State of Washington
Pension Funding Council
2011 Actuarial Valuation Audit

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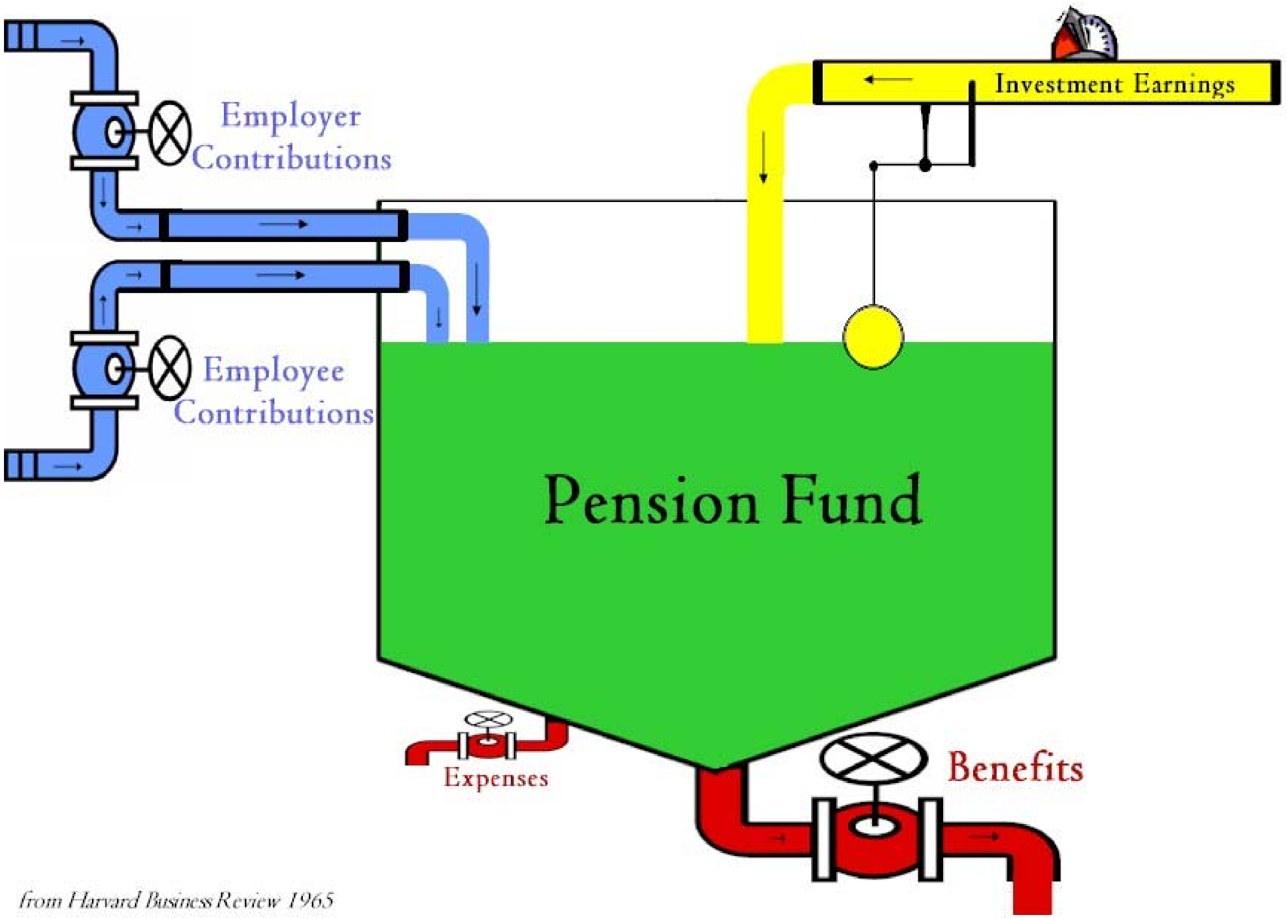
Topics for Discussion

- Key Findings
- Actuarial Audit Valuation Process
- Data Review
- Replication of Liabilities, Actuarial Value of Assets and Contribution Rates
- Deterministic Projections
- Questions

Key Findings

- No material difference in data review or calculations of plan liabilities, actuarial value of assets and contribution rates
- Technical Issues – Discussed After Replication
  - Asset issues
  - Entry age normal cost issues
  - Death benefit issues
  - OPEB issues
- Other minor differences discussed in full report

The Actuarial Valuation



from Harvard Business Review 1965

Actuarial Valuation Audit Process

- **Data review --** Comparison of raw data provided by DRS to final data used by the OSA in the valuation
- **Replication of liabilities** – Independently value the plan using the census data and assumptions of the OSA to verify the calculation of the value of benefits
- **Replication of actuarial value of assets –** Independently compute the actuarial value of assets based on the market value provided by DRS and the cash flow information provided by WSIB
- **Replication of contribution rates** – Independently produce the contribution rates based on the value of liabilities and the value of assets
- **Deterministic projections** – Use multiple economic scenarios to stress test the plan methods to ensure they produce a reasonable pattern of funding and funded status

Data Review

	All Plans (Excluding LEOFF 2)				
	Raw Data	Apply OSA Defaults	Final OSA Data	Effect of Defaults	Ratio of Final / Defaults
Active Members					
Entry Age	35.81	35.81	35.84	0.0%	0.1%
Current Age	47.84	47.84	47.83	0.0%	0.0%
Service	11.99	11.99	11.99	0.0%	0.0%
Valuation Salary	$ 51,639	$ 53,452	$ 53,453	3.5%	0.0%
Vested Terminated Members					
Current Age	53.71	53.71	53.70	0.0%	0.0%
Current Service	11.39	11.39	11.39	0.0%	0.0%

	All Plans (Excluding LEOFF 2)				
	Raw Data	Apply OSA Defaults	Final OSA Data	Effect of Defaults	Ratio of Final / Defaults
Service Retirees					
Current Age	72.29	72.29	72.29	0.0%	0.0%
Benefit Amount	$ 21,284	$ 21,284	$ 21,310	0.0%	0.1%
Disabled Retirees					
Current Age	68.13	68.13	68.13	0.0%	0.0%
Benefit Amount	$ 22,844	$ 22,844	$ 22,846	0.0%	0.0%
Beneficiaries					
Current Age	76.42	76.42	76.42	0.0%	0.0%
Benefit Amount	$ 15,372	$ 15,372	$ 15,372	0.0%	0.0%

We understand the defaults provided to us have been superseded by another process within the valuation system

Replication of Liabilities and Assets

	Present Value of Future Benefits			Actuarial Value of Assets		
Plan	**OSA**	**Cheiron**	**Variance**	**OSA**	**Cheiron**	**Variance**
PERS 1	$ 12,722.2	$ 12,877.9	1.2%	$ 8,883.4	$ 8,889.3	0.1%
PERS 2/3	$ 27,336.5	$ 27,242.8	-0.3%	$ 20,996.7	$ 21,006.9	0.0%
SERS 2/3	$ 3,696.0	$ 3,691.8	-0.1%	$ 2,872.1	$ 2,873.5	0.0%
PSERS 2	$ 454.8	$ 448.1	-1.5%	$ 140.7	$ 140.7	0.0%
WSPRS 1/2	$ 993.7	$ 989.2	-0.5%	$ 949.5	$ 950.0	0.1%
TRS 1	$ 9,313.1	$ 9,140.3	-1.9%	$ 7,485.0	$ 7,489.9	0.1%
TRS 2/3	$ 9,761.6	$ 9,827.5	0.7%	$ 7,140.6	$ 7,144.1	0.0%
LEOFF 1	$ 4,150.3	$ 4,190.4	1.0%	$ 5,565.3	$ 5,568.6	0.1%
LEOFF 2	$ 8,718.1	$ 8,778.8	0.7%	$ 6,620.7	$ 6,623.6	0.0%
Grand Total	**$ 77,146.3**	**$ 77,186.7**	**0.1%**	**$ 60,653.9**	**$ 60,686.7**	**0.1%**
	Present Value of Future Salaries			**Market Value of Assets**		
Grand Total	**$ 146,596.1**	**$ 146,996.0**	**0.3%**	**$ 57,350.3**	**$ 57,350.3**	**0.0%**

Amounts in millions

- Aggregate present value of future benefits are within 0.1%
- Aggregate present value of future salaries are within 0.3%
- Aggregate assets are within 0.1%
- All are well within the range of normal tolerances for an actuarial audit

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Replication of Liabilities

	Entry Age Normal Cost				
	OSA		Cheiron		Variance
PERS 2/3	$	693.4	$	705.2	1.7%
SERS 2/3	$	102.6	$	104.5	1.9%
PSERS 2	$	22.9	$	29.9	30.6%
WSPRS 1/2	$	14.5	$	14.7	1.3%
TRS 2/3	$	262.5	$	270.5	3.0%
LEOFF 2	$	257.7	$	260.7	1.2%

- The entry age normal cost rate is used to set minimum contribution rates for these plans
- All plans except PSERS are within normal tolerances
- The variance shown reflects the combined impact of the technical issues found related to the application of the entry age method, the valuation of OPEB benefits, and the valuation of other death benefits

Replication of Contribution Rates

	Employer Contribution Rates		
	OSA	Cheiron	Difference
PERS 1	4.00%	4.17%	0.17%
PERS 2/3	5.03%	4.93%	-0.10%
SERS 2/3	5.64%	5.58%	-0.06%
PSERS 2	6.22%	6.18%	-0.04%
WSPRS 1/2	7.63%	7.70%	0.07%
TRS 1	4.48%	4.03%	-0.45%
TRS 2/3	5.73%	5.86%	0.13%
LEOFF 1	0.00%	0.00%	0.00%
LEOFF 2	7.57%	7.65%	0.08%

- The differences in contribution rates are due to the slight differences in liability measurements as opposed to any difference in the calculation of contribution rates based on those liability measurements
- The largest difference (TRS 1 amortization rate) is primarily due to a 1.9% difference in the measurement of the TRS 1 present value of future benefits
- We do not view any of these differences as material

Technical Issues

- Assets
  - Market value of assets differs from the CAFR
  - Underweighting beginning of year balances
- Entry Age Normal Cost Calculations
  - Cost not spread as a level percentage of pay over career
  - Entry age isn't based on date entered current plan
- Death Benefits
  - Minor issues with application of assumed ratio of survivors selecting an annuity and other plan specific benefits
- OPEB Benefits
  - First year in audit, and a number of technical issues found that are significant to the valuation of the OPEB benefits, but not to the valuation as a whole
- Details of technical issues are in the full report

Other Minor Issues

- Discount rate for LEOFF 1 is different than for LEOFF 2. It is not clear how the amortization of any LEOFF 1 unfunded would be calculated
- Consider reporting funded status on an Entry Age basis instead of Projected Unit Credit
- Consider removing membership growth assumption. It is not consistent with standard actuarial practice and defers amortization payments further into the future
- Certain minor assumptions do not appear to be disclosed in the valuation report
- Consider refinement of discussion of funded status on a market value basis in the valuation report

Deterministic Projections

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Baseline	Payroll Growth	3.75%	Max UAL Rates	Y	Group	PERS
Historical	Membership Growth	0.95%	Min UAL Rate	3.50%	Plan	PERS 2/3
1960						

2011	7.90%
2012	7.90%
2013	7.90%
2014	7.90%
2015	7.90%
2016	7.90%
2017	7.90%
2018	7.90%
2019	7.90%
2020	7.90%
2021	7.90%
2022	7.90%
2023	7.90%
2024	7.90%
2025	7.90%
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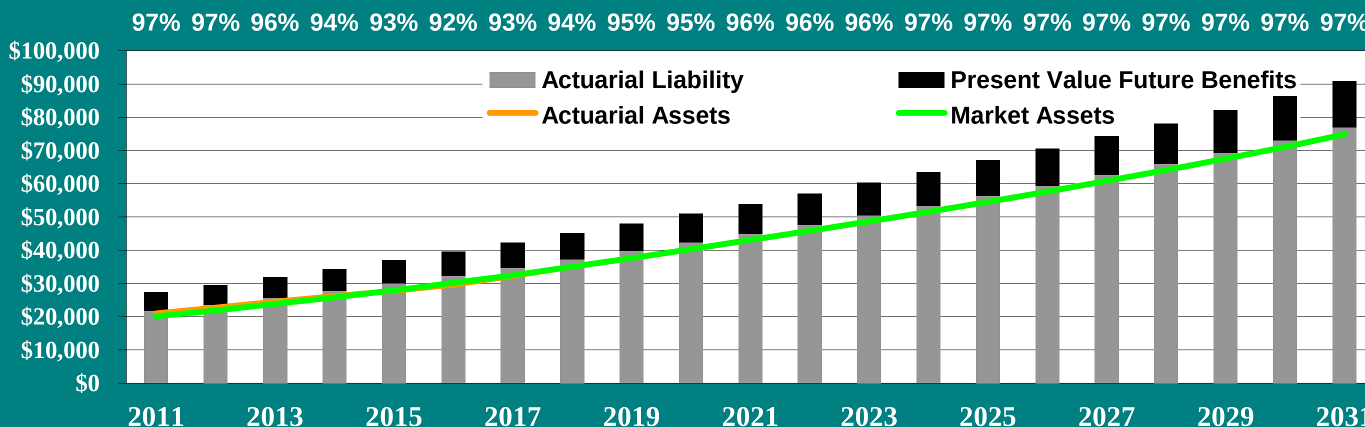
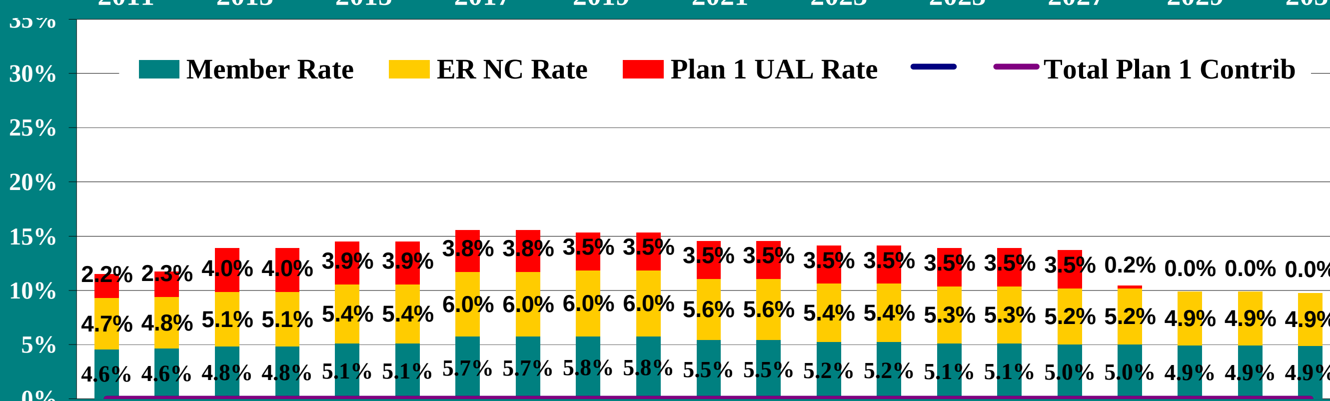
2027	7.90%
2028	7.90%
2029	7.90%
2030	7.90%
Avg	7.90%





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Questions

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