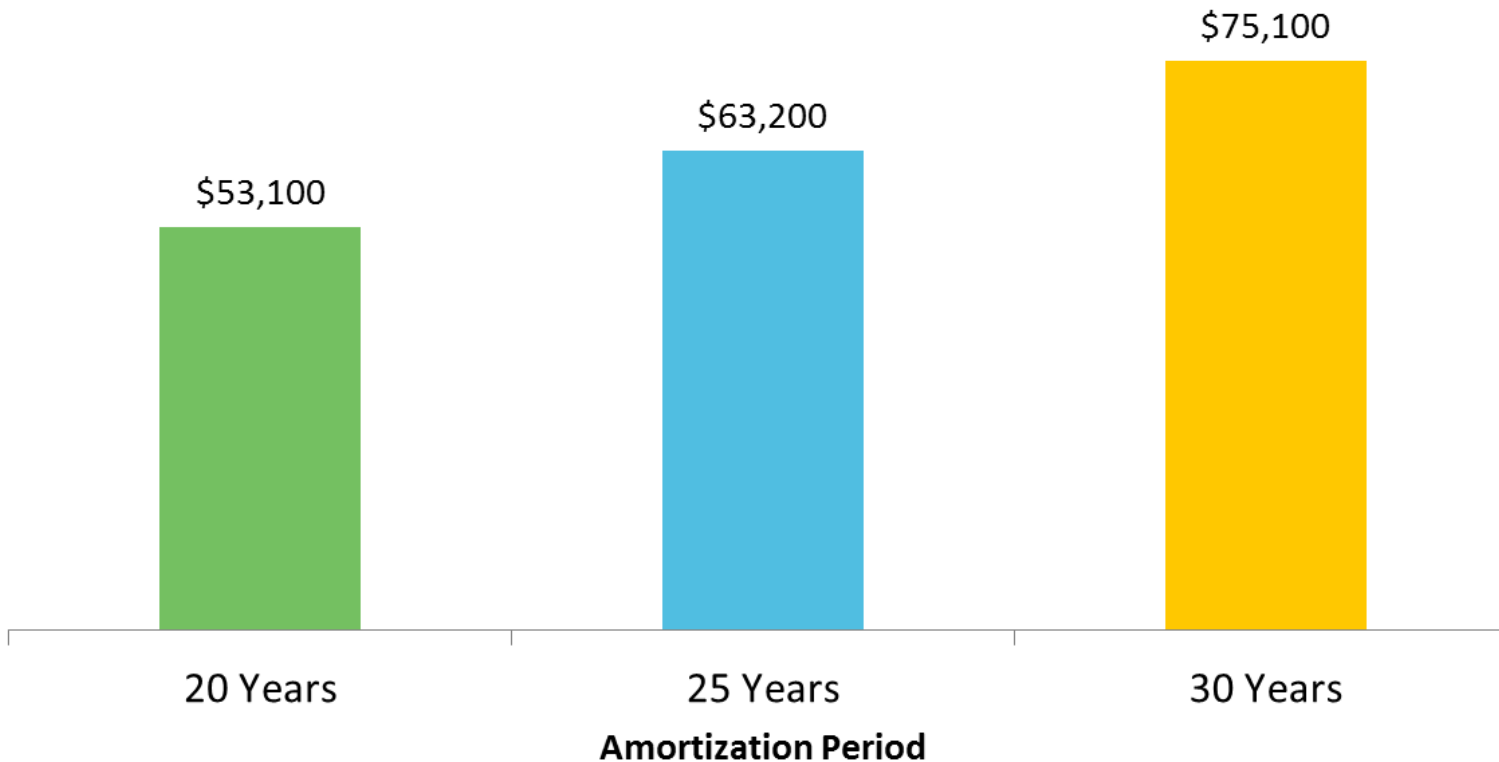
Current policy

- Tier 1 / Tier 2:
20 years
- OPSRP:
16 years

Illustration of UAL Amortization Periods

Total Repayment (\$M) by Selected Amortization Period

Level % of pay amortization, 7.20% assumed return, 3.50% payroll growth



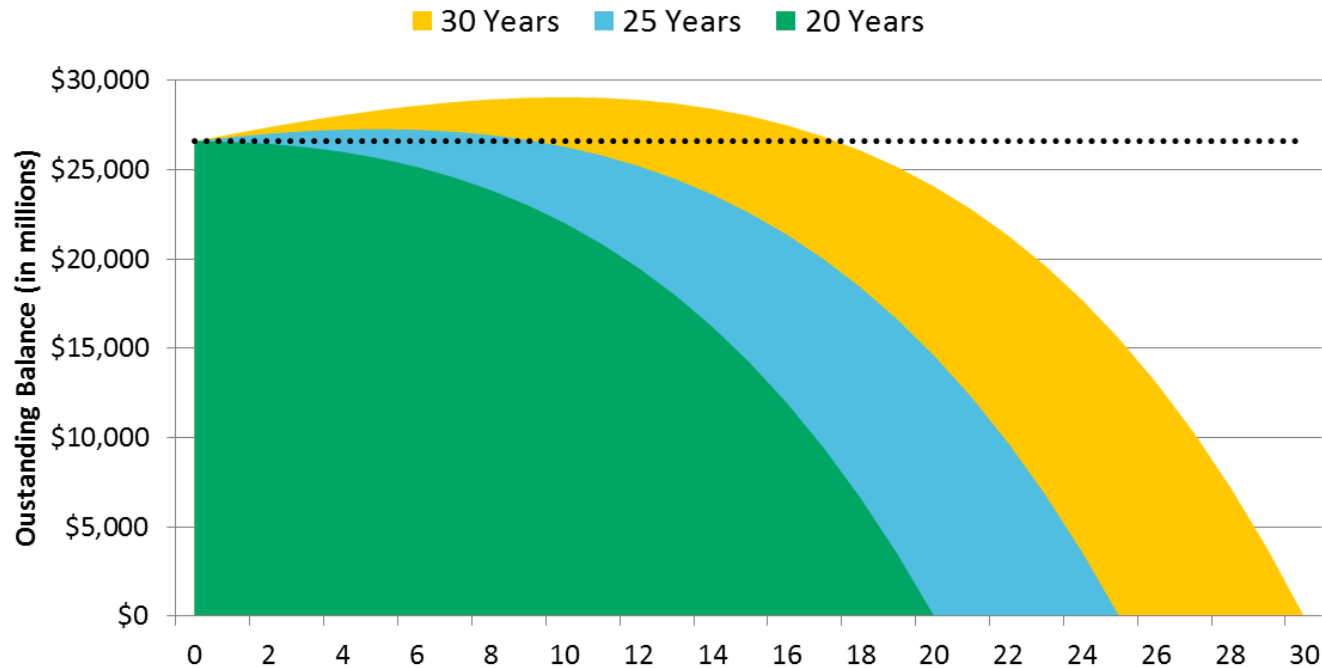
Current policy

- Tier 1 / Tier 2:
20 years
- OPSRP:
16 years

Remaining Balance for 20/25/30 Year Periods

UAL Balance Over Time by Selected Amortization Period

Level % of pay amortization, 7.20% interest, 3.50% payroll growth



Current policy

- Tier 1 / Tier 2:
20 years
- OPSRP:
16 years

- **Why 20 years or less?** If actual experience matches the assumption...
 - with 25 years zero progress is made in decreasing the initial UAL until year 10
 - with 30 years the UAL has increased by about 9% after the first decade, and zero progress is made in decreasing the initial UAL until year 18

School District Weighted Pension-Only Rates

2009-2011
rates set prior
to economic
downturn

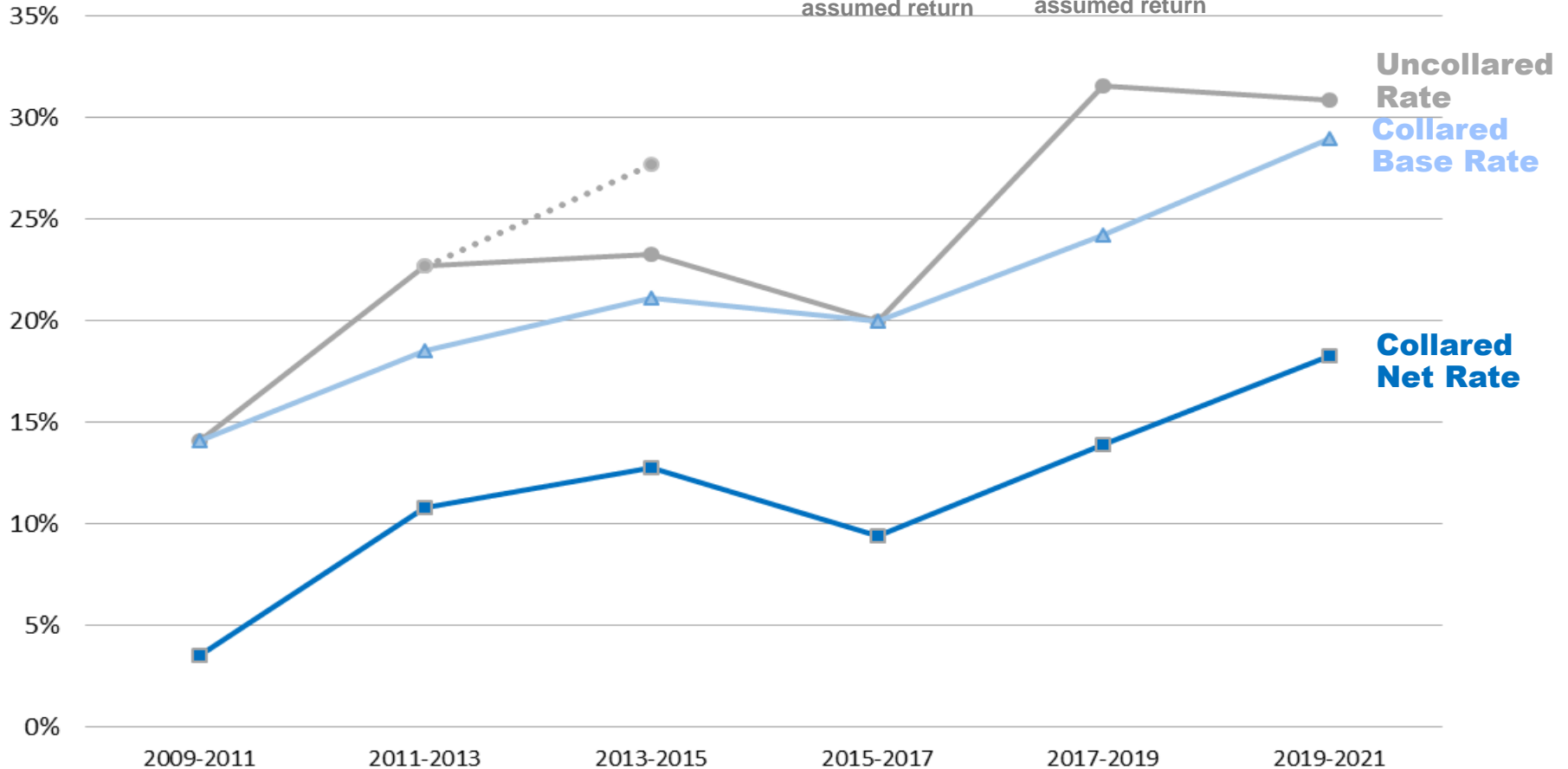
2011-2013
rates first to
reflect -27%
return in 2008

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



Assumed Rate: 8.00% 8.00% 8.00% 7.75% 7.50% 7.20%



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Rate Collar – Original Development and Objectives

- Rate collar originally established by PERS Board after the 2003 reforms
 - Initially used in the 12/31/04 (advisory) and 12/31/05 (rate-setting) valuations
 - Development process included stochastic (i.e., 10,000 scenario) analysis
- Board: collar balanced competing articulated **objectives** for methods
 - Transparent
 - Predictable and stable rates
 - Protect funded status
 - Equitable across generations
 - Actuarially sound
 - GASB compliant

High Concept – The Uncollared Rate Calculation

- Transparently calculate the actuarially needed **uncollared rate** that would:
 - Avoid UAL balance materially worsening in the near-term if actual future experience matches the assumptions used in calculating the UAL
 - Return PERS to 100% funded status if future experience matches assumptions
- Use best currently available market data in the uncollared rate calculation
 - Fair market value of assets (instead of a smoothed asset measure)
 - Current capital market outlooks from actuary, investment consultant to Treasury

High Concept – The Collared Rate Calculation

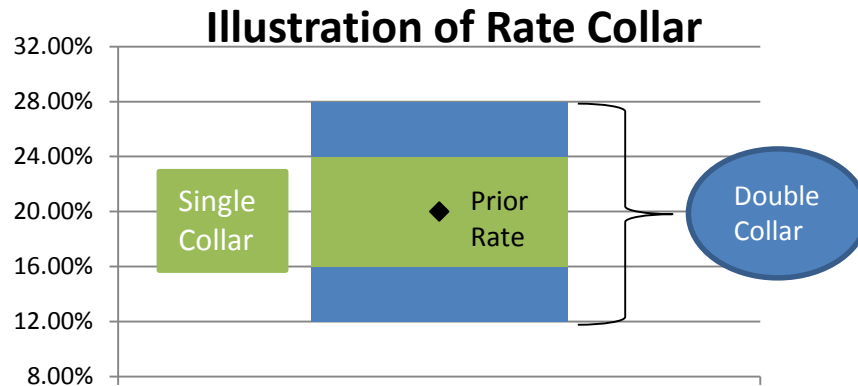
- If uncollared rate is well above the current rate charged, put a collar on the initial rate increase
 - New rate charged to employers will be partway toward the uncollared rate
- The **collared rate** can temporarily be below the uncollared rate
 - Collaring systematically spreads large increases across multiple biennia
 - Additional market data after the first collared increase is used in later calculations
- The collar width should be calibrated to balance competing objectives
 - Too wide: same as having no collar, insufficiently stable or predictable
 - Too narrow: harms funded status, generationally inequitable, actuarially unsound

Rate Collar – Into the (Important) Technical Weeds

- The collar's look back to the rate currently charged is technically complex
 - Rates charged vary from employer to employer
 - For any single employer, rates vary by payroll type (e.g., Tier 1/Tier 2, OPSRP)
 - Calculation should be contemplative of experience and rate pooling arrangements
 - In rate pools, some employers have side accounts and others do not
 - In the State & Local Government Rate Pool (SLGRP), many employers have employer-specific pre-pooling experience rate charges or rate offsets
- Solution: For collaring, look back at rate currently charged for each **rate pool**
 - Tier 1 / Tier 2 collar calculations are separate from the OPSRP collar calculation
 - For Tier 1/Tier 2, the SLGRP, school districts, and the 126 independent employers who do not pool their Tier 1 / Tier 2 experience are each collared separately
 - Inside a rate pool, disregard employer-specific pre-pooling charges and offsets
 - Collaring sets the allowed biennial increase in each pool's **base rates**
 - Employers actually pay **net rates**, which reflect the effect of employer-specific adjustments for side accounts and pre-pooling rate charges or offsets

Rate Collar - Current Design

- The maximum change typically permitted by the collar is:
 - 20% of the rate currently in effect (3% of payroll minimum collar width)
- If funded status excluding side accounts is 60% or lower, the width of the collar doubles
 - 40% of rate currently in effect (6% of payroll minimum collar width)
- If the funded status is between 60% and 70%, the collar size is pro-rated between the single collar width and the double collar width



- Collars are calculated at a rate pool level and limit the biennium to biennium increase in the UAL Rate for a given rate pool

Rate Collar Example – Beaverton School District

Employer Rates Effective July 1, 2017 for Beaverton School District

	Payroll		
	Tier 1/Tier 2	OPSRP	
		General Service	Police & Fire
Pension			
Normal cost rate	13.28%	8.02%	12.79%
Tier 1/Tier 2 UAL rate ¹	12.15%	12.15%	12.15%
OPSRP UAL rate	1.27%	1.27%	1.27%
Side account rate relief ²	(9.68%)	(9.68%)	(9.68%)
Net pension contribution rate	17.02%	11.76%	16.53%
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.43%	0.43%	0.43%
Net retiree healthcare rate	0.50%	0.43%	0.43%
Total net employer contribution rate	17.52%	12.19%	16.96%

- For the 2017-19 biennium, Beaverton SD contributes **collared net rates** of **17.52%** on its Tier 1/Tier 2 payroll and **12.19%** on its OPSRP payroll
 - Tier 1/Tier 2 experience is mandatorily pooled across all school districts
 - OPSRP experience is pooled state-wide across all PERS employers

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Rate Collar Example – Beaverton School District

Employer Rates Effective July 1, 2017 for Beaverton School District

	Payroll		
	Tier 1/Tier 2	OPSRP	
		General Service	Police & Fire
Pension			
Normal cost rate	13.28%	8.02%	12.79%
Tier 1/Tier 2 UAL rate ¹	12.15%	12.15%	12.15%
OPSRP UAL rate	1.27%	1.27%	1.27%
Side account rate relief ²	(9.68%)	(9.68%)	(9.68%)
Net pension contribution rate	17.02%	11.76%	16.53%
Retiree Healthcare			
Normal cost rate	0.07%	0.00%	0.00%
UAL rate	0.43%	0.43%	0.43%
Net retiree healthcare rate	0.50%	0.43%	0.43%
Total net employer contribution rate	17.52%	12.19%	16.96%


Sum is 25.43%



- The Tier 1/Tier 2 collar calculation focuses on the components that are set at the experience pooling level (i.e., all school districts, no other employers)
 - For Tier 1/Tier 2 school district payroll, the total of the Normal Cost Rate plus the Tier 1/Tier 2 UAL Rate (25.43% of payroll for 2017-2019) set the currently charged rate reference point for application of the collar to 2019-2021 rates

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Rate Collar Example – Beaverton School District

Funded Status as of December 31, 2017		70% to 130%
2017-2019 Normal Cost + Tier 1/Tier 2 UAL Rate		<u>25.43%</u>
Minimum 2019-2021 Rate		20.34%
Maximum 2019-2021 Rate	120% of 25.43% 	<u>30.52%</u>

Employer Rates Effective July 1, 2019 for Beaverton School District

	Tier 1/Tier 2	Payroll	
		General Service	Police & Fire
Pension			
Normal cost rate	13.79%	8.40%	13.03%
Tier 1/Tier 2 UAL rate ¹	16.73%	16.73%	16.73%
OPSRP UAL rate	1.45%	1.45%	1.45%
Side account rate relief ²	(9.17%)	(9.17%)	(9.17%)
Net pension contribution rate	22.80%	17.41%	22.04%
Retiree Healthcare			
Normal cost rate	0.06%	0.00%	0.00%
UAL rate	0.00%	0.00%	0.00%
Net retiree healthcare rate	0.06%	0.00%	0.00%
Total net employer contribution rate	22.86%	17.41%	22.04%

Sum is 30.52%* 

***Uncollared UAL rate is 1.93% of payroll higher**

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Recap of Methods and Assumptions Covered Today

▪ Assumed rate

- Used to estimate earnings to prudently set contributions in the funding equation
- Informed by up-to-date market outlooks from third-party advisors
- Rate selected by Board does not affect actual future investment earnings

▪ Amortization period

- Amortization is as a level percent of projected payroll, not a level dollar amount
- Twenty years is longest period that avoids near-term negative amortization

▪ Rate collar

- Transparent in comparison to alternative approaches
- Uses most current investment data (asset levels, market outlooks)
- Lets entities see the rate needed to avoid UAL increases near term and to fund the UAL over the amortization period if future experience matches assumptions
- Balances competing guiding principles (predictable and stable rates vs. protect funded status, intergenerational equity) in an actuarially sound manner

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Agenda for Next Two Presentations

- May 31: Economic assumptions, rate-setting methods
 - Assumed rate – data from Treasury’s consultants, Milliman’s model
 - Inflation and system payroll growth
 - Amortization and contribution rate collaring
- July 26: Demographic assumptions, Board decisions
 - Member-specific assumptions based on study of recent PERS experience
 - Assumptions and methods adopted will be used for:
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Appendix

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Certification

This presentation summarizes information provided in valuations for the Oregon Public Employees Retirement System (“PERS” or “the System”) and prior presentations to the PERS Board, including the December 2018 and February 2019 presentations to the PERS Board. Those presentations, along with the December 31, 2017 System-Wide Actuarial Valuation Report, should be referenced for additional detail on the assumptions, methods, and plan provisions underlying these results.

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 our best estimate of anticipated experience affecting the System.

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. The PERS Board has the final decision regarding the appropriateness of the assumptions.

Actuarial computations presented in this report are for purposes of determining the recommended funding amounts for 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.

Certification

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.

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 its work product.

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 pension actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the System. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.