DECEMBER 31, 2012 ACTUARIAL VALUATION

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

September 27, 2013

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Introduction

- Today we will review preliminary system average valuation results for the Tier 1/Tier 2 & OPSRP retirement programs
- All work is based on:
  - Asset levels at year-end 2012 as reported by Treasury
  - Member demographics at year-end 2012
  - Current benefit provisions including Senate Bill 822
- Results are advisory in nature
  - Indicate where 2015 - 2017 rates would be if set today
  - Assess program funded status and UAL shortfall

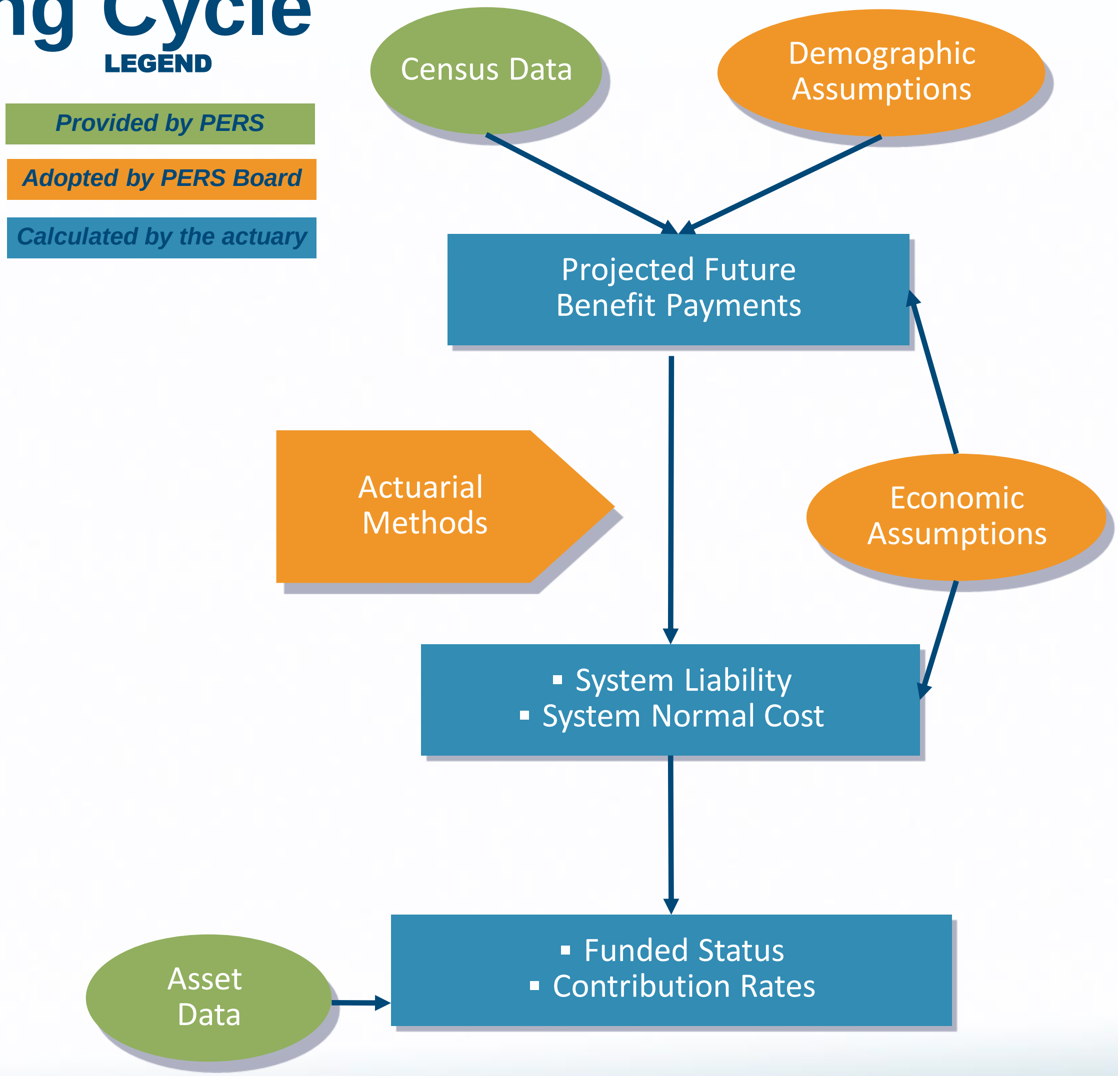
Valuation Process and Timeline

- Actuarial valuations are conducted annually
  - Alternate between “rate setting” and “advisory” valuations
  - The 12/31/2012 valuation is advisory
- The Board adopts rate setting valuation results, and rates go into effect 18 months subsequent to the valuation date

Valuation Date	Employer Contribution Rates
12/31/2011 →	July 2013 – June 2015
12/31/2013 →	July 2015 – June 2017

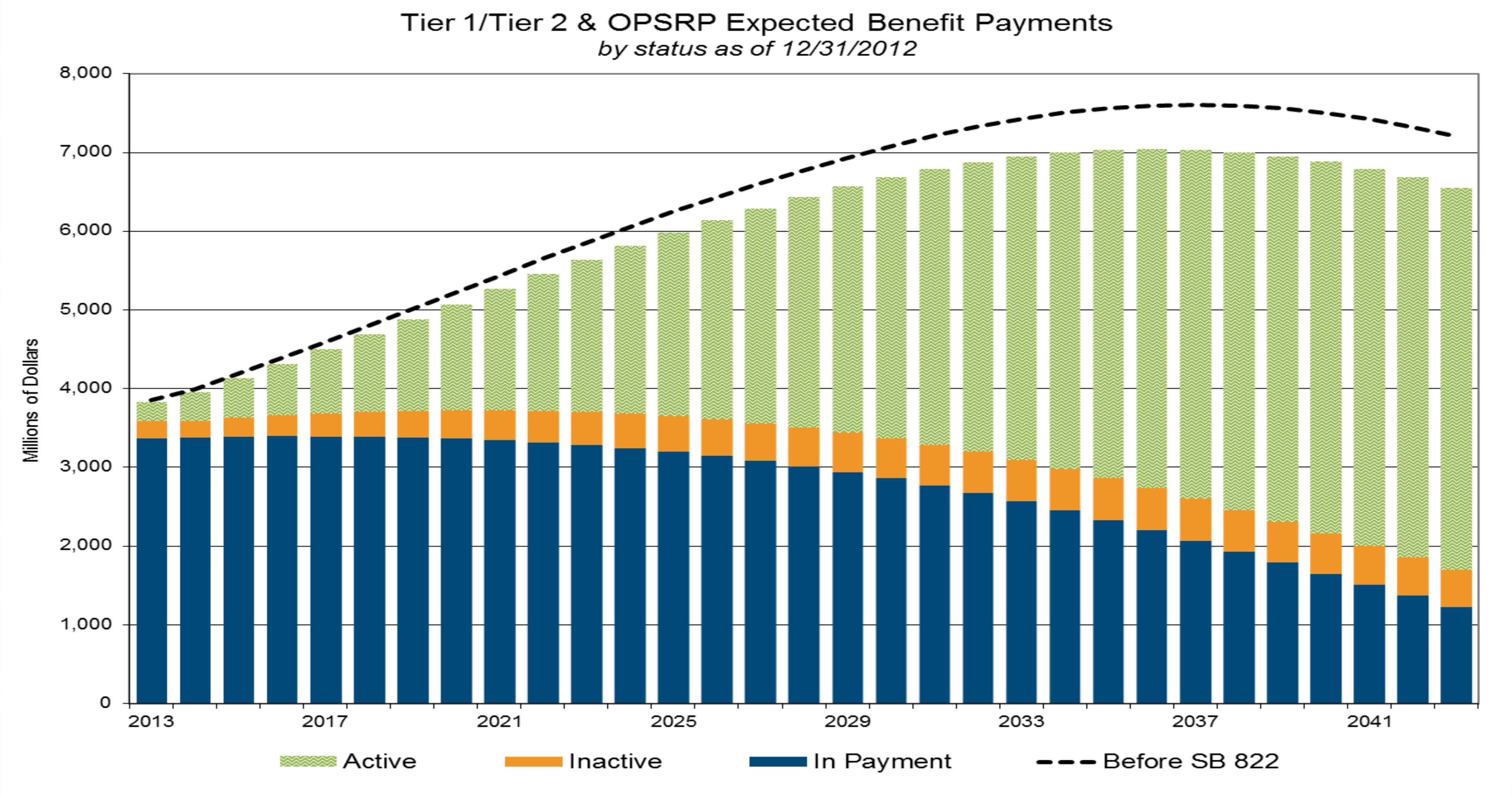
Two-Year Rate-Setting Cycle

- July 2013: Assumptions & methods endorsed by Board in consultation with the actuary
- **September 2013: System-wide 12/31/12 "advisory" actuarial valuation results**
- November 2013: Advisory 2015-2017 employer-specific contribution rates
- July 2014: System-wide 12/31/13 "rate-setting" actuarial valuation results
- September 2014: Disclosure & adoption of employer-specific 2015-2017 contribution rates



Development of Liabilities

Liabilities are calculated from projected benefit payments



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Changes to Assumptions & Methods

- In addition to updates for assets, demographics and Senate Bill 822, the following changes affect year-to-year results
  - Investment return assumption
    - Reduced from 8.00% to 7.75%
  - Actuarial cost allocation method
    - Changed to entry age normal (EAN)
    - The cost method defines what portion of projected retirement benefits are allocated to:
      - Past service (Accrued Liability)
      - Current service (Normal Cost)

12/31/2012 Preliminary Valuation Results

Tier 1/Tier 2 & OPSRP (Excluding Side Accounts & Retiree Health Care)

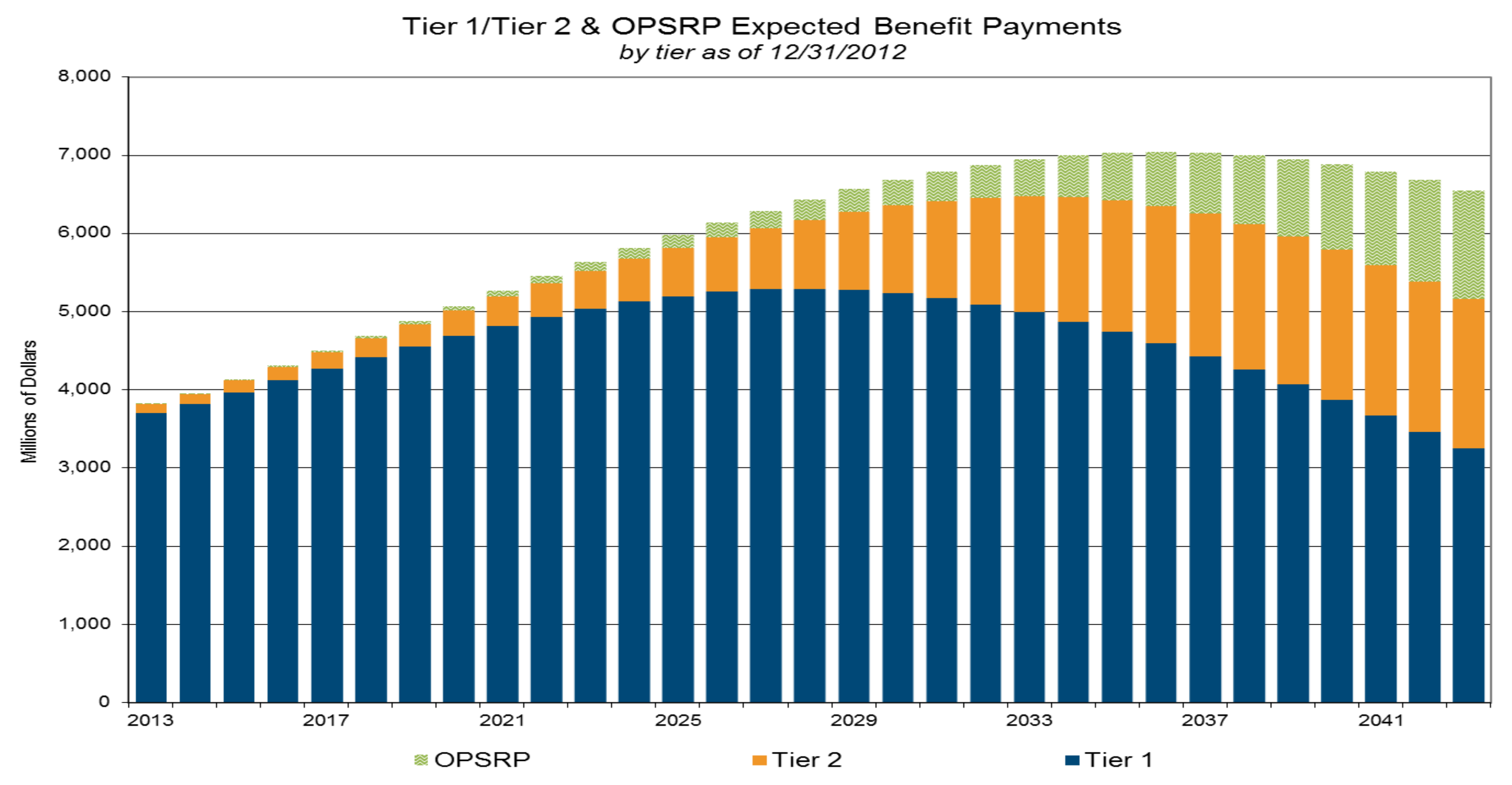
(amounts in billions)	**Pre-SB 822 12/31/2011**	**Post-SB 822 12/31/2011[1]**	**12/31/2012[1]**
Accrued Liability	$61.2	$58.6	$62.5
Assets	$44.9	$44.9	$49.3
Unfunded Accrued Liability (UAL)	$16.3	$13.7	$13.2
Funded Status	73%	77%	79%

68% of liability is attributable to members no longer in PERS-covered employment

[1]*Reflects the liability reductions of Senate Bill 822*

Development of Liabilities

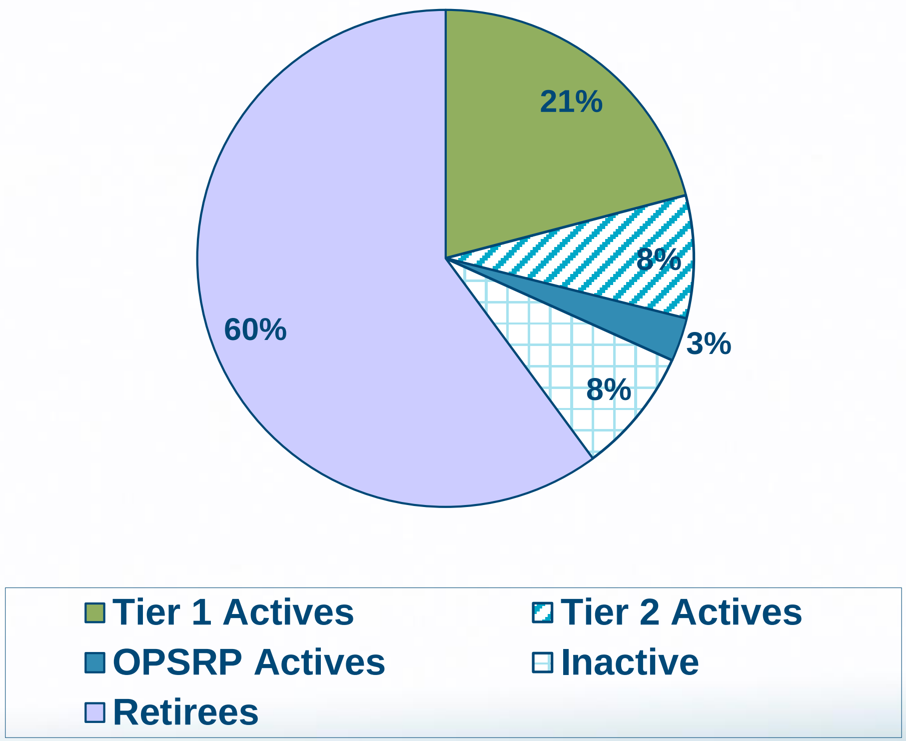
This chart shows benefit payments split by membership group



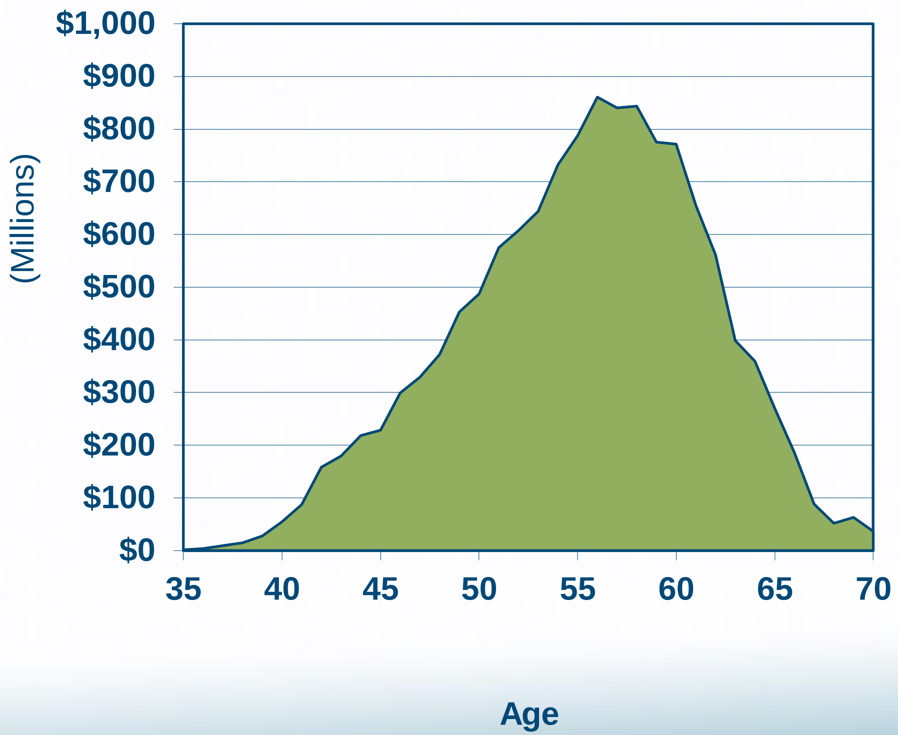
Division of Accrued Liability by Category

12/31/2012 Tier 1/Tier 2 and OPSRP Actuarial Accrued Liability

Actuarial Accrued Liability by Member Category



Age Distribution of Tier 1 Active Liability



Contribution Rate Components

- All employer rates have at least two components
  - Normal Cost Rate
    - Economic value of projected benefits allocated to this year
    - Paid at 100 cents on the dollar
  - UAL (shortfall) Rate
    - Calculated to recover shortfall in a systematic manner over a specific time period if assumptions are met
- If future experience follows assumption and contributions are made in line with policy, funded status will return to 100% over the specified time period

Normal Cost Rates

Tier 1/Tier 2 & OPSRP (Excluding Retiree Health Care & IAP)

Normal Cost Rate (% of payroll)	12/31/2011	12/31/2012
Tier 1/Tier 2	9.00%	13.92%
OPSRP	6.56%	8.12%
System Average	8.16%	11.72%

Changing to Entry Age Normal (the GASB-endorsed method) allocates a portion of Tier 1/Tier 2 Money Match costs to current and future years

For OPSRP, the EAN method immediately increases the normal cost rate to a projected career-average level

Uncollared Rates

- The first employer contribution rate calculation step is development of the uncollared rate, which is:
  - Normal Cost Rate, plus
  - UAL (unfunded accrued liability or shortfall) Rate
- Actuarial method and assumption changes endorsed by the Board in July increased both the calculated Normal Cost Rate and the UAL
- To partially mitigate these increases, in July the Board endorsed re-amortizing all accumulated Tier 1/Tier 2 UAL as a level percentage of projected payroll over a closed twenty year period

Uncollared System Average Rates

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

	12/31/2011[1] 2013 - 2015 Final			12/31/2012[1] 2015 - 2017 Advisory		
	Tier 1 / Tier 2	OPSRP	System-Wide	Tier 1 / Tier 2	OPSRP	System-Wide
Normal Cost	9.00%	6.56%	8.16%	13.92%	8.12%	11.72%
Tier 1/Tier 2 UAL	14.77%	14.77%	14.77%	10.62%	10.62%	10.62%
OPSRP UAL	0.15%	0.15%	0.15%	0.68%	0.68%	0.68%
Valuation Uncollared Rate	**23.92%**	**21.48%**	**23.08%**	**25.22%**	**19.42%**	**23.02%**
SB 822 Benefit Provisions	**-2.50%**	**-2.50%**	**-2.50%**			
Uncollared Rate	**21.42%**	**18.98%**	**20.58%**			

SB 822 benefit provisions reflected in 12/31/12 valuation rates

12/31/2012 uncollared rates reflect a re-amortization (as a level percentage of payroll) of Tier 1/Tier 2 UAL over twenty years

[1] *For this exhibit, adjustments are assumed not to be limited due to an individual employer reaching a 0.00% contribution rate.*

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UAL Rates

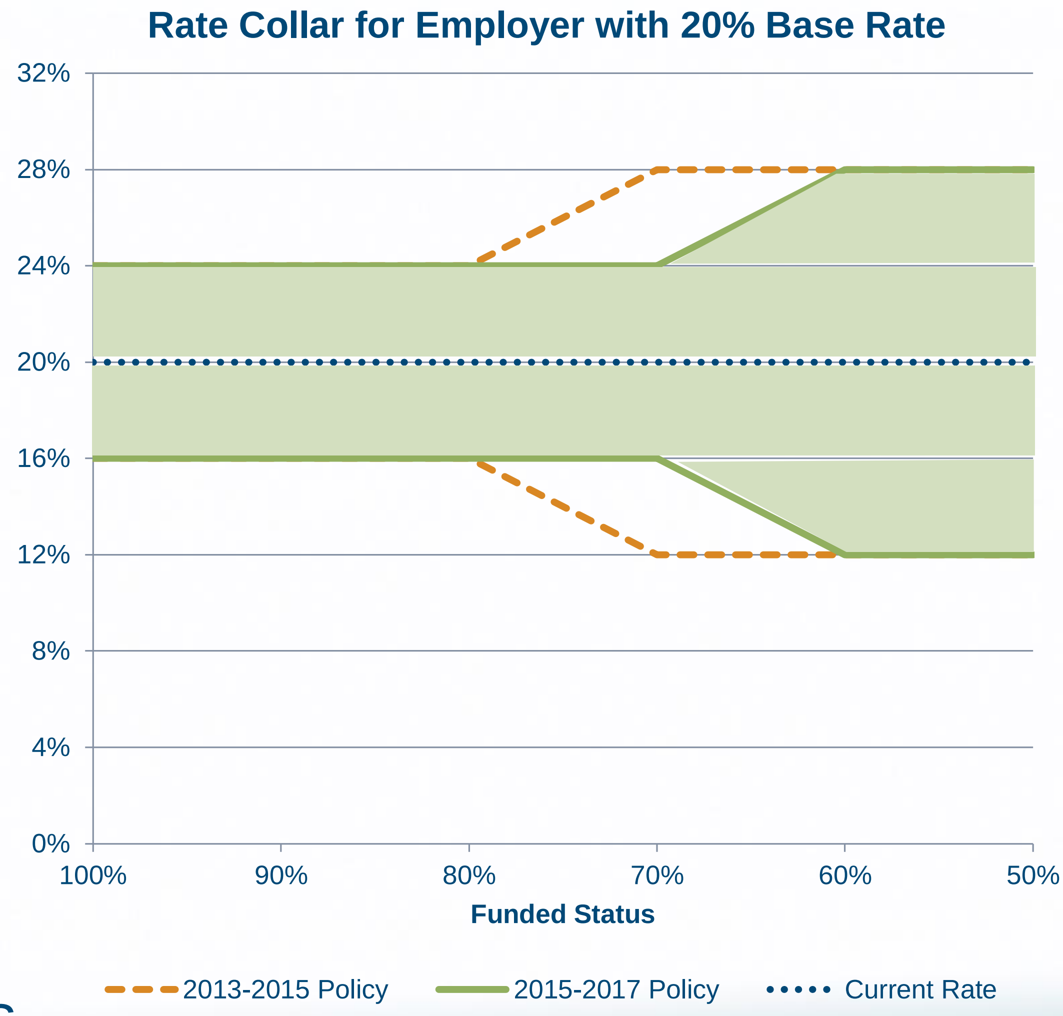
- The Tier 1/Tier 2 UAL Rate change results from:
  - 2012 asset returns greater than assumed (lowered UAL)
  - SB 822 changes to benefit provisions (lowered UAL)
  - Lowering of investment return assumption and other assumption changes (increased UAL)
  - Re-amortization of Tier 1 / Tier 2 UAL over 20 years (lowered UAL rate)
  - Change to EAN cost method (slightly increased Tier 1 / Tier 2 UAL)
- The OPSRP UAL Rate change is primarily driven by investment return assumption and cost method modifications

The Rate Collar

- The uncollared rate is not always the rate charged as, following periods of significant volatility, the “rate collar” limits biennium to biennium rate changes
  – Any increases that are not permitted at a given biennium due to collar limitations are deferred to the next biennium
- The collar only indirectly affects the calculation of the uncollared rate, which is the forecast long-term level of needed rates
  – This effect is illustrated by SB 822’s rate deferral provision
- The collar directly affects the steepness of the biennium-to-biennium rate increases to reach the needed long-term level

The Rate Collar

- In addition to changes already noted, the rate collar calculation was modified for this valuation
- The funded status at which the collar width begins to double was lowered from 80% to 70%
- This change was assessed using a stress test under a wide variety of future noisy investment return scenarios



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Collared System Average Base Rates

Excludes Retiree Health Care & IAP Contributions, Side Account Offsets

	12/31/2011[1] 2013 - 2015 Final			12/31/2012[1] 2015 - 2017 Advisory		
	Tier 1 / Tier 2	OPSRP	System-Wide	Tier 1 / Tier 2	OPSRP	System-Wide
Uncollared Rate	**21.42%**	**18.98%**	**20.58%**	**25.22%**	**19.42%**	**23.02%**
Collar Adjustment	(2.30%)	(2.30%)	(2.30%)	(3.94%)	(3.94%)	(3.94%)
SB 822 Rate Deferral	(1.78%)	(1.78%)	(1.78%)	N/A	N/A	N/A
Collared Base Rate	**17.34%**	**14.90%**	**16.50%**	**21.28%**	**15.48%**	**19.08%**

2013 – 2015 collared rates reflect the rate deferral in SB 822

The collar limits increases that would be effective July 2015

Barring benefit modifications or 2013 investment returns varying significantly from assumption, final 2015 – 2017 base rates will be similar to advisory 2015 – 2017 base rates

[1] *For this exhibit, adjustments are assumed not to be limited due to an individual employer reaching a 0.00% contribution rate.*

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Net Rates

- Collared base rates are adjusted to develop net rates
- Net rates are the rates employers actually pay
- Adjustments fall into two major categories
  - Rate offsets for employers with side accounts
  - Charges or offsets for employers in the State & Local Government Rate Pool (SLGRP), reflecting equalization measures at the time of pooling

Collared System Average Net Rates

Excludes Retiree Health Care & IAP Contributions

	12/31/2011[1] 2013 - 2015 Final			12/31/2012[1] 2015 - 2017 Advisory		
	Tier 1 / Tier 2	OPSRP	System-Wide	Tier 1 / Tier 2	OPSRP	System-Wide
Collared Base Rate	**17.34%**	**14.90%**	**16.50%**	**21.28%**	**15.48%**	**19.08%**
Side Account (Offset)	(5.26%)	(5.26%)	(5.26%)	(5.70%)	(5.70%)	(5.70%)
SLGRP Charge/(Offset)	(0.44%)	(0.44%)	(0.44%)	(0.45%)	(0.45%)	(0.45%)
Collared Net Rate	**11.64%**	**9.20%**	**10.80%**	**15.13%**	**9.33%**	**12.93%**

Rates vary substantially by employer and by pool

Not all employers have side account offsets

Changes in side account offsets are not collared, and thus are more volatile than base rates

[1] *For this exhibit, adjustments are assumed not to be limited due to an individual employer reaching a 0.00% contribution rate.*

Comments on Advisory 2015 – 2017 Rates

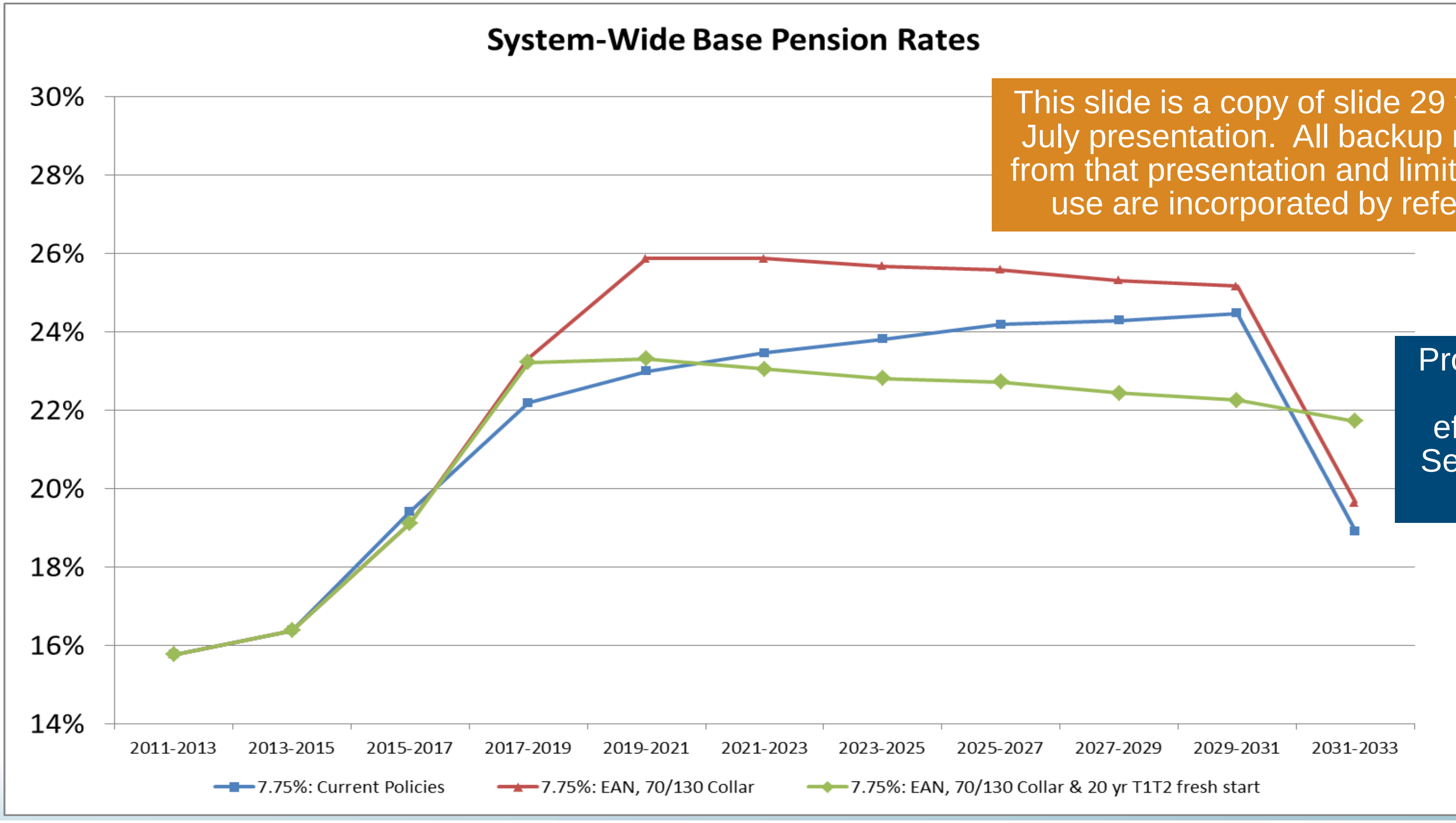
- No single employer pays the system-wide average rate
  – School district base rates are above the average
  – Most SLGRP employers' base rates are below the average
- Rates shown do <u>not</u> include the effects of:
  – Individual Account Plan (IAP) contributions
  – Rates for the RHIA & RHIPA retiree healthcare programs
  – Debt service payments on pension obligation bonds

Rate Projections

- A variety of assumptions and method changes were endorsed in July
  - Milliman recommendations
    - Entry Age Normal (EAN) cost allocation method
    - Modification to rate collar
  - PERS staff recommendations among policy alternatives
    - Investment return assumption
    - Refinance Tier 1/Tier 2 shortfall over twenty years
- These policies are modeled as the green line on the next slide

Rate Projections

Comparison of policies under a 7.75% assumed return with 7.50% fixed actual asset return



This slide is a copy of slide 29 from our July presentation. All backup material from that presentation and limitations of use are incorporated by reference

Projections reflect effects of Senate Bill 822

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Rate Projections

- We are not updating the “green line” projection this month
- The projection presented at the July meeting already reflected:
  - Effects of Senate Bill 822
  - Actual 2012 investment returns
- New information not yet reflected in the green line:
  - Actual 2013 investment returns (6.5% through August 31)
  - Updates to member demographics as of year-end 2012
- This new information would not significantly move the line
  - No near-term movements due to the rate collar
  - Long-term movement will be based on investment outcomes

Rate Projections

- In November, we will return with updated projections
- Projections will be developed using two types of models
  - Deterministic
    - Straight lines reflecting steady future investment returns
  - Stochastic
    - Probability distributions reflecting a wide variety of future noisy investment return scenarios
    - These projections will include updates to the risk metrics we used to stress test our July recommendations on the cost allocation method and rate collar structure

Wrap Up / Next Steps

- Between now and the November meeting, we will:
  - Assist PERS in responding to potential legislation
  - Develop updated actuarial equivalence factors for 2014
  - Issue system-wide and employer-specific valuation reports
- At the November meeting, we will:
  - Review the valuation results for the retiree health insurance programs, which have low funded status levels
    - Funded status, especially for RHIPA, is very low but healthcare liabilities were less than 1% of pension liabilities in the year-end 2011 valuation
  - Update long-term rate and funded status projections

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, 2012, for the Plan Year ending December 31, 2012. The results are preliminary in nature and may not be relied upon to, for example, prepare the System’s Consolidated Annual Financial Report (CAFR). The reliance document will be the forthcoming formal December 31, 2012 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 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. Actuarial computations presented in this report under GASB Statements No. 25 and 27, 43 and 45 are for purposes of fulfilling financial accounting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System’s

Certification

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, and of GASB Statements No. 25 and 27, 43 and 45. 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.

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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.

Appendix

12/31/2012 Preliminary Valuation Results

Tier 1/Tier 2 & OPSRP (Excluding Retiree Health Care & IAP)

12/31/2012 Normal Cost Rate (% of payroll)	Tier 1/Tier 2	OPSRP
General Service	13.41%	7.68%
Police & Fire	17.19%	11.79%
Weighted Average	13.92%	8.12%

Appendix

Data Exhibits

	December 31				
	2012				2011
	Tier 1	Tier 2	OPSRP	Total	Total
Active Members					
Count	42,776	46,661	77,666	167,103	170,972
Average age	54.4	48.4	41.8	46.9	46.6
Average total service	22.2	12.2	4.9	11.4	11.0
Average prior year covered salary	$ 65,737	$ 56,008	$ 39,375	$ 50,768	$ 49,388
Dormant Members[1]					
Count	19,668	16,397	5,806	41,871	40,507
Average age	57.3	50.6	44.9	53.0	52.9
Average monthly deferred benefit	$ 2,116	$ 641	$ 283	$ 1,284	$ 1,235
Retired Members and Beneficiaries[1]					
Count	114,045	7,410	582	122,037	118,408
Average age	71.2	65.6	64.9	70.8	70.6
Average monthly benefit	$ 2,422	$ 879	$ 351	$ 2,318	$ 2,265
Total members	**176,489**	**70,468**	**84,054**	**331,011**	**329,887**

1. Dormant 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.

Appendix

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, 2012, were based on values provided by Oregon PERS reflecting the Board's earnings crediting decisions for 2012.

Methods / Policies

Actuarial Cost Method: Entry Age Normal, adopted effective December 31, 2012. December 31, 2011 results were calculated under Projected Unit Credit.

UAL Amortization: The UAL for OPSRP, and Retiree Health Care as of December 31, 2007 are amortized as a level percentage of combined valuation payroll over a closed period 20 year period for OPSRP and a closed 10 year period for Retiree Health Care. For the Tier 1/Tier 2 UAL, the amortization period will be reset at 20 years as of December 31, 2013. 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/Tier 1, 16 years for OPSRP, 10 years for Retiree Health Care) from the odd-year valuation in which they are first recognized.

Appendix

Actuarial Basis

Methods / Policies (cont'd)

Contribution rate stabilization method: Contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) are confined to a collar based on the prior contribution rate (prior to application of side accounts, pre-SLGRP liabilities, and 6 percent Independent Employer minimum). The new contribution rate will generally not increase or decrease from the prior contribution rate by more than the greater of 3 percentage points or 20 percent of the prior contribution rate. If the funded percentage excluding side accounts drops below 60% or increases above 140%, the size of the collar doubles. If the funded percentage excluding side accounts is between 60% and 70% or between 130% and 140%, the size of the rate collar is increased on a graded scale.

Expenses: OPSRP administration expenses are assumed to be equal to $5.5M and are added to the OPSRP normal cost.

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).

Assumptions

Assumptions for valuation calculations are as described in the 2012 Experience Study for Oregon PERS and presented to the PERS Board in July 2013.

Provisions

Provisions valued are as detailed in the 2011 Valuation Report, with the exception the provisions of Senate Bill 822, which was enacted by the legislature in April 2013.

Senate Bill 822 reduced benefits in two ways:

- Eliminated tax remedy benefit for members not subject to Oregon state income taxes
- Reduced the COLA benefit payable to members. Under SB 822, the 2013 COLA was 1.5%, and in subsequent years it will be based on the following graded marginal rate structure: 2.0% on first $20,000 of annual benefit; 1.5% on $20,000 to $40,000; 1.0% on $40,000 to $60,000; and 0.25% on benefits over $60,000.