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Oregon Public Employees' Retirement System
Experience Study for December 31, 2008 Actuarial Valuation
Actuarial Methods and Economic Assumptions

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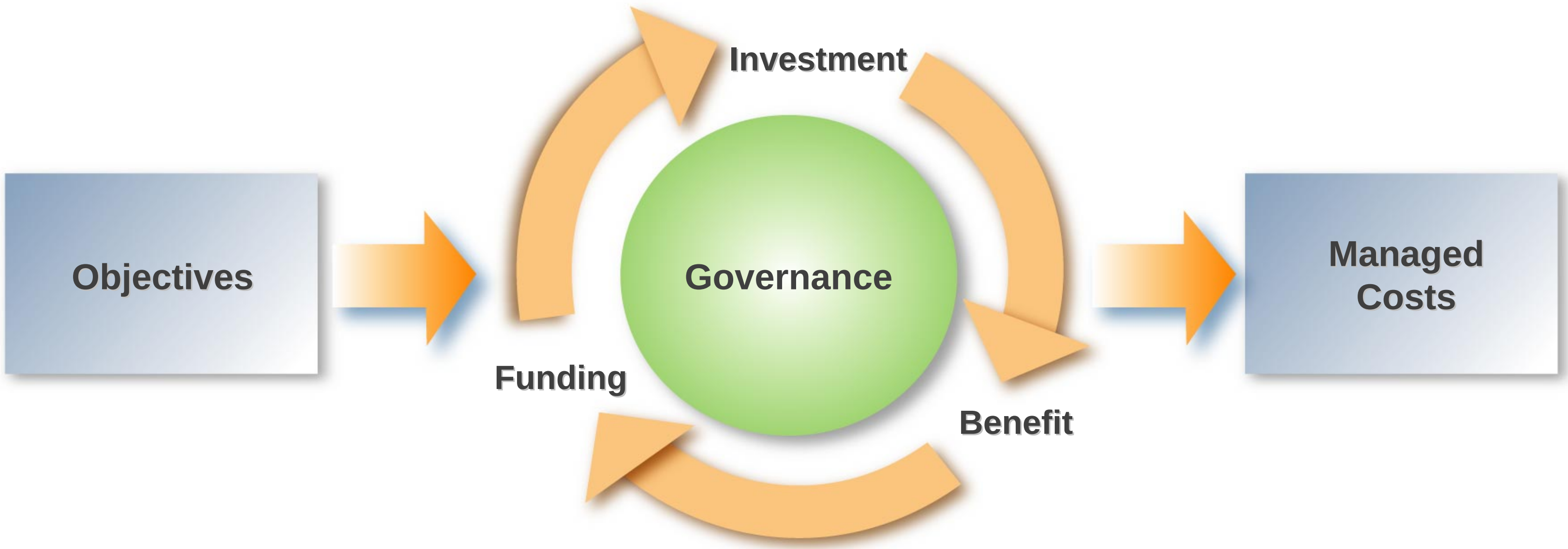
Contents

Introduction
Retirement Plan Financial Management Framework

Total Contributions = Benefits Paid - Investment Earnings



Actuarial methods/assumptions primarily affect the timing of contributions

Introduction
Objectives for Actuarial Methods and Assumptions

- Transparent
- Predictable and stable rates
- Protect funded status
- Equitable across generations
- Actuarially sound
- GASB compliant

Introduction
Summary of Recommendations

- Actuarial Methods and Allocation Procedures
  – Eliminate Projected Unit Credit (PUC) amortization
  – Shorten amortization period for retiree healthcare plans (RHIA and RHIPA)
  – Update allocation of liability for service segments
  – Clarify treatment of Legislative changes with the contribution rate collar
  – Clarify amortization of new side accounts and new transition liabilities/surpluses
  – Confirm exclusion of Rate Guarantee (Deficit) Reserve

- Economic Assumptions
  – OPSRP administrative expense assumption
  – Health care trend assumption

Actuarial Methods and Allocation Procedures

Actuarial Methods
Summary of Recommendations

	Current Methods	Recommended Changes
Actuarial Cost Method	Projected Unit Credit	None
Amortization Method	Level Percent of Combined Payroll	None
Amortization Period	▪ T1/T2 PUC method change – 3-year rolling ▪ Regular UAL – Closed amortization from first valuation used to set contribution rates in which experience is recognized –T1/T2 – 20 years –OPSRP – 16 years –RHIA/RHIPA – 20 years ▪ New side accounts – Period ending 12/31/2027 ▪ New transition liabilities – Period ending 12/31/2027 + PUC method change over a rolling 3 years	▪ Eliminate PUC method change amortization for T1/T2 and existing and future transition liabilities ▪ Reduce RHIA/RHIPA amortization period to 10 years
Asset Valuation Method	Market Value	None
Excluded Reserves	Contingency, Capital Preservation, and Rate Guarantee	None
T1/T2 and OPSRP Rate Collar	Greater of 20% of current rate or 3 percentage points. Rate collar doubles if funded percentage falls below 80% or increases above 120%	None

Actuarial Methods
PUC Method Change Amortization

- When the Projected Unit Credit (PUC) method was adopted in 2004, the increase in the UAL was amortized over a rolling three-year period.
- The first rates reflecting this amortization were effective July 1, 2007. Rates effective July 1, 2009 include an average rate of about 6% of payroll for the PUC method change amortization.
- By the time the current contribution rates are changed on July 1, 2011, the increase in the UAL due to the change to PUC will have been paid off.
- Consequently, we recommend eliminating the PUC change amortization from the valuation now, so it won't be included in contribution rates that become effective July 1, 2011.

Actuarial Methods
RHIA/RHIPA Amortization Period

- RHIA and RHIPA are only provided to Tier 1 and Tier 2 members. OPSRP members are not eligible.
- Because the benefits are only available to a closed group of employees, the Annual Required Contribution (ARC) under GASB can only be determined using a level dollar amortization or a level percent of projected pay for the closed group.
- Since funding for RHIA and RHIPA commenced at a later date, the funded status is significantly lower than for the pension benefits (50% and 34% as of 12/31/2007).
- Consequently, we recommend amortizing the RHIA and RHIPA UAL over 10 years (the approximate average remaining service period for Tier 1 and Tier 2 members) as a level percentage of Tier 1, Tier 2, and OPSRP payroll.
- For GASB purposes, the reported amortization period will reflect the current amortization payment as a level dollar amortization and will be less than the 30 year maximum permitted by GASB.

Allocation Procedures
Allocation of Liability for Service Segments

- When a member works for more than one employer over their career, the liability for that member is allocated to the employers for which the member worked.
- Current method
  - Blend Money Match and Full Formula methodologies based on percentage of liability attributable to each formula as of the next rate setting valuation.
    - Results in allocation of liability among employers consistent with the formulas prevailing at the time of valuation
- We recommend no changes to this allocation approach, but recommend updating the percentage attributable to Money Match based on our most recent projections
- This change has no impact on total system liabilities, but will affect the allocation of liabilities between employers

Percentage of Liability Projected to be Attributable to Money Match		
	General Service	Police & Fire
Current Assumption	65%	25%
Projected to 12/31/2009	51%	14%
Recommendation	**50%**	**15%**

Actuarial Methods
Other Issues

- Clarify adjustments to the contribution rate collar
  - The effect of any non-de minimis plan design changes adopted by the Legislature will be applied to the base contribution rate before determining the collar.
  - Example:
    - Base contribution rate **before** Legislation: 12%
    - Funded status **before** Legislation: 100%
    - Collar **before** Legislation: 9% to 15%
    - Increase in contribution rate due to Legislation: 1%
    - Base contribution rate **after** Legislation: 13%
    - Funded status **after** Legislation: 95%
    - Collar **after** Legislation: 10% to 16%
  - The purpose of this clarification is to avoid an incentive to adopt benefit improvements when the collar would eliminate or restrict the immediate impact of the benefit improvements on contribution rates.

Actuarial Methods
Other Issues

- Amortization of new side accounts and new transition liabilities
  - All side accounts and transition liabilities have been amortized over the period ending December 31, 2027.
  - This amortization has exactly matched the amortization of the UAL.
  - The UAL will now be amortized in multiple pieces over a period of 20 years from the time the gain or loss is first recognized.
  - For simplicity, we recommend continuing to amortize any side account or transition liability over the period ending December 31, 2027.
  - This amortization will no longer exactly match the amortization of the UAL.
  - As a result, employers joining the SLGRP effective January 1, 2010 will pay a slightly different UAL/Transition rate than they would have paid as an independent employer. (Note: they already pay a slightly different normal cost rate.)

Actual Methods

Other Issues

- Exclusion of negative Rate Guarantee Reserve (Deficit Reserve)
  - The value of assets used to determine employer contribution rates has historically excluded any assets in the Rate Guarantee Reserve.
  - Now that the Rate Guarantee Reserve is in a deficit, we want to confirm that the negative asset is still excluded. As a result, valuation assets will exceed the fair value of assets.
  - If we did not exclude it, employer contribution rates would be higher (ignoring the collar). But, these additional contributions would increase Employer Reserves. These additional contributions would not restore the Rate Guarantee Reserve.
  - If earnings do not restore the Rate Guarantee Reserve, another mechanism will need to be employed.
    - We understand that if a deficit persists for 5 years, employers may be required to restore the Rate Guarantee Reserve.
    - However, it is not clear how a restoration payment would be made.
    - If the restoration payment is made via a transfer from other reserves already included in the actuarial value of assets, we may need to reconsider this methodology.

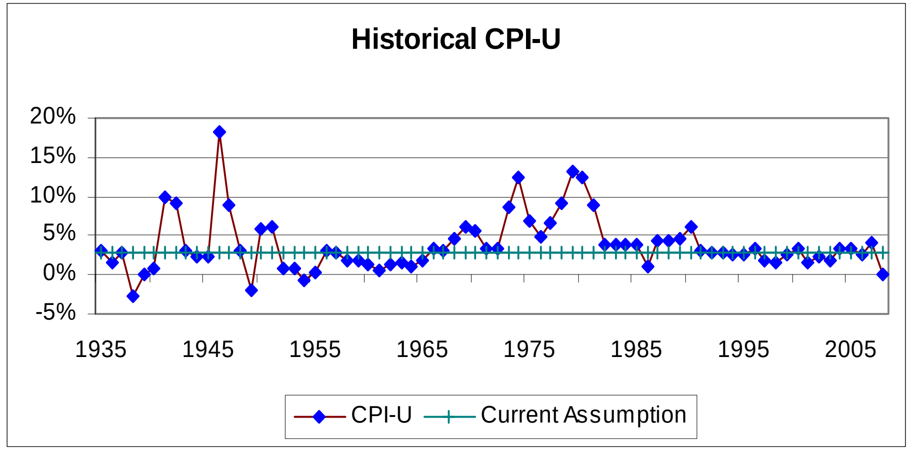
Economic Assumptions

Economic Assumptions
Summary of Recommendations

	Current Assumption	Recommended Assumption
Inflation	2.75%	No change
Real Wage Growth	1.00%	No change
Payroll Growth	3.75%	No change
Regular Investment Return	8.00%	TBD
Variable Investment Return	8.50%	TBD
Health Cost Trend Rate		
▪ 2009 Trend Rate	9.00%	7.00%
▪ Ultimate Trend Rate	5.00%	4.50%
▪ Year Reaching Ultimate Trend	2013	2029
OPSRP Administrative Expenses	$8.5 million	$6.6 million

Economic Assumptions
Inflation

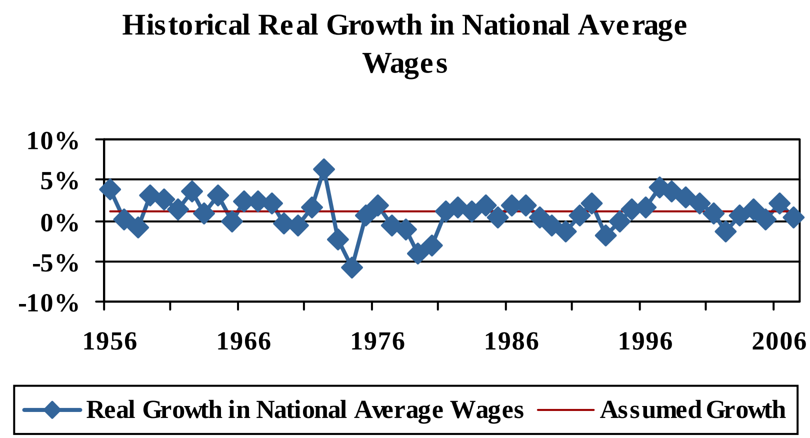
- The inflation assumption affects other assumptions, including payroll growth, investment return, and health care inflation.
- Historical rates have varied significantly as shown in the chart on the top. The median rate over this period is 2.99%.
- Market estimates of future inflation rates can be estimated from the difference in yield between nominal Treasury securities and Treasury inflation protection securities (TIPS). Market turmoil in late 2008 produced unusual results as of the valuation date using this method. By March 31, 2009, breakeven inflation rose to 1.28% and 1.46% for 10-year and 30-year periods, respectively.
- Social Security's current intermediate inflation assumption is 2.8%.
- We recommend no change to the current assumption of 2.75%.



As of 12/31/2008	10-Year	30-Year
Treasury Yield	2.25%	2.69%
TIPS Yield	2.14%	3.63%
Breakeven Inflation	**0.11%**	**-0.94%**

Economic Assumptions
Real Wage Growth

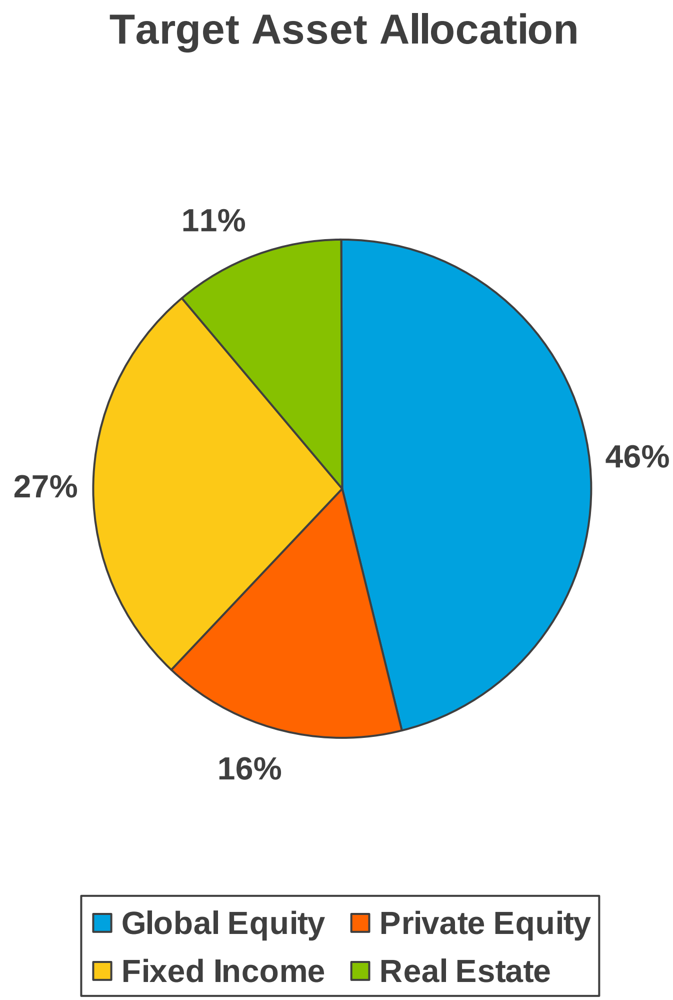
- An individual member's expected salary increase is composed of three components:
  - Inflation
  - Real wage growth
  - Merit and longevity wage growth
- Real wage growth represents the increase in wages above inflation for the entire group due to improvements in productivity and competitive pressures.
- Social Security's intermediate assumption for real wage growth is 1.1%.
- We recommend maintaining this assumption at 1.0%.
- Combined with our recommended inflation assumption, the payroll growth assumption would remain at 3.75%.



Period Ending December 31, 2007	Average Real Growth Rate National Average Wages
10 Years	1.24%
20 Years	0.94%
30 Years	0.67%
40 Years	0.56%
50 Years	0.81%

Economic Assumptions
Investment Return

- The target asset allocation is established by the Oregon Investment Council (OIC).
- OIC's investment consultant, Strategic Investment Solutions, Inc., is in the process of updating its capital market forecasts and expected return for the Oregon PERS portfolio.



Economic Assumptions
Investment Return

Asset Class	Regular Account			Variable Account		
	Target	Compound Annual Return	Standard Deviation	Target	Compound Annual Return	Standard Deviation
Private Equity	16%	9.59%	28.4%			
Global Equity	46%	8.42%	16.9%	100%	8.42%	16.9%
US Fixed Income	24%	4.66%	5.5%			
Non-US Hedged Bonds	3%	3.23%	6.0%			
Real Estate	11%	7.34%	13.7%			
Portfolio -- Gross	100%	7.99%	12.5%	100%	8.42%	16.9%
Portfolio – Net of Expenses		**7.74%**	**12.5%**		**8.17%**	**16.9%**

Based on capital market expectations developed by Mercer Investment Consulting

Economic Assumptions
Investment Return

Percentile	Regular Account	Variable Account
35th	6.66%	6.71%
40th	7.03%	7.21%
45th	7.39%	7.69%
50th	**7.74%**	**8.17%**
55th	8.09%	8.64%
60th	8.44%	9.13%
65th	8.81%	9.62%

- Using Mercer Investment Consulting assumptions the median expected return is 7.74% for the Regular account and 8.17% for the Variable account both net of expenses and before active management.
- We assumed 5 basis points in administrative expenses and 20 basis points in passive investment expenses.
- The OIC expected annual policy return is being updated at this time.
- Since we normally consider expected returns using both Mercer Investment Consulting assumptions and the OIC's assumptions, we recommend postponing an adoption of an investment return assumption until the July Board meeting.

Economic Assumptions
OPSRP Administrative Expenses

- OPSRP administrative expenses are significant relative to OPSRP assets.
- We expect the administrative expenses to decline to around 10 basis points in about 10 years and ultimately be similar to the Tier 1/Tier 2 assumption of 5 basis points.
- Our previous assumption was $8.5 million per year.
  - Reflected $1.9 million annual payment amortizing initial IT setup charge and $6.6 million of regular administrative expenses.
- By the next rate-setting valuation, the payment for initial IT setup will be complete.
  - Therefore, we recommend removing this portion of the charge from our assumption.
  - Data provided by PERS indicates that $6.6 million is still an appropriate level for assumed regular administrative expenses.

	Current		Recommended	
Valuation Year	$ Amount	% of Projected Payroll	$ Amount	% of Projected Payroll
2007	$8.5	0.58%	N/A	N/A
2008	$8.5	0.45%	$6.6	0.35%
2009	$8.5	0.36%	$6.6	0.28%

Economic Assumptions
Health Cost Trend Rate for RHIPA Subsidy

- The Maximum Subsidy increased an average of 7.0% over the last 5 years.
- The Maximum Subsidy increased 8.6% and 4.7% in 2008 and 2009 respectively.
- Mercer's healthcare actuaries expect medical costs to increase 6.5-8.5% in 2009.
- Mercer's healthcare actuaries have developed a new trend model that grades down more slowly to the ultimate assumption.
  - Assumes trend will converge to the change in national healthcare expenditures, and that such expenditures ultimately settle at 22 percent of GDP
  - At that point, trend assumed to increase at 4.5%, a long-term estimate of GDP growth

Health Cost Inflation		
	Prior Assumption	Recommended Assumption
2007	9.0%	
2008	8.0%	
2009	7.0%	7.0%
2010	6.5%	7.0%
2011	6.0%	7.0%
2012	5.5%	6.9%
2013	5.0%	6.9%
2014	5.0%	6.9%
2015	5.0%	6.9%
2016	5.0%	6.8%
2017	5.0%	6.8%
2018	5.0%	6.6%
2019	5.0%	6.4%
2020	5.0%	6.2%
2021	5.0%	6.0%
2022	5.0%	5.8%
2023	5.0%	5.6%
2024	5.0%	5.4%
2025	5.0%	5.2%
2026	5.0%	5.0%
2027	5.0%	4.9%
2028	5.0%	4.7%
2029+	5.0%	4.5%

Decisions

Decisions
Estimated Impact of Changes (ignoring collar)

	Tier 1/Tier 2		OPSRP		RHIA/RHIPA	
	Normal Cost Rate	UAL Rate	Normal Cost Rate	UAL Rate	Normal Cost Rate	UAL Rate
Eliminate PUC Method Amortization	0.0%	(2.9%)	0.0%	0.0%	0.0%	0.04%
Shorten RHIA/RHIPA Amortization	N/A	N/A	N/A	N/A	0.0%	0.22%
Health Care Trend	N/A	N/A	N/A	N/A	0.01%*	0.01%*
OPSRP Administrative Expenses	N/A	N/A	(0.1%)	0.0%	N/A	N/A
Total	**0.0%**	**(2.9%)**	**(0.1%)**	**0.0%**	**0.0%**	**0.3%**

**Rate impact for RHIPA only*

Decisions

Selection of Actuarial Methods and Assumptions

- Actuarial Methods and Allocation Procedures
  - Eliminate PUC method change amortization
  - Shorten RHIA/RHIPA amortization period
  - Update allocation of liability for service segments
- Economic Assumptions
  - Update health care trend assumption
  - Decrease OPSRP administrative expense assumption

Next Steps

- May Board Meeting
  – Experience Study – Methods and Economic Assumptions
  – Board Adoption of Methods and Economic Assumptions for 12/31/2008 and 12/31/2009 Actuarial Valuations
- July Board Meeting
  – Experience Study – Investment Return and Demographic Assumptions
  – Board Adoption of Investment Return and Demographic Assumptions for 12/31/2008 and 12/31/2009 Actuarial Valuations
- September Board Meeting
  – 12/31/2008 system-wide actuarial valuation results
- October
  – 12/31/2008 Individual Employer Reports

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