WASHINGTON STATE

Law Enforcement Officers' and Fire Fighters' Plan 2 Retirement Board

2013 Actuarial Valuation Report

Office of the State Actuary

"Securing tomorrow's pensions today."

Report Preparation

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Photo Credit: Charles Middleton, "Fire Fighter Saving Girl."

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Washington State Investment Board

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Office of the State Actuary

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As of June 30, 2013

October 2014

As required under Chapter 41.45 RCW, this report documents the results of an actuarial valuation of the Law Enforcement Officers' and Fire Fighters' Retirement System Plan 2 (LEOFF 2).

The primary purpose of this valuation is to determine contribution requirements for LEOFF 2 for the plan year ending June 30, 2013, under the funding policy established by the LEOFF 2 Retirement Board. This valuation also provides information on the funding progress and developments in the plan over the past year.

This report is organized into the following four sections.

- Summary of Key Results.
- Actuarial Exhibits.
- Participant Data.
- Appendices.

The Summary of Key Results section provides a high-level summary of the valuation results for LEOFF 2. The next two sections of the report provide detailed actuarial asset and liability information and participant data. The Appendices provide a summary of the principal actuarial assumptions and methods, a summary of the major plan provisions, and additional information used to prepare this valuation.

We encourage you to submit any questions you might have concerning this report to our regular address or our e-mail address at state.actuary@leg.wa.gov. We also invite you to visit our website (osa.leg.wa.gov), for further information regarding the actuarial funding of the Washington State retirement systems.

Sincerely,

Matthew M. Smith, FCA, EA, MAAA
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Section One

Summary of Key Results

Intended Use

The purpose of this report is to develop contribution rates required to fund the Law Enforcement Officers' and Fire Fighters' Retirement System (LEOFF) Plan 2 based on the funding policies described in this section. This report provides information on the contribution rates, the funding progress, and developments in the plan over the past year. This report also discloses the data, assumptions, and methods we used to develop the contribution rates. This report is not intended to satisfy the accounting requirements under the Governmental Accounting Standards Board (GASB) rules.

Contribution Rates

The Office of the State Actuary (OSA) calculated the member, employer, and state contribution rates as a percentage of salary based on the long-term funding policy adopted by the LEOFF 2 Retirement Board (the Board). The summary table to the right shows contribution rates based on the 2013 valuation along with comparable rates from the previous valuation. The **Actuarial Exhibits** section of this report shows how we developed these rates.

Contribution Rates		
	2013	2012
Member	7.97%	7.74%
Employer*	4.78%	4.64%
State	3.19%	3.10%

**Excludes administrative expense rate.*

During the 2012 Interim, the Board adopted a short-term and temporary funding policy to hold contribution rates at a minimum level to manage the risk of increasing contribution rates in the future. This short-term policy includes minimum contribution rates based on 100 percent of the normal cost calculated under the Entry Age Normal (EAN) funding method instead of 90 percent (the Board's long-term policy). During the 2014 Interim, and after receiving the results of this actuarial valuation, the Board adopted contribution rates for the 2015-17 Biennium that maintain contribution rates at current levels. Based on the results of this actuarial valuation, current contribution rates fall in between the rates calculated under the Board's short and long-term funding polices. Please see the **Actuarial Certification Letter** for further details on this temporary funding policy. The table to the left shows the contribution rates adopted by the Board for 2013-17.

Adopted Contribution Rates*	
Member	8.41%
Employer**	5.05%
State	3.36%

**Adopted for period 2013-17.*

***Excludes administrative expense rate.*

Contribution Rate-Setting Cycle

Under current Washington State law, in July of even-numbered years, the Board reviews the basic contribution rates calculated by the Board-retained actuary based on an actuarial valuation performed on asset, participant, and plan information compiled in odd-numbered years. In calculating basic contribution rates, the Board-retained actuary applies the statutory funding policies described in this section. The Board then adopts contribution rates for LEOFF Plan 2 as provided under RCW 41.26.720(1)(a). The adopted rates remain in place for the ensuing biennium, subject to revision by the Legislature.

RCW 41.45.070 requires that a temporary and supplemental contribution rate increase be charged to fund the cost of benefit enhancements enacted following the adoption of the basic rates. Supplemental contribution rates are included in the basic rates at the beginning of the next contribution rate-setting cycle.

Funding Policy

Washington State relies on systematic actuarial funding to finance the on-going cost of the state retirement systems. Under this financing approach, we reduce the cost of future pension payments by the expected long-term return on invested contributions.

The state's funding policy is found in Chapter 41.45 RCW — Actuarial Funding of State Retirement Systems. It includes the following goals to:

- Provide a dependable and systematic process for funding the benefits to members and retirees of the Washington State Retirement Systems.
- Continue to fully fund LEOFF Plan 2 as provided by law.
- Establish long-term employer contribution rates that will remain a relatively predictable proportion of the future state budgets.
- Fund, to the extent feasible, all benefits over the working lives of those members so that the taxpayers who receive the benefit of those members' service pay the cost of those benefits.

The Board adopted minimum contribution rates equal to 90 percent of the normal cost rate calculated under the Entry Age Normal (EAN) actuarial cost method.

The Washington State Investment Board (WSIB) directs the investment of retirement system contributions. RCW 43.33A.110 requires WSIB to maximize investment returns at a prudent level of risk.

Comments on 2013 Results

Many factors can influence how actuarial valuation results change from one measurement date to the next. Those factors include changes in the covered population, changes in plan provisions, assumptions, and methods, and experience that varies from our expectations.

For this valuation, assumption changes explain most of the changes from last year's report. The assumed rate of investment return remained at 7.5 percent for LEOFF 2. The Board adopted our recommendation to change the projection scale we use to estimate future improvement in rates of mortality from 50 percent of Scale AA to 100 percent of Scale BB. The mortality assumption change led to lower funded status and higher contribution rates than calculated last valuation.

We observed no significant changes in the covered population and there were no changes in plan provisions. We also made no significant changes to our actuarial methods.

In terms of annual plan experience, the actual rate of investment return was 12.36 percent and above the assumed rate. The rate of investment return on the actuarial (or smoothed) value of assets was higher than expected for the plan year as well. We also observed lower than expected salary growth for the year when estimating plan liabilities.

Detailed gain and loss information by system can be found in the **Actuarial Exhibits** section of this report. Please see the **Actuarial Certification Letter** for additional comments on the 2013 valuation results.

Actuarial Liabilities

Actuarial Liabilities		
(Dollars in Millions)	**2013**	**2012**
Future Value of Fully Projected Benefits	$85,177	$65,782
Present Value of Fully Projected Benefits	$10,314	$9,203
Present Value of Accrued Benefits	$6,859	$6,071
Unfunded Actuarial Accrued Liability	N/A	N/A
Valuation Interest Rate	7.50%	7.50%

The table to the left summarizes key measures of actuarial liability along with the liabilities from last year's valuation. The Future Value of Fully Projected Benefits represents the total expected value of all future benefit payments for all members as of the valuation date. The Present Value of Fully Projected Benefits represents today's value of the Future Value of Fully Projected Benefits when we discount future benefit payments with the valuation interest rate. In other words, if we invest the Present Value of Fully Projected Benefits as a lump sum amount at the valuation date and earn the valuation interest rate each year, there would be enough money to pay all future benefit payments for current members.

The Present Value of Accrued (Earned) Benefits identifies the portion of the Present Value of Future Benefits that has been "earned" as of the valuation date based on the Projected Unit Credit (PUC) actuarial cost method. The Unfunded Actuarial Accrued Liability (UAAL) represents the excess, if any, of the Present Value of Accrued Benefits at the valuation date over the Actuarial Value of Assets. In other words, the UAAL equals the present value of benefits earned at the valuation date not covered by current actuarial assets.

See the **Actuarial Exhibits** section of this report for additional information on the plan's actuarial liabilities and a disclosure of expected future benefit payments by year. Also, see the **Glossary** for brief explanations of the actuarial terms.

Plan Assets

The table to the right shows the Market Value of Assets and Actuarial (or smoothed) Value of Assets along with approximate rates of investment return.

Assets		
(Dollars in Millions)	**2013**	**2012**
Market Value of Assets	$7,637	$6,640
Actuarial Value of Assets	7,862	7,222
Contributions*	272	266
Disbursements	110	91
Investment Return	825	93
Other**	$10	$7
Rate of Return on Assets***	12.36%	1.40%

**Employee and Employer.*

***Includes transfers, restorations, payables, etc.*

****This is the time-weighted rate of return on the Market Value of Assets, net of expenses. The Actuarial Value of Assets is used in determining contribution rates.*

To limit the volatility in contribution rates and funded status due to short-term market fluctuations, we smooth (or defer) the difference between actual and expected annual investment returns over a period not to exceed eight years. The Actuarial Value of Assets equals the Market Value of Assets less the Total Deferred Investment Gains and (Losses) at the valuation date. The Actuarial Value of Assets can never be less than 70 percent or greater than 130 percent of the Market Value of Assets.

See the **Actuarial Exhibits** section of this report for additional information on the plan's assets as well as the development of the Actuarial Value of Assets.

Funded Status

The funded status helps readers evaluate the health of a pension plan. A history of funded status measured consistently over a defined period helps readers evaluate a plan's funding progress over time. The funded status represents the portion of the present value of earned benefits covered by today's actuarial assets. A plan with a 100 percent funded status has one dollar in actuarial assets for each dollar of earned (or accrued) liability at the valuation date. A plan with a funded status of at least 100 percent is generally considered to be on target with its financing plan. However, a plan more/less than 100 percent funded is not automatically considered over-funded/at-risk.

We use the PUC actuarial cost method to report the funded status of the plan. The PUC method takes into account future salary and service growth for purposes of determining future benefit amounts and eligibility for those benefits, but only reflects service credit earned at the valuation date for determining earned (or accrued) benefits.

Comparing the PUC liabilities to the Actuarial Value of Assets provides an appropriate measure of a plan's funded status. Under current GASB rules, the PUC method is one of several acceptable measures of a plan's funded status. Use of another cost method could also be considered appropriate and could produce materially different results.

GASB Statements 67 and 68 become effective after June 15, 2015, replace the current GASB statements, and require use of the Entry Age Normal Cost Method (EANC) for accounting purposes. We will begin reporting the EANC funded status with the next actuarial valuation, as of June 30, 2014, to improve consistency between this funding report and future accounting disclosures.

We did not use the PUC cost method to determine contribution requirements in this valuation. Please see the **Glossary** for a more detailed explanation of PUC.

Funded Status		
(Dollars in Millions)	**2013**	**2012**
a. Present Value of Accrued Benefits	$6,859	$6,071
b. Market Value of Assets	$7,637	$6,640
c. Deferred Gains/(Losses)	($225)	($581)
d. Actuarial Value of Assets (b-c)	$7,862	$7,222
e. Unfunded Liability (a-d)	($1,003)	($1,150)
f. Funded Ratio (d/a)	115%	119%

Note: Totals may not agree due to rounding.

The table to the left displays the funded status for LEOFF Plan 2. We also provide a history of funded status since 1986 and funded status under alternate assumptions and methods in the **Actuarial Exhibits** section.

Participant Data

The table to the right summarizes the participant data used in the actuarial valuation for the plan year ending June 30, 2013, along with comparable information from last year's valuation. See the **Participant Data** section of this report for additional information.

Participant Data		
	2013	2012
Active Members		
Number	16,687	16,720
Total Salaries (in millions)	$1,597	$1,560
Average Annual Salary	$95,694	$93,308
Average Attained Age	43.5	43.2
Average Service	14.6	14.3
Retirees and Beneficiaries		
Number	2,782	2,344
Average Annual Benefit	$37,812	$34,930
Terminated Members		
Number Vested	698	689
Number "Non-Vested"	1,565	1,558

Key Assumptions

Key Assumptions	
Valuation Interest Rate	7.50%
Salary Increase	3.75%
Inflation	3.00%
Growth in Membership*	1.25%

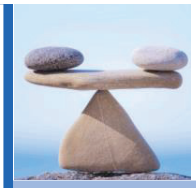
**Applies to the LEOFF 1 funding method only.*

The table to the left displays key economic assumptions used in the actuarial valuation for the plan year ending June 30, 2013. These assumptions are unchanged from our last valuation.

The Board adopted changes to the demographic assumptions used in this valuation. The ***2007-2012 Demographic Experience Study***, available on our website, discloses all the assumption changes from the last valuation. See the **Actuarial Methods and Assumptions** in the Appendix for a detailed listing of assumptions used in this valuation.

Section Two

Actuarial Exhibits



Office of the State Actuary

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Actuarial Certification Letter
Law Enforcement Officers' and Fire Fighters'
Retirement System Plan 2
Actuarial Valuation Report
As of June 30, 2013

October 2014

This report documents the results of an actuarial valuation of the Law Enforcement Officers' and Fire Fighters' Retirement System Plan 2 (LEOFF 2) as defined under Chapter 41.26 of the Revised Code of Washington. The primary purpose of this valuation is to determine contribution requirements for the retirement plan as of the June 30, 2013, valuation date consistent with the prescribed funding policy established by the LEOFF 2 Retirement Board (the Board). This valuation also provides information on the funding progress and developments in the plan over the past year. This valuation report should not be used for other purposes. Please replace this report with a more recent report when available.

The valuation results summarized in this report involve calculations that require assumptions about future economic and demographic events. We believe that the assumptions and methods used in the underlying valuation are reasonable and appropriate for the primary purpose stated above. The use of another set of assumptions and methods, however, could also be reasonable and could produce materially different results. Actual results may vary from our expectations.

The assumptions used in this valuation for investment return, inflation, and salary growth were adopted by the Board in the 2011 Interim. The membership growth assumption was prescribed by the Legislature. Please see our latest *Economic Experience Study* report for further information on the economic assumptions. The Board adopted updates to the demographic assumptions as part of their review of the *2007-2012 Experience Study* results and adoption of the associated contribution rates. The Legislature was responsible for the selection of the actuarial cost and asset valuation methods. In our opinion, all methods, assumptions, and calculations are reasonable and are in conformity with generally accepted actuarial principles and standards of practice as of the date of this publication.

The Department of Retirement Systems (DRS) provided us with member and beneficiary data. We checked the data for reasonableness as appropriate based on the purpose of the valuation. The Washington State Investment Board (WSIB) and DRS provided financial and asset information. An audit of the financial and participant data was not performed. We relied on all the information provided as complete and accurate. In our opinion, this information is adequate and substantially complete for purposes of this valuation.

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The asset smoothing method adopted during the 2003 Legislative session (Chapter 11, Laws of 2003, E1) was intended to address the volatility of contribution rates under the aggregate funding method when used in combination with the existing asset allocation policy of WSIB. The combination of the current asset smoothing method with any other funding method or asset allocation policy may not be appropriate.

During the 2012 Interim, the Board adopted a stable contribution rate policy for 2013-17 to manage the risk of increasing contribution rates in the future. During the 2014 Interim, the Board reaffirmed the policy for the 2015-17 Biennium. This temporary funding policy produces contribution rates at June 30, 2013, that exceed the requirements under the plan's actuarial cost method and long-term funding policy. In our opinion, this temporary funding policy is reasonable and consistent with the Board's risk management goals. The adoption of contribution rates below the current stable rates for 2013-17 could also be reasonable, but potentially inconsistent with the Board's risk management goals.

The undersigned, with actuarial credentials, meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein. While this report is intended to be complete, we are available to offer extra advice and explanations as needed.

Sincerely,

Matthew M. Smith, FCA, EA, MAAA
State Actuary

Lisa A. Won, ASA, FCA, MAAA
Senior Actuary

Office of the State Actuary October 2014

Contribution Rates

Member and Employer Rate Summary		
	2013	2012
Member	7.97%	7.74%
Employer*	4.78%	4.64%
State (Normal Cost)	3.19%	3.10%
State (Plan 1 UAAL)	0.00%	0.00%
Total State	3.19%	3.10%

**Excludes administrative expense rate.*

Development of Employer/State Rates	
	LEOFF 2
a. Total Normal Cost	15.94%
b. Employee Normal Cost (a x 50%)	7.97%
c. Total Employer/State Normal Cost (a - b)	7.97%
d. State Normal Cost (a x 20%)	3.19%
e. Employer Normal Cost (c - d)*	4.78%
f. Cost to Amortize UAAL	0.00%
g. Total Employer Contribution Rate (e + f)**	4.78%

**Excludes administrative expense rate.*

***The state pays 20% of the total normal cost for LEOFF 2. This reduces the total employer contribution rate from 7.97% to 4.78%.*

The tables on the following page show the development of the normal cost rates. Consistent with the Law Enforcement Officers' and Fire Fighters' (LEOFF) Plan 2 Retirement Board's (the Board) funding policy, the normal cost rates include minimum contribution rates to provide stable and adequate contribution rates over time. The minimum rates are 90 percent of the normal cost calculated under the Entry Age Normal (EAN) funding method. Please see the **Glossary** for a more detailed explanation of EAN.

Development of Normal Cost Rates		
(Dollars in Millions)		**LEOFF 2**
1. Calculation of Member Normal Cost Rate		
a.	Future Value of Fully Projected Benefits	$85,177
b.	Present Value of Fully Projected Benefits	10,314
c.	Valuation Assets	7,862
d.	Unfunded Fully Projected Benefits (b - c)	2,451
e.	Plan 1 Present Value of Future Salaries (PVS)	N/A
f.	Plan 2 PVS	17,563
g.	Weighted PVS (2e + 2f)	$35,126
h.	Employee Normal Cost (d / g)	6.98%
i.	Employee Minimum Contribution Rate	7.97%
j.	Employee Contribution Rate with Minimum	7.97%
k.	Change In Plan Provisions (Laws of 2014)	0.00%
l.	Employee Contribution Rate (j + k)	7.97%
2. Calculation of Employer/State Normal Cost Rate		
a.	Present Value of Fully Projected Benefits	$10,314
b.	Valuation Assets	7,862
c.	Unfunded Fully Projected Benefits (a - b)	2,451
d.	Present Value of Employee Contributions	1,226
e.	Employer/State Responsibility (c - d)	$1,226
f.	Plan 2 PVS	$17,563
g.	Employer/State Normal Cost (e / f)	6.98%
h.	Employer/State Minimum Contribution Rate	7.97%
i.	Employer/State Contribution Rate with Minimum	7.97%
j.	Change In Plan Provisions (Laws of 2014)	0.00%
k.	Total Employer/State Contribution Rate (i + j)	7.97%
3. Contribution Rates Adopted for 2013-17*		
a.	Employee Contribution Rate**	8.41%
b.	Employer Contribution Rate (a - c)**	5.05%
c.	State Contribution Rate**	3.36%
d.	Total Contribution Rate (a + b + c)	**16.82%**

Note: Totals may not agree due to rounding.
**LEOFF 2 rates adopted by the LEOFF 2 Board.*
***LEOFF 2 rate: 50% Employee, 30% Employer, 20% State.*

Amortization of the Plan 1 Unfunded Actuarial Accrued Liability (UAAL)		
(Dollars in Millions)		**LEOFF 1**
a.	Future Value of Fully Projected Benefits	$11,500
b.	Present Value of Fully Projected Benefits (PVFB)	4,420
c	Valuation Assets	5,516
d.	Actuarial Present Value of Future Normal Costs	0
e.	UAAL (b - c - d)	(1,096)
f.	Expected UAAL Contributions to 2013	0
g.	Remaining UAAL (e - f)	($1,096)
h.	Amortization Date	6/30/2024
i.	Present Value of Projected Salaries beyond 2013	$12,646
j.	Preliminary Contribution Rate (g/ i)*	(8.67%)
k.	Change In Plan Provisions (Laws of 2014)	0.00%
l.	Contribution Rate to Amortize the UAAL (j + k)*	(8.67%)

Note: Totals may not agree due to rounding.
**No LEOFF 1 UAAL contributions are required when the plan is fully funded under current funding methods and assumptions.*

Actuarial Liabilities

Present Value of Fully Projected Benefits	
(Dollars in Millions)	**LEOFF 2**
Active Members	
Retirement	$7,637
Termination	144
Death	104
Disability	351
Return of Contributions on Termination	87
Return of Contributions on Death	129
Total Active	**$8,451**
Inactive Members	
Terminated	$154
Service Retired	1,517
Disability Retired	123
Survivors	69
Total Inactive	**$1,862**
Laws of 2014	**0**
2013 Total	**$10,314**
2012 Total	**$9,203**

Note: Totals may not agree due to rounding.

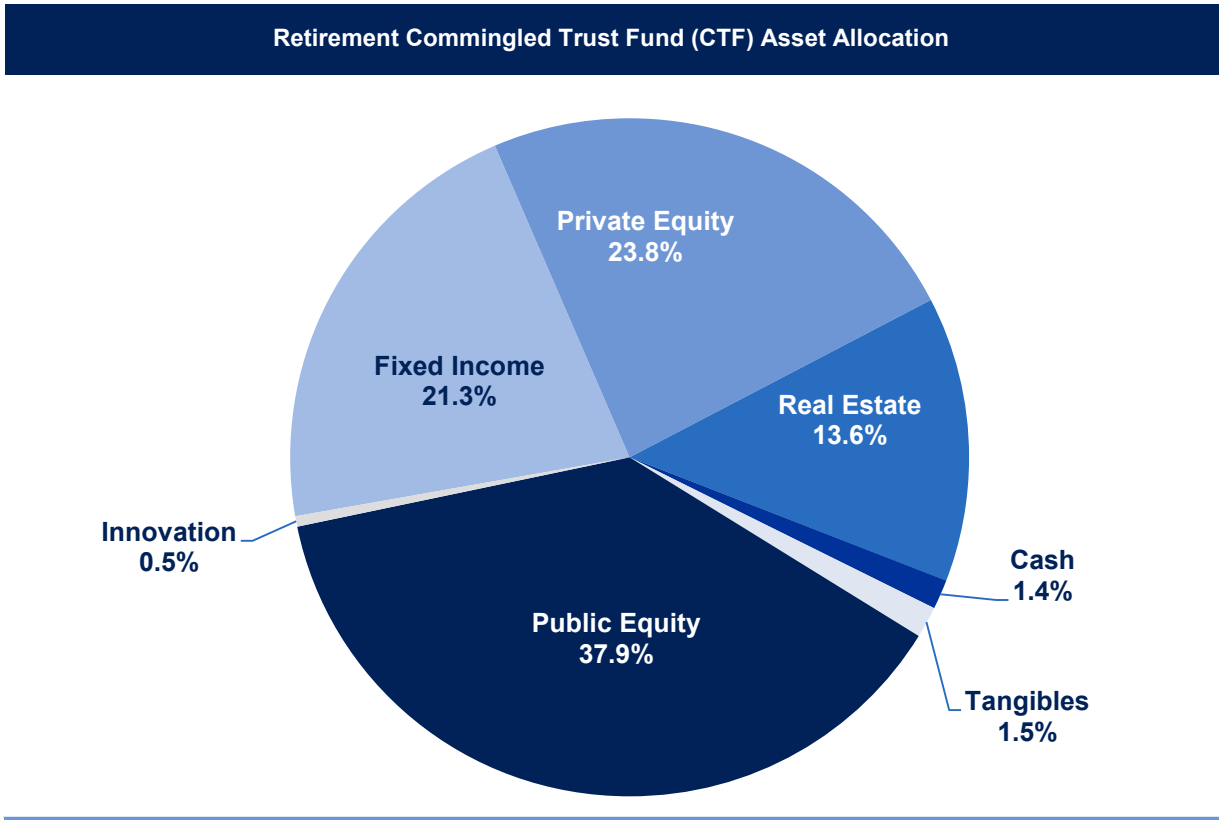
Present Value of Accrued (Earned) Benefits*	
(Dollars in Millions)	**LEOFF 2**
Active Members	
Retirement	$4,484
Termination	87
Death	70
Disability	226
Return of Contributions on Termination	52
Return of Contributions on Death	78
Total Active	**$4,997**
Inactive Members	
Terminated	$154
Service Retired	1,517
Disability Retired	123
Survivors	69
Total Inactive	**$1,862**
Laws of 2014	**0**
2013 Total	**$6,859**
2012 Total	**$6,071**

Note: Totals may not agree due to rounding.

**Calculated using the PUC cost method. This method was not used to determine contribution requirements.*

Fully Projected Benefit Payments					
LEOFF - Plan 2					
(Dollars in Millions) Year	Future Value	Present Value	Year	Future Value	Present Value
2013	$140	$135	**2063**	$1,554	$40
2014	168	151	**2064**	1,481	36
2015	201	168	**2065**	1,407	32
2016	236	184	**2066**	1,330	28
2017	275	199	**2067**	1,252	24
2018	317	213	**2068**	1,173	21
2019	362	226	**2069**	1,093	18
2020	410	239	**2070**	1,014	16
2021	462	250	**2071**	934	14
2022	518	261	**2072**	856	12
2023	577	270	**2073**	778	10
2024	639	278	**2074**	702	8
2025	703	285	**2075**	628	7
2026	771	290	**2076**	556	6
2027	841	295	**2077**	488	5
2028	913	298	**2078**	423	4
2029	987	299	**2079**	362	3
2030	1,063	300	**2080**	306	2
2031	1,140	299	**2081**	255	2
2032	1,218	297	**2082**	209	1
2033	1,297	295	**2083**	169	1
2034	1,376	291	**2084**	134	1
2035	1,454	286	**2085**	105	1
2036	1,531	280	**2086**	80	0
2037	1,606	273	**2087**	61	0
2038	1,678	265	**2088**	45	0
2039	1,747	257	**2089**	33	0
2040	1,812	248	**2090**	23	0
2041	1,871	238	**2091**	16	0
2042	1,925	228	**2092**	11	0
2043	1,973	217	**2093**	8	0
2044	2,014	206	**2094**	5	0
2045	2,049	195	**2095**	3	0
2046	2,076	184	**2096**	2	0
2047	2,095	173	**2097**	1	0
2048	2,108	162	**2098**	1	0
2049	2,113	151	**2099**	1	0
2050	2,111	140	**2100**	0	0
2051	2,101	130	**2101**	0	0
2052	2,085	120	**2102**	0	0
2053	2,063	110	**2103**	0	0
2054	2,035	101	**2104**	0	0
2055	2,000	93	**2105**	0	0
2056	1,960	84	**2106**	0	0
2057	1,915	77	**2107**	0	0
2058	1,865	69	**2108**	0	0
2059	1,811	63	**2109**	0	0
2060	1,752	56	**2110**	0	0
2061	1,689	51	**2111**	0	0
2062	$1,623	$45	**2112**	$0	$0
			Total	**$85,177**	**$10,314**

Plan Assets



Cash: Highly liquid, very safe investments that can be easily converted into cash, such as Treasury Bills and money-market funds.

Fixed Income: Securities representing debt obligations and usually having fixed payments and maturities. Different types of fixed income securities include government and corporate bonds, mortgage-backed securities, asset-backed securities, convertible issues, and may also include money-market instruments.

Innovation: Fund that provides the ability to invest in a broad range of assets that fall outside the traditional asset classes or management style of existing asset classes.

Public Equity: Shares of U.S. and non-U.S. corporations that trade on public exchanges or "over-the-counter." The ownership of a corporation is represented by shares that are claimed on the corporation's earnings and assets.

Private Equity: The infusion of equity capital into a private company (one that is not available on the public markets). Private equity investments include securities that are not listed on a public exchange and are not easily accessible to most individuals. These investments range from initial capital in start-up enterprises to leveraged buyouts of mature corporations.

Real Estate: An externally-managed selection of partnership investments with the majority of the partnerships invested in high-quality real estate leased to third parties.

Tangibles: The tangible asset portfolio invests in sectors such as infrastructure, timber, agriculture, natural resources, commodities, or other sectors consistent with the goals of the asset class.

Change in Market Value of Assets	
(Dollars in Millions)	**LEOFF 2**
2012 Market Value	**$6,640**
Revenue	
Contributions	
Employee	136
Employer/State	137
Total Contributions	272
Investment Return	825
Restorations	8
Transfers In	2
Miscellaneous	0
Total Revenue	**$1,107**
Disbursements	
Monthly Benefits	101
Refunds	9
Total Benefits	109
Transfers Out	0
Expenses	1
Total Disbursements	**$110**
Payables	$0
2013 Market Value	**$7,637**
2013 Actuarial Value	**$7,862**
Ratio (AV/MV)	**103%**

Note: Totals may not agree due to rounding.

Calculation of Actuarial Value of Assets				
(Dollars in Millions)				**LEOFF 2**
a.	Market Value at 6/30/2013			$7,637
b.	Deferred Gains and (Losses)			
	Plan Year Ending	**Years Deferred**	**Years Remaining**	
	6/30/2013	5	4	257
	6/30/2012	7	5	(278)
	6/30/2011	8	5	437
	6/30/2010	5	1	44
	6/30/2009	8	3	(620)
	6/30/2008	8	2	(123)
	9/30/2007	8	1	58
	Total Deferral			($225)
c.	Market Value less Deferral (a - b)			$7,862
d.	70% of Market Value of Assets			$5,346
e.	130% of Market Value of Assets			$9,929
f.	**Actuarial Value of Assets***			**$7,862**

Note: Totals may not agree due to rounding.

**Actuarial Value of Assets can never be less than 70% or greater than 130% of the market value of assets.*

Investment Gains and (Losses) for Prior Year		
(Dollars in Millions)		**LEOFF 2**
a.	2012 Market Value (at WSIB)	$6,620
b.	Total Cash Flow	172
c.	2013 Market Value (at WSIB)	7,617
d.	Actual Return (c - b - a)	$826
e.	Weighted Asset Amount	$6,693
f.	Expected Return (7.5% x e)	502
g.	Investment Gain/(Loss) for Prior Year (d - f)	322
h.	Dollar-Weighted Rate of Return	12.31%

Note: Totals may not agree due to rounding.

Funded Status

We report a plan's funded status by comparing the plan's current assets to the present value of earned pensions of its members. A plan's funded status can vary significantly, depending on the assumptions and methods used to determine the value of the plan's assets and liabilities. For this valuation report, we present two funded status measures.

The first funded status measure compares the Actuarial Value of Assets (AVA) to the Projected Unit Credit (PUC) liabilities calculated using a long-term interest assumption. The second measure compares the Market Value of Assets (MVA) to the PUC liabilities calculated using a short-term interest assumption. The next sections describe these measures in more detail and display the resulting funded status for the plan. Please see the **Glossary** for an explanation of the PUC actuarial cost method.

We include information for LEOFF Plan 1 because the prior funding policy required the state to amortize any LEOFF 1 Unfunded Actuarial Accrued Liability (UAAL) not later than June 30, 2024, using projected salaries of both LEOFF 1 and LEOFF 2 members.

Funded Status on an Actuarial Value Basis

We report the funded status on an actuarial value basis as the ratio of the AVA to the PUC liability calculated using the 7.50 percent valuation interest rate assumption. We assume the plan is on-going and, therefore, we use the same long-term assumptions to develop the liabilities as we used for determining the contribution requirements of the plan. We don't expect the assumptions to match actual experience over short-term periods. However, we do expect these assumptions to reasonably approximate average annual experience over long-term periods. This measure of funded status is consistent with the state's current funding policy and financing plan for future retirement benefits.

We use an asset valuation method to determine the AVA. This asset valuation method smooths the inherent volatility in the MVA by deferring a portion of annual investment gains or losses for a certain number of years. Investment gains and losses occur when the annual return on investments varies from the long-term assumed rate of 7.5 percent. The AVA provides a more stable measure of the plan's assets on an on-going basis.

We use the PUC actuarial cost method to determine the present value of earned pensions. The PUC liabilities are actuarial liabilities based on members' earned service credit as of the valuation date. They include future assumed salary increases and reflect future service credits for determining benefit eligibility. The PUC liabilities are discounted to the valuation date using the valuation interest rate to

determine the present value (today's value). The valuation interest rate is consistent with the long-term expected return on invested contributions.

Comparing the PUC liabilities to the AVA provides an appropriate measure of a plan's funded status. Under current Governmental Accounting Standards Board (GASB) statements, the PUC method is one of several acceptable measures of a plan's funded status. Use of another cost method could also be considered appropriate and could produce materially different results. A plan with a funded status under this measurement of at least 100 percent is generally considered to be on target with its financing plan. However, a plan more/less than 100 percent funded is not automatically considered over-funded/at-risk.

GASB Statements 67 and 68 become effective after June 15, 2015, replace the current GASB statements, and require use of the Entry Age Normal Cost Method (EANC) for accounting purposes. We will begin reporting the EANC funded status with the next actuarial valuation report, as of June 30, 2014.

The table below displays the funded status on an actuarial value basis for LEOFF.

Funded Status on an Actuarial Value Basis*		
(Dollars in Millions)	**LEOFF 2**	**LEOFF 1**
PUC Liability	$6,859	$4,410
Valuation Assets	$7,862	$5,516
Unfunded Liability	($1,003)	($1,107)
Funded Ratio		
2013 **	**115%**	**125%**
2012	119%	135%
2011 **	119%	135%
2010 **	119%	127%
2009 **	128%	125%
2008 **	133%	128%
2007 **	129%	123%
2006 **	116%	117%
2005 **	114%	114%
2004	117%	109%
2003	125%	112%
2002	137%	119%
2001 **	154%	129%
2000 **	161%	136%
1999	154%	125%
1998	160%	117%
1997 **	155%	108%
1996	130%	89%
1995	126%	80%
1994 **	124%	68%
1993	127%	68%
1992	128%	65%
1991	154%	66%
1990	153%	65%
1989 **	158%	65%
1988	153%	66%
1987	157%	69%

Note: Totals may not agree due to rounding. See the 2013 AVR for development of LEOFF 1 values.

**Liabilities valued using the PUC cost method at an interest rate of 7.5% for LEOFF 2, 7.8% for LEOFF 1. All assets have been valued under the actuarial asset method.*

***Assumptions changed.*

The present value of actuarial liabilities is sensitive to the interest rate assumption. The following tables show how the funded status changes when we use different interest rate assumptions. We calculated liabilities using varying interest rates to show this sensitivity.

Funded Status at a 1% Lower Interest Rate Assumption*		
(Dollars in Millions)	**LEOFF 2**	**LEOFF 1**
PUC Liability	$8,212	$4,844
Valuation Assets	$7,862	$5,516
Unfunded Liability	$349	($673)
Funded Ratio		
2013	**96%**	**114%**
2012	100%	124%
2011	100%	123%
2010	99%	116%
2009	107%	114%
2008	111%	117%

Note: Totals may not agree due to rounding. See the 2013 AVR for development of LEOFF 1 values.
**Liabilities valued using the PUC cost method at an interest rate of 6.5% for LEOFF 2, 6.8% for LEOFF 1. All assets have been valued under the actuarial asset method.*

Funded Status at a 1% Higher Interest Rate Assumption*		
(Dollars in Millions)	**LEOFF 2**	**LEOFF 1**
PUC Liability	$5,808	$4,039
Valuation Assets	$7,862	$5,516
Unfunded Liability	($2,054)	($1,477)
Funded Ratio		
2013	**135%**	**137%**
2012	140%	146%
2011	140%	146%
2010	141%	139%
2009	152%	137%
2008	159%	141%

Note: Totals may not agree due to rounding. See the 2013 AVR for development of LEOFF 1 values.
**Liabilities valued using the PUC cost method at an interest rate of 8.5% for LEOFF 2, 8.8% for LEOFF 1. All assets have been valued under the actuarial asset method.*

Funded Status on a Market Value Basis

We report the funded status on a market value basis as the ratio of the MVA to the PUC liability calculated using a 5 percent interest rate assumption. The funded status on a market value basis provides a measure of the plan's health if the plan is "settled" or "immunized" on the valuation date. Immunizing a pension plan means attaching assets to liabilities so the assets maturing each year match the expected pension payments due from the pension plan each year. A plan can be settled by purchasing annuities on the open market for each member, or immunized by investing the assets in bonds with payment streams that match the expected benefit payments. Expected benefit payments would include growth for future salary inflation, which is why we have used the PUC liability measure instead of a purely accrued liability measure.

Because LEOFF 2 is open and on-going, we only present the market value funded status for the closed LEOFF 1. Although LEOFF 1 is closed to new members, it is not settled and has not been immunized. However, there is an opportunity to immunize the plan in the future. LEOFF 1 is considered an on-going plan because current annuitants continue to receive their benefits from the retirement trust fund, and current active members continue to accrue benefits under the plan. However, because the plan is closed to new members, the future benefit payments are more predictable, have a shorter duration, and would be easier to immunize. The decision to settle or immunize LEOFF 1 is complex and would require additional actuarial analysis and information that is outside the scope of this report.

The following table displays the market value funded status for LEOFF 1 as described above.

Funded Status on a Market Value Basis*		
(Dollars in Millions)		**LEOFF 1**
Projected Unit Credit Liability		$5,840
Market Value of Assets		$5,140
Unfunded Liability		$701
Funded Ratio		
	2013	**88%**
	2012	91%
	2011	95%
	2010	82%
	2009	76%
	2008	107%
	2007	114%
	2006	102%
	2005	94%

Note: Totals may not agree due to rounding.
**Liabilities have been valued using an interest rate of 5% while assets are their market value. The 5% interest rate approximates the "risk-free" rate of return on assets while maintaining consistency with the 3% inflation assumption used to project future benefit payments. This method was not used to determine contribution requirements. Prior to 2011, liabilities were valued at 5.5%.*

Both funded status measures vary based on the measurement (valuation) date and the market conditions on that date. The market value measure, however, is more volatile because the asset value has no smoothing and the ability to immunize the plan depends on current bond and annuity purchase rates.

Actuarial Gains/Losses

The next three tables display actuarial gains and losses, expressed as contribution rate changes. Actuaries use gain/loss analysis to compare actual changes to assumed changes in assets, liabilities, and salaries from various sources. We also use this analysis to determine:

- The accuracy of our valuation model and annual processing.
- Why contribution rates changed.
- The reasonableness of the actuarial assumptions.

Actuarial gains will reduce contribution rates; actuarial losses will increase contribution rates. Under a reasonable set of actuarial assumptions, actuarial gains and losses will offset over long-term experience periods.

Change in State Contribution Rate by Source*	
Change in Employer Rate	**LEOFF**
2012 Contribution Rate Before Laws of 2013	**(8.79%)**
Remove Rate Floor / Ceiling	(0.74%)
LEOFF 1 Funding Method Changes	0.34%
2012 Adjusted Contribution Rate	**(9.19%)**
Liability Gains/Losses	0.04%
Asset Gains/Losses	0.89%
Present Value of Future Salaries Gains/Losses	(0.40%)
Incremental Changes	2.98%
Other Gains/Losses	(0.20%)
Total Change	**3.31%**
2013 Preliminary Contribution Rate	**(5.88%)**
Increase from Applied Rate Floor	0.40%
Laws of 2014	0.00%
2013 Adjusted Contribution Rate	**(5.48%)**

**The LEOFF contribution rate is the State's portion for Plan 2 (20% of the Normal Cost) plus the UAAL rate for Plan 1.*

Change in Normal Cost by Source*	
Change in Normal Costs	**LEOFF 2**
2012 Normal Cost Before Laws of 2013	3.10%
Remove Rate Floor / Ceiling	(0.74%)
2012 Adjusted Normal Cost Rate	**2.36%**
Liabilities	
Salaries	(0.14%)
Termination	0.00%
Retirement	(0.01%)
Growth / Return to Work	0.16%
Other Liabilities	0.04%
Total Liability Gains/Losses	**0.05%**
Asset Gains/Losses	**(0.02%)**
Present Value of Future Salaries Gains/Losses	**(0.06%)**
Incremental Changes	
Plan Change	0.00%
Method Change	0.00%
Assumption Change	0.00%
Correction Change	0.00%
Experience Study Change	0.43%
Total Incremental Changes Gains/Losses	**0.43%**
Other Gains/Losses	0.03%
Total Change	**0.43%**
2013 Preliminary Normal Cost	**2.79%**
Increase from Applied Rate Floor	0.40%
Laws of 2014	0.00%
2013 Adjusted Normal Cost	**3.19%**

**The LEOFF 2 contribution rate is the State's portion for Plan 2 (20% of the Normal Cost) .*

Change in State UAAL Rate by Source*	
Change in UAAL Rate	**LEOFF 1**
2012 UAAL Rate Before Laws of 2013	(11.89%)
Remove Rate Floor / Ceiling	0.00%
LEOFF 1 Roll Forward Funding Method	0.34%
2012 Adjusted UAAL Rate	**(11.55%)**
Liabilities	
Salaries	(0.03%)
Termination	0.00%
Retirement	(0.02%)
Return to Work	0.00%
Inflation (CPI)	(0.14%)
Other Liabilities	0.18%
Total Liability Gains/Losses	**(0.01%)**
Asset Gains/Losses	**0.91%**
Present Value of Future Salaries Gains/Losses	**(0.34%)**
Incremental Changes	
Plan Change	0.00%
Method Change	0.00%
Assumption Change	0.29%
Correction Change	0.00%
Experience Study Change	2.26%
Total Incremental Changes Gains/Losses	**2.55%**
Other Gains/Losses	**(0.23%)**
Total Change	**2.88%**
2013 Preliminary UAAL Rate	**(8.67%)**
Laws of 2014	0.00%
2013 Adjusted UAAL Rate	**(8.67%)**

**The contribution rate is the UAAL rate for plan 1. No contributions are required under current law when the plan remains fully funded.*

Effect of Plan, Assumption, and Method Changes

In addition to experience gains or losses, changes in plan provisions or actuarial assumptions or methods can also impact contribution rates.

Plan Changes

- None.

Assumption Changes

- For LEOFF 1, we lowered the assumed long-term rate of return from 7.9 percent to 7.8 percent.
- We updated assumed administrative factors.
- We updated demographic assumptions as a result of the *2007-2012 Experience Study*.

Method Changes

- None.

Effect of Changes on the Current Valuation

The following table shows the effect of the above changes on the current actuarial valuation report results.

Effect of Plan, Assumption, and Method Changes	
Before Changes	**LEOFF 2**
PVFB	$9,814
PUC Liability	6,655
Actuarial Value of Assets	7,862
Unfunded Liability	(1,208)
Employer Contribution Rate*	**4.64%**
After Changes	
PVFB	$10,314
PUC Liability	6,859
Actuarial Value of Assets	7,862
Unfunded Liability	(1,003)
Employer Contribution Rate*	**4.78%**
Increase/(Decrease) in Rate	**0.14%**

Before and after changes include actuarial gains and losses for the year ending 6/30/2013.
Both before and after contribution rates include rate minimums.
**The contribution rate is the Employer's portion only (30% of the Plan 2 Normal Cost).*

Section Three

Participant Data

Overview of System Membership

Law Enforcement Officers' and Fire Fighters' (LEOFF) Retirement System Plan 2 (Chapter 41.26 RCW).

Membership includes fire fighters; emergency medical technicians; law enforcement officers including sheriffs; university, port, and city police officers; and Department of Fish and Wildlife enforcement officers.

Active Membership By Employer	
State Agencies	124
Higher Education	110
Community Colleges	0
K-12	0
Counties	2,753
County Sub Divisions	211
First Class Cities	4,890
Other Cities	4,911
Ports	173
Education Service District	0
Fire Districts	3,515
Public Utility District	0
Water Districts	0
Energy Northwest	0
Unions	0
TOTAL	**16,687**

The following table summarizes participant data changes from last year's valuation to this year's valuation. We divide the participant data into two main categories.

- **Actives** – members accruing benefits in the plan.
- **Annuitants** – members and beneficiaries receiving benefits from the plan.

Reconciliation of Participant Data	
2012 Actives	16,720
Transfers	0
Hires/Rehires	612
New Retirees	(366)
Deaths	(11)
Terminations	(268)
2013 Actives	**16,687**
2012 Annuitants	2,344
New Retirees	441
Annuitant Deaths	(16)
New Survivors	16
Other	(3)
2013 Annuitants	**2,782**
Ratio of Actives to Annuitants	**6.00**

Summary of Plan Participants

Summary of Plan Participants		
	2013	2012
Active Members		
Number	16,687	16,720
Total Salaries (Millions)	$1,597	$1,560
Average Age	43.5	43.2
Average Service	14.6	14.3
Average Salary	$95,694	$93,308
Terminated Members		
Number Vested	698	689
Number "Non-Vested"	1,565	1,558
Retirees		
Number of Retirees (All)	2,782	2,344
Average Monthly Benefit, All Retirees	$3,151	$2,911
Number of New "Service Retirees"	402	323
Average Monthly Benefit, New "Service Retirees"	$4,091	$3,970

Section Four

Appendices

Actuarial Methods and Assumptions

To calculate the contribution rates necessary to pre-fund the plan's benefits, an actuary uses an actuarial cost method, asset valuation method, economic assumptions, and demographic assumptions.

Actuarial Cost Methods

The future benefit obligations (or costs of the plan) are spread over the working lifetimes of the plan members based on the actuarial cost method (or funding method) in place for the plan. This produces a future stream of contributions to pre-fund the plan's benefits. Different cost methods pre-fund plans at different rates. Some put more money in earlier whereas others put more money in later.

Actuarial cost methods generally have two parts, which serve to:

- Fund future benefits in a consistent manner from year to year.
- Make up for any shortfalls in prior funding, including differences in funding when experience differs from assumptions.

The two parts of an actuarial cost method are:

- **The Normal Cost** — the value of future benefits allocated to the current plan year under the actuarial cost method.
- **Amortization of the Unfunded Actuarial Accrued Liability (UAAL)** — where the UAAL represents the amount of past service liability that exceeds the value of the plan's assets.

The Legislature was responsible for the selection of the actuarial cost and asset valuation methods. The actuarial cost methods used for the Law Enforcement Officers' and Fire Fighters' (LEOFF) Retirement System are as follows.

LEOFF Plan 1: A variation of the Frozen Initial Liability Cost Method is used to determine the normal cost and the actuarial accrued liability for retirement, termination, and ancillary benefits. Under this method, the UAAL is equal to the unfunded actuarial present value of projected benefits less the actuarial present value of future normal costs for all active members and is reset at each valuation date. The present value of future normal costs is based on the Aggregate normal cost rate for Plan 2 and the resulting UAAL is amortized by June 30, 2024, as a level percentage of projected system payroll. The projected payroll includes pay from Plan 2 as well as projected payroll from future new entrants.

LEOFF Plan 2: We use the Aggregate Cost Method to determine the normal cost and the actuarial accrued liability. Under this method, the unfunded actuarial present value of fully projected benefits is amortized over the future payroll of the active group. Members pay 50 percent of the total normal cost. The entire contribution is considered normal cost and no UAAL exists.

We use the Projected Unit Credit (PUC) cost method to report the plan's funded status. The PUC cost method projects future benefits under the plan, using salary growth and other assumptions, and applies the service that has been earned as of the valuation date to determine accrued liabilities. Comparing the PUC liabilities to the actuarial value of assets on the valuation date provides an appropriate measure of a plan's funded status. Under current Governmental Accounting Standards Board (GASB) rules, the PUC method is one of several acceptable measures of a plan's funded status. Use of another cost method could also be considered appropriate and could produce materially different results. Please see the **Glossary** for a further explanation of the PUC cost method.

GASB Statements 67 and 68 become effective after June 15, 2015, replace the current GASB statments, and require use of the Entry Age Normal Cost Method (EANC) for accounting purposes. We will begin reporting the EANC funded status with the next actuarial valuation, as of June 30, 2014.

We use the plan's assets to calculate contribution rates, unfunded liabilities, and the plan's funded status. Because the market value of assets can be volatile from one year to the next, an asset valuation method is generally used to adjust the Market Value of Assets (MVA) and smooth the effects of short-term volatility. The adjusted assets are called the Actuarial Value of Assets (AVA), or valuation assets.

Annual Gain/Loss		
Rate of Return	**Smoothing Period**	**Annual Recognition**
14.5% and up	8 years	12.50%
13.5-14.5%	7 years	14.29%
12.5-13.5%	6 years	16.67%
11.5-12.5%	5 years	20.00%
10.5-11.5%	4 years	25.00%
9.5-10.5%	3 years	33.33%
8.5-9.5%	2 years	50.00%
6.5-8.5%	1 year	100.00%
5.5-6.5%	2 years	50.00%
4.5-5.5%	3 years	33.33%
3.5-4.5%	4 years	25.00%
2.5-3.5%	5 years	20.00%
1.5-2.5%	6 years	16.67%
0.5-1.5%	7 years	14.29%
0.5% and lower	8 years	12.50%

For this valuation, we calculate the AVA using an asset smoothing method. This smoothing method was adopted during the 2003 Legislative Session. Each year, beginning with the application of this smoothing method, we determine the amount the actual investment return exceeds (or falls below) the expected investment return and we smooth that year's gain (or loss) based on the scale in the table above.

Additionally, to ensure the AVA maintains a reasonable relationship to the MVA, a 30 percent corridor is in place. This means the AVA may not exceed 130 percent nor drop below 70 percent of the MVA in any valuation.

Economic Assumptions

Economic Assumptions	
Annual Growth in Membership	1.25%
Interest on Member Contributions[1]	5.50%
Return on Investment Earnings[2]	7.50%
Inflation[3]	3.00%
General Salary Increases (includes inflation)[4]	3.75%
Annual COLA[5]	3.00%

[1] *Annual rate, compounded quarterly.*

[2] *Annual rate, compounded annually, net of expenses*

[3] *Based on the CPI: Urban Wage Earners & Clerical Workers, Seattle-Tacoma-Bremerton, WA - All Items.*

[4] *Excludes longevity, merit or step increases that usually apply to members in the early part of their careers.*

[5] *Based on the CPI (3% maximum per year).*

These generally include the annual rate of return on plan assets, annual rate of inflation, and annual rate of salary growth. The economic assumptions used in this actuarial valuation are prescribed by the Legislature and the LEOFF Plan 2 Retirement Board and are shown in the table to the left.

Demographic Assumptions

These include rates of retirement, rates at which members become disabled, turnover rates, mortality rates, and several other demographic assumptions as disclosed later in this section.

Changes in Methods and Assumptions since the Last Valuation

We changed the methods we use to value liabilities in the following ways.

- For LEOFF 1, we assume a 7.8 percent interest rate.
- We updated assumed administrative factors consistent with those currently in use by the Department of Retirement Systems.
- We performed an experience study of the plans for the period 2007-2012. As a result of this study, we updated demographic assumptions. For a full description of the assumption changes see the *2007-2012 Experience Study Report*.

Our mortality rates include an assumption for future mortality improvements. We took two steps to build our mortality assumptions.

First, we developed the base mortality table by starting with RP-2000, published by the Society of Actuaries, and applied age offsets for each plan. When age offsets are negative, it means we think people of a given age are generally healthier than others their age. In other words, we expect their mortality experience will be similar to younger people. Conversely, a positive age offset means we expect mortality experience for a given age to match that of a higher age in the general population. For instance, we expect a 50-year-old LEOFF male to have the same mortality rate as other 49-year-old males because we assume a negative one-year age offset.

Next, we applied mortality improvements to the RP-2000 mortality table using Scale BB. Beginning with the 2013 Actuarial Valuation Report, we use “generational” mortality instead of projecting to a given year. Under generational mortality, a member is assumed to receive additional mortality improvements in each future year, throughout their lifetime.

As an example of generational mortality, consider a healthy LEOFF Plan 2 male, age 50. To project the RP-2000 mortality rates to the valuation year 2013, we use the following equation.

$$\text{RP-2000 rate} \times (1 - \text{Scale BB})^{13}$$

For a 50-year-old male, this is $0.001995 \times (1 - 0.003)^{13} = 0.001919$.

The next tables show the age offsets we used as well as the mortality rates projected to the current valuation year for each plan. Please note that this table is meant to be an example only. Under generational mortality, the mortality rate for each age will improve in each future year by the rates in the mortality improvement table.

Following these tables, the next table shows Scale BB, which was published by the Society of Actuaries.

Please see the *2007-2012 Experience Study* for more details regarding the development of these rates.

	Mortality Projected to 2013		Disabled Mortality Projected to 2013			
	LEOFF All Plans		LEOFF Plan 1*		LEOFF Plan 2	
Offsets	-1	1	2	2	0	0
Age	Male	Female	Male	Female	Male	Female
20	0.000318	0.000185	0.000352	0.000187	0.021706	0.007165
21	0.000332	0.000187	0.000359	0.000189	0.021706	0.007165
22	0.000343	0.000189	0.000362	0.000193	0.021706	0.007165
23	0.000352	0.000193	0.000362	0.000199	0.021706	0.007165
24	0.000359	0.000199	0.000364	0.000206	0.021706	0.007165
25	0.000362	0.000206	0.000367	0.000214	0.021706	0.007165
26	0.000362	0.000214	0.000378	0.000226	0.021706	0.007165
27	0.000364	0.000226	0.000396	0.000239	0.021706	0.007165
28	0.000367	0.000239	0.000427	0.000254	0.021706	0.007165
29	0.000378	0.000254	0.000480	0.000295	0.021706	0.007165
30	0.000396	0.000295	0.000540	0.000337	0.021706	0.007165
31	0.000427	0.000337	0.000607	0.000379	0.021706	0.007165
32	0.000480	0.000379	0.000675	0.000418	0.021706	0.007165
33	0.000540	0.000418	0.000743	0.000457	0.021706	0.007165
34	0.000607	0.000457	0.000809	0.000494	0.021706	0.007165
35	0.000675	0.000494	0.000869	0.000533	0.021706	0.007165
36	0.000743	0.000533	0.000927	0.000575	0.021706	0.007165
37	0.000809	0.000575	0.000982	0.000623	0.021706	0.007165
38	0.000869	0.000623	0.001038	0.000679	0.021706	0.007165
39	0.000927	0.000679	0.001098	0.000744	0.021706	0.007165
40	0.000982	0.000744	0.001168	0.000819	0.021706	0.007165
41	0.001038	0.000819	0.001249	0.000901	0.021706	0.007165
42	0.001098	0.000901	0.001343	0.000990	0.021706	0.007165
43	0.001168	0.000990	0.001450	0.001081	0.021706	0.007165
44	0.001249	0.001081	0.001554	0.001176	0.021706	0.007165
45	0.001343	0.001176	0.001668	0.001275	0.021706	0.007165
46	0.001450	0.001275	0.001789	0.001379	0.022934	0.007871
47	0.001554	0.001379	0.001919	0.001491	0.024162	0.008616
48	0.001668	0.001491	0.002056	0.001612	0.025393	0.009401
49	0.001789	0.001612	0.002355	0.001781	0.026626	0.010227
50	0.001919	0.001781	0.002565	0.001941	0.027865	0.011093
51	0.002056	0.001941	0.002804	0.002122	0.029109	0.011999
52	0.002355	0.002122	0.003074	0.002331	0.030354	0.012941
53	0.002565	0.002331	0.003485	0.002613	0.031600	0.013911
54	0.002804	0.002579	0.004039	0.002933	0.032844	0.014710

Improvements in mortality are projected to the valuation year specified based on 100% of Scale BB.

**LEOFF 1 uses RP-2000 Healthy mortality table as its base.*

	Mortality Projected to 2013 (Continued)		Disabled Mortality Projected to 2013 (Continued)			
	LEOFF		LEOFF			
	All Plans		Plan 1*		Plan 2	
Offsets	-1	1	2	2	0	0
Age	Male	Female	Male	Female	Male	Female
55	0.003074	0.002895	0.004513	0.003259	0.034084	0.015500
56	0.003485	0.003216	0.005071	0.003628	0.035325	0.016274
57	0.003987	0.003581	0.005643	0.004053	0.036095	0.017026
58	0.004397	0.004001	0.006321	0.004554	0.036853	0.017756
59	0.004876	0.004494	0.007098	0.005169	0.037608	0.018465
60	0.005426	0.005102	0.007993	0.005842	0.038373	0.019164
61	0.006078	0.005765	0.009019	0.006624	0.039163	0.019864
62	0.006825	0.006537	0.010029	0.007367	0.039993	0.020582
63	0.007684	0.007367	0.011177	0.008296	0.040878	0.021619
64	0.008671	0.008296	0.012479	0.009363	0.041837	0.022736
65	0.009642	0.009363	0.013740	0.010396	0.042886	0.023955
66	0.010745	0.010396	0.015076	0.011492	0.044046	0.025296
67	0.011996	0.011492	0.016486	0.012702	0.045331	0.026775
68	0.013208	0.012702	0.018245	0.014310	0.046758	0.028407
69	0.014683	0.014310	0.020187	0.015880	0.048979	0.030203
70	0.016270	0.015880	0.022415	0.017663	0.051419	0.032169
71	0.018245	0.017663	0.024967	0.019634	0.054096	0.034310
72	0.020187	0.019634	0.027853	0.021760	0.057025	0.036627
73	0.022415	0.021760	0.031085	0.024024	0.060218	0.039121
74	0.024967	0.024024	0.034647	0.026468	0.063685	0.041793
75	0.027853	0.026468	0.038539	0.029151	0.067428	0.044644
76	0.031085	0.029151	0.042825	0.032134	0.071441	0.047676
77	0.034647	0.032134	0.047594	0.035477	0.075711	0.050896
78	0.038539	0.035477	0.052886	0.039215	0.080223	0.054315
79	0.042825	0.039215	0.059190	0.043404	0.084949	0.057946
80	0.047594	0.043404	0.066129	0.048117	0.089862	0.061809
81	0.052886	0.048117	0.073714	0.053427	0.094933	0.065931
82	0.059190	0.053427	0.081980	0.059420	0.100137	0.070344
83	0.066129	0.059420	0.091000	0.066197	0.105449	0.075080
84	0.073714	0.066197	0.100892	0.073830	0.110855	0.080171
85	0.081980	0.073830	0.111776	0.082344	0.116344	0.085649
86	0.091000	0.082344	0.123728	0.091717	0.121907	0.091543
87	0.102232	0.091717	0.138550	0.101847	0.129238	0.097879
88	0.114762	0.101847	0.154718	0.112555	0.136816	0.104676
89	0.128717	0.112555	0.170753	0.123601	0.144652	0.111949

Improvements in mortality are projected to the valuation year specified based on 100% of Scale BB.

**LEOFF 1 uses RP-2000 Healthy mortality table as its base.*

	Mortality Projected to 2013 *(Continued)*		Disabled Mortality Projected to 2013 *(Continued)*			
	LEOFF		LEOFF			
	All Plans		Plan 1*		Plan 2	
Offsets	-1	1	2	2	0	0
Age	Male	Female	Male	Female	Male	Female
90	0.144131	0.125237	0.187595	0.136508	0.158844	0.121292
91	0.160944	0.138313	0.205043	0.149559	0.175301	0.131363
92	0.177617	0.151534	0.222895	0.162529	0.192587	0.142191
93	0.195128	0.164674	0.240969	0.175223	0.210494	0.153534
94	0.213269	0.177533	0.259127	0.187455	0.228814	0.166845
95	0.231828	0.189924	0.277287	0.199043	0.247362	0.179872
96	0.250616	0.201662	0.295405	0.209819	0.265995	0.192423
97	0.269491	0.212577	0.313442	0.219639	0.284628	0.204312
98	0.284628	0.219639	0.327063	0.225411	0.299288	0.212577
99	0.303218	0.228371	0.344891	0.235455	0.317558	0.222524
100	0.317558	0.235455	0.357447	0.244749	0.331358	0.228371
101	0.335704	0.247960	0.373200	0.259209	0.349415	0.238544
102	0.349415	0.259209	0.381932	0.271886	0.362136	0.247960
103	0.366882	0.275449	0.392744	0.289328	0.378090	0.262606
104	0.378090	0.289328	0.394831	0.303833	0.386937	0.275449
105	0.392003	0.307811	0.400000	0.322725	0.397886	0.293116
106	0.397886	0.322725	0.400000	0.337441	0.400000	0.307811
107	0.400000	0.337441	0.400000	0.351544	0.400000	0.322725
108	0.400000	0.351544	0.400000	0.364617	0.400000	0.337441
109	0.400000	0.364617	0.400000	0.376246	0.400000	0.351544
110	0.400000	0.376246	0.400000	0.386015	0.400000	0.364617
111	0.400000	0.386015	0.400000	0.393507	0.400000	0.376246
112	0.400000	0.393507	0.400000	0.398308	0.400000	0.386015
113	0.400000	0.398308	0.400000	0.400000	0.400000	0.393507
114	0.400000	0.400000	0.400000	0.400000	0.400000	0.398308
115	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000
116	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000
117	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000
118	0.400000	0.400000	1.000000	1.000000	0.400000	0.400000
119	0.400000	1.000000	1.000000	1.000000	0.400000	0.400000
120	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000

Improvements in mortality are projected to the valuation year specified based on 100% of Scale BB.

**LEOFF 1 uses RP-2000 Healthy mortality table as its base.*

100% Scale BB Mortality Improvement								
Age	Male	Female	Age	Male	Female	Age	Male	Female
20	0.0030	0.0030	50	0.0030	0.0030	80	0.0150	0.0120
21	0.0030	0.0030	51	0.0030	0.0030	81	0.0150	0.0120
22	0.0030	0.0030	52	0.0030	0.0030	82	0.0150	0.0120
23	0.0030	0.0030	53	0.0030	0.0030	83	0.0150	0.0120
24	0.0030	0.0030	54	0.0030	0.0040	84	0.0150	0.0120
25	0.0030	0.0030	55	0.0030	0.0050	85	0.0150	0.0120
26	0.0030	0.0030	56	0.0030	0.0060	86	0.0150	0.0120
27	0.0030	0.0030	57	0.0040	0.0070	87	0.0140	0.0120
28	0.0030	0.0030	58	0.0050	0.0080	88	0.0130	0.0120
29	0.0030	0.0030	59	0.0060	0.0090	89	0.0120	0.0120
30	0.0030	0.0030	60	0.0070	0.0100	90	0.0110	0.0110
31	0.0030	0.0030	61	0.0080	0.0110	91	0.0100	0.0100
32	0.0030	0.0030	62	0.0090	0.0120	92	0.0090	0.0090
33	0.0030	0.0030	63	0.0100	0.0120	93	0.0080	0.0080
34	0.0030	0.0030	64	0.0110	0.0120	94	0.0070	0.0070
35	0.0030	0.0030	65	0.0120	0.0120	95	0.0060	0.0060
36	0.0030	0.0030	66	0.0130	0.0120	96	0.0050	0.0050
37	0.0030	0.0030	67	0.0140	0.0120	97	0.0040	0.0040
38	0.0030	0.0030	68	0.0150	0.0120	98	0.0040	0.0040
39	0.0030	0.0030	69	0.0150	0.0120	99	0.0030	0.0030
40	0.0030	0.0030	70	0.0150	0.0120	100	0.0030	0.0030
41	0.0030	0.0030	71	0.0150	0.0120	101	0.0020	0.0020
42	0.0030	0.0030	72	0.0150	0.0120	102	0.0020	0.0020
43	0.0030	0.0030	73	0.0150	0.0120	103	0.0010	0.0010
44	0.0030	0.0030	74	0.0150	0.0120	104	0.0010	0.0010
45	0.0030	0.0030	75	0.0150	0.0120	105	0.0000	0.0000
46	0.0030	0.0030	76	0.0150	0.0120	106	0.0000	0.0000
47	0.0030	0.0030	77	0.0150	0.0120	107	0.0000	0.0000
48	0.0030	0.0030	78	0.0150	0.0120	108	0.0000	0.0000
49	0.0030	0.0030	79	0.0150	0.0120	109	0.0000	0.0000
						110	0.0000	0.0000

	Service Retirement			Disablement*		Ratio of Survivors Selecting Annuities**		
	LEOFF 1		LEOFF 2	LEOFF 1	LEOFF 2	LEOFF 1	LEOFF 2	
	Service less than 30 years	Service greater than or equal to 30 years						
Age	Male & Female			Male & Female		Male & Female		Age
20	0.00	0.00	0.00	0.0010	0.0001	0.00	0.00	20
21	0.00	0.00	0.00	0.0010	0.0001	0.00	0.00	21
22	0.00	0.00	0.00	0.0010	0.0001	0.00	0.00	22
23	0.00	0.00	0.00	0.0010	0.0001	0.00	0.00	23
24	0.00	0.00	0.00	0.0010	0.0002	0.00	0.00	24
25	0.00	0.00	0.00	0.0010	0.0002	0.00	0.00	25
26	0.00	0.00	0.00	0.0024	0.0002	0.00	0.00	26
27	0.00	0.00	0.00	0.0038	0.0003	0.00	0.00	27
28	0.00	0.00	0.00	0.0052	0.0003	0.00	0.00	28
29	0.00	0.00	0.00	0.0066	0.0004	0.00	0.00	29
30	0.00	0.00	0.00	0.0080	0.0005	0.00	0.00	30
31	0.00	0.00	0.00	0.0094	0.0005	0.00	0.02	31
32	0.00	0.00	0.00	0.0107	0.0006	0.00	0.12	32
33	0.00	0.00	0.00	0.0121	0.0006	0.00	0.19	33
34	0.00	0.00	0.00	0.0135	0.0007	0.00	0.24	34
35	0.00	0.00	0.00	0.0149	0.0008	0.00	0.28	35
36	0.00	0.00	0.00	0.0163	0.0009	0.00	0.32	36
37	0.00	0.00	0.00	0.0190	0.0011	0.00	0.35	37
38	0.00	0.00	0.00	0.0205	0.0012	0.00	0.38	38
39	0.00	0.00	0.00	0.0220	0.0013	0.00	0.41	39
40	0.00	0.00	0.00	0.0235	0.0014	0.64	0.43	40
41	0.00	0.00	0.00	0.0249	0.0014	0.64	0.45	41
42	0.00	0.00	0.00	0.0264	0.0015	0.64	0.47	42
43	0.00	0.00	0.00	0.0279	0.0016	0.64	0.49	43
44	0.00	0.00	0.00	0.0360	0.0017	0.64	0.51	44
45	0.00	0.00	0.00	0.0400	0.0018	0.64	0.52	45
46	0.00	0.00	0.00	0.0468	0.0020	0.64	0.54	46
47	0.00	0.00	0.00	0.0532	0.0023	0.64	0.55	47
48	0.00	0.00	0.00	0.0592	0.0026	0.64	0.56	48
49	0.00	0.00	0.00	0.0648	0.0029	0.64	0.58	49

Disability and Ratio of Survivors Selecting Annuities rates have been rounded for display purposes.

**LEOFF disability retirements are assumed to continue after service retirement eligibility, except for LEOFF 1 members with more than 30 years of service. Please see the 2013 AVR for full LEOFF 1 assumptions.*

***Refers to survivor who selects annuity payments (rather than a lump sum payment) upon active or terminated vested member's death. The LEOFF 2 ratio is 0.642 for duty-related deaths.*

	Service Retirement (Continued)			Disablement* (Continued)		Ratio of Survivors Selecting Annuities** (Continued)		
	LEOFF 1		LEOFF 2	LEOFF 1	LEOFF 2	LEOFF 1	LEOFF 2	
	Service less than 30 years	Service greater than or equal to 30 years						
Age	Male & Female			Male & Female		Male & Female		Age
50	0.07	0.12	0.03	0.0700	0.0032	0.64	0.59	50
51	0.07	0.12	0.04	0.0748	0.0036	0.64	0.60	51
52	0.07	0.12	0.05	0.0792	0.0040	0.64	0.61	52
53	0.07	0.12	0.10	0.0832	0.0045	0.64	0.62	53
54	0.10	0.16	0.10	0.0868	0.0050	0.64	0.63	54
55	0.10	0.20	0.10	0.0900	0.0055	0.64	0.64	55
56	0.10	0.20	0.10	0.0928	0.0062	0.64	0.65	56
57	0.13	0.20	0.10	0.0952	0.0069	0.64	0.66	57
58	0.13	0.20	0.15	0.0972	0.0076	0.64	0.67	58
59	0.13	0.20	0.15	0.0988	0.0085	0.64	0.67	59
60	0.23	0.25	0.15	0.1000	0.0095	0.64	0.68	60
61	0.23	0.25	0.19	0.1008	0.0105	0.64	0.69	61
62	0.23	0.25	0.23	0.1012	0.0117	0.67	0.73	62
63	0.23	0.25	0.20	0.1012	0.0131	0.67	0.74	63
64	0.23	0.25	0.20	0.1008	0.0145	0.67	0.75	64
65	0.23	0.25	0.25	0.1000	0.0162	0.67	0.75	65
66	0.23	0.25	0.25	0.0756	0.0026	0.67	0.75	66
67	0.23	0.25	0.25	0.0544	0.0004	0.67	0.75	67
68	0.23	0.25	0.25	0.0364	0.0001	0.67	0.75	68
69	0.23	0.25	0.25	0.0216	0.0000	0.67	0.75	69
70	1.00	1.00	1.00	0.0000	0.0000	0.67	0.75	70
71	1.00	1.00	1.00	0.0000	0.0000	0.67	0.75	71
72	1.00	1.00	1.00	0.0000	0.0000	0.67	0.75	72
73	1.00	1.00	1.00	0.0000	0.0000	0.67	0.75	73
74	1.00	1.00	1.00	0.0000	0.0000	0.67	0.75	74
75	1.00	1.00	1.00	0.0000	0.0000	0.67	0.75	75
76	1.00	1.00	1.00	0.0000	0.0000	0.67	0.75	76
77	1.00	1.00	1.00	0.0000	0.0000	0.67	0.75	77
78	1.00	1.00	1.00	0.0000	0.0000	0.67	0.75	78
79	1.00	1.00	1.00	0.0000	0.0000	0.67	0.75	79
80+	1.00	1.00	1.00	0.0000	0.0000	0.67	0.75	80+

Disability and Ratio of Survivors Selecting Annuities rates have been rounded for display purposes.
**LEOFF disability retirements are assumed to continue after service retirement eligibility, except for LEOFF 1 members with more than 30 years of service. Please see the 2013 AVR for full LEOFF 1 assumptions.*
***Refers to survivor who selects annuity payments (rather than a lump sum payment) upon active or terminated vested member's death. The LEOFF 2 ratio is 0.642 for duty-related deaths.*

	Termination	Probability of Vesting upon Termination* (for those not eligible to retire early)		Step Salary Increases		
	LEOFF	LEOFF 1	LEOFF 2	LEOFF		
Service Years	Male & Female	Male & Female		% Increase	Salary Ratio	Service Years
0	0.1070	0.000	0.000	10.70%	1.827	0
1	0.0481	0.000	0.000	10.70%	1.650	1
2	0.0245	0.000	0.000	7.50%	1.491	2
3	0.0194	0.000	0.000	5.90%	1.387	3
4	0.0187	0.000	0.000	3.70%	1.310	4
5	0.0181	1.000	0.325	2.60%	1.263	5
6	0.0174	1.000	0.350	1.80%	1.231	6
7	0.0168	1.000	0.350	1.40%	1.209	7
8	0.0161	1.000	0.350	1.30%	1.192	8
9	0.0155	1.000	0.375	1.20%	1.177	9
10	0.0148	1.000	0.375	1.70%	1.163	10
11	0.0142	1.000	0.400	1.20%	1.144	11
12	0.0135	1.000	0.400	1.20%	1.130	12
13	0.0129	1.000	0.400	1.20%	1.117	13
14	0.0122	1.000	0.400	1.20%	1.104	14
15	0.0116	1.000	0.400	1.20%	1.090	15
16	0.0109	1.000	0.450	1.00%	1.078	16
17	0.0103	1.000	0.450	1.00%	1.067	17
18	0.0096	1.000	0.500	1.00%	1.056	18
19	0.0090	1.000	0.550	1.00%	1.046	19
20	0.0083	1.000	0.600	1.00%	1.036	20
21	0.0077	1.000	0.600	0.50%	1.025	21
22	0.0070	1.000	0.650	0.50%	1.020	22
23	0.0064	1.000	0.800	0.50%	1.015	23
24	0.0057	1.000	0.850	0.50%	1.010	24
25	0.0051	1.000	0.900	0.50%	1.005	25
26	0.0044	1.000	0.900	0.00%	1.000	26
27	0.0038	1.000	0.900	0.00%	1.000	27
28	0.0031	1.000	0.950	0.00%	1.000	28
29	0.0025	1.000	0.950	0.00%	1.000	29
30+	0.0018	1.000	0.950	0.00%	1.000	30+

Termination rates have been rounded for display purposes.

**Denotes ratio of members who do not withdraw their savings when they leave employment.*

Early Retirement Factors		
Years Early	LEOFF 2*	Subsidized 3%**
0	1.000	1.00
1	0.914	0.97
2	0.836	0.94
3	0.765	0.91
4	0.701	N/A
5	0.642	N/A
6	0.589	N/A
7	0.541	N/A
8	0.497	N/A
9	0.456	N/A
10	0.420	N/A
11	0.386	N/A
12	0.355	N/A
13	0.327	N/A
14	0.301	N/A
15	0.278	N/A
16	0.256	N/A
17	0.236	N/A
18	0.218	N/A
19	0.201	N/A
20	0.186	N/A
21	0.171	N/A
22	0.158	N/A
23	0.146	N/A
24	0.135	N/A
25	0.125	N/A
26	0.116	N/A
27	0.107	N/A
28	0.100	N/A
29	0.100	N/A
30+	0.100	N/A

From Normal Retirement Age.

*Only applies to non-duty disabilities and deaths.

***LEOFF 2 members must be at least age 50 with 20 or more years of service to qualify.*

Average Final Compensation Load	
System/Plan	Load
LEOFF 1	4.50%

Reflects allowances for cashouts of annual and sick leave for calculation of Average Final Compensation.

Certain and Life Annuities: Years Certain	
LEOFF 1	3
LEOFF 2	5

Assumed Retirement Age from Inactive Status	
LEOFF 2	53 (50 if service >= 20 years)

Member/Beneficiary Age Difference (In Years)		
	Male Member	Female Member
LEOFF	3	(1)

Age difference is Member age minus Beneficiary age.

Duty-Related Death Assumption	
	Duty Death Rate*
LEOFF 1	0.0350%
LEOFF 2	0.0350%

**The duty death rate is a constant probability, regardless of age. The nonduty death rate is obtained by subtracting duty death rate from mortality rate for any given age.*

LEOFF 2 Duty-Related Disability Assumption	
Age	Duty Disability Rate*
20	97.25%
25	95.86%
30	94.50%
35	93.11%
40	91.75%
45	89.00%
50	86.25%
55+	83.50%

**Probability of disability being duty-related; geometrically interpolated between given values. Applies to LEOFF 2 only. Table represents a summary of rates.*

Additional Duty-Related Assumptions for LEOFF 2	
Percent of disabilities assumed to be catastrophic	12%
Percent of deaths assumed to be caused by occupational diseases for fire fighters	
Age	Rate
20-49	14.74%
50-69	27.39%
Percent of Final Average Salary paid for catastrophic disability benefits (including offset adjustments).	44%

Average Ratio of Survivors of Inactive Deaths Selecting Annuities*	
LEOFF 2	56%

**Refers to survivor who selects annuity payments (rather than a lump sum payment) if a currently terminated vested member dies before retirement age.*

Joint and 100 Percent Survivor Option Factors*		
	Male Members	Female Members
LEOFF 2	0.859	0.881

**Applied to on-going survivor benefits in the event of a non-duty, pre-retirement death. Based on our member/beneficiary age difference assumptions and the option factors in WAC 415-02-380. Reductions apply to non-duty death benefits only.*

Employee Contribution Rates for Savings Fund Accrual	
LEOFF 2	8.41%

This assumption helps us estimate the value of accumulated employee contributions with interest if a member elects a refund of contributions instead of a deferred retirement allowance upon termination.
**No LEOFF 1 rates are required as long as the plan remains fully funded.*

Medical Premium Reimbursement

Medical Premium Reimbursement

RCW 41.26.510(5) states that qualified survivors and children of line-of-duty deaths (Survivors) in LEOFF 2 shall have medical premiums reimbursed from the retirement fund. The law also provides that all survivors will be covered by the Public Employees Benefits Board (PEBB).

RCW 41.26.470(10) states that LEOFF 2 members with total disabilities (Disabilities) and qualified family members shall have medical premiums reimbursed from the retirement fund.

The costs for these benefits are included in the results presented in this report. However, the benefits are funded through irrevocable trust funds, known as 401(h) accounts, from contribution rates selected by the Department of Retirement Systems (DRS) and the LEOFF 2 Board. These contribution rates are "carved out" of the total adopted contribution rates. DRS and the LEOFF 2 Board will periodically review the funding requirements for these benefits and adjust the 401(h) contribution rates as necessary.

The information below represents methods and assumptions tied directly to the medical premium reimbursement benefits. Please see the ***2013 Other Post-Employment Benefits Actuarial Valuation Report*** (OPEB Report) for the assumptions referenced below.

Medical Inflation

- **Current and Future Survivors, and Future Disabilities:** Uniform Medical Plan Medicare and Pre-Medicare assumptions (OPEB report).
- **Current Disabilities:** 5 percent per year.

Percent Married

- **Future Disabilities:** 85 percent.
- **Current Disabilities:** 100 percent.

Percent With Children

- **Disabilities and Survivors:** 100 percent, one child each.

Premium Percentages

When the data for members currently qualifying for total disability benefits does not provide information about how many family members are covered, we use the assumptions in the table at the right to split the total premium into each family member's share.

Premium Percentages *(Current Disabilities)*	
Family Member	**Percent of Total Premium**
Primary	34%
Spouse	49%
Child	17%
All	100%

Assumed Coverage Type, Future Disabilities

- Fifty percent covered by policies provided under the Consolidated Omnibus Budget Reconciliation Act of 1985 (COBRA).
- Fifty percent covered by employer-provided policies.

Assumed Timing/Length of Coverage

Assumed Timing/Length of Coverage			
Coverage Type	**Beneficiary Type**	**Start of Coverage**	**End of Coverage**
COBRA			
	Future Disabilities	Upon Benefit Commencement	2.5 Years after Commencement*
	Current Disabilities	Upon Benefit Commencement	29 Months after Commencement
Employer/PEBB			
	Survivors and Spouses of Disabilities	Upon Benefit Commencement	Age 65**
	Disabilities	Upon Benefit Commencement	29 Months after Commencement
	Child	Upon Benefit Commencement	10 Years after Commencement**
Medicare			
	Future Disabilities	2.5 Years after Commencement*	Paid for Life
	Current Disabilities	29 Months after Commencement	Paid for Life
	Survivors and Spouses of Disabilities	Age 65**	Paid for Life**
State-Provided Medicare Subsidy* **			
	Current and Future Disabilities	29 Months After Commencement	Paid for Life

**Because of a limitation in the model, we assume 2 years for 50% of members, and 3 years for 50% of members, depending on member's age at benefit commencement.*

***Benefits paid to spouses and child(ren) of Disabilities for the life of the member.*

****Whether member is covered by COBRA or other means, we assume the member is also covered under the state's explicit Medicare subsidy.*

Assumed Premiums

Disabilities (Used for Future Disabilities and Current Disabilities Who Have Missing Values)			
Coverage Type	**Family Member**	**Category**	**Annual Premium**
COBRA			
	Member	Pre-Medicare	$10,376.62
	Spouse	Pre-Medicare	5,807.57
	Child	Pre-Medicare	$3,058.40
Employer			
	Member	Pre-Medicare	$12,895.81
		Medicare	7,854.30
	Spouse	Pre-Medicare	11,457.78
		Medicare	7,392.38
	Child	Pre-Medicare	$3,962.35
Total Disabilities			
State-Provided Medicare Subsidy			
	Age	**Annual Subsidy**	
	Less than 25	$6,472.80	
	25-27	4,084.80	
	28 and Above	$1,156.80	

Future Survivors (Covered under PEBB Options)			
		Annual Premium	
Family Member	**Category**	**Medical**	**Dental**
Survivor			
	Pre-Medicare	$6,549.96	$556.08
	Medicare	$2,630.88	$556.08
Child			
	Pre-Medicare	$4,856.88	$556.08

Miscellaneous Assumptions/Methods

We include the following miscellaneous assumptions and methods in this valuation:

- Minimum and maximum allowable ages are set in the data as follows.

	Non-Annuitants	Annuitants
Minimum Age	16	20
Maximum Age	80	110

- Default entry salaries, usually increased for past service, are assigned for active members with less than two months' service during the valuation year.
- Historical salaries for vested terminated members are not provided in the valuation data. Beginning with the 2008 valuation year, we first look to see if we kept a historical salary for such a member in the prior year's data. If so, we copy the salary to the current year's data. If a member was active in the prior year and terminated in the current year, we copy the prior year's salary to the current year's salary and keep it as historical.
- Additionally, in 2009 we searched our data for actual salaries up to ten years prior for terminated vested members who did not already have historical salaries listed. To estimate salaries for the remaining terminated vested

members, we use the following procedure: First, a salary appropriate for LEOFF 2 and the member's total past service is assigned. These salaries are determined as of a given base year. Second, the salary is divided by the general salary increase assumption for each year the member has been inactive as measured from the base year.

- DRS reports salaries earned during the year prior to the valuation date. However, the salaries used in the first year of the valuation process have received an additional merit salary increase. In other words, the valuation software projects salaries to the coming year, beginning the day after the valuation date.
- LEOFF 2 uses a midyear decrement timing assumption.
- Members who receive a disability benefit are not assumed to return to active duty in the future.
- Termination rates are discontinued after members are eligible to retire.

Summary of Plan Provisions

The table to the right presents a high-level summary of the plan provisions and is not meant to contain an exhaustive list. For complete details of plan provisions, please refer to the statute shown in the table or contact the plan administrator, the Department of Retirement Systems. In the unlikely event that information contained in this table conflicts with state law, the law takes precedence.

Summary of Plan Provisions	
Effective Date of Plan	10/1/77
Date Closed to New Entrants	Open
Statutory Reference	Chapter 41.26 RCW
Normal Retirement Eligibility (age/service)	53/5
Accrued Benefit Formula	2% x YOS x AFC; 0.25% per month pre-retirement COLA with 20 years of service
Computation of FAS/AFC	Average compensation earnable for the highest 60 consecutive months
Credited Service	Monthly, based on hours worked each month
Vesting	5 years
Vested Benefits Upon Termination	Refund of employee contributions (x 150% if 10 YOS) plus interest, or deferred retirement allowance
Early Retirement Eligibility (age/service)	50/20
Early Retirement Reduction Factors	3% ERF with 20 YOS
Disability Retirement Benefit	Non-duty: accrued benefit, actuarially reduced; Duty, occupational: accrued benefit without actuarial reduction, minimum 10% of AFC; Duty, total: 70% of AFC with offsets for Social Securty and L&I benefits, not to exceed 100% of AFC.
COLA	Lesser of CPI* or 3%
Minimum Benefit per Month per YOS	n/a
Changes in Plan Provisions Since Last Valuation	Annuity Purchase (C 91 L 14); Definition of Firefighter (C 145 L 14)
Material Benefits not Included in this Valuation	We are not currently valuing portability with Seattle, Tacoma, & Spokane

**CPI: Urban Wage Earners & Clerical Workers, Seattle-Tacoma-Bremerton, WA - All Items.*

Age/Service Distribution

Age and Service Distribution of Active Law Enforcement Officers
(Number of Actives and Average Annual Salary)

LEOFF Plan 2

Attained Age	Attained Years of Service													
	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & Over	Total
Under 25	25	20	7	0	0	0	0	0	0	0	0	0	0	**52**
	$54,455	$58,993	$79,863	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$59,621**
25-29	82	82	53	43	61	198	0	0	0	0	0	0	0	**519**
	$57,855	$60,910	$66,635	$72,571	$78,977	$83,268	$0	$0	$0	$0	$0	$0	$0	**$72,631**
30-34	40	57	48	73	77	707	89	0	0	0	0	0	0	**1,091**
	$57,595	$64,958	$70,367	$78,792	$80,393	$86,694	$86,995	$0	$0	$0	$0	$0	$0	**$82,825**
35-39	25	39	32	34	43	530	537	121	0	0	0	0	0	**1,361**
	$57,554	$65,380	$72,674	$79,028	$82,412	$86,048	$91,745	$96,251	$0	$0	$0	$0	$0	**$87,483**
40-44	23	23	21	20	28	363	579	674	127	0	0	0	0	**1,858**
	$57,507	$63,847	$77,162	$72,068	$82,099	$83,547	$90,665	$95,883	$105,782	$0	$0	$0	$0	**$90,976**
45-49	3	10	8	11	7	153	271	501	620	129	0	0	0	**1,713**
	$72,096	$60,014	$77,919	$82,520	$73,134	$84,378	$92,392	$98,112	$102,546	$107,201	$0	$0	$0	**$97,705**
50-54	1	5	2	6	5	61	123	199	397	409	81	1	0	**1,290**
	*	$70,847	$66,748	$82,112	$95,635	$79,085	$91,232	$94,504	$102,196	$110,032	$112,354	*	$0	**$101,685**
55-59	4	0	5	5	1	28	38	84	134	192	218	26	0	**735**
	$68,858	$0	$77,944	$121,683	*	$83,484	$83,741	$92,065	$98,747	$106,422	$115,393	$116,968	$0	**$104,151**
60-64	0	1	1	2	0	12	14	34	36	63	90	21	0	**274**
	$0	*	*	$74,439	$0	$84,359	$94,766	$86,439	$95,420	$98,510	$109,201	$106,827	$0	**$99,723**
65-69	0	1	0	0	0	3	4	3	5	12	9	1	0	**38**
	$0	*	$0	$0	$0	$69,316	$80,458	$74,196	$68,637	$97,354	$100,336	*	$0	**$88,380**
70 & Over	0	0	0	0	0	0	1	0	0	0	1	0	0	**2**
	$0	$0	$0	$0	$0	$0	*	$0	$0	$0	*	$0	$0	**$117,743**
Total	**203**	**238**	**177**	**194**	**222**	**2,055**	**1,656**	**1,616**	**1,319**	**805**	**399**	**49**	**0**	**8,933**
	$57,764	**$63,002**	**$71,630**	**$78,136**	**$81,092**	**$85,161**	**$91,010**	**$95,994**	**$102,043**	**$107,627**	**$113,047**	**$112,710**	**$0**	**$92,384**

Average:	Age	43.4	Number of Participants:	Vested	7,692	Males	8,085	Early Retirement Eligible:	**560**
	Service	14.4		Not Vested	1,241	Females	848	Normal Retirement Eligible:	**1,470**

**Annual Salary omitted for privacy reasons.*
Numbers of participants eligible for early and normal retirement are estimates only.

Age and Service Distribution of Active Fire Fighters
(Number of Actives and Average Annual Salary)
(Continued)

LEOFF Plan 2

Attained Age	Attained Years of Service													
	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & Over	Total
Under 25	21	18	6	2	1	0	0	0	0	0	0	0	0	**48**
	$57,006	$60,915	$63,868	$77,285	*	$0	$0	$0	$0	$0	$0	$0	$0	**$59,779**
25-29	26	67	70	45	69	173	0	0	0	0	0	0	0	**450**
	$60,589	$62,324	$71,166	$73,586	$80,170	$86,686	$0	$0	$0	$0	$0	$0	$0	**$76,828**
30-34	36	57	57	47	69	543	126	0	0	0	0	0	0	**935**
	$58,464	$62,967	$70,791	$78,546	$82,532	$90,222	$95,797	$0	$0	$0	$0	$0	$0	**$85,750**
35-39	16	18	29	35	54	404	506	116	0	0	0	0	0	**1,178**
	$58,046	$59,660	$72,205	$78,174	$82,303	$90,328	$97,614	$102,840	$0	$0	$0	$0	$0	**$92,607**
40-44	8	9	16	12	28	254	522	536	152	1	0	0	0	**1,538**
	$56,270	$61,552	$71,402	$81,522	$81,199	$90,471	$98,623	$104,876	$108,290	*	$0	$0	$0	**$99,238**
45-49	2	5	11	6	14	113	243	380	478	123	0	0	0	**1,375**
	$54,002	$59,306	$71,874	$77,208	$82,978	$91,247	$96,538	$106,251	$110,269	$119,233	$0	$0	$0	**$104,974**
50-54	3	5	3	5	1	34	116	198	387	346	141	3	0	**1,242**
	$110,536	$75,344	$95,594	$106,877	*	$85,169	$94,529	$102,091	$110,815	$115,963	$123,928	$129,684	$0	**$109,982**
55-59	0	5	3	1	4	13	42	82	177	185	221	18	0	**751**
	$0	$91,783	$136,552	*	$120,940	$101,365	$96,480	$101,136	$106,709	$116,076	$124,188	$130,313	$0	**$113,503**
60-64	1	1	1	1	1	9	21	22	38	36	76	7	0	**214**
	*	*	*	*	*	$83,108	$108,736	$94,894	$109,230	$113,364	$119,526	$110,949	$0	**$109,910**
65-69	0	0	0	0	0	0	3	1	6	3	7	2	0	**22**
	$0	$0	$0	$0	$0	$0	$104,784	*	$105,688	$117,922	$108,243	$105,864	$0	**$109,958**
70 & Over	0	0	0	0	0	0	0	0	0	0	1	0	0	**1**
	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	*	$0	$0	*
Total	**113**	**185**	**196**	**154**	**241**	**1,543**	**1,579**	**1,335**	**1,238**	**694**	**446**	**30**	**0**	**7,754**
	$59,736	**$63,084**	**$72,325**	**$77,896**	**$82,357**	**$89,910**	**$97,542**	**$104,315**	**$109,634**	**$116,416**	**$123,046**	**$124,102**	**$0**	**$99,506**

Average:	Age	43.6	Number of Participants:	Vested	6,697	Males	7,299	Early Retirement Eligible:	**556**
	Service	14.9		Not Vested	1,057	Females	455	Normal Retirement Eligible:	**1,406**

**Annual Salary omitted for privacy reasons.*
Numbers of participants eligible for early and normal retirement are estimates only.

Age/Years Retired Distribution

Age and Years Retired Distribution of Service Retired Law Enforcement Officers
(Number of Service Retired Members and Average Monthly Benefit)

LEOFF Plan 2

Attained Age	Attained Years Retired													
	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & Over	Total
Under 50	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
50-54	31	55	12	9	6	0	0	0	0	0	0	0	0	**113**
	$3,330	$2,883	$3,435	$3,038	$3,636	$0	$0	$0	$0	$0	$0	$0	$0	**$3,117**
55-59	43	68	96	95	66	149	0	0	0	0	0	0	0	**517**
	$4,576	$4,301	$3,846	$3,679	$2,957	$2,960	$0	$0	$0	$0	$0	$0	$0	**$3,567**
60-64	32	44	49	47	25	257	40	0	0	0	0	0	0	**494**
	$4,188	$3,808	$3,609	$3,644	$3,613	$2,756	$1,770	$0	$0	$0	$0	$0	$0	**$3,075**
65-69	10	9	28	15	14	80	76	1	0	0	0	0	0	**233**
	$4,055	$3,612	$2,590	$3,478	$2,894	$2,702	$1,638	*	$0	$0	$0	$0	$0	**$2,492**
70-74	3	2	2	3	3	24	32	12	0	0	0	0	0	**81**
	$3,040	$2,690	$1,990	$3,826	$1,460	$2,414	$1,513	$1,034	$0	$0	$0	$0	$0	**$1,890**
75-79	0	0	0	0	0	5	7	5	3	0	0	0	0	**20**
	$0	$0	$0	$0	$0	$2,098	$1,642	$1,070	$615	$0	$0	$0	$0	**$1,459**
80-84	0	0	0	0	0	0	1	4	1	0	0	0	0	**6**
	$0	$0	$0	$0	$0	$0	*	$1,539	*	$0	$0	$0	$0	**$1,219**
85-89	0	0	0	0	0	0	0	0	0	1	0	0	0	**1**
	$0	$0	$0	$0	$0	$0	$0	$0	$0	*	$0	$0	$0	*****
90-94	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
95 & Over	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Total	**119**	**178**	**187**	**169**	**114**	**515**	**156**	**22**	**4**	**1**	**0**	**0**	**0**	**1,465**
	$4,064	**$3,688**	**$3,550**	**$3,620**	**$3,089**	**$2,784**	**$1,636**	**$1,161**	**$725**	*****	**$0**	**$0**	**$0**	**$3,062**

Average:	Age	61.1	Males	1,340
	Years Retired	5.0	Females	125

**Monthly benefit omitted for privacy reasons.*

Age and Years Retired Distribution of Service Retired Fire Fighters
(Number of Service Retired Members and Average Monthly Benefit)
(Continued)

LEOFF Plan 2

Attained Age	Attained Years Retired													
	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & Over	Total
Under 50	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
50-54	19	20	4	2	1	0	0	0	0	0	0	0	0	46
	$4,490	$4,195	$3,994	$3,316	*	$0	$0	$0	$0	$0	$0	$0	$0	$4,228
55-59	46	70	63	41	41	47	0	0	0	0	0	0	0	308
	$4,896	$4,895	$4,642	$3,881	$3,479	$2,999	$0	$0	$0	$0	$0	$0	$0	$4,231
60-64	38	38	46	38	19	126	12	0	0	0	0	0	0	317
	$4,612	$4,502	$4,713	$4,238	$3,339	$3,110	$2,389	$0	$0	$0	$0	$0	$0	$3,811
65-69	5	13	10	8	8	44	33	0	0	0	0	0	0	121
	$3,464	$3,497	$4,225	$3,771	$3,988	$2,995	$2,505	$0	$0	$0	$0	$0	$0	$3,153
70-74	0	1	3	5	1	18	13	3	0	0	0	0	0	44
	$0	*	$2,855	$2,041	*	$2,358	$1,897	$1,227	$0	$0	$0	$0	$0	$2,051
75-79	0	0	0	0	0	2	8	7	6	0	0	0	0	23
	$0	$0	$0	$0	$0	$2,535	$1,825	$1,336	$930	$0	$0	$0	$0	$1,504
80-84	0	0	0	0	0	0	2	1	2	1	0	0	0	6
	$0	$0	$0	$0	$0	$0	$1,652	*	$652	*	$0	$0	$0	$1,402
85-89	0	0	0	0	0	0	0	0	1	0	0	0	0	1
	$0	$0	$0	$0	$0	$0	$0	$0	*	$0	$0	$0	$0	*
90-94	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
95 & Over	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**108**	**142**	**126**	**94**	**70**	**237**	**68**	**11**	**9**	**1**	**0**	**0**	**0**	**866**
	$4,658	**$4,532**	**$4,571**	**$3,906**	**$3,441**	**$3,005**	**$2,263**	**$1,454**	**$796**	*	**$0**	**$0**	**$0**	**$3,719**

Average:	Age	61.4	Males	824
	Years Retired	4.4	Females	42

**Monthly benefit omitted for privacy reasons.*

Age and Years Retired Distribution of All Law Enforcement Officers With Disabilities
(Number of All Members With Disabilities and Average Monthly Benefit)

LEOFF Plan 2

Attained Age	Attained Years Retired													
	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & Over	Total
Under 50	4	10	3	4	3	11	3	0	0	0	0	0	0	38
	$1,938	$1,842	$1,327	$2,153	$1,358	$1,334	$583	$0	$0	$0	$0	$0	$0	$1,560
50-54	1	3	1	5	1	7	4	0	0	0	0	0	0	22
	*	$2,704	*	$2,891	*	$1,712	$902	$0	$0	$0	$0	$0	$0	$2,283
55-59	2	4	1	2	4	23	6	1	0	0	0	0	0	43
	$3,875	$4,601	*	$3,585	$2,648	$3,078	$863	*	$0	$0	$0	$0	$0	$2,891
60-64	0	2	4	4	2	25	5	0	1	0	0	0	0	43
	$0	$4,380	$2,094	$3,063	$4,426	$2,594	$1,893	$0	*	$0	$0	$0	$0	$2,621
65-69	0	1	0	0	2	10	9	0	0	0	0	0	0	22
	$0	*	$0	$0	$2,567	$2,825	$1,558	$0	$0	$0	$0	$0	$0	$2,359
70-74	0	0	0	0	0	2	1	1	0	0	0	0	0	4
	$0	$0	$0	$0	$0	$630	*	*	$0	$0	$0	$0	$0	$737
75-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
80-84	0	0	0	0	0	0	0	0	0	0	1	0	0	1
	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	*	$0	$0	*
85-89	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
90-94	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
95 & Over	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**7**	**20**	**9**	**15**	**12**	**78**	**28**	**2**	**1**	**0**	**1**	**0**	**0**	**173**
	$2,492	**$2,910**	**$2,479**	**$2,833**	**$2,639**	**$2,459**	**$1,257**	**$1,058**	*	**$0**	*	**$0**	**$0**	**$2,321**

Average:	Age	56.6	Males	141
	Years Retired	6.2	Females	32

**Monthly benefit omitted for privacy reasons.*

Age and Years Retired Distribution of All Fire Fighters With Disabilities
(Number of All Members With Disabilities and Average Monthly Benefit)
(Continued)

LEOFF Plan 2

Attained Age	Attained Years Retired													
	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & Over	Total
Under 50	0	0	0	1	0	4	2	0	0	0	0	0	0	7
	$0	$0	$0	*	$0	$786	$1,104	$0	$0	$0	$0	$0	$0	$1,017
50-54	2	2	1	3	0	5	3	0	0	0	0	0	0	16
	$4,075	$5,308	*	$1,257	$0	$1,829	$889	$0	$0	$0	$0	$0	$0	$2,391
55-59	2	7	3	7	5	11	3	0	0	0	0	0	0	38
	$3,817	$3,839	$4,947	$3,733	$3,423	$3,173	$2,186	$0	$0	$0	$0	$0	$0	$3,528
60-64	2	4	6	1	3	16	3	0	0	0	0	0	0	35
	$3,194	$4,766	$4,861	*	$3,316	$3,265	$2,918	$0	$0	$0	$0	$0	$0	$3,684
65-69	0	0	0	2	1	5	5	0	0	0	0	0	0	13
	$0	$0	$0	$3,207	*	$2,288	$2,191	$0	$0	$0	$0	$0	$0	$2,495
70-74	0	0	0	0	0	1	1	2	0	0	0	0	0	4
	$0	$0	$0	$0	$0	*	*	$680	$0	$0	$0	$0	$0	$1,133
75-79	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
80-84	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
85-89	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
90-94	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
95 & Over	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**6**	**13**	**10**	**14**	**9**	**42**	**17**	**2**	**0**	**0**	**0**	**0**	**0**	**113**
	$3,696	**$4,350**	**$4,791**	**$2,963**	**$3,409**	**$2,673**	**$1,937**	**$680**	**$0**	**$0**	**$0**	**$0**	**$0**	**$3,056**

Average:	Age	58.9	Males	101
	Years Retired	5.6	Females	12

**Monthly benefit omitted for privacy reasons.*

Age and Years Retired Distribution of Survivors of Law Enforcement Officers
(Number of Survivors and Average Monthly Benefit)

LEOFF Plan 2

Attained Age	Attained Years Retired													
	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & Over	Total
Under 50	0	1	3	15	5	5	1	0	0	0	0	0	0	30
	$0	*	$1,023	$777	$1,528	$1,790	*	$0	$0	$0	$0	$0	$0	$1,149
50-54	1	1	4	6	1	6	2	0	0	0	0	0	0	21
	*	*	$3,958	$1,243	*	$1,994	$1,291	$0	$0	$0	$0	$0	$0	$2,105
55-59	1	1	0	9	5	11	4	0	0	0	0	0	0	31
	*	*	$0	$437	$1,916	$2,059	$1,183	$0	$0	$0	$0	$0	$0	$1,502
60-64	0	1	0	2	0	4	2	0	0	0	0	0	0	9
	$0	*	$0	$2,043	$0	$2,484	$1,458	$0	$0	$0	$0	$0	$0	$2,367
65-69	0	0	0	2	2	3	3	0	0	0	0	0	0	10
	$0	$0	$0	$1,846	$1,166	$3,225	$863	$0	$0	$0	$0	$0	$0	$1,829
70-74	0	0	0	0	0	2	2	2	0	0	0	0	0	6
	$0	$0	$0	$0	$0	$2,111	$1,069	$1,135	$0	$0	$0	$0	$0	$1,438
75-79	0	0	0	1	0	0	1	0	1	0	0	0	0	3
	$0	$0	$0	*	$0	$0	*	$0	*	$0	$0	$0	$0	$800
80-84	0	0	0	0	0	0	1	0	0	0	0	0	0	1
	$0	$0	$0	$0	$0	$0	*	$0	$0	$0	$0	$0	$0	*
85-89	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
90-94	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
95 & Over	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**2**	**4**	**7**	**35**	**13**	**31**	**16**	**2**	**1**	**0**	**0**	**0**	**0**	**111**
	$3,303	**$2,370**	**$2,700**	**$885**	**$1,601**	**$2,174**	**$1,312**	**$1,135**	*	**$0**	**$0**	**$0**	**$0**	**$1,602**

Average:	Age	54.4	Males	2
	Years Retired	5.8	Females	109

**Monthly benefit omitted for privacy reasons.*

Age and Years Retired Distribution of Survivors of Fire Fighters
(Number of Survivors and Average Monthly Benefit)
(Continued)

LEOFF Plan 2

Attained Age	Attained Years Retired													
	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & Over	Total
Under 50	0	1	4	3	1	3	0	0	0	0	0	0	0	12
	$0	*	$1,809	$743	*	$1,870	$0	$0	$0	$0	$0	$0	$0	$1,599
50-54	1	0	1	1	1	4	0	0	0	0	0	0	0	8
	*	$0	*	*	*	$4,530	$0	$0	$0	$0	$0	$0	$0	$3,914
55-59	0	1	0	4	1	5	0	0	0	0	0	0	0	11
	$0	*	$0	$2,837	*	$2,008	$0	$0	$0	$0	$0	$0	$0	$2,460
60-64	1	0	0	2	3	4	3	1	0	0	0	0	0	14
	*	$0	$0	$2,435	$2,586	$2,478	$2,452	*	$0	$0	$0	$0	$0	$2,565
65-69	0	0	1	0	1	2	0	1	0	0	0	0	0	5
	$0	$0	*	$0	*	$3,191	$0	*	$0	$0	$0	$0	$0	$3,461
70-74	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
75-79	0	0	0	0	0	0	0	2	0	0	0	0	0	2
	$0	$0	$0	$0	$0	$0	$0	$809	$0	$0	$0	$0	$0	$809
80-84	0	0	0	0	0	0	0	1	0	0	0	0	0	1
	$0	$0	$0	$0	$0	$0	$0	*	$0	$0	$0	$0	$0	*
85-89	0	0	0	0	0	0	0	0	1	0	0	0	0	1
	$0	$0	$0	$0	$0	$0	$0	$0	*	$0	$0	$0	$0	*
90-94	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
95 & Over	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**2**	**2**	**6**	**10**	**7**	**18**	**3**	**5**	**1**	**0**	**0**	**0**	**0**	**54**
	$3,110	**$2,780**	**$2,477**	**$2,588**	**$2,832**	**$2,781**	**$2,452**	**$668**	*	**$0**	**$0**	**$0**	**$0**	**$2,491**

Average:	Age	56.1	Males	1
	Years Retired	6.5	Females	53

**Monthly benefit omitted for privacy reasons.*

Historical Data

Historical Data										
(Dollars in Millions)	2013	2012	2011	2010	2009	2008	2007*	2006	2005	2004
Contribution Information										
Employer Rate	4.78%	4.64%	4.54%	4.54%	4.44%	4.34%	4.56%	4.66%	4.86%	4.57%
State Rate	3.19%	3.10%	3.03%	3.03%	2.96%	2.89%	3.04%	3.11%	3.24%	3.03%
Employee Rate	7.97%	7.74%	7.57%	7.57%	7.40%	7.23%	7.60%	7.77%	8.10%	7.60%
Funded Status										
Projected Unit Credit Liability	$6,859	$6,071	$5,576	$5,078	$4,349	$3,786	$3,386	$3,323	$2,932	$2,521
Market Value of Assets	$7,637	$6,640	$6,366	$5,081	$4,309	$5,315	$5,185	$4,339	$3,614	$2,984
Actuarial Value of Assets	$7,862	$7,222	$6,621	$6,043	$5,564	$5,053	$4,360	$3,844	$3,329	$2,947
Unfunded Liability	($1,003)	($1,150)	($1,044)	($965)	($1,215)	($1,266)	($974)	($521)	($397)	($426)
Funded Ratio	114.6%	118.9%	118.7%	119.0%	127.9%	133.4%	128.8%	115.7%	113.5%	116.9%
Participant Data										
Number of Actives	16,687	16,720	16,805	16,775	16,951	16,626	16,099	15,718	15,168	14,754
Total Annual Salaries	$1,597	$1,560	$1,535	$1,490	$1,443	$1,345	$1,234	$1,172	$1,092	$1,020
Number of Terminated Vested	698	689	655	781	672	649	629	597	570	521
Number of Terminated, Not Vested	1,565	1,558	1,617	1,707	1,663	1,531	1,433	1,362	1,285	1,233
Number of Retirees and Beneficiaries	2,782	2,344	2,015	1,639	1,367	1,134	924	779	574	432
Total Annual Benefits	$105	$82	$65	$49	$38	$29	$22	$17	$11	$8
Assumptions										
Valuation Interest Rate	7.50%	7.50%	7.50%	8.00%	8.00%	8.00%	5.94%	8.00%	8.00%	8.00%
Salary Increase	5.30%	5.43%	5.61%	6.55%	6.61%	6.61%	5.49%	7.40%	7.40%	7.60%
Inflation**	3.00%	3.00%	3.00%	3.50%	3.50%	3.50%	3.50%	3.50%	3.50%	3.50%
Growth in Membership	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%	0.94%	1.25%	1.25%	1.25%
Actuarial Experience										
Return on Market Value	12.31%	1.45%	21.08%	12.99%	(22.64%)	(1.33%)	16.61%	15.77%	17.55%	13.64%
Return on Actuarial Value	6.41%	6.25%	6.15%	4.84%	5.72%	11.04%	10.03%	10.80%	9.30%	4.10%
Salary Increase	3.91%	3.22%	3.48%	5.35%	6.69%	7.65%	4.31%	5.50%	5.90%	5.20%
Inflation	2.54%	3.17%	0.78%	0.44%	4.48%	3.79%	3.73%	3.02%	1.57%	1.41%
Growth in Membership	(1.32%)	(0.87%)	(0.12%)	0.17%	1.53%	2.62%	1.83%	2.66%	1.85%	0.33%
COLA***	2.54%-3%	3.00%	0.78%-3%	0.44%-3%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%

**For the 2007 valuation, the salary, interest, and growth rates were not annualized. They reflect the actual valuation period of nine months.*

***Based on the assumption for prior year's CPI: Urban Wage Earners & Clerical Workers, Seattle-Tacoma-Bremerton, WA - All Items.*

****COLA is based on the CPI (3% maximum per year).*

Glossary

Actuarial Accrued Liability

Computed differently under different funding methods, the actuarial accrued liability generally represents the portion of the present value of fully projected benefits attributable to service credit earned (or accrued) as of the valuation date.

Actuarial Gain or Loss

A pension plan incurs actuarial gains or losses when the actual experience of the pension plan does not exactly match assumptions. For example, an actuarial gain would occur if assets earned 10 percent for a given year since the assumed interest rate in the valuation is 7.5 percent.

Actuarial Value of Assets

The value of pension plan investments and other property used by the actuary for the purpose of an actuarial valuation (sometimes referred to as valuation assets). Actuaries often select an asset valuation method that smooths the effects of short-term volatility in the market value of assets.

Entry Age Normal (EAN) Funding Method

The EAN funding method is a standard actuarial funding method. The annual cost of benefits under EAN is comprised of two components:

- Normal cost; plus
- Amortization of the unfunded actuarial accrued liability.

The normal cost is determined on an individual basis, from a member's age at plan entry, and is designed to be a level percentage of pay throughout a member's career.

Funded Ratio/Status

The ratio of a plan's current assets to the present value of earned pensions. There are several acceptable methods of measuring a plan's assets and liabilities. The methods and assumptions used can vary based on the purpose of the measurement.

Market Value of Assets (MVA)

The market value of assets is the value of the pension fund based on the value of the assets as they would trade on an open market, including accrued income and expenses.

Normal Cost

Computed differently under different funding methods, the normal cost generally represents the portion of the cost of projected benefits allocated to the current plan year. The employer normal cost equals the

total normal cost of the plan reduced by employee contributions.

Present Value of Fully Projected Benefits

Computed by projecting the total future benefit payments from the plan, using actuarial assumptions (i.e., probability of death or retirement, salary increases, etc.), and discounting the payments to the valuation date using the valuation interest rate to determine the present value (today's value).

Present Value of Future Salaries (PVFS)

The value of future expected salaries discounted with interest to the valuation date.

Projected Unit Credit (PUC) Actuarial Cost Method

The PUC cost method is a standard actuarial funding method. The annual cost of benefits under PUC is comprised of two components:

- Normal cost; plus
- Amortization of the unfunded actuarial accrued liability.

The PUC normal cost is the estimated present value of projected benefits current plan members will earn in the year following the valuation date.

Unfunded Actuarial Accrued Liability (UAAL)

The excess, if any, of the actuarial accrued liability over the actuarial value of assets. In other words, the present value of benefits earned to date that not covered by current plan assets.

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