DECEMBER 31, 2014 ACTUARIAL VALUATION

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

September 25, 2015

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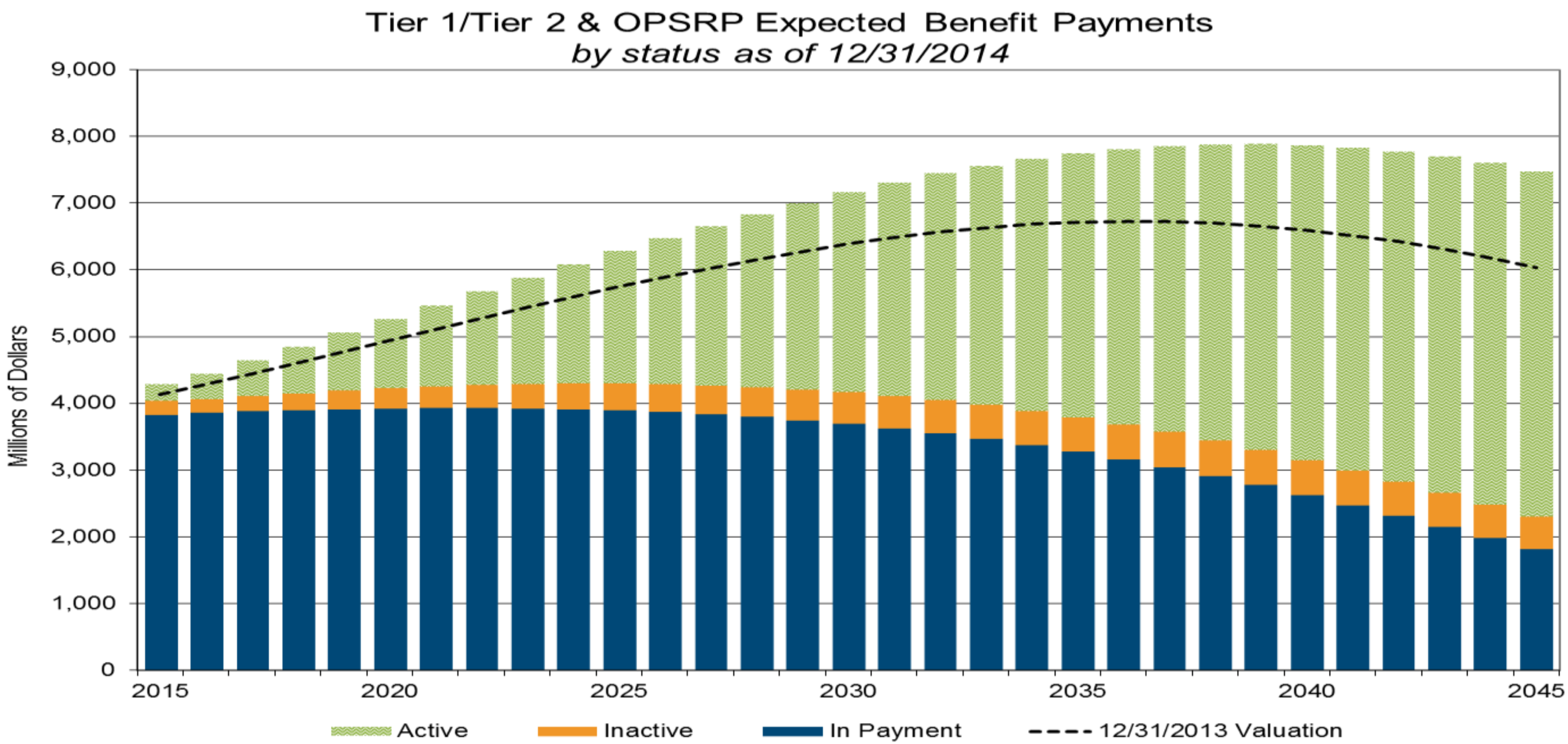
Introduction

- Today we will review preliminary valuation results for the Tier 1/Tier 2 & OPSRP retirement programs
  - We will also review preliminary valuation results for the RHIA & RHIPA retiree healthcare programs
- All work is based on:
  - Asset levels and member demographics at year-end 2014
  - Updates to methods and assumptions from the 2014 Experience Study
  - Current benefit provisions, including the effects of Senate Bills 822 & 861 and the related ruling in the *Moro* case
- Results are advisory in nature
  - Indicate where 2017 - 2019 contribution rates would be if set today
  - Assess program funded status and unfunded actuarial liability (UAL)
- Action item for today: Adopt the 2014 Experience Study

Projected Benefit Payments



The dotted line reflects the projected payments from the 12/31/2013 valuation, prior to the effects of *Moro* and updates to methods and assumptions

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System Funded Status and UAL

- System-total pension funded status is lower and unfunded actuarial liability is larger in the 12/31/2014 actuarial valuation than in the 12/31/2013 valuation

System-total pension funded status		
($ in billions)	**12/31/2013**	**12/31/2014**
Actuarial liability	$62.6	$73.5
Assets (excluding side accounts)	$54.1	$55.5
UAL (excluding side accounts)	$8.5	$18.0
Funded status (excluding side accounts)	86%	76%
Side account assets	$5.9	$5.9
UAL (including side accounts)	$2.6	$12.1
Funded status (including side accounts)	96%	84%

Sources of 2014 UAL Increase

Sources of 2014 UAL Increase	UAL Increase
Expected UAL increase/(decrease) during 2014	$0.2 B
2014 actual investment performance below assumption	$0.2 B
Moro adjustment to projected benefits	$5.1 B
Decrease in assumed return to 7.50%	$1.7 B
Update to mortality assumption	$1.8 B
All other assumption changes and actual experience	$0.5 B
Total	$9.5 B

- The *expected UAL increase/(decrease)* is the change, based on 12/31/2013 valuation results, projected to occur during 2014 if:
  - Actual 2014 experience mirrored 12/31/2013 valuation assumptions
  - No benefit or assumption changes made for the 12/31/2014 valuation
- 2014 increase reflects effects of temporary negative amortization

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Tier 1/Tier 2 Rate Pool Funded Status and UAL

- Funded status differs for the two large Tier 1/Tier 2 rate pools

($ in billions)	SLGRP	School Districts
Actuarial liability	$37.2	$27.1
Assets (excluding side accounts)	$28.5	$20.3
UAL (excluding side accounts)	$8.7	$6.8
Funded status (excluding side accounts)	77%	75%
Projected 2015 payroll	$5.4	$2.9
Ratio of UAL to payroll	161%	234%
Side account assets	$2.7	$3.1
UAL (including side accounts)	$6.0	$3.7
Funded status (including side accounts)	84%	86%

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Overview of Rate Calculation Structure

- The *uncollared 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
- The rate collar sets a biennium's *base rate*, limiting the base rate change when there is a large change in the uncollared rate
- Employers pay the *net rate*, which can differ from the base rate due to adjustments that fall into two major categories
  - Side account rate offsets for employers with side accounts
  - SLGRP charges/offsets (e.g., Transition Liability/Surplus)

Comments on Advisory 2017 – 2019 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
- Employers in a rate pool do not pay the pool average rate
  – Actual rates reflect employer-specific side account rate offsets and/or any SLGRP charges/offsets
  – SLGRP normal cost rates are specific to an employer's composition of member tier and job classification
- 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

Uncollared Pension Rates – School Districts

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

	12/31/2013 2015 - 2017 Final			12/31/2014 2017 - 2019 Advisory		
	Payroll			Payroll		
	Tier 1 / Tier 2	OPSRP	Weighted Average[1]	Tier 1 / Tier 2	OPSRP	Weighted Average[1]
Normal Cost	11.94%	7.33%	10.14%	13.72%	8.10%	11.28%
Tier 1/Tier 2 UAL	9.25%	9.25%	9.25%	17.54%	17.54%	17.54%
OPSRP UAL	0.61%	0.61%	0.61%	1.01%	1.01%	1.01%
Uncollared Rate	**21.80%**	**17.19%**	**20.00%**	**32.27%**	**26.65%**	**29.83%**
Increase				**10.47%**	**9.46%**	**9.83%**

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

[1] *Weighting based on the pool's payroll levels (Tier 1/Tier 2, OPSRP) as of the valuation date.*

Uncollared Pension Rates – SLGRP Average

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

	12/31/2013 2015 - 2017 Final			12/31/2014 2017 - 2019 Advisory		
	Payroll			Payroll		
	Tier 1 / Tier 2	OPSRP	Weighted Average[1]	Tier 1 / Tier 2	OPSRP	Weighted Average[1]
Normal Cost	13.66%	7.79%	11.13%	16.05%	8.63%	12.52%
Tier 1/Tier 2 UAL	5.71%	5.71%	5.71%	12.09%	12.09%	12.09%
OPSRP UAL	0.61%	0.61%	0.61%	1.01%	1.01%	1.01%
Uncollared Rate	**19.98%**	**14.11%**	**17.45%**	**29.15%**	**21.73%**	**25.62%**
Increase				**9.17%**	**7.62%**	**8.17%**

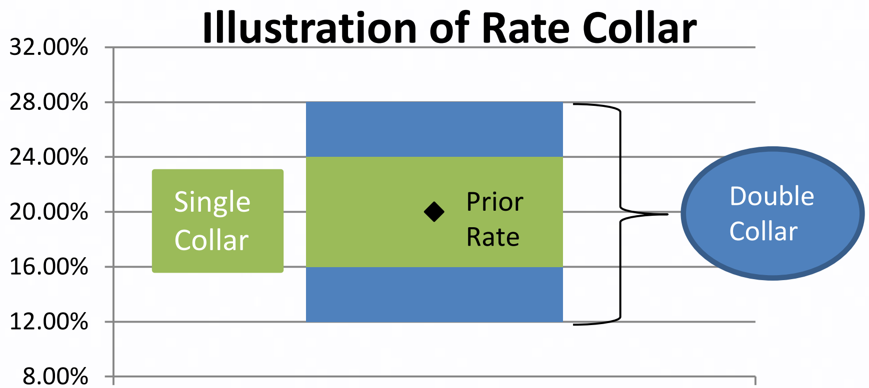
The pool-average advisory collared net rates which employers would be charged are shown on a subsequent slide

Employer-specific rates vary widely from the SLGRP average

1 *Weighting based on the pool's payroll levels (Tier 1/Tier 2, OPSRP) as of the valuation date.*

Current Rate Collar 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 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 initial collar and double collar level



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

Collared Pension Base Rates – School Districts

Excludes Retiree Health Care & IAP Contributions, Side Account Offsets

	12/31/2013 2015 - 2017 Final			12/31/2014 2017 - 2019 Advisory		
	Payroll			Payroll		
	Tier 1 / Tier 2	OPSRP	Weighted Average[1]	Tier 1 / Tier 2	OPSRP	Weighted Average[1]
Uncollared Rate	**21.80%**	**17.19%**	**20.00%**	**32.27%**	**26.65%**	**29.83%**
Collar Limitation	(0.00%)	(0.00%)	(0.00%)	(5.83%)	(5.83%)	(5.83%)
Collared Base Rate	**21.80%**	**17.19%**	**20.00%**	**26.44%**	**20.82%**	**24.00%**
Increase				**4.64%**	**3.63%**	**4.00%**

Barring benefit modifications or actual 2015 investment returns differing materially from assumption, final 2017 – 2019 base rates will be similar to advisory 2017 – 2019 base rates shown in this presentation

1 *Weighting based on the pool's payroll levels (Tier 1/Tier 2, OPSRP) as of the valuation date*

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Collared Pension Base Rates – SLGRP Average

Excludes Retiree Health Care & IAP Contributions, Side Account Offsets

	12/31/2013 2015 - 2017 Final			12/31/2014 2017 - 2019 Advisory		
	Payroll			Payroll		
	Tier 1 / Tier 2	OPSRP	Weighted Average[1]	Tier 1 / Tier 2	OPSRP	Weighted Average[1]
Uncollared Rate	**19.98%**	**14.11%**	**17.45%**	**29.15%**	**21.73%**	**25.62%**
Collar Limitation	(1.14%)	(1.14%)	(1.14%)	(6.26%)	(6.26%)	(6.26%)
Collared Base Rate	**18.84%**	**12.97%**	**16.31%**	**22.89%**	**15.47%**	**19.36%**
Increase				**4.05%**	**2.50%**	**3.05%**

Barring benefit modifications or actual 2015 investment returns differing materially from assumption, final 2017 – 2019 base rates will be similar to advisory 2017 – 2019 base rates shown in this presentation

Employer-specific base rates can vary widely from SLGRP average rates

1 *Weighting based on the pool's payroll levels (Tier 1/Tier 2, OPSRP) as of the valuation date*

Collared Pension Net Rates – School Districts

Excludes Retiree Health Care & IAP Contributions

	12/31/2013[1] 2015 - 2017 Final			12/31/2014[1] 2017 - 2019 Advisory		
	Payroll			Payroll		
	Tier 1 / Tier 2	OPSRP	Weighted Average[2]	Tier 1 / Tier 2	OPSRP	Weighted Average[2]
Collared Base Rate	**21.80%**	**17.19%**	**20.00%**	**26.44%**	**20.82%**	**24.00%**
Side Account (Offset)	(10.62%)	(10.62%)	(10.62%)	(10.61%)	(10.61%)	(10.61%)
Collared Net Rate	**11.18%**	**6.57%**	**9.38%**	**15.83%**	**10.21%**	**13.39%**
Increase				**4.65%**	**3.64%**	**4.01%**

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

Changes in side account offsets are not collared; actual 2015 returns below assumption would lower the offset, increasing the net rate

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 the pool's payroll levels (Tier 1/Tier 2, OPSRP) as of the valuation date*

Collared Pension Net Rates – SLGRP Average

Excludes Retiree Health Care & IAP Contributions

	12/31/2013[1] 2015 - 2017 Final			12/31/2014[1] 2017 - 2019 Advisory		
	Payroll			Payroll		
	Tier 1 / Tier 2	OPSRP	Weighted Average[2]	Tier 1 / Tier 2	OPSRP	Weighted Average[2]
Collared Base Rate	**18.84%**	**12.97%**	**16.31%**	**22.89%**	**15.47%**	**19.36%**
Side Account (Offset)	(4.99%)	(4.99%)	(4.99%)	(4.94%)	(4.94%)	(4.94%)
SLGRP Charge/(Offset)	(0.80%)	(0.80%)	(0.80%)	(0.80%)	(0.80%)	(0.80%)
Collared Net Rate	**13.05%**	**7.18%**	**10.52%**	**17.15%**	**9.73%**	**13.62%**
Increase				**4.10%**	**2.55%**	**3.10%**

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

Changes in side account offsets are not collared; actual 2015 returns below assumption would lower the offset, increasing the net rate

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 the pool's payroll levels (Tier 1/Tier 2, OPSRP) as of the valuation date*

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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	$5,580	$575	$5,980	$800	$225
School Districts	$5,950	$560	$6,370	$850	$290
All Others	$7,350	$870	$7,870	$1,155	$285
Total	**$18,880**	**$2,005**	**$20,220**	**$2,805**	**$800**

* Assumes payroll grows at 3.50% annually based on 12/31/2014 active member census, reflecting proportional payroll composition (Tier 1/Tier 2 vs. OPSRP) as of 12/31/2014

- Projected 2017-19 contributions are determined by applying collared net advisory rates calculated in the 12/31/2014 valuation
  - Projections do not reflect the effects of actual 2015 investment returns

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Looking Toward the Rate-Setting Valuation

- This valuation is based on 12/31/2014 assets and demographic information and calculates:
  - Advisory 2017-19 uncollared contribution rates
  - Advisory 2017-19 collared base contribution rates
  - Advisory 2017-19 side account rate offsets
  - Advisory 2017-19 collared net contribution rates
- Actual 2017-19 contribution rates will be determined based on 12/31/2015 asset and demographic information

If actual 2015 investment returns are below the 7.5% assumed return, how will each of the four measures noted above change between the 12/31/2014 advisory valuation and the 12/31/2015 rate-setting valuation?

Effects of 2015 Returns – Uncollared Rates

- Any actual 2015 investment underperformance compared to the assumed 7.5% return would increase final uncollared 2017-19 rates determined in the 12/31/2015 rate-setting valuation
  - Actual underperformance has a "first dollar" effect on uncollared rates
- To illustrate, if actual 2015 return was +2.5%, the uncollared system-average rate would be estimated to increase by 2.1% of payroll for the 5% investment underperformance
- The relationship between investment underperformance and uncollared rate changes is approximately linear
  - In other words, 2.5% underperformance is estimated to impact the uncollared rate by approximately 1.05% of payroll, which is half of the effect of 5% underperformance

Effects of 2015 Returns – Collared Base Rates

- Any 2015 investment underperformance would affect a rate pool's collared 2017-19 base rates only if it affects the size of the rate collar
  - The collar size increases if a rate pool's funded status falls below 70%
  - For rate pools currently above 70%, actual underperformance leading to funded status below 70% will affect the collared base rate
- The actual return before the collar would widen varies by pool and depends on each pool's funded status
  - Current funded status: School districts (75%); SLGRP (77%)
- If returns are below the necessary threshold, the collar would progressively widen (and the collared base rate would increase) linearly until funded status was 60% or less

Effects of 2015 Returns – Side Account Offsets

- Like uncollared rates, any actual 2015 investment underperformance will decrease final 2017-19 side account rate offsets determined in the 12/31/2015 rate-setting valuation
  - Actual underperformance has a "first dollar" effect on side account offsets
- Most current side account rate offsets are calculated to fully amortize at 12/31/2027 if future experience follows assumptions
  - This remaining amortization period, which is shorter than the 20-year amortization period used for amortizing new Tier 1/Tier 2 UAL, will lead to large changes in 2017-19 side account rate offsets if investment losses are material
- The relationship between investment underperformance and changes in side account rate offsets is approximately linear

Effects of 2015 Returns – Collared Net Rates

- How any actual 2015 investment underperformance affects an employer's final 2017-19 net rates determined in the 12/31/2015 rate-setting valuation depends on two factors
  - Which Tier 1/Tier 2 rate pool the employer participates in
  - Whether or not the employer has a side account
- The effect on net rates for employers without side accounts will be very similar or identical to the effect, if any, on collared base rates
- The effect on net rates for employers with side accounts will be the sum of two separate effects
  - Effect, if any, on collared base rates
  - Effect due to change in side account rate offset

12/31/2014 Retiree Health Care Valuation

- Two separate 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
- RHIA and RHIPA benefits historically have been less well funded than Tier 1/Tier 2 & OPSRP benefits
  - To help address that, in July 2009 the Board shortened the shortfall amortization period to ten years to improve funded status over less time
  - Rates reflecting the shorter amortization were first effective July 2011

12/31/2014 Retiree Health Care Valuation

- While funded status is low, RHIA and RHIPA liabilities combined are less than 1% of the pension liability
- In recent experience studies, we recommended restructuring the RHIPA participation assumption for future state government retirements
  - Assume higher participation rates for retirees eligible for the largest employer-paid subsidies
  - Rates reflecting new structure first went into effect in July 2015
- RHIPA warrants continued monitoring, as funded status is very low and subsidy payments are sensitive to actual participation levels

12/31/2014 Retiree Health Care Valuation

Unfunded Accrued Liability (UAL) and Advisory Contribution Rates

	RHIA		RHIPA*	
(amounts in millions)	12/31/2013	12/31/2014	12/31/2013	12/31/2014
Accrued Liability	$474	$468	$61	$71
Assets	$354	$396	$ 5	$ 7
UAL	$120	$72	$56	$64
Funded Status	**75%**	**85%**	**9%**	**10%**
Normal Cost Rate	**0.08%**	**0.07%**	**0.09%**	**0.11%**
UAL Rate	**0.45%**	**0.43%**	**0.35%**	**0.39%**
Total Rate	**0.53%**	**0.50%**	**0.44%**	**0.50%**

**State Agencies, OUS, and State Judiciary are the only employers who pay RHIPA rates*

RHIPA assets at year-end 2014 were only about 150% of 2014 RHIPA benefit payments

Contribution Rate & Funded Status Projections

- In November, we will return with contribution rate and funded status projections based on this valuation
  - They 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
  - Deterministic
    - Straight lines reflecting steady future actual investment returns
  - Stochastic
    - 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 / Next Steps

- Action item:
  - Adoption of the 2014 Experience Study
- Between now and the November meeting, we will:
  - Assist PERS in preparing financial reporting schedules
  - Develop updated actuarial equivalence factors for 2016
  - Issue system-wide and employer-specific valuation reports
- At the November meeting, we will:
  - Provide listings of employer-specific advisory 2017-2019 contribution rates
  - 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, 2014, for the Plan Year ending December 31, 2014. 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, 2014 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. 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 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 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 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. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Appendix

Data Exhibits

	2014				2013
	Tier 1	Tier 2	OPSRP	Total	Total
Active Members					
Count	34,174	42,180	88,505	164,859	162,185
Average Age	55.2	49.6	42	46.9	46.9
Average Service	23.5	14.1	5.5	11.4	11.5
Average prior year Covered Salary	$ 70,668	$ 61,473	$ 44,604	$ 54,323	$ 52,688
Inactive Members[1]					
Count	16,521	15,924	10,118	42,563	41,213
Average Age	57.7	51.8	46.4	52.8	52.5
Average Monthly Benefit	$ 2,052	$ 707	$ 326	$ 1,138	$ 1,135
Retired Members and Beneficiaries[1]					
Count	121,545	8,428	1,532	131,505	128,117
Average Age	71.5	66.3	65.8	71.1	70.8
Average Monthly Benefit	$ 2,516	$ 791	$ 381	$ 2,381	$ 2,365
Total Members	**172,240**	**66,532**	**100,155**	**338,927**	**331,515**

[1] *Inactive and Retiree counts are shown by lives within each rate pool. In other words, a member is counted once per purposes of this exhibit, regardless of their service history for different rate pools.*

Valuation Process and Timeline

- Actuarial valuations are conducted annually
  - Alternate between “rate setting” and “advisory” valuations
  - The 12/31/2014 valuation is advisory
- The Board adopts rate setting valuation results, and rates go into effect 18 months subsequent to the valuation date

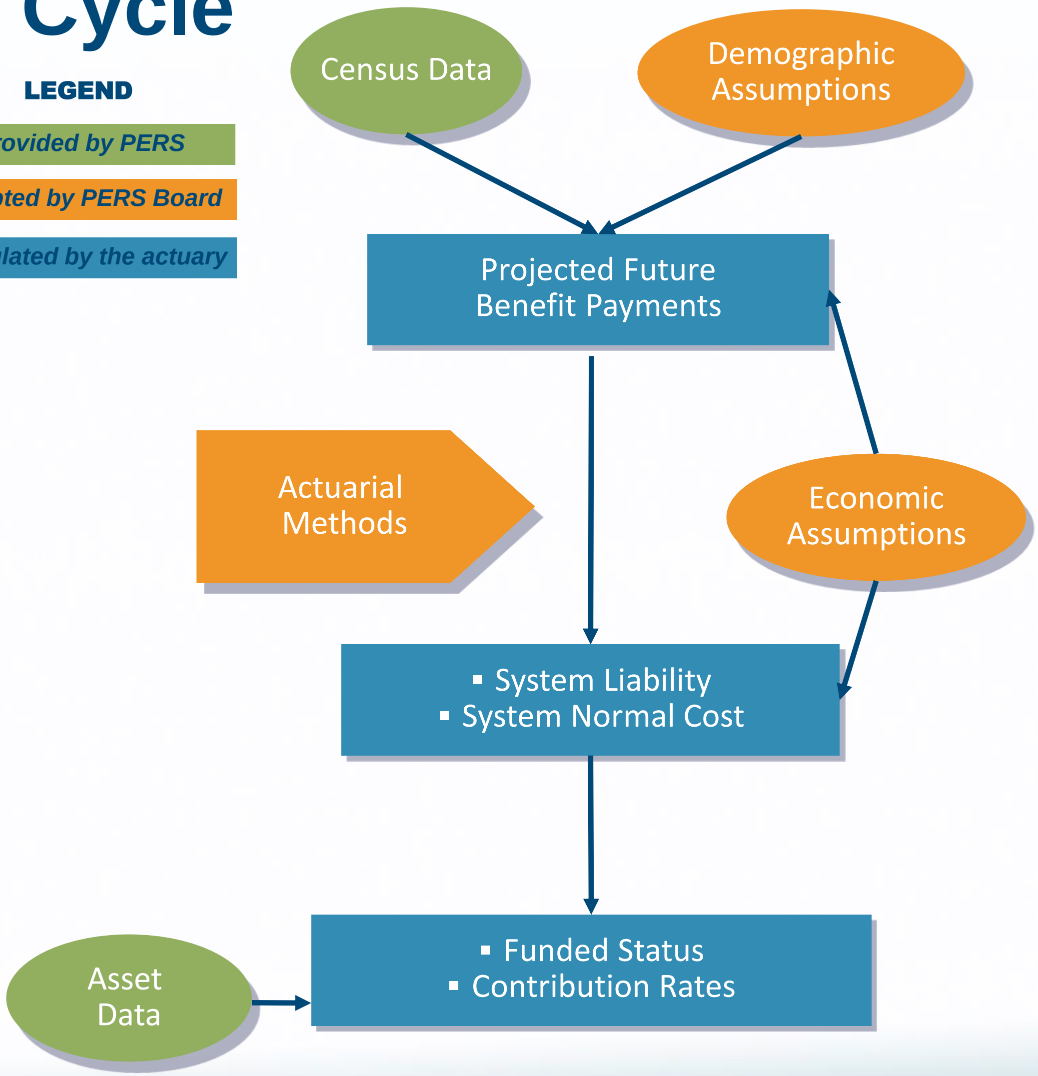
Valuation Date	Employer Contribution Rates
12/31/2013 →	July 2015 – June 2017
12/31/2015 →	July 2017 – June 2019

Two-Year Rate-Setting Cycle

- July 2015: Assumptions & methods adopted by Board in consultation with the actuary
- September 2015: System-wide 12/31/14 “advisory” actuarial valuation results
- November 2015: Advisory 2017-2019 employer-specific contribution rates
- July 2016: System-wide 12/31/15 “rate-setting” actuarial valuation results
- September 2016: Disclosure & adoption of employer-specific 2017-2019 contribution rates

LEGEND

- *Provided by PERS*
- *Adopted by PERS Board*
- *Calculated by the actuary*



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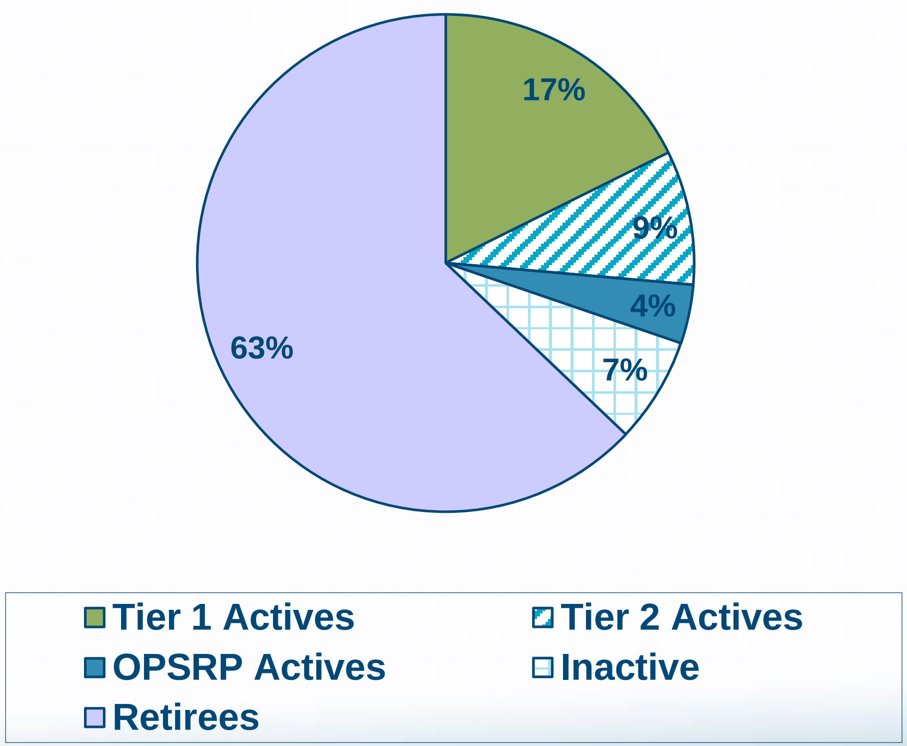
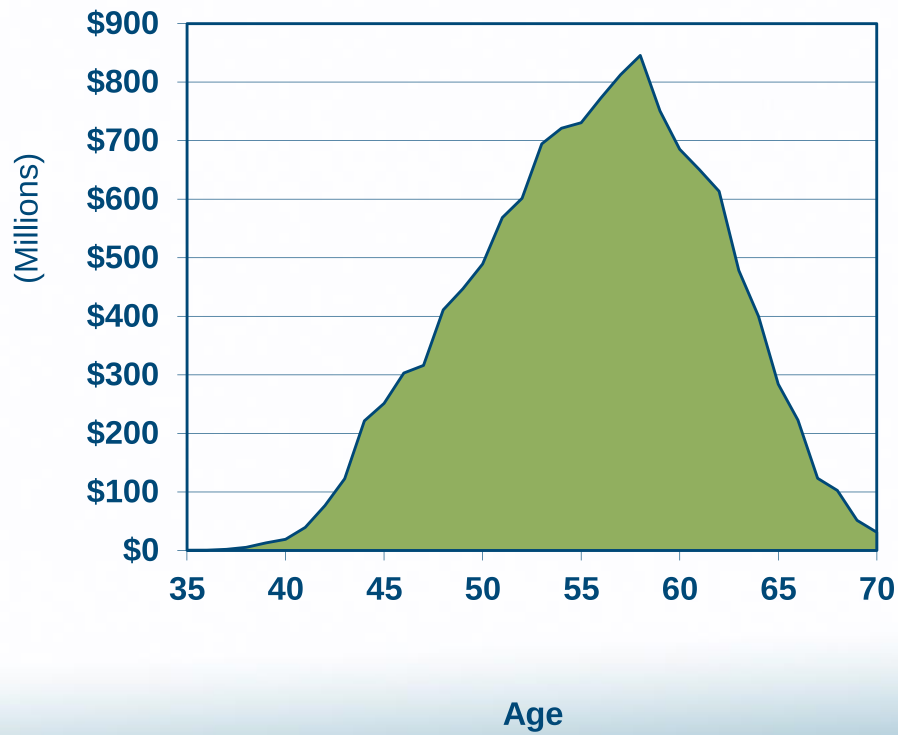
Division of Accrued Liability by Category

12/31/2014 Tier 1/Tier 2 and OPSRP Actuarial Accrued Liability

Actuarial Accrued Liability by Member Category



Age Distribution of Tier 1 Active Liability



Uncollared Pension Rates – System-Wide

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

	12/31/2013 2015 - 2017 Final			12/31/2014 2017 - 2019 Advisory		
	Payroll			Payroll		
	Tier 1 / Tier 2	OPSRP	Weighted Average[1]	Tier 1 / Tier 2	OPSRP	Weighted Average[1]
Normal Cost	13.18%	7.79%	10.94%	15.41%	8.63%	12.30%
Tier 1/Tier 2 UAL	6.63%	6.63%	6.63%	13.68%	13.68%	13.68%
OPSRP UAL	0.61%	0.61%	0.61%	1.01%	1.01%	1.01%
Uncollared Rate	**20.42%**	**15.03%**	**18.18%**	**30.10%**	**23.32%**	**26.99%**
Increase				**9.68%**	**8.29%**	**8.81%**

The advisory collared net rates which employers would be charged are shown later in this presentation

[1] *Weighting based on the pool's payroll levels (Tier 1/Tier 2, OPSRP) as of the valuation date.*

Collared Pension Base Rates – System-Wide

Excludes Retiree Health Care & IAP Contributions, Side Account Offsets

	12/31/2013 2015 - 2017 Final			12/31/2014 2017 - 2019 Advisory		
	Payroll			Payroll		
	Tier 1 / Tier 2	OPSRP	Weighted Average[1]	Tier 1 / Tier 2	OPSRP	Weighted Average[1]
Uncollared Rate	**20.42%**	**15.03%**	**18.18%**	**30.10%**	**23.32%**	**26.99%**
Collar Limitation	(0.72%)	(0.72%)	(0.72%)	(6.25%)	(6.25%)	(6.25%)
Collared Base Rate	**19.70%**	**14.31%**	**17.46%**	**23.85%**	**17.07%**	**20.74%**
Increase				**4.15%**	**2.76%**	**3.28%**

The collar limits increases that would be effective July 2017

Barring benefit modifications or 2015 investment returns significantly above assumption, final 2017 – 2019 base rates will be similar to advisory 2017 – 2019 base rates shown in this presentation

[1] *Weighting based on the pool's payroll levels (Tier 1/Tier 2, OPSRP) as of the valuation date.*

Collared Pension Net Rates – System-Wide

Excludes Retiree Health Care & IAP Contributions

	12/31/2013[1] 2015 - 2017 Final			12/31/2014[1] 2017 - 2019 Advisory		
	Payroll			Payroll		
	Tier 1 / Tier 2	OPSRP	Weighted Average[2]	Tier 1 / Tier 2	OPSRP	Weighted Average[2]
Collared Base Rate	**19.70%**	**14.31%**	**17.46%**	**23.85%**	**17.07%**	**20.74%**
Side Account (Offset)	(6.38%)	(6.38%)	(6.38%)	(6.37%)	(6.37%)	(6.37%)
SLGRP Charge/(Offset)	(0.47%)	(0.47%)	(0.47%)	(0.47%)	(0.47%)	(0.47%)
Collared Net Rate	**12.85%**	**7.46%**	**10.61%**	**17.01%**	**10.23%**	**13.90%**
Increase				**4.16%**	**2.77%**	**3.29%**

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

Changes in side account offsets are not collared

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 the pool's payroll levels (Tier 1/Tier 2, OPSRP) as of the valuation date*

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, 2014, were based on values provided by Oregon PERS reflecting the Board's earnings crediting decisions for 2014.

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 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 was 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: Tier 1/Tier 2 administration expenses are assumed to be equal to $33.0M, while OPSRP administration expenses are assumed to be equal to $5.5M. The assumed expenses 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).

Assumptions

Assumptions for valuation calculations are as described in the 2014 Experience Study for Oregon PERS and presented to the PERS Board in July 2015.

Provisions

Provisions valued are as detailed in the 2013 Valuation Report, except as modified by the Supreme Court decision in *Moro v. State of Oregon*.

Appendix

Blended COLA

Moro Decision

The Oregon Supreme Court decision in *Moro v. State of Oregon* stated that the reduced COLA amounts provided by Senate Bills 822 and 861 (both passed in 2013) only apply to benefits earned after the effective date of the legislation. According to the Court, PERS members who earned benefits before and after the effective date “will be entitled to receive during retirement a blended COLA rate that reflects the different COLA provisions applicable to benefits earned at different times.”

The Supreme Court did not articulate a specific a methodology for determining a member’s blended COLA. For purposes of the results in this presentation, the blending was based on the creditable service earned before and after the effective date.

The example below illustrates this blended COLA approach for a member with 30 years of service at retirement, 20 of which were earned prior to the effective date of the SB 861 COLA.

Annual Benefit COLA Applies to:	COLA prior to SB 822 & 861	SB 861 COLA	Blended COLA
<$60,000	2.00%	1.25%	(20/30) x 2.00% +(10/30) x 1.25% = 1.75%
>$60,000	2.00%	0.15%	(20/30) x 2.00% +(10/30) x 0.15% = 1.38%