Presentation to the

Bipartisan PERS Solutions Work Group

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September 2016

Presentation Goals

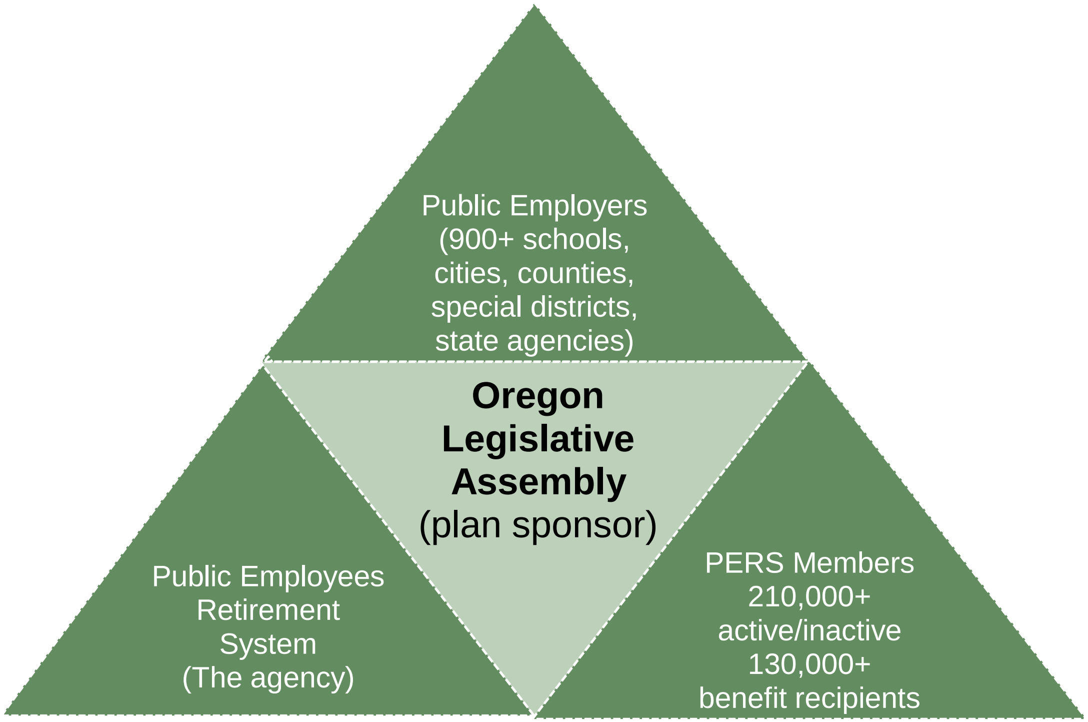
This presentation is intended to review the following:

1. The math that drives the fundamental cost equation which PERS uses to derive employer rates
2. Roles of the various governing bodies over elements of that equation
3. How the two components of employer rates, “normal cost” and “UAL rate,” represent their respective costs for the benefits provided by PERS
4. Principles used by the PERS Board to set employer rates
5. How the application of those principles affects the prospects for changes to employer rates by various legislative concepts

PERS Overview

The Oregon Legislative Assembly is the "Plan Sponsor" for the Oregon Public Employees Retirement System and determines the benefits to participating public employees. Those benefits have been modified over time, including the creation of three benefit groups: Tier One (through 1995), Tier Two (1996-Aug. 2003), and OPSRP (August 2003 to present.)

Approximately 900 public employers participate in PERS, including school districts, special districts, cities, counties, and state agencies. Once the employer chooses to join PERS, there are no provisions for them to leave the plan.



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:

$$B = C + E$$

BENEFITS = CONTRIBUTIONS + EARNINGS

BENEFITS	CONTRIBUTIONS	EARNINGS
present value of earned benefits	employer funds to pay pension benefits	future returns on invested funds
Set by: Oregon Legislature	Set by: PERS Board	Managed by: Oregon Investment Council

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

Employer Contribution Rate Setting Cycle

Actuarial valuations are conducted annually, but alternate between "advisory" and "rate setting": e.g., the December 31, 2014, valuation results were used to project employer rates, but the December 31, 2015, valuation was used to set actual rates for the 2017-2019 biennium.

Once employer rates are adopted by the PERS Board (in the fall of the even-numbered year), they become effective the following July 1 of the odd-numbered year (18 months after the valuation date).

Valuation Date	Employer Contribution Rates
December 31, 2013 ⟶	July 2015 - June 2017
December 31, 2015 ⟶	July 2017 - June 2019
December 31, 2017 ⟶	July 2019 - June 2021

Solving the Equation . . .

When setting employer contribution rates, the PERS Board considers the following objectives and principles:

- Transparent process and inputs
- Predictable and stable employer contribution rates
- Protect funded status to secure future benefit payments
- Equitable across generations of taxpayers funding the system
- Actuarially sound – fully fund the system if assumptions are met
- 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.

Funded Status and Unfunded Actuarial Liability (UAL) ($ billions)

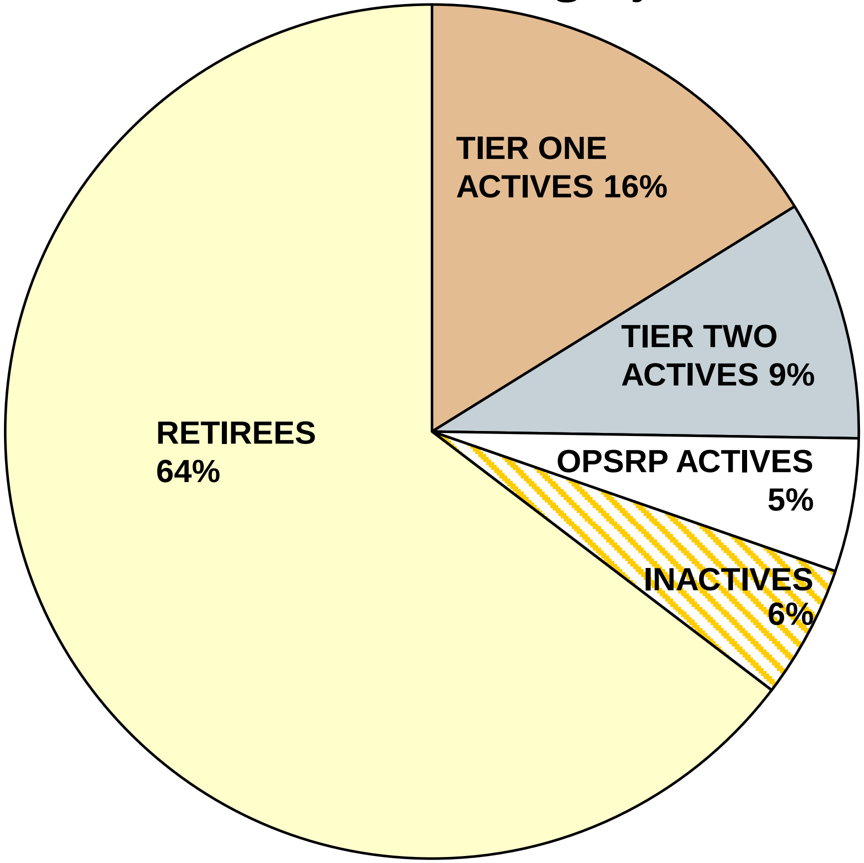
System-total Pension Funded Status ($ billions)			
Reflects:	**12/31/2013**	**12/31/2014**	**12/31/2015**
Moro decision?	*No*	*Yes*	*Yes*
2014 Experience Study assumptions?	*No*	*Yes*	*Yes*
Actuarial liability	$62.6	$73.5	$76.2
Assets (excluding side accounts)	$54.1	$55.5	$54.4
UAL (excluding side accounts)	$8.5	$18.0	$21.8
Funded status (excluding side accounts)	86%	76%	71%
Side account assets	$5.9	$5.9	$5.6
UAL (including side accounts)	$2.6	$12.1	$16.2
Funded status (including side accounts)	96%	84%	79%

Milliman presentation; July 29, 2016 Board meeting

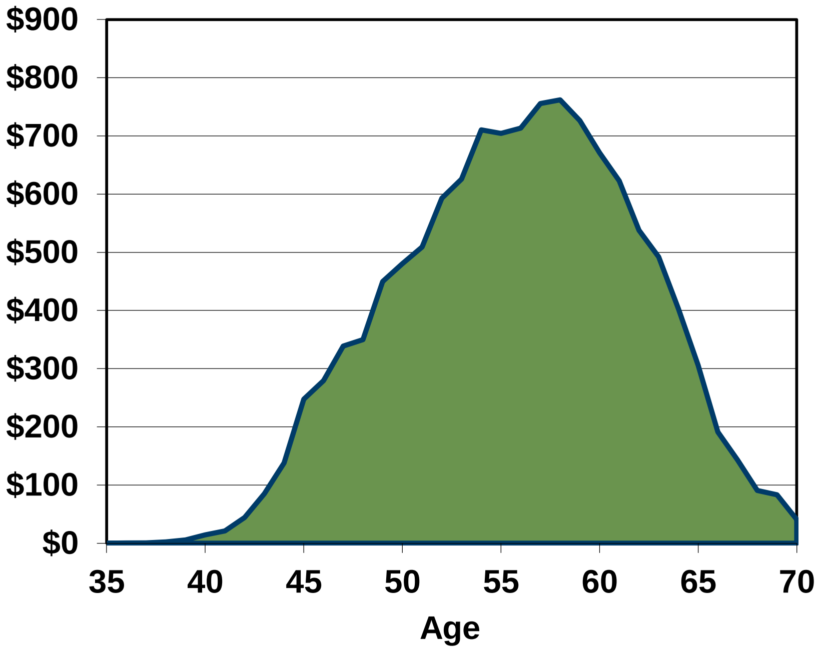
PERS Oregon Public Employees Retirement System

Actuarial Liability by Benefit Program
(Tier One/Two and OPSRP as of 12-31-15)

Actuarial Liability by Member Category



Age Distribution of Tier One Actives' Liability ($ millions)



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System Wide Pension Rates (% of Payroll)

Excludes Retiree Health Care and IAP Contributions

	2015 - 17 Actual Rates			2017 - 19 Proposed Rates		
	Tier One/Two	OPSRP	Weighted Average[1]	Tier One/Two	OPSRP	Weighted Average[1]
Normal Cost	13.18%	7.79%	10.94%	15.07%	8.56%	11.79%
Tier 1/Tier 2 UAL	6.63%	6.63%	6.63%	16.02%	16.02%	16.02%
OPSRP UAL	0.61%	0.61%	0.61%	1.27%	1.27%	1.27%
Uncollared Rate[2]	**20.42%**	**15.03%**	**18.18%**	**32.36%**	**25.85%**	**29.08%**
Increase				**11.94%**	**10.82%**	**10.90%**
Collar Limitation	(0.72%)	(0.72%)	(0.72%)	(8.23%)	(8.23%)	(8.23%)
Collared Base Rate*	**19.70%**	**14.31%**	**17.46%**	**24.13%**	**17.62%**	**20.85%**
Side Account (Offset)	(6.38%)	(6.38%)	(6.38%)	(6.14%)	(6.14%)	(6.14%)
SLGRP Charge/(Offset)	(0.47%)	(0.47%)	(0.47%)	(0.48%)	(0.48%)	(0.48%)
Collared Net Rate	**12.85%**	**7.46%**	**10.61%**	**17.51%**	**11.00%**	**14.23%**
Increase				**4.66%**	**3.54%**	**3.62%**

1 Weighting based on the membership distribution (Tier 1/Tier 2, OPSRP) as of the valuation date.
2 Does not include side accounts

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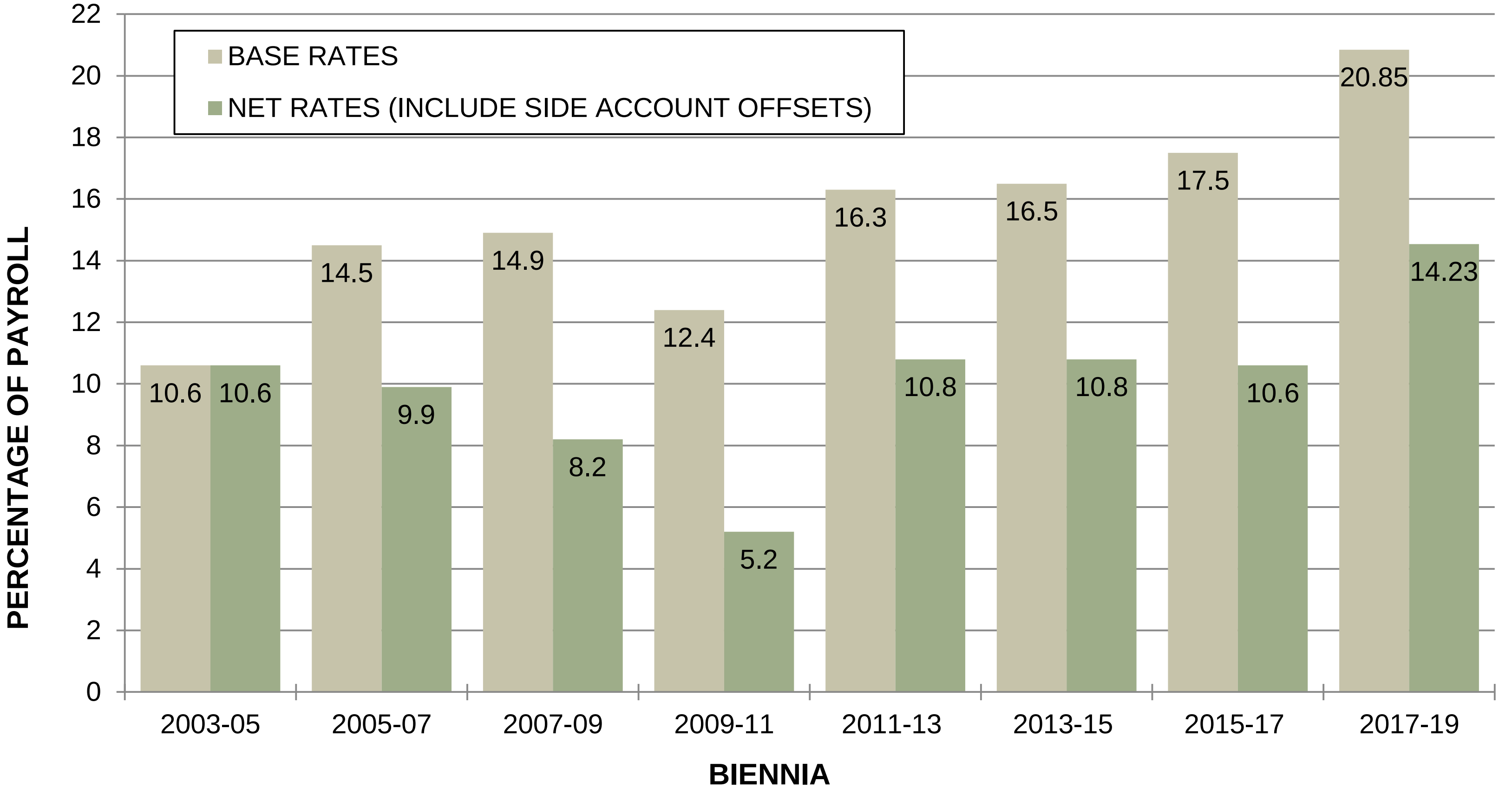
PERS System Wide Average Employer Rates



- EXCLUDES 6% MEMBER CONTRIBUTIONS AND PENSION OBLIGATION BOND DEBT SERVICE PAYMENTS
- INCLUDES TIER ONE, TIER TWO, AND OPSRP
- RATES FOR 2005-07 AND BEFORE ARE AS OF VALUATION DATE
- 2017-19 RATES REFLECT INVESTMENT RETURNS FOR 2014 AND 2015, THE *MORO* DECISION, ASSUMED RATE DECREASE FROM 7.75% TO 7.5%, UPDATED MORTALITY ASSUMPTIONS, EXPECTED INCREASE IN UAL IN 2014 AND 2015, AND ALL OTHER ASSUMPTION CHANGES AND ACTUARIAL EXPERIENCE
- DOES NOT INCLUDE RHIA/RHIPA

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2017-19 Contribution Increase Estimates

($ millions)	Projected 2015-17 Payroll*	(A) Projected 2015-17 Contribution	Projected 2017-19 Payroll*	(B) Projected 2017-19 Contribution	(B) - (A) Projected Contribution Increase
State Agencies	$5,620	$575	$6,020	$835	$260
School Districts	$6,120	$575	$6,560	$910	$335
All Others	$7,350	$875	$7,880	$1,165	$290
Total	**$19,090**	**$2,025**	**$20,460**	**$2,910**	**$885**

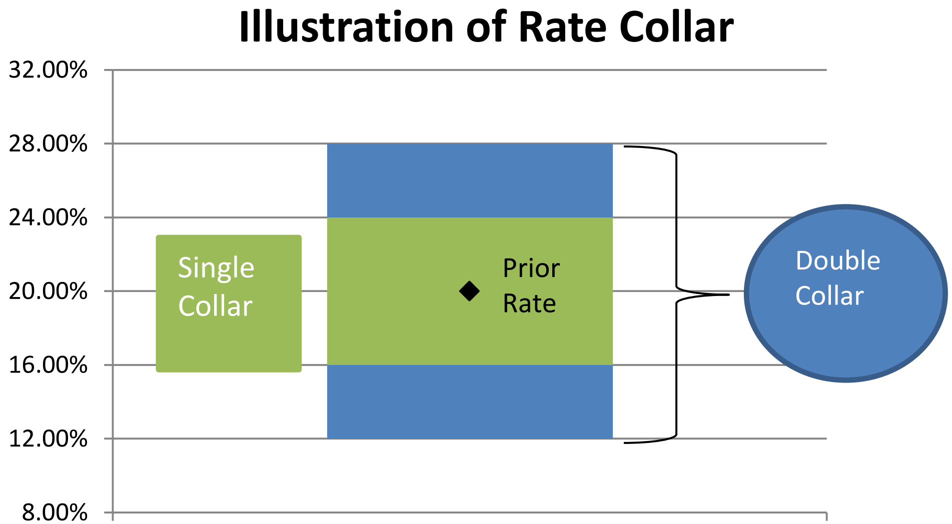
* Assumes payroll grows at 3.50% annually based on 12/31/2015 active member census, reflecting proportional payroll composition (Tier One/Tier Two vs. OPSRP) as of 12/31/2015

- Collared net rates are used to project 2017-2019 contributions
- The advisory valuation had a projected contribution increase of $800 million; the change from that estimate was caused primarily by 2015 investment underperformance and the leveraged effects that side accounts had on net rates

Milliman presentation; July 29, 2016 Board meeting

Current Design of Rate Collar

- 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 is 60% or lower, the width of the collar doubles to 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 prorated between the initial collar and double collar level

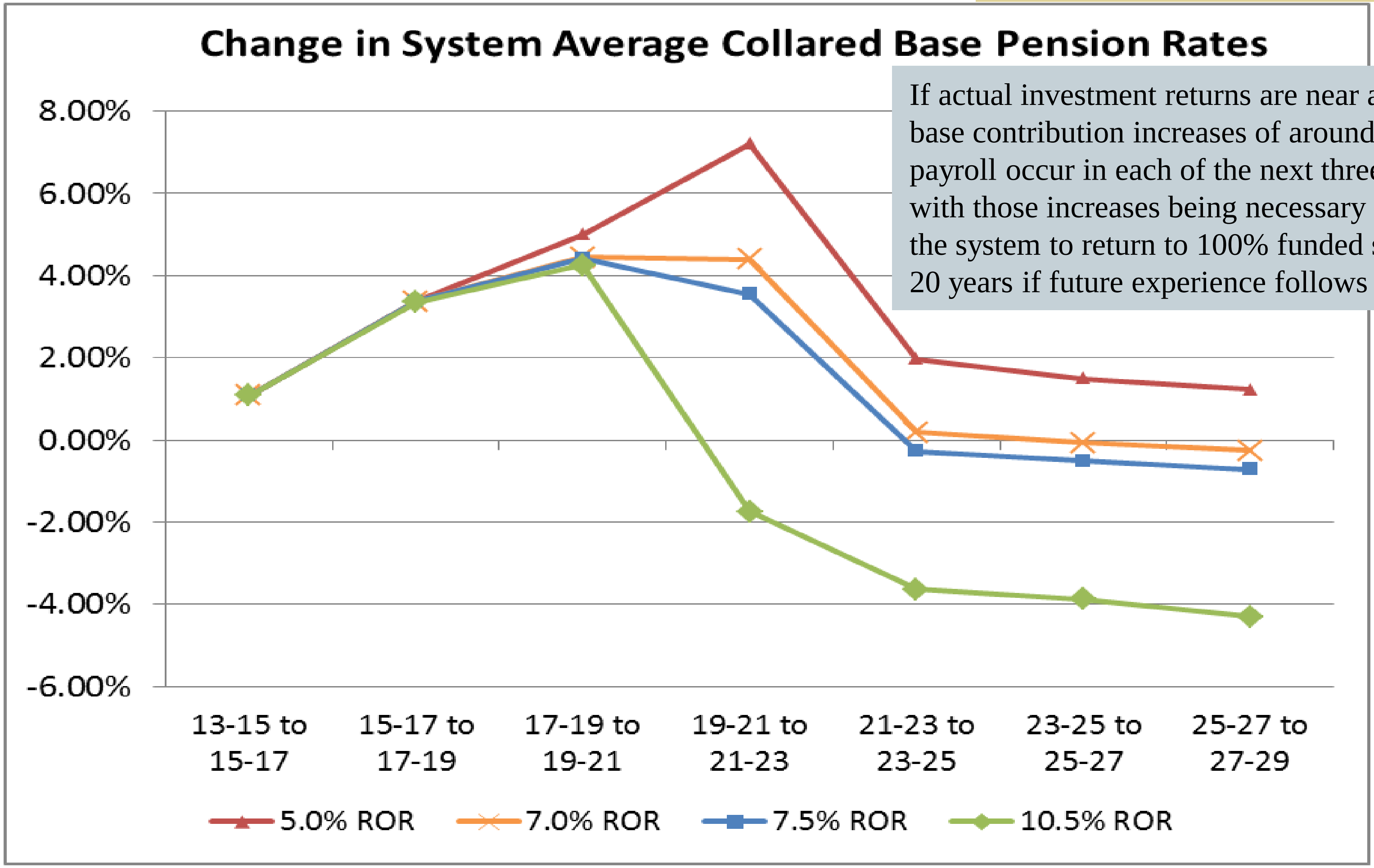


- Rate collars are calculated at a rate pool level and limit the biennium to biennium increase in the UAL rate for a given rate pool

Milliman presentation; May 29, 2015 Board meeting

Contribution Increases
(November 2015 Financial Modeling)

From Nov. 2015 PERS Board materials:
- Based on published returns through October 2015
- Does not reflect $0.3 billion in 2015 demographic experience losses



If actual investment returns are near assumption, base contribution increases of around 4% of payroll occur in each of the next three biennia, with those increases being necessary to position the system to return to 100% funded status over 20 years if future experience follows assumptions.

Shows biennium to biennium changes under steady return projections

Milliman presentation; July 29, 2016 Board meeting

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Balancing the “B”, “C”, and “E”

PENSION BENEFIT FUNDING SOURCES (1970-2015)

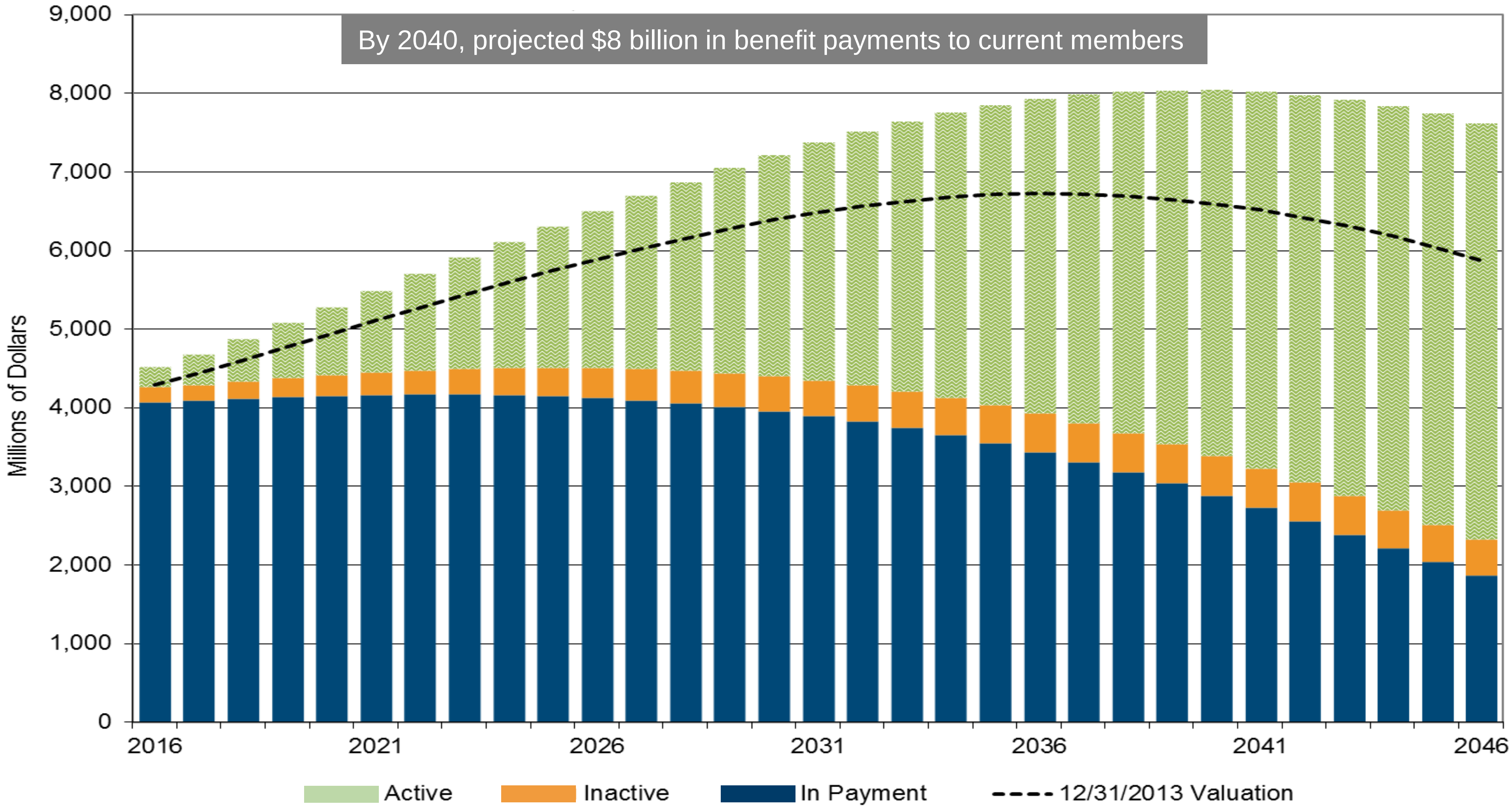
73.4¢
INVESTMENT EARNINGS

21.1¢
EMPLOYERS

5.5¢
MEMBERS

Since 1970, the total revenues into PERS to pay for Tier One and Tier Two benefits have come from these three sources. Member contributions were diverted to the Individual Account Program starting in 2004, so their share of revenue will diminish over time.

Projected Benefit Payments by Status
(as of 12-31-15)



Dotted line depicts the projected payments from the 12/31/2013 rate-setting valuation, which did not reflect the *Moro* decision

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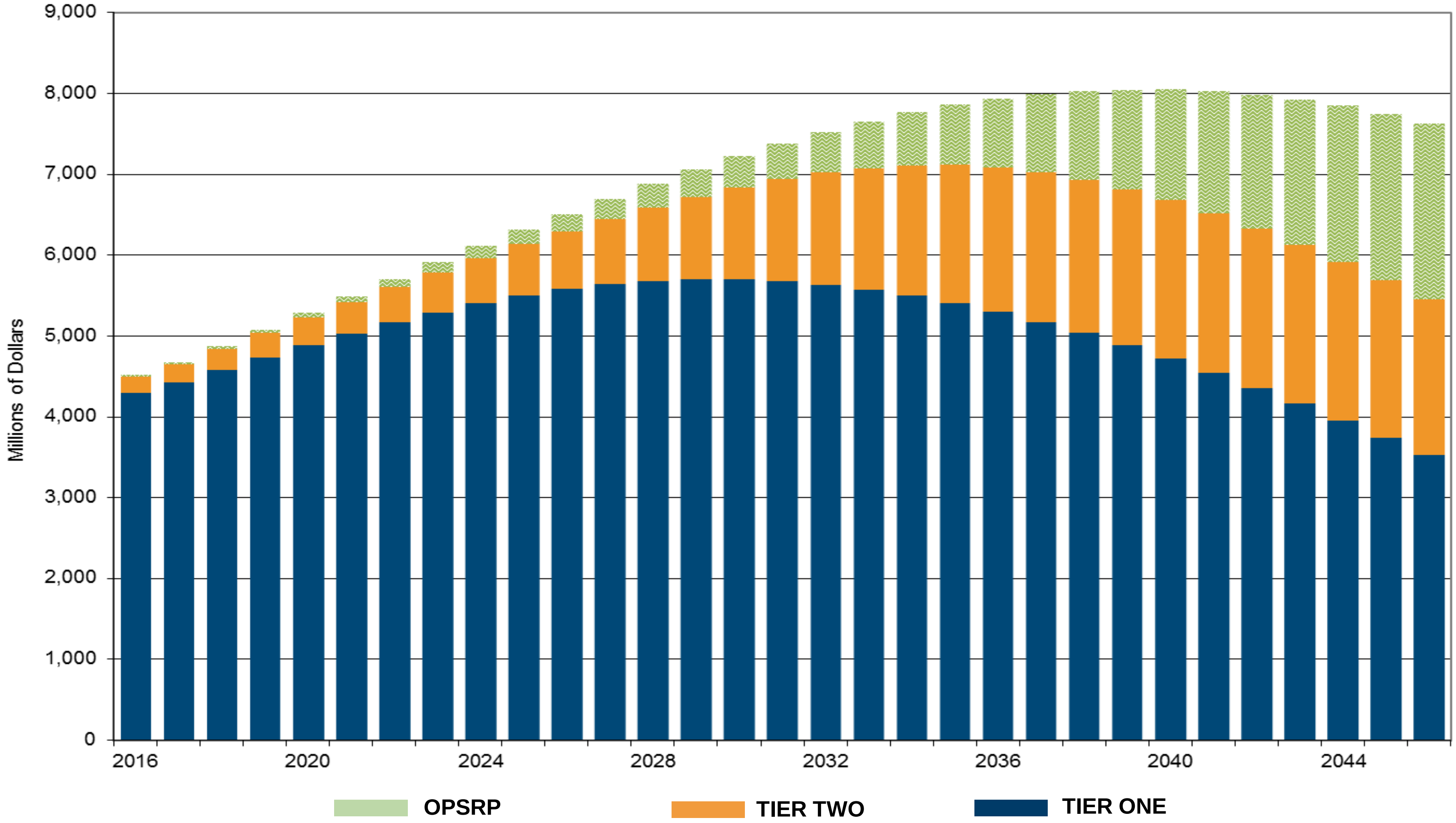
Projected Benefit Payments by Program
(as of 12-31-15)



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Presentation Summary

1. The fundamental cost equation shows the two main drivers of the employer contribution rate: the legislature, through their changes to the benefit plan, and the Oregon Investment Council, whose earnings are a crucial funding source for those benefits
2. The principal cause for the relatively high employer rates is not the “normal cost” for the benefits earned by active members in PERS, but rather the “UAL rate” that’s charged to recover the cost for accrued benefits owed mostly to members who are no longer public employees
3. Proposed legislative concepts either shift the benefit cost from employers to members, or reduce the “normal cost” incrementally by reducing benefits for active members, but do not reduce the unfunded legacy benefits that are the principal driver of higher employer rates
4. On September 14, 2016, the PERS Board and Oregon Investment Council held a joint meeting and discussed their concerns about the growing unfunded liablity; both groups have particular insight into these system funding challenges and would like to be involved in further discussions about potential solutions

For more information, including actuarial analyses of proposed legislative concepts, visit the PERS website.

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