Washington LEOFF 2 Plan Retirement Board 2011 Actuarial Valuation Audit

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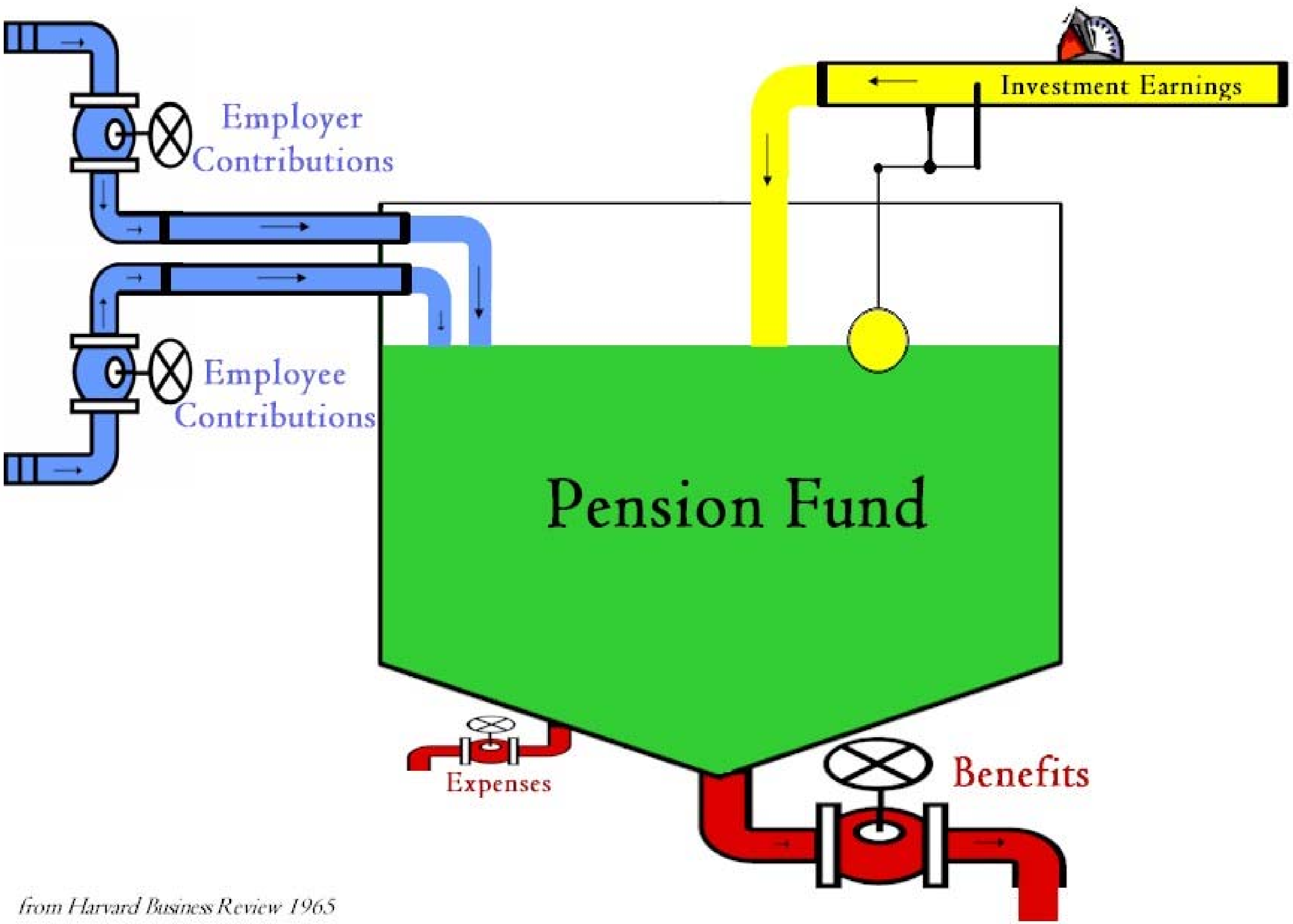
Topics for Discussion

- 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 reproduce 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

	LEOFF Plan 2				
	Raw Data	Apply OSA Defaults	Final OSA Data	Effect of Defaults	Effect of Final
Active Members					
Minimums					
Entry Age	19	19	18	0.0%	-5.3%
Current Age	21	21	21	0.0%	0.0%
Valuation Salary	$ -	$ 38,000	$ 38,000	NA	0.0%
Maximums					
Entry Age	65	65	65	0.0%	0.0%
Current Age	72	72	72	0.0%	0.0%
Service	33.75	33.75	33.75	0.0%	0.0%
Valuation Salary	$ 244,068	$ 244,068	$ 244,068	0.0%	0.0%
Averages					
Entry Age	28.89	28.89	28.88	0.0%	0.0%
Current Age	42.72	42.72	42.72	0.0%	0.0%
Service	13.84	13.84	13.84	0.0%	0.0%
Valuation Salary	$ 90,283	$ 91,331	$ 91,322	1.2%	0.0%
Vested Terminated Members					
Minimums					
Current Age	28	28	28	0.0%	0.0%
Current Service	5.00	5.00	5.00	0.0%	0.0%
Maximums					
Current Age	68	68	68	0.0%	0.0%
Current Service	32.67	32.67	32.67	0.0%	0.0%
Averages					
Current Age	46.22	46.22	46.21	0.0%	0.0%
Current Service	11.91	11.91	11.91	0.0%	0.0%

We understand the defaults provided to us have been superseded by another process within the valuation system

Data Review

	LEOFF Plan 2				
	Raw Data	Apply OSA Defaults	Final OSA Data	Effect of Defaults	Ratio of Final / Defaults
Service Retirees					
Minimums					
Current Age	50	50	50	0.0%	0.0%
Benefit Amount	$ 151	$ 151	$ 151	0.0%	0.0%
Maximums					
Current Age	86	86	86	0.0%	0.0%
Benefit Amount	$ 94,368	$ 94,368	$ 94,368	0.0%	0.0%
Averages					
Current Age	60.50	60.50	60.49	0.0%	0.0%
Benefit Amount	$ 34,194	$ 34,194	$ 34,194	0.0%	0.0%
Disabled Retirees					
Minimums					
Current Age	32	32	32	0.0%	0.0%
Benefit Amount	$ 1,445	$ 1,445	$ 1,445	0.0%	0.0%
Maximums					
Current Age	79	79	79	0.0%	0.0%
Benefit Amount	$ 64,700	$ 64,700	$ 64,700	0.0%	0.0%
Averages					
Current Age	56.20	56.20	56.19	0.0%	0.0%
Benefit Amount	$ 27,073	$ 27,073	$ 27,073	0.0%	0.0%
Beneficiaries					
Minimums					
Current Age	9	20	16	122.2%	-20.0%
Benefit Amount	$ 1,422	$ 1,422	$ 1,422	0.0%	0.0%
Maximums					
Current Age	86	86	86	0.0%	0.0%
Benefit Amount	$ 86,561	$ 86,561	$ 86,561	0.0%	0.0%
Averages					
Current Age	53.08	53.08	53.20	0.0%	0.2%
Benefit Amount	$ 20,313	$ 20,313	$ 20,313	0.0%	0.0%

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

Replication of Liabilities

Present Value of Future Benefits	LEOFF 2 OSA	LEOFF 2 Cheiron	LEOFF 2 Variance
Actives			
Retirement	$ 6,831.6	$ 6,860.5	0.4%
Termination	169.7	174.4	2.8%
Death	148.6	167.9	13.0%
Disability	402.0	411.2	2.3%
Total Actives	**$ 7,551.9**	**$ 7,614.0**	**0.8%**
Inactive			
Vested Term	$ 121.2	$ 120.3	-0.7%
Nonvested Term Due Refund	9.1	9.1	0.0%
Retired	883.6	882.8	-0.1%
Disabled	84.4	85.1	0.8%
Beneficiary	50.3	49.8	-1.1%
LOP Liability	17.6	17.7	0.8%
Total Inactive	**$ 1,166.1**	**$ 1,164.7**	**-0.1%**
Total	**$ 8,718.1**	**$ 8,778.8**	**0.7%**
Valuation Salaries	**$ 1,531.2**	**$ 1,533.3**	**0.1%**
Present Value of Future Salaries	**$ 16,910.3**	**$ 17,018.5**	**0.6%**

Amounts in millions

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Replication of Liabilities

Entry Age Normal Cost	LEOFF 2 OSA	LEOFF 2 Cheiron	LEOFF 2 Variance
Retirement	$ 217.9	$ 218.4	0.2%
Termination	14.4	15.8	9.7%
Death	7.3	6.5	-11.1%
Disability	18.1	20.0	10.4%
Total Entry Age Normal Cost	**$ 257.7**	**$ 260.7**	**1.2%**
Valuation Salaries	**$ 1,531.2**	**$ 1,533.3**	**0.1%**
Entry Age Normal Cost Rate	**16.83%**	**17.00%**	**0.17%**

Amounts in millions

- The entry age normal cost rate is used to set minimum contribution rates
- The variance shown reflects the combined impact of the technical issues related to the application of the entry age method, the valuation of OPEB benefits, and the valuation of other death benefits

Replication of Actuarial Value of Assets

	LEOFF 2		
Actuarial Value of Assets	**OSA**	**Cheiron**	**Variance**
Market Value of Assets	$ 6,365.8	$ 6,365.8	0.0%
Deferred Recognition			
2005	$ 36.0	$ 35.9	-0.2%
2006	71.2	71.0	-0.3%
2007	173.9	173.6	-0.2%
2008	(245.6)	(245.6)	0.0%
2009	(1,033.3)	(1,034.0)	0.1%
2010	131.2	130.6	-0.4%
2011	611.6	610.7	-0.2%
Total	$ (254.9)	$ (257.8)	1.2%
70% of Market Value	4,456.0	4,456.0	0.0%
130% of Market Value	8,275.5	8,275.5	0.0%
Actuarial Value of Assets	$ 6,620.7	$ 6,623.6	0.0%

Amounts in millions

Replication of Contribution Rates

	LEOFF 2		
Aggregate Normal Cost Rate	**OSA**	**Cheiron**	**Variance**
Present Value of Future Benefits	$ 8,718.1	$ 8,778.8	0.7%
Actuarial Value of Assets	6,620.7	6,623.6	0.0%
Gainsharing	-	-	N/A
Unfunded PVFB	$ 2,097.4	$ 2,155.1	2.8%
Present Value of Future Salaries	33,820.7	34,037.0	0.6%
EE/ER Aggregate Normal Cost Rate	**6.20%**	**6.33%**	**0.13%**

Amounts in millions

Both the employees and the sponsors (employers and state) pay the aggregate normal cost rate, subject to the application of the minimum contribution rate

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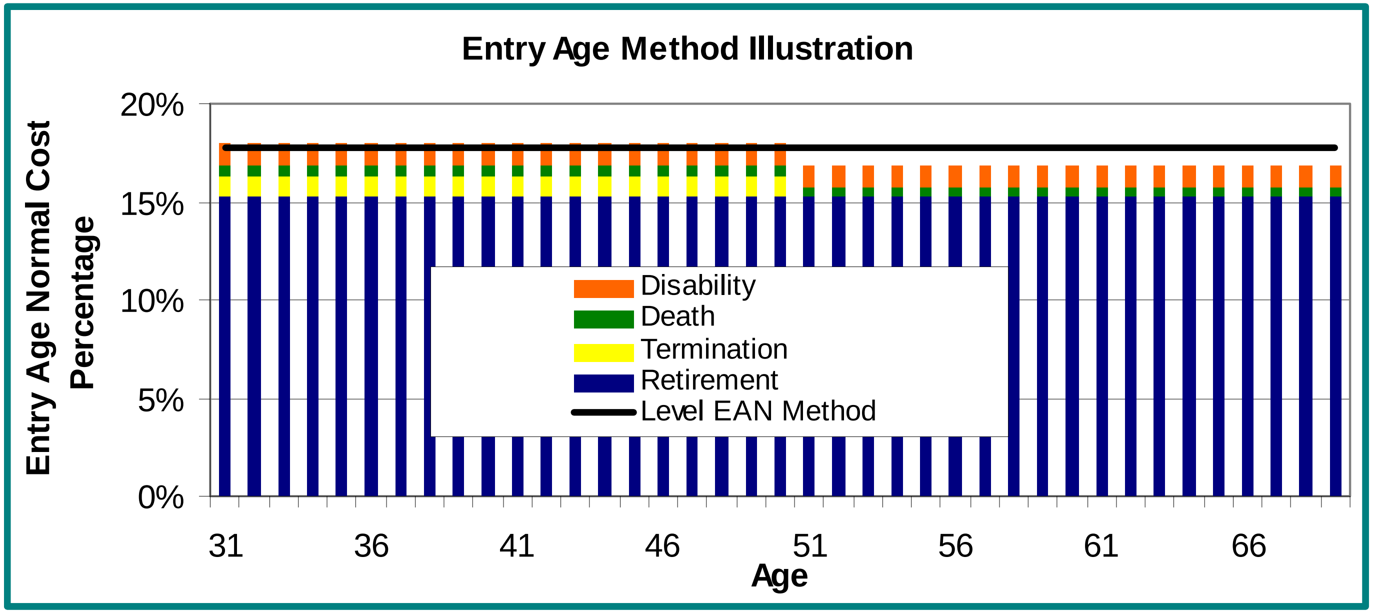
Replication of Contribution Rates

	OSA	Cheiron	Difference
Aggregate EE NC Rate	6.20%	6.33%	0.13%
Minimum (90% of EA NC Rate)	7.57%	7.65%	0.08%
Employee Contribution Rate	7.57%	7.65%	0.08%
Aggregate ER/State NC Rate	6.20%	6.33%	0.13%
Minimum (90% of EA NC Rate)	7.57%	7.65%	0.08%
Employer Contribution Rate	4.54%	4.59%	0.05%
State Contribution Rate	3.03%	3.06%	0.03%

Technical Issues

- Assets
  - The market value of assets used for the valuation does not match and is not reconciled to the market value reported in the CAFR due to the exclusion of certain funds
  - The beginning of year balances are weighted for 364/365ths of a year instead of a full year in the actuarial value of assets calculation

Technical Issues



- Entry Age Normal Cost Calculations
  - Cost is spread as a level percentage of pay over each decrement instead of over the member's career
  - Entry age is based on date of entry into any of the plan's with reciprocity instead of entry into LEOFF 2

Technical Issues

- Death Benefits
  - Minor issues with application of assumed ratio of survivors selecting an annuity
  - Refund benefit is understated for certain members who suffer a duty death

Technical Issues

- OPEB Benefits (First year included in audit)
  - Theory – two issues
  - Application – seven issues
  - Disclosure/Documentation – three issues
- Benefits overview:
  - Death: Covers the deceased participant's spouse and children's welfare contributions after the duty related death of the participant
  - Disability: Covers the duty related disabled retirees and their families' welfare contributions

Technical Issues

- **OPEB Benefits (LEOFF2 – Death & Disability Benefits)**
  - **Reconciliation:** OSA vs. Matching. We were not able to fully reconcile to OSA's calculated Present Value of Future Benefits (PVFB) and Entry Age normal costs when replicating the calculations. However, the remaining small difference (less than 2% in aggregate) means any potential recommended changes would have an insignificant (less than 0.001%) impact.
  - **Benchmarking:** OSA vs. Cheiron. Fixing theoretical and application issues, Cheiron's estimated PVFB is 15.5% higher than OSA's.

LEOFF Plan 2
Reimbursement of Medical Premium - Duty Related Disability & Death Benefits

	OSA	Matching	*% change*	Cheiron	*% change*
Present Value of Future Benefits					
Actives - Death	$ 14.8	$ 15.1	1.9%	$ 13.2	-11.2%
Actives - Disability	13.7	14.0	2.2%	20.9	52.6%
Inactives - Death	7.5	7.5	0.0%	7.0	-6.7%
Inactives - Disability	1.4	1.3	-2.3%	2.1	52.7%
Total	**$ 37.4**	**$ 37.9**	**1.3%**	**$ 43.2**	**15.5%**
Entry Age Normal Cost					
Actives - Death	$ 1.1	$ 1.1	-0.9%	$ 0.8	-26.6%
Actives - Disability	0.7	0.7	3.4%	1.2	62.1%
Total	**$ 1.8**	**$ 1.8**	**0.0%**	**$ 2.0**	**11.1%**

Amounts in millions

Technical Issues

- **OPEB Benefits – Theoretical issues**
  – We recommend that the retiree-paid portion of the premium should be increased at the same blended trend rate as is assumed in the Other Postemployment Benefits (OPEB) Actuarial Valuation Report (AVR), regardless of current status (inactive or active) and reason for benefits (disability or death). The OSA uses flat trend for disabled retirees currently receiving benefits.
  – We recommend that the number of employees with access to employer-sponsored retiree medical benefits be reviewed as the number of retirees in payment status seems higher than the current assumption of 50%.

Technical Issues

- **OPEB Benefits – Application issues**
  - ProVal Model: The coding of the disability benefit is done using the Pension mode. The OPEB mode is recommended.
  - LEOFF 2 Death/Survivor Benefits:
    - For actives, the assumptions state that 85% of employees have spouses. The coding is done assuming 100% and should be changed to 85%.
    - For actives, the likelihood of death (i.e. decrement) should be based on age and gender of the employee instead of the spouse's age and gender.
    - Program contribution rates to switch to Medicare rates when spouses become Medicare eligible
    - The liabilities associated with the child(ren) should be greater than $0.
  - LEOFF 2 Disability Benefits:
    - Actives: The benefits are only trended up to the time of the disability. The benefits should continue to increase after the current active employee becomes disabled at the same rate as used in the OPEB AVR.
    - Disabled Retirees: The trends used in ProVal (3%) should match the stated assumption (5%). (also see first comment in theoretical issues)

Technical Issues

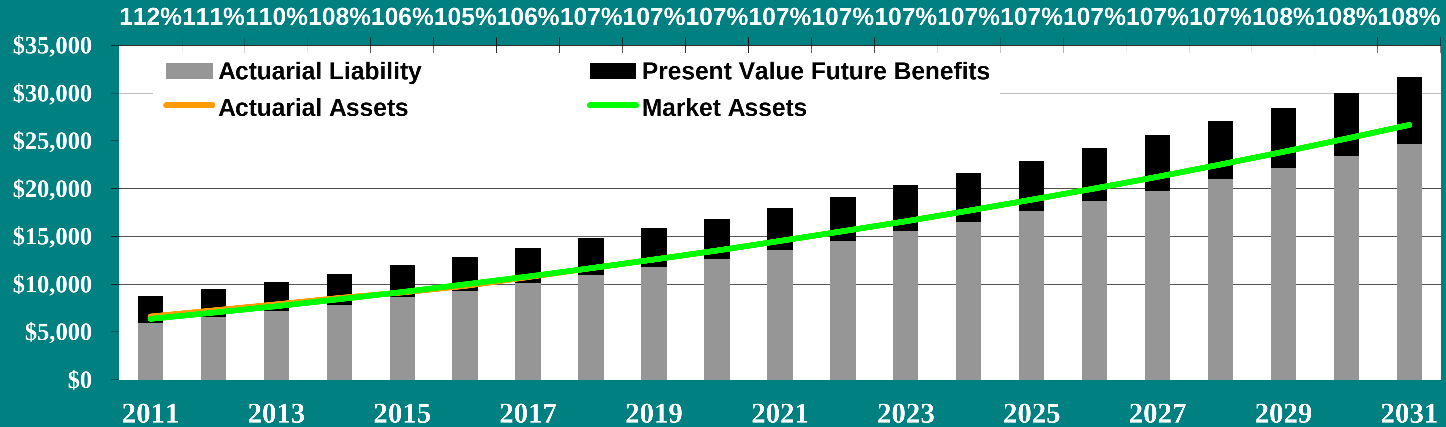
- **OPEB Benefits - Disclosure issues** (based on preliminary report sections)
  - The methodology section of the report should state that the health benefit is being funded via a 401(h) account
  - The OPEB assumptions should be documented in the report
  - Descriptions of these benefits should be included in Appendix 4 with the Summary of Plan Provisions

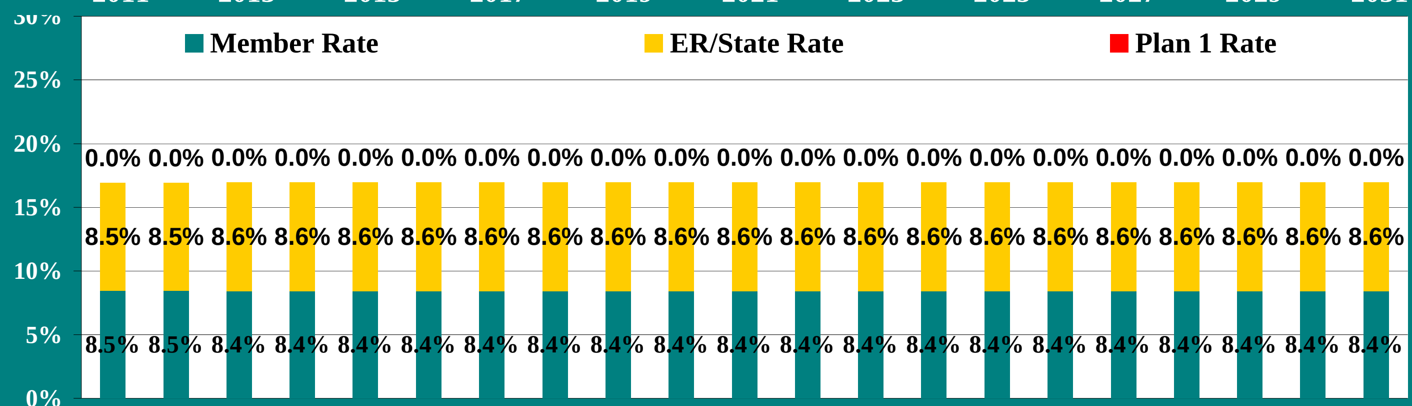
Deterministic Projections

CHEIRON **Stress Testing** P-scan

Baseline	Payroll Growth	3.75%	Asset corridor	70%	130%	Group	LEOFF
Historical	Membership Growth	0.95%	Max Smooth Yrs	8		Plan	2
1954	Amortization Period	2024	Min EANC %	100%			

2011	7.50%
2012	7.50%
2013	7.50%
2014	7.50%
2015	7.50%
2016	7.50%
2017	7.50%
2018	7.50%
2019	7.50%
2020	7.50%
2021	7.50%
2022	7.50%
2023	7.50%
2024	7.50%
2025	7.50%
2026	7.50%
2027	7.50%
2028	7.50%
2029	7.50%
2030	7.50%
Avg	7.50%





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
- Consider refinement of discussion of funded status on a market value basis in valuation report
- Certain minor assumptions do not appear to be disclosed in the valuation report

Conclusion

- We reviewed the implementation of recommendations from our prior audit and repeated recommendations on which no action was taken and no resolution was made. None of these issues affect the recommended contribution rates
- We also worked to refine our replication of certain measures that were not as close as we would like in the first audit. This focus led to many of the technical issues found in this audit
- In this audit, we also examined for the first time the new OPEB benefits that are funded through a 401(h) account. Many of our findings are based on this initial examination
- For this audit, we recommend that all recommendations be confirmed in the audit two years from now to verify that the recommendations have been adopted or a decision not to adopt the recommendations has been made

Questions

Required Disclosures

- The purpose of this presentation is to discuss the results of the 2011 State of Washington LEOFF Plan 2 actuarial valuation audit. Any other user of this presentation is not an intended user and is considered a third party.
- In preparing this presentation, we relied without audit, on information (some oral and some written) supplied by the OSA and DRS and the plan provisions described in state statute.
- We hereby certify that, to the best of our knowledge, this presentation and its contents, which are based on the information and data supplied by the OSA and DRS, and which are work products of Cheiron, Inc., are complete and have been prepared in accordance with generally recognized and accepted actuarial principles and practices which are consistent with the Code of Professional Conduct and applicable Actuarial Standards of Practice set out by the Actuarial Standards Board. Furthermore, as credentialed actuaries, we meet the Qualification Standards of the American Academy of Actuaries to render the opinion contained in this report. This presentation does not address any contractual or legal issues. We are not attorneys and our firm does not provide any legal services or advice.
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