Overview of Actuarial Methods & Assumptions Affecting System Financing

Senate Committee on Workforce

Steven Patrick Rodeman
PERS Executive Director

February 15, 2017

Quick Reminder – The 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
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

Actuarial Reports – Purpose and Timing

- ORS 238.605 directs the PERS Board to engage a competent actuary to issue an "actuarial report" at least once every two years
  - The report evaluates the current and prospective assets and liabilities
  - Addresses the mortality, disability, service, and other experience of the members
  - Makes recommendations to facilitate proper administration
- The PERS Board has the actuary prepare a report every year
  - For even-numbered years (e.g., 2016), the report is the "Experience Study" which focuses on system dynamics and how well they match the methods and assumptions that the actuary has used to date
  - For odd-numbered years (e.g., 2017), the report uses the prior valuation's methods and assumptions to derive contribution rates for each PERS employer, which the PERS Board adopts to take effect July 1 of the next odd numbered year (e.g.,2019)

Actuarial Methods & Assumptions

- The Experience Study (even-year report) drives consideration of the economic and demographic profile of employers and members in the system, and updates projections accordingly when necessary to more accurately assess the system
  - Economic assumptions include expected inflation and real investment returns over the next 20 years (which results in the assumed rate)
  - Demographic assumptions include the percentage of eligible members who choose to retire at a given age; life expectancy; mix of Tier One, Tier Two, and OPSRP, etc.
- The System Valuation Report (odd-year report) reflects any method and assumption changes from the prior report in deriving the system's liabilities
  - For example, if the Experience Study concludes that members are living longer than we had previously assumed, the Valuation Report will increase the liabilities accordingly, as longer member lives means the benefits paid will increase
- The System Valuation Report is used to set employer contribution rates for the coming biennium; those rates reflect the changes in assets and liabilities that were recognized in the Experience Study as well as the calendar year of the valuation report (e.g., investment returns)

Sources of 2014-2015 UAL Increase ($ billions)

2014	UAL Increase
Expected UAL increase during 2014	$0.2
2014 actual investment returns below assumption	$0.2
Moro adjustment to projected benefits	$5.1
Decrease in assumed rate of return to 7.50%	$1.7
Update to mortality assumptions	$1.8
All other assumption changes and actual experience	$0.5
Total	**$9.5 billion**

2015	UAL Increase
Expected UAL increase during 2015	$0.9
2015 actual investment returns below assumption	$2.6
Actual demographic experience different than assumed	$0.5
Total	**$3.8 billion**

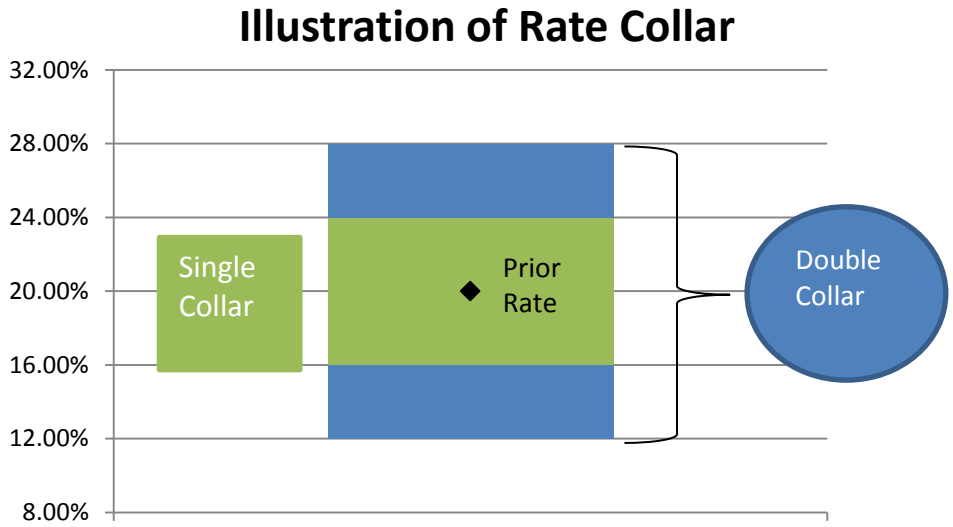
Milliman presentations; September 25, 2014 Board meeting and September 30, 2015 Board meeting

Deriving Employer Contribution Rates

- Every rate-setting report has the potential to generate an additional "slice" of Unfunded Actuarial Liability ("UAL"); under current rate setting policies, each "slice" of UAL is scheduled to be repaid under the following parameters:
  - As a level percentage of PERS-covered payroll
  - Over a twenty-year closed amortization period
  - Using the system's current assumed rate
- The resulting UAL Rate is then included in the employer's contribution rate to repay the unfunded actuarial liability under these terms
- The UAL increase that was "recognized" in the 2014/ 2015 System Valuation drove the Tier One/Two UAL portion of employer rates for the 2017-19 biennium up by almost 10% of payroll (from 6.63% to 16.02%)
  - Because of the PERS Board's rate collaring policy, a portion of that rate increase was "collared off" to be applied over the next two biennia
  - Whether all or some of that "collared off" rate is ever assessed to employers will also depend on system funded status changes over the intervening years; benefit increases will drive the UAL higher while unanticipated asset increases (e.g., market returns exceeding the assumed rate) would drive the UAL lower

Current Design of Rate Collar

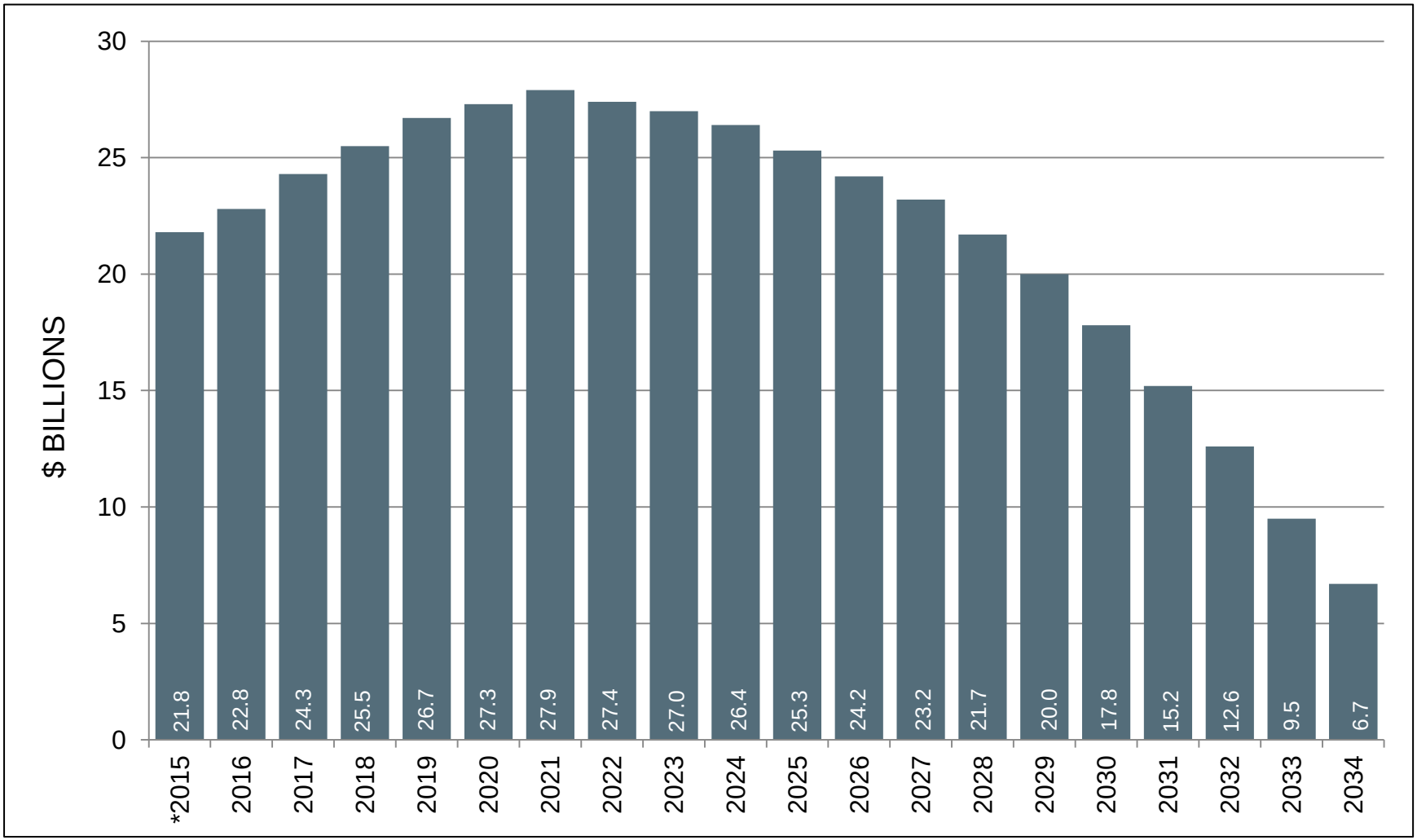
- The maximum change typically permitted by the collar is 20% of the rate currently in effect (3% of payroll minimum collar width)
- If funded status is 60% or lower, the width of the collar doubles to 40% of rate currently in effect (6% of payroll minimum collar width)
- If the funded status is between 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

Current and Projected UAL (Excluding Side Accounts)



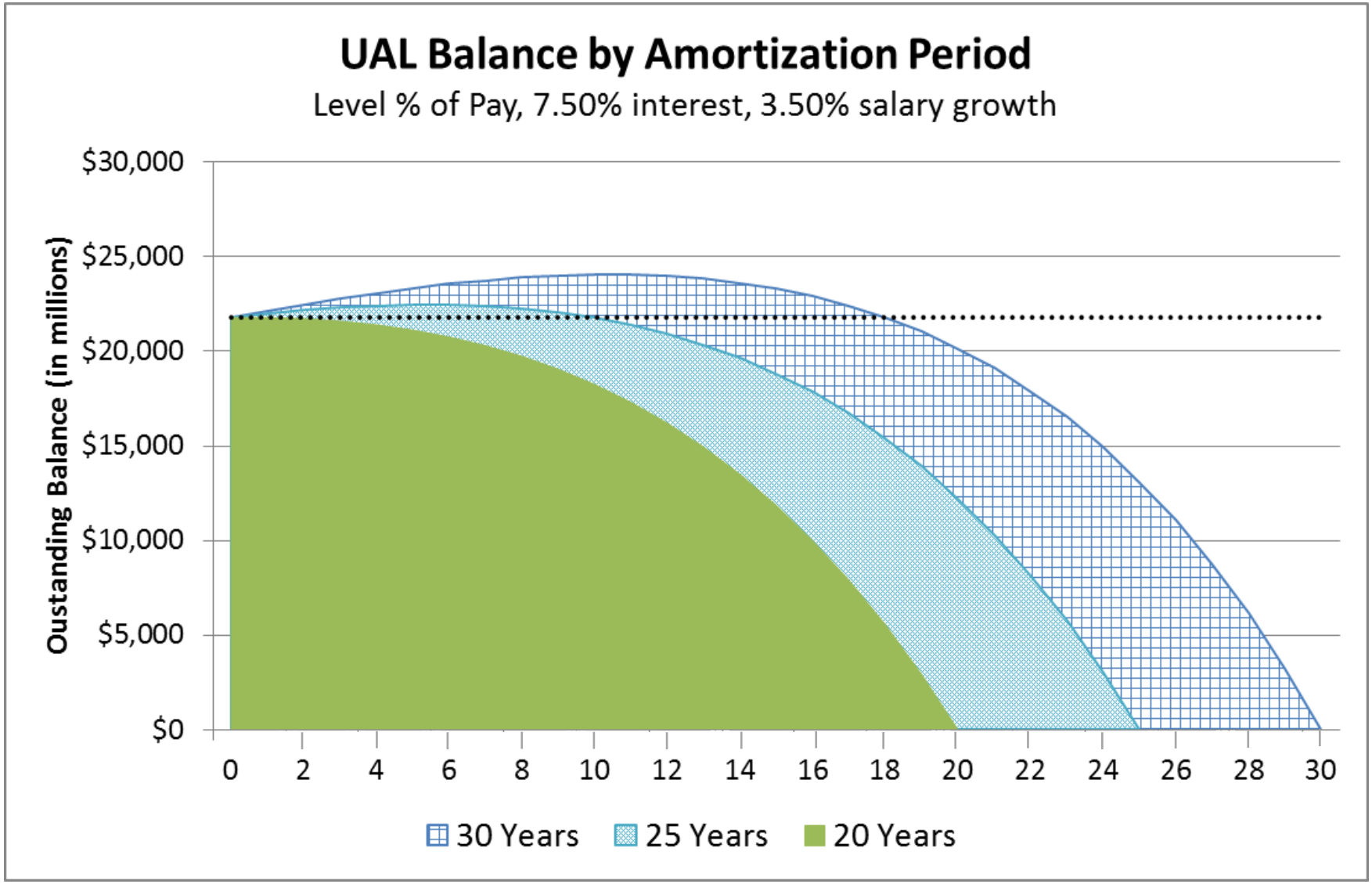
* 2015 IS ACTUAL; OTHER YEARS ARE PROJECTED BASED ON NOVEMBER 2016 MILLIMAN PRESENTATION

PERS Oregon Public Employees Retirement System

Changing the Amortization Period

- Remember, every rate-setting report that recognizes an additional UAL "slice" then derives employer rates to be repay the UAL under the following parameters:
  - As a level percentage of PERS-covered payroll
  - Over a twenty-year closed amortization period
  - Using the system's current assumed rate
- PERS' actuary (Milliman) recently refreshed their letter explaining the effect of increasing the UAL Amortization Period (a copy of that letter is included as an exhibit to this presentation); key points they raise are:
  - Extending the amortization period results in significant "negative amortization" where the UAL balance actually grows solely as a function of the financing structure (e.g., a 30 year amortization schedule does not reduce the original UAL for 18 years), as illustrated on the following slide

UAL Balance Amortization Patterns

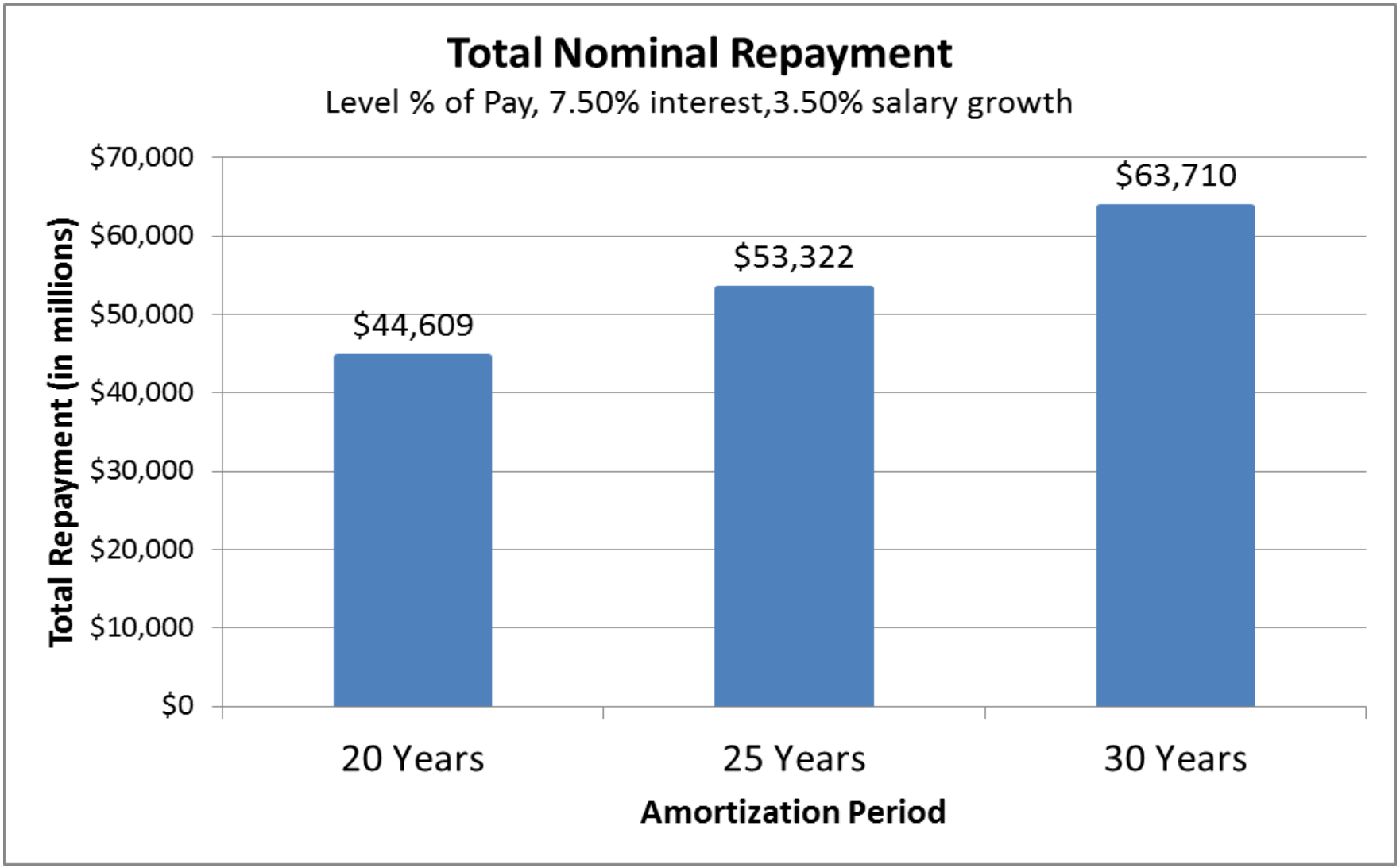


Milliman presentation; September 30, 2016 – joint meeting of OIC/PERS Board

Rate Effect of Longer Amortization Periods

- Extending the amortization period beyond the current 20 years would reduce the employer rate used to recover the UAL
  - Just as increasing a home mortgage from 15 to 30 years lowers the monthly payment
  - According to Milliman, the employer rate for amortizing a $22 billion UAL is 16.68% using all the current assumptions; if that amortization period is extended to 30 years, that employer rate drops to 13.05%, a 3.63% reduction in employer rates
- The total amortization costs, however, climb significantly because the UAL payments extend for another ten years
  - According to Milliman, the total repayment for 20 years of $45.018 billion balloons to $64.295 billion on a 30 year cycle, or 43% more in total costs (see next slide)
  - These examples are on uncollared employer rates; because PERS rates are currently collared, an extended amortization period would not actually lower employer rates until the collar is fully implemented (maybe the 2023-25 biennium at the soonest)
  - During the resulting period of extended negative amortization, any years where investment returns do not meet assumption or other factors that increase system liability will compound the already deeper hole of UAL that the extended amortization will have created

Total UAL Amortization Payments



Milliman presentation; September 30, 2016 – joint meeting of OIC/PERS Board

PERS Oregon Public Employees Retirement System

For More Information

Website
http://www.oregon.gov/pers

Resources
- **"PERS by the Numbers"** – Approachable summary of information about PERS benefits, demographics, and system funding
- **Board agendas and materials** – Including actuarial presentations from Milliman, information about administrative rules, and other information

Executive Director
Steven Patrick Rodeman
steven.p.rodeman@state.or.us

Senior Policy Director
Marjorie Taylor
marjorie.taylor@state.or.us
503-431-8902