2014 Actuarial Valuation Report

Washington State
Law Enforcement Officers'
and Fire Fighters'
Plan 2 Retirement Board
as of June 30, 2014

Office of the State Actuary

"Securing tomorrow's pensions today."

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November 2015

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, 2014, under the funding policy established by the LEOFF 2 Retirement Board. These contribution requirements are purely informational since, according to state law, this "off-cycle" valuation is not used to determine contribution rates. This valuation also provides information on the funding progress and developments in the plan over the past year.

This report is organized into four sections. The *Summary of Key Results* section provides a high-level summary of the valuation results for LEOFF 2. The *Actuarial Exhibits* and *Participant Data* sections 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.

The LEOFF 2 Retirement Board has received the 2015 Recognition Award For Funding from the *Public Pension Coordinating Council* (PPCC). The PPCC is a coalition of three national retirement associations which establish Public Pension Standards that reflect minimum expectations for public retirement system management, administration, and funding.

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.

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

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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. However, consistent with current law, this is not a rate-setting valuation so these results are informational only. 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 2014 valuation along with comparable rates from the previous valuation. The **Actuarial Exhibits** section of this report shows how we developed these rates.

Contribution Rates

	2014	2013
Member	7.91%	7.97%
Employer*	4.74%	4.78%
State	3.17%	3.19%

**Excludes administrative expense rate.*

During the 2014 Interim, the Board adopted contribution rates for the 2015-17 Biennium that match the contribution rates being collected for the 2013-15 Biennium. Based on the contribution rates calculated in this valuation, the rates adopted by the Board fall between their long-term and short-term funding policies that include minimum contribution rates based on 90 percent and 100 percent, respectively, of the normal cost calculated under the Entry Age Normal (EAN) funding method. Please see the **Actuarial Certification Letter** for further details on this temporary funding policy. The table to the right 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 RCW 41.45 — Actuarial Funding of State Retirement Systems. It includes the following goals:

- Provide a dependable and systematic process for funding the benefits to members and retirees of the Washington State Retirement Systems.
- Fully amortize the total cost of LEOFF Plan 1 not later than June 30, 2024.
- Continue to fully fund LEOFF 2 as provided by law.
- Establish long-term employer contribution rates that will remain a relatively predictable proportion of 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 2014 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.

We observed no significant changes in the covered population. We also made no significant changes to our actuarial methods. One change was made to the plan provisions, based on recent legislation, to pay an L&I monthly death benefit from the LEOFF 2 trust fund to surviving spouses when the L&I benefits cease due to remarriage.

In terms of annual plan experience, the actual rate of investment return was 18.89 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 greater 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 2014 valuation results.

Actuarial Liabilities

The next table 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 Entry Age Normal (EAN) 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.

Actuarial Liabilities		
(Dollars in Millions)	**2014**	**2013**
Future Value of Fully Projected Benefits	$89,832	$85,177
Present Value of Fully Projected Benefits	$11,205	$10,314
Present Value of Accrued (Earned) Benefits*	$8,069	$7,220
Unfunded Actuarial Accrued Liability	N/A	N/A
Valuation Interest Rate	7.50%	7.50%

**Calculated using Entry Age Normal (EAN) cost method.*

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 below shows the Market Value of Assets and Actuarial (or smoothed) Value of Assets along with approximate rates of investment return.

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.

Assets		
(Dollars in Millions)	**2014**	**2013**
Market Value of Assets	$9,251	$7,637
Actuarial Value of Assets	8,638	7,862
Contributions*	282	272
Disbursements	135	110
Investment Return	1,456	825
Other**	$10	$10
Rate of Return on Assets***	18.89%	12.36%

**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.*

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.

In this report, we present funded status based on both Projected Unit Credit (PUC) and EAN cost methods. Please see the **Actuarial Exhibits** section of this report for more information on this reporting change.

The table to the right displays the funded status for LEOFF Plan 2. We did not use the PUC cost method to determine contribution requirements in this valuation. We also provide a history of PUC funded status in the **Actuarial Exhibits** section. Please see the **Glossary** for a more detailed explanation of PUC and EAN.

Funded Status		
(Dollars in Millions)	**2014**	**2013**
a. Entry Age Normal Liability	$8,069	$7,220
b. Projected Unit Credit Liability	7,629	6,859
c. Market Value of Assets	9,251	7,637
d. Deferred Gains/(Losses)	613	(225)
e. Actuarial Value of Assets (c-d)	8,638	7,862
Unfunded Liability - Entry Age Normal (a-e)	($569)	($643)
Entry Age Normal Funded Ratio (e/a)	107%	109%
Unfunded Liability - Projected Unit Credit (b-e)	($1,009)	($1,003)
Projected Unit Credit Funded Ratio (e/b)	113%	115%

Note: Totals may not agree due to rounding.

Participant Data

The table to the right summarizes the participant data used in the actuarial valuation for the plan year ending June 30, 2014, along with information from last year's valuation. See the **Participant Data** section of this report for additional information.

Participant Data		
	2014	**2013**
Active Members		
Number	16,773	16,687
Total Salaries *(in millions)*	$1,661	$1,597
Average Annual Salary	$99,048	$95,694
Average Attained Age	43.6	43.5
Average Service	14.7	14.6
Retirees and Beneficiaries		
Number	3,235	2,782
Average Annual Benefit	$40,318	$37,812
Terminated Members		
Number Vested	749	698
Number "Non-Vested"	1,618	1,565

Key Assumptions

The next table displays key economic assumptions used in the actuarial valuation. These assumptions are unchanged from our last valuation.

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.*

Section Two:

Actuarial Exhibits

Actuarial Certification Letter
Law Enforcement Officers' and Fire Fighters'
Retirement System Plan 2
Actuarial Valuation Report
As of June 30, 2014

November 2015

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, 2014, valuation date consistent with the prescribed funding policy established by the LEOFF 2 Retirement Board (the Board). These contribution requirements are purely informational since, according to law, this "off-cycle" valuation is not used to determine contribution rates. 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 Demographic 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.

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, 2014, 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 operating budget for fiscal year 2016, as passed by the Legislature in the 2015 Legislative Session, requires a transfer of $15.779 million from the LEOFF 2 trust fund to a separate account identified as the Benefit Improvement Account (BIA). The purpose of the BIA is to fund future benefit improvements to LEOFF 2. The BIA account will hold funds until such time as a benefit improvement is enacted and the assets of the BIA are transferred to the LEOFF 2 trust to offset the liabilities of the associated benefit improvement. Under the law that created the BIA, any funds in the BIA cannot be used to finance current plan provisions. As such, those funds will not be included in the assets of the LEOFF 2 trust when determining contribution requirements under the funding policy. The most recent asset transfer from the LEOFF 2 trust to the BIA occurred after the measurement date of this valuation report and was not included in this report. However, our initial analysis shows it will not impact contribution rates at this time. We expect future valuations will reflect this transfer of assets.

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.

Matthew M. Smith, FCA, EA, MAAA	Lisa A. Won, ASA, FCA, MAAA
State Actuary	Deputy State Actuary

Contribution Rates

Member and Employer Rate Summary	2014	2013
Member	7.91%	7.97%
Employer*	4.74%	4.78%
State (Normal Cost)	3.17%	3.19%
State (Plan 1 UAAL)	0.00%	0.00%
Total State	3.17%	3.19%

**Excludes administrative expense rate.*

The following tables 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.

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.

Development of Employer/State Rates	LEOFF 2
a. Total Normal Cost	15.82%
b. Employee Normal Cost (a x 50%)	7.91%
c. Total Employer/State Normal Cost (a - b)	**7.91%**
d. State Normal Cost (a x 20%)	3.17%
e. Employer Normal Cost (c - d)*	4.74%
f. Cost to Amortize UAAL	0.00%
g. Total Employer Contribution Rate (e + f)**	**4.74%**

**Excludes administrative expense rate.*

***The state pays 20% of the total normal cost for LEOFF 2. This reduces the total employer contribution rate from 7.91% to 4.74%.*

Development of Normal Cost Rates		
(Dollars in Millions)		**LEOFF 2**
1.	**Calculation of Member Normal Cost Rate**	
a.	Future Value of Fully Projected Benefits	$89,832
b.	Present Value of Fully Projected Benefits*	11,171
c.	Valuation Assets	8,638
d.	Unfunded Fully Projected Benefits (b - c)	2,533
e.	Plan 1 Present Value of Future Salaries (PVS)	N/A
f.	Plan 2 PVS	18,122
g.	Weighted PVS (2e + 2f)	$36,244
h.	Employee Normal Cost (d / g)	6.99%
i.	Employee Minimum Contribution Rate	7.81%
j.	Employee Contribution Rate with Minimum	7.81%
k.	Change In Plan Provisions (Laws of 2015)	0.10%
l.	Employee Contribution Rate (j + k)	7.91%
2.	**Calculation of Employer/State Normal Cost Rate**	
a.	Present Value of Fully Projected Benefits*	$11,171
b.	Valuation Assets	8,638
c.	Unfunded Fully Projected Benefits (a - b)	2,533
d.	Present Value of Employee Contributions	1,266
e.	Employer/State Responsibility (c - d)	$1,266
f.	Plan 2 PVS	$18,122
g.	Employer/State Normal Cost (e / f)	6.99%
h.	Employer/State Minimum Contribution Rate	7.81%
i.	Employer/State Contribution Rate with Minimum	7.81%
j.	Change In Plan Provisions (Laws of 2015)	0.10%
k.	Total Employer/State Contribution Rate (i + j)	7.91%
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.

**Does not include liabilities from law changes during the 2015 Legislative Session.*

***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	$11,022
b.	Present Value of Fully Projected Benefits (PVFB)	4,332
c	Valuation Assets	5,499
d.	Actuarial Present Value of Future Normal Costs	0
e.	UAAL (b - c - d)	(1,168)
f.	Expected UAAL Contributions to 2017	0
g.	Remaining UAAL (e - f)	($1,168)
h.	Amortization Date	6/30/2024
i.	Present Value of Projected Salaries beyond 2013	$10,206
j.	Preliminary Contribution Rate (g/ i)*	(11.44%)
k.	Change In Plan Provisions (Laws of 2014)	0.00%
l.	Contribution Rate to Amortize the UAAL (j + k)*	(11.44%)

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	$8,033
Termination	147
Death	105
Disability	370
Return of Contributions on Termination	92
Return of Contributions on Death	137
Total Active	**$8,883**
Inactive Members	
Terminated	$177
Service Retired	1,891
Disability Retired	143
Survivors	76
Total Inactive	**$2,287**
Laws of 2015	**35**
2014 Total	**$11,205**
2013 Total	**$10,314**

Note: Totals may not agree due to rounding.

Entry Age Normal Accrued Liability	
(Dollars in Millions)	**LEOFF 2**
Active Members	
Retirement	$5,405
Termination	33
Death	46
Disability	206
Return of Contributions on Termination	(26)
Return of Contributions on Death	84
Total Active	**$5,747**
Inactive Members	
Terminated	$177
Service Retired	1,891
Disability Retired	143
Survivors	76
Total Inactive	**$2,287**
Laws of 2015	**35**
2014 Total	**$8,069**
2013 Total	**$7,220**

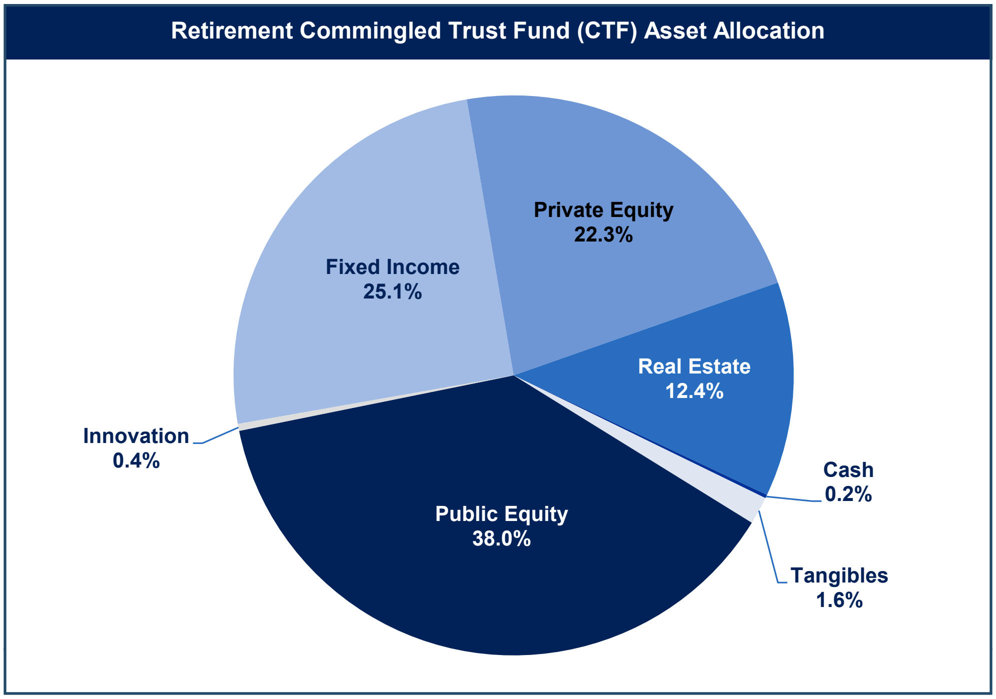
Note: Totals may not agree due to rounding.

Projected Unit Credit Accrued Liability*	
(Dollars in Millions)	**LEOFF 2**
Active Members	
Retirement	$4,769
Termination	88
Death	72
Disability	242
Return of Contributions on Termination	53
Return of Contributions on Death	83
Total Active	**$5,307**
Inactive Members	
Terminated	$177
Service Retired	1,891
Disability Retired	143
Survivors	76
Total Inactive	**$2,287**
Laws of 2015	**35**
2014 Total	**$7,629**
2013 Total	**$6,859**

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
2014	$171	$165	**2064**	$1,604	$42
2015	203	182	**2065**	1,530	37
2016	239	200	**2066**	1,453	33
2017	279	216	**2067**	1,374	29
2018	321	232	**2068**	1,294	25
2019	367	246	**2069**	1,214	22
2020	416	260	**2070**	1,133	19
2021	468	272	**2071**	1,052	16
2022	524	283	**2072**	971	14
2023	584	294	**2073**	890	12
2024	646	302	**2074**	811	10
2025	712	310	**2075**	733	9
2026	780	316	**2076**	657	7
2027	851	320	**2077**	584	6
2028	924	324	**2078**	513	5
2029	999	326	**2079**	446	4
2030	1,075	326	**2080**	383	3
2031	1,154	325	**2081**	325	2
2032	1,233	324	**2082**	272	2
2033	1,313	321	**2083**	224	1
2034	1,394	316	**2084**	182	1
2035	1,474	311	**2085**	146	1
2036	1,554	305	**2086**	115	1
2037	1,632	298	**2087**	89	0
2038	1,708	290	**2088**	67	0
2039	1,781	282	**2089**	50	0
2040	1,850	272	**2090**	37	0
2041	1,915	262	**2091**	27	0
2042	1,974	251	**2092**	19	0
2043	2,027	240	**2093**	13	0
2044	2,074	228	**2094**	9	0
2045	2,114	217	**2095**	6	0
2046	2,147	205	**2096**	4	0
2047	2,173	193	**2097**	3	0
2048	2,191	181	**2098**	2	0
2049	2,201	169	**2099**	1	0
2050	2,204	157	**2100**	1	0
2051	2,199	146	**2101**	0	0
2052	2,187	135	**2102**	0	0
2053	2,168	125	**2103**	0	0
2054	2,143	115	**2104**	0	0
2055	2,112	105	**2105**	0	0
2056	2,074	96	**2106**	0	0
2057	2,031	87	**2107**	0	0
2058	1,983	79	**2108**	0	0
2059	1,930	72	**2109**	0	0
2060	1,873	65	**2110**	0	0
2061	1,811	58	**2111**	0	0
2062	1,745	52	**2112**	0	0
2063	$1,676	$47	**2113**	$0	$0
			Total	**$89,832**	**$11,205**

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.

Calculation of Actuarial Value of Assets				
(Dollars in Millions)				**LEOFF 2**
a.	Market Value at 6/30/2014			$9,251
b.	Deferred Gains and (Losses)			
	Plan Year Ending	**Years Deferred**	**Years Remaining**	
	6/30/2014	8	7	768
	6/30/2013	5	3	193
	6/30/2012	7	4	(223)
	6/30/2011	8	4	350
	6/30/2010	5	0	0
	6/30/2009	8	2	(413)
	9/30/2008	8	1	(61)
	Total Deferral			$613
c.	Market Value less Deferral (a - b)			$8,638
d.	70% of Market Value of Assets			$6,476
e.	130% of Market Value of Assets			$12,026
f.	**Actuarial Value of Assets***			**$8,638**

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.	2013 Market Value (at WSIB)	$7,617
b.	Total Cash Flow	152
c.	2014 Market Value (at WSIB)	9,226
d.	Actual Return (c - b - a)	$1,456
e.	Weighted Asset Amount	$7,678
f.	Expected Return (7.5% x e)	576
g.	Investment Gain/(Loss) for Prior Year (d - f)	877
h.	Dollar-Weighted Rate of Return	18.93%

Note: Totals may not agree due to rounding.

Change in Market Value of Assets	
(Dollars in Millions)	**LEOFF 2**
2013 Market Value	**$7,637**
Revenue	
Contributions	
Employee	141
Employer/State	141
Total Contributions	282
Investment Return	1,456
Restorations	10
Transfers In	0
Miscellaneous	0
Total Revenue	**$1,749**
Disbursements	
Monthly Benefits	125
Refunds	9
Total Benefits	134
Transfers Out	0
Expenses	1
Total Disbursements	**$135**
Payables	$0
2014 Market Value	$9,251
2014 Actuarial Value	$8,638
Ratio (AV/MV)	**93%**

Note: Totals may not agree due to rounding.

Funded Status

In our actuarial valuation report, we calculate a plan's funded status by comparing (a) the plan's current assets, determined under an asset valuation method, to (b) the present value of accrued (or earned) pensions of its members calculated under an actuarial cost method. Funded status can vary significantly depending on the purpose of the measurement and the assumptions and methods used to determine the funded status.

Based on the purpose of the measurement, actuaries can select from several acceptable actuarial cost methods when measuring a plan's funded status. The cost methods vary in the manner they allocate benefits to past and future time periods. Generally speaking, benefits allocated to past service are considered accrued (or earned). Please see the **Glossary** for an explanation of the actuarial cost methods we use in this actuarial valuation.

For prior actuarial valuation reports, we relied on the Projected Unit Credit (PUC) actuarial cost method when reporting funded status. Due to changes in financial reporting from the Governmental Accounting Standards Board (GASB), we will report funded status using the Entry Age Normal (EAN) actuarial cost method and discontinue use of the PUC method after this year's report. We believe this change will lessen the confusion that can result from the reporting of multiple funded status measurements in various reports. However, the funded status measures we share in this report may still vary from those presented in the Department of Retirement Systems (DRS) Comprehensive Annual Financial Report (CAFR). These differences occur because the assumptions and methods that apply for determining contribution requirements (under a funding valuation) may not apply for financial reporting under GASB accounting standards (an accounting valuation). Put another way, these measurements still represent distinct measurements for distinct purposes and the results may vary between the two reports.

Projected Unit Credit Funded Status on an Actuarial Value Basis*			
(Dollars in Millions)		**LEOFF 2**	**LEOFF 1**
PUC Liability		$7,629	$4,323
Valuation Assets		$8,638	$5,499
Unfunded Liability		($1,009)	($1,176)
Funded Ratio			
	**2014 ** **	**113%**	**127%**
	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%
	1986	142%	57%

Note: Totals may not agree due to rounding. See the 2014 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.*

To determine the present value (today's value) of accrued benefits we discount future benefits to the valuation date using the valuation interest rate. The valuation interest rate is adopted by the LEOFF Plan 2 Retirement Board and is consistent with the long-term expected return under the plan's funding policy. (Note: This discount rate may vary from the rate used for financial reporting under GASB accounting standards).

In addition to the valuation interest rate, we use the same long-term assumptions to develop the funded status measure in this report as we use 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.

For reporting funded status and calculating contribution requirements, we also use an asset valuation method to determine the actuarial value of assets (AVA). This asset valuation method smooths the inherent volatility in the Market Value of Assets (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. To determine the 2014 investment gains or losses, we used an investment return assumption of 7.5 percent. The AVA provides a more stable measure of the plan's assets on an ongoing basis.

With this background in mind, we display the funded status on an "actuarial value" basis. For the actuarial basis, we use the assumed long-term rate of return and actuarial value of assets consistent with the plan's funding policy.

Entry Age Normal Funded Status on an Actuarial Value Basis*		
(Dollars in Millions)	**LEOFF 2**	**LEOFF 1**
EAN Liability	$8,069	$4,323
Valuation Assets	$8,638	$5,499
Unfunded Liability	($569)	($1,177)
Funded Ratio		
2014	**107%**	**127%**

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

It's also reasonable and acceptable to report funded status using other assumptions and methods. The resulting funded status will change with the use of assumptions and methods that vary from what we present in this report. Please visit our website: *Funded Status Tables* for funded status measures that vary by interest rate assumptions and asset valuation methods.

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.

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 UAAL Rate by Source*

Change in UAAL Rate	LEOFF 1
2013 UAAL Rate Before Laws of 2014	(8.67%)
Remove Rate Floor / Ceiling	0.00%
LEOFF 1 Roll Forward Funding Method	(2.49%)
2013 Adjusted UAAL Rate	**(11.16%)**
Liabilities	
Salaries	(0.04%)
Termination	0.00%
Retirement	(0.02%)
Return to Work	0.01%
Inflation (CPI)	(0.72%)
Other Liabilities	0.21%
Total Liability Gains/Losses	**(0.60%)**
Asset Gains/Losses	**0.74%**
Present Value of Future Salaries Gains/Losses	**(0.13%)**
Incremental Changes	
Plan Change	0.00%
Method Change	0.00%
Assumption Change	0.00%
Correction Change	0.00%
Experience Study Change	0.00%
Total Incremental Changes Gains/Losses	**0.00%**
Other Gains/Losses	**(0.29%)**
Total Change	**(0.28%)**
2014 Preliminary UAAL Rate	**(11.44%)**
Laws of 2015	0.00%
2014 Adjusted UAAL Rate	**(11.44%)**

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

Change in State Contribution Rate by Source*

Change in Employer Rate	LEOFF
2013 Contribution Rate Before Laws of 2014	**(5.48%)**
Remove Rate Floor / Ceiling	(0.40%)
LEOFF 1 Funding Method Changes	(2.49%)
2013 Adjusted Contribution Rate	**(8.37%)**
Liability Gains/Losses	(0.36%)
Asset Gains/Losses	0.64%
Present Value of Future Salaries Gains/Losses	(0.27%)
Incremental Changes	0.00%
Other Gains/Losses	(0.28%)
Total Change	**(0.27%)**
2014 Preliminary Contribution Rate	**(8.64%)**
Increase from Applied Rate Floor	0.33%
Laws of 2015	0.04%
2014 Adjusted Contribution Rate	**(8.27%)**

**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
2013 Normal Cost Before Laws of 2014	3.19%
Remove Rate Floor / Ceiling	(0.40%)
2013 Adjusted Normal Cost Rate	**2.79%**
Liabilities	
Salaries	(0.01%)
Termination	(0.01%)
Retirement	0.00%
Growth / Return to Work	0.22%
Other Liabilities	0.04%
Total Liability Gains/Losses	**0.24%**
Asset Gains/Losses	**(0.10%)**
Present Value of Future Salaries Gains/Losses	**(0.14%)**
Incremental Changes	
Plan Change	0.00%
Method Change	0.00%
Assumption Change	0.00%
Correction Change	0.00%
Experience Study Change	0.00%
Total Incremental Changes Gains/Losses	**0.00%**
Other Gains/Losses	0.01%
Total Change	**0.01%**
2014 Preliminary Normal Cost	**2.80%**
Increase from Applied Rate Floor	0.33%
Laws of 2015	0.04%
2014 Adjusted Normal Cost	**3.17%**

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

Section Three:

Participant Data

Overview of System Membership

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	132
Higher Education	110
Community Colleges	0
K-12	0
Counties	2,755
County Sub Divisions	263
First Class Cities	4,904
Other Cities	4,884
Ports	173
Education Service District	0
Fire Districts	3,552
Public Utility District	0
Water Districts	0
Energy Northwest	0
Unions	0
TOTAL	**16,773**

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	
2013 Actives	16,687
Transfers	0
Hires/Rehires	809
New Retirees	(400)
Deaths	(16)
Terminations	(307)
2014 Actives	**16,773**
2013 Annuitants	2,782
New Retirees*	463
Annuitant Deaths	(22)
New Survivors	15
Other	(3)
2014 Annuitants	**3,235**
Ratio of Actives to Annuitants	**5.18**

**Includes service and disability retirees.*

Summary of Plan Participants

Summary of Plan Participants	2014	2013
Active Members		
Number	16,773	16,687
Total Salaries (Millions)	$1,661	$1,597
Average Age	43.6	43.5
Average Service	14.7	14.6
Average Salary	$99,048	$95,694
Terminated Members		
Number Vested	749	698
Number "Non-Vested"	1,618	1,565
Retirees		
Number of Retirees (All)	3,235	2,782
Average Monthly Benefit, All Retirees	$3,360	$3,151
Number of New "Service Retirees"	431	402
Average Monthly Benefit, New "Service Retirees"	$4,209	$4,091

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. This section, together with the web pages linked below, list the actuarial methods and assumptions used for this valuation.

Actuarial Methods

Please see the *Actuarial Methods* web page for descriptions of the actuarial cost methods and asset valuation method we use for this valuation.

Actuarial Assumptions

Assumptions that change regularly, along with new assumption and method changes since the last actuarial valuation report, are listed within this section. Otherwise, please see the *Actuarial Assumptions* web page for descriptions of all remaining assumptions.

Demographic Assumptions

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.

Changes in Methods and Assumptions since the Last Valuation

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

- We corrected how our valuation software calculates a member's entry age under the Entry Age Normal actuarial cost method. Prior to the correction, the funding age was rounded resulting in an entry age one year higher in some cases.
- We changed the way we apply salary limits, as described in the *2007-2012 Experience Study Report*.

Summary of Plan Provisions

The summary of key plan provisions used in the actuarial valuation are provided in two sets of tables. The table below contain plan provisions that can change frequently while the provisions that change less frequently can be found on our website: *Summary of General Plan Provisions*.

These tables present high-level summaries and are not meant to be exhaustive lists. For complete details of plan provisions, please refer to the statutes governing the systems or contact the plan administrator, Department of Retirement Systems (DRS). In the unlikely event that information contained in these summary tables conflicts with state law, the law takes precedence.

Summary of Frequently Changing Plan Provisions - LEOFF

	Plan 1	Plan 2
COLA	Full CPI*	Lesser of CPI* or 3%
Changes in Plan Provisions Since Last Valuation	None	Supplemental Survivor Benefits, (C 78 L 15)

**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	32	38	8	1	0	0	0	0	0	0	0	0	0	**79**
	$58,221	$60,605	$72,036	*	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$60,980**
25-29	84	146	71	44	37	138	1	0	0	0	0	0	0	**521**
	$59,176	$64,593	$70,001	$74,084	$78,631	$88,340	*	$0	$0	$0	$0	$0	$0	**$72,609**
30-34	51	98	63	55	63	664	70	0	0	0	0	0	0	**1,064**
	$58,964	$66,434	$72,454	$74,428	$87,246	$90,512	$93,295	$0	$0	$0	$0	$0	$0	**$84,872**
35-39	36	52	29	27	41	530	490	113	0	0	0	0	0	**1,318**
	$61,632	$66,172	$76,201	$82,239	$82,295	$89,405	$94,582	$100,368	$0	$0	$0	$0	$0	**$89,936**
40-44	22	32	30	22	16	340	507	671	125	0	0	0	0	**1,765**
	$60,544	$68,540	$73,465	$78,703	$86,799	$88,212	$93,200	$99,278	$106,342	$0	$0	$0	$0	**$94,052**
45-49	7	11	9	7	13	178	238	556	593	160	0	0	0	**1,772**
	$63,333	$79,972	$67,210	$88,157	$84,446	$86,948	$92,931	$100,436	$107,008	$113,977	$0	$0	$0	**$100,887**
50-54	2	4	4	2	7	58	112	216	400	444	75	0	0	**1,324**
	$70,919	$64,542	$86,021	$80,151	$80,456	$86,264	$94,453	$99,345	$105,893	$111,662	$118,030	$0	$0	**$105,208**
55-59	1	3	1	4	5	22	29	85	134	204	203	38	0	**729**
	*	$69,119	*	$89,438	$124,576	$87,360	$85,596	$93,035	$101,482	$111,376	$118,322	$118,032	$0	**$107,647**
60-64	0	2	0	1	1	6	18	37	37	59	83	43	0	**287**
	$0	$90,562	$0	*	*	$93,608	$90,730	$91,763	$98,765	$102,719	$113,804	$119,512	$0	**$105,444**
65-69	0	0	2	0	0	3	5	5	2	8	11	4	0	**40**
	$0	$0	$75,140	$0	$0	$72,653	$84,786	$96,021	$55,290	$120,300	$112,003	$120,136	$0	**$101,446**
70 & Over	0	0	0	0	0	0	2	1	0	0	0	1	0	**4**
	$0	$0	$0	$0	$0	$0	$83,647	*	$0	$0	$0	*	$0	**$113,568**
Total	**235**	**386**	**217**	**163**	**183**	**1,939**	**1,472**	**1,684**	**1,291**	**875**	**372**	**86**	**0**	8,903
	$59,800	**$65,815**	**$72,344**	**$77,521**	**$84,829**	**$89,144**	**$93,498**	**$99,297**	**$105,708**	**$111,495**	**$117,068**	**$118,812**	**$0**	**$95,339**

Average:	Age	43.5	Number of Participants:	Vested	7,637	Males	8,047	Early Retirement Eligible:	**586**
	Service	14.5		Not Vested	1,266	Females	856	Normal Retirement Eligible:	**1,507**

**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	32	13	4	1	0	0	0	0	0	0	0	0	**71**
	$56,194	$57,012	$70,941	$67,843	*	$0	$0	$0	$0	$0	$0	$0	$0	**$60,540**
25-29	49	75	55	59	33	158	1	0	0	0	0	0	0	**430**
	$56,533	$62,996	$72,140	$78,704	$80,921	$87,409	*	$0	$0	$0	$0	$0	$0	**$76,050**
30-34	47	69	65	63	58	548	90	0	0	0	0	0	0	**940**
	$61,128	$66,008	$74,094	$82,052	$84,791	$93,425	$100,267	$0	$0	$0	$0	$0	$0	**$87,821**
35-39	18	35	28	32	38	446	485	120	0	0	0	0	0	**1,202**
	$58,587	$65,737	$73,160	$85,843	$86,782	$93,758	$100,133	$109,038	$0	$0	$0	$0	$0	**$95,602**
40-44	6	21	9	18	10	247	454	550	144	0	0	0	0	**1,459**
	$58,144	$65,732	$70,864	$75,773	$93,309	$92,538	$102,174	$109,055	$114,777	$0	$0	$0	$0	**$103,095**
45-49	6	7	6	11	7	123	234	451	510	115	1	0	0	**1,471**
	$57,747	$65,930	$69,093	$82,389	$82,099	$94,086	$100,440	$109,893	$115,959	$124,251	*	$0	$0	**$109,360**
50-54	0	4	4	5	5	25	107	199	409	365	128	3	0	**1,254**
	$0	$110,887	$78,739	$87,687	$102,470	$85,779	$100,635	$105,606	$116,526	$120,192	$128,803	$138,113	$0	**$114,887**
55-59	1	0	5	3	1	18	41	72	195	186	205	55	0	**782**
	*	$0	$104,270	$137,275	*	$104,005	$100,315	$98,707	$111,307	$118,787	$132,444	$128,915	$0	**$118,001**
60-64	0	1	1	1	0	11	15	19	44	56	66	16	0	**230**
	$0	*	*	*	$0	$95,415	$102,736	$98,873	$113,818	$117,206	$128,317	$131,370	$0	**$116,396**
65-69	0	0	0	0	0	0	6	2	4	6	10	1	0	**29**
	$0	$0	$0	$0	$0	$0	$118,935	$106,438	$124,457	$130,443	$109,844	*	$0	**$119,028**
70 & Over	0	0	0	0	0	0	0	0	0	0	2	0	0	**2**
	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$108,431	$0	$0	**$108,431**
Total	**148**	**244**	**186**	**196**	**153**	**1,576**	**1,433**	**1,413**	**1,306**	**728**	**412**	**75**	**0**	**7,870**
	$58,767	**$64,532**	**$73,619**	**$81,660**	**$85,575**	**$92,842**	**$100,997**	**$108,167**	**$115,266**	**$120,329**	**$129,908**	**$130,040**	**$0**	**$103,244**

Average:	Age	43.7	Number of Participants:	Vested	6,850	Males	7,414	Early Retirement Eligible:	**558**
	Service	15.0		Not Vested	1,020	Females	456	Normal Retirement Eligible:	**1,497**

**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	39	44	19	8	4	0	0	0	0	0	0	0	0	114
	$3,874	$2,774	$3,075	$3,299	$2,898	$0	$0	$0	$0	$0	$0	$0	$0	$3,242
55-59	61	91	98	90	78	138	0	0	0	0	0	0	0	556
	$4,626	$4,364	$3,730	$3,853	$3,608	$2,964	$0	$0	$0	$0	$0	$0	$0	$3,745
60-64	24	58	45	51	67	294	61	0	0	0	0	0	0	600
	$3,918	$4,430	$3,957	$4,118	$3,913	$3,038	$2,345	$0	$0	$0	$0	$0	$0	$3,396
65-69	11	27	14	30	14	97	103	2	0	0	0	0	0	298
	$3,293	$3,641	$3,766	$2,462	$3,755	$2,870	$1,845	$1,426	$0	$0	$0	$0	$0	$2,634
70-74	0	3	2	5	5	27	34	19	0	0	0	0	0	95
	$0	$3,040	$2,759	$2,633	$3,224	$2,310	$1,959	$999	$0	$0	$0	$0	$0	$2,020
75-79	0	0	0	1	0	3	12	10	2	0	0	0	0	28
	$0	$0	$0	*	$0	$2,196	$1,724	$1,285	$161	$0	$0	$0	$0	$1,542
80-84	0	0	0	0	0	1	0	4	4	0	0	0	0	9
	$0	$0	$0	$0	$0	*	$0	$1,290	$1,491	$0	$0	$0	$0	$1,439
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	135	223	178	185	168	560	210	35	6	1	0	0	0	1,701
	$4,174	$3,962	$3,709	$3,637	$3,714	$2,949	$2,002	$1,138	$1,047	*	$0	$0	$0	$3,247

Average: Age 61.5
Years Retired 5.3

Males 1,553
Females 148

**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	29	27	2	3	1	0	0	0	0	0	0	0	0	62
	$4,224	$3,878	$4,515	$4,278	*	$0	$0	$0	$0	$0	$0	$0	$0	$4,092
55-59	49	72	81	53	38	67	0	0	0	0	0	0	0	360
	$5,225	$5,161	$4,871	$4,617	$3,863	$3,466	$0	$0	$0	$0	$0	$0	$0	$4,572
60-64	28	60	38	50	36	129	23	0	0	0	0	0	0	364
	$4,465	$4,895	$4,686	$4,964	$4,322	$3,214	$2,339	$0	$0	$0	$0	$0	$0	$4,036
65-69	8	9	18	16	12	57	41	0	0	0	0	0	0	161
	$4,243	$3,516	$3,908	$4,406	$4,198	$3,541	$2,456	$0	$0	$0	$0	$0	$0	$3,474
70-74	1	0	1	5	6	22	16	3	0	0	0	0	0	54
	*	$0	*	$3,063	$2,385	$2,584	$2,093	$2,009	$0	$0	$0	$0	$0	$2,347
75-79	0	0	0	0	1	1	8	8	7	0	0	0	0	25
	$0	$0	$0	$0	*	*	$2,372	$1,361	$917	$0	$0	$0	$0	$1,585
80-84	0	0	0	0	0	0	1	4	3	0	0	0	0	8
	$0	$0	$0	$0	$0	$0	*	$2,124	$1,109	$0	$0	$0	$0	$1,791
85-89	0	0	0	0	0	0	0	0	2	1	0	0	0	3
	$0	$0	$0	$0	$0	$0	$0	$0	$558	*	$0	$0	$0	$657
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	115	168	140	127	94	276	89	15	12	1	0	0	0	1,037
	$4,677	$4,772	$4,660	$4,658	$3,975	$3,286	$2,354	$1,694	$906	*	$0	$0	$0	$3,964

Average: Age 61.6
Years Retired 4.6

Males 980
Females 57

**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	2	5	7	3	4	13	3	0	0	0	0	0	0	37
	$2,919	$1,941	$1,797	$1,443	$2,229	$1,342	$599	$0	$0	$0	$0	$0	$0	$1,638
50-54	2	3	4	1	2	10	2	0	0	0	0	0	0	24
	$2,310	$1,766	$2,983	*	$3,072	$1,882	$868	$0	$0	$0	$0	$0	$0	$2,332
55-59	1	2	2	1	4	20	9	1	0	0	0	0	0	40
	*	$2,645	$4,246	*	$2,275	$2,931	$1,573	*	$0	$0	$0	$0	$0	$2,548
60-64	1	2	4	3	5	22	7	0	0	0	0	0	0	44
	*	$3,880	$4,817	$2,013	$3,113	$3,003	$2,790	$0	$0	$0	$0	$0	$0	$3,100
65-69	0	0	1	1	0	13	12	0	0	1	0	0	0	28
	$0	$0	*	*	$0	$2,965	$1,847	$0	$0	*	$0	$0	$0	$2,431
70-74	0	0	0	0	0	2	4	1	0	0	0	0	0	7
	$0	$0	$0	$0	$0	$2,114	$1,291	*	$0	$0	$0	$0	$0	$1,417
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	6	12	18	9	15	80	37	2	0	1	1	0	0	181
	$2,386	$2,338	$3,161	$2,588	$2,649	$2,547	$1,745	$1,087	$0	*	*	$0	$0	$2,392

Average:	Age	57.2	Males	146
	Years Retired	6.8	Females	35

**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	2	2	0	0	1	3	3	0	0	0	0	0	0	11
	$4,345	$2,783	$0	$0	*	$915	$917	$0	$0	$0	$0	$0	$0	$1,961
50-54	2	1	0	0	3	5	0	0	0	0	0	0	0	11
	$3,204	*	$0	$0	$1,294	$1,876	$0	$0	$0	$0	$0	$0	$0	$2,170
55-59	3	9	8	2	6	11	4	0	0	0	0	0	0	43
	$5,778	$4,935	$3,982	$4,556	$4,112	$3,340	$1,547	$0	$0	$0	$0	$0	$0	$3,961
60-64	1	5	7	8	3	20	4	0	0	0	0	0	0	48
	*	$2,853	$4,081	$5,016	$3,513	$3,444	$1,947	$0	$0	$0	$0	$0	$0	$3,658
65-69	0	0	0	0	2	6	9	0	0	0	0	0	0	17
	$0	$0	$0	$0	$3,296	$2,791	$2,587	$0	$0	$0	$0	$0	$0	$2,742
70-74	0	0	0	0	1	2	1	1	1	0	0	0	0	6
	$0	$0	$0	$0	*	$1,782	*	*	*	$0	$0	$0	$0	$1,298
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	8	17	15	10	16	47	21	1	1	0	0	0	0	136
	$4,730	$4,026	$4,028	$4,924	$3,031	$2,937	$1,993	*	*	$0	$0	$0	$0	$3,278

Average:	Age	59.3	Males	121
	Years Retired	5.6	Females	15

**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**	**0 & Over**	**Total**
Under 50	2	0	1	3	15	9	1	0	0	0	0	0	0	**31**
	$1,780	$0	*	$1,051	$798	$1,616	*	$0	$0	$0	$0	$0	$0	**$1,177**
50-54	0	1	3	4	5	2	4	0	0	0	0	0	0	**19**
	$0	*	$1,346	$4,065	$1,492	$2,933	$1,540	$0	$0	$0	$0	$0	$0	**$2,180**
55-59	1	2	1	0	9	14	7	0	0	0	0	0	0	**34**
	*	$3,303	*	$0	$853	$2,128	$1,606	$0	$0	$0	$0	$0	$0	**$1,846**
60-64	0	0	1	0	4	5	4	1	0	0	0	0	0	**15**
	$0	$0	*	$0	$1,127	$1,964	$1,889	*	$0	$0	$0	$0	$0	**$1,804**
65-69	0	0	0	1	2	5	2	0	0	0	0	0	0	**10**
	$0	$0	$0	*	$1,901	$2,472	$442	$0	$0	$0	$0	$0	$0	**$1,874**
70-74	0	0	0	0	0	1	4	2	0	0	0	0	0	**7**
	$0	$0	$0	$0	$0	*	$1,464	$1,165	$0	$0	$0	$0	$0	**$1,519**
75-79	0	0	0	0	1	0	1	0	1	0	0	0	0	**3**
	$0	$0	$0	$0	*	$0	*	$0	*	$0	$0	$0	$0	**$822**
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	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	**3**	**3**	**6**	**8**	**36**	**36**	**23**	**4**	**1**	**0**	**0**	**0**	**0**	**120**
	$2,736	**$2,744**	**$2,045**	**$2,638**	**$988**	**$2,079**	**$1,560**	**$1,261**	*****	**$0**	**$0**	**$0**	**$0**	**$1,680**

Average:	Age	55.3	Males	3
	Years Retired	6.4	Females	117

**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**	**0 & Over**	**Total**
Under 50	0	2	1	4	1	4	0	0	0	0	0	0	0	**12**
	$0	$2,966	*	$1,858	*	$2,365	$0	$0	$0	$0	$0	$0	$0	**$1,970**
50-54	0	2	0	1	3	5	0	0	0	0	0	0	0	**11**
	$0	$1,790	$0	*	$3,216	$4,107	$0	$0	$0	$0	$0	$0	$0	**$3,357**
55-59	0	0	1	1	4	5	1	0	0	0	0	0	0	**12**
	$0	$0	*	*	$2,919	$1,645	*	$0	$0	$0	$0	$0	$0	**$2,541**
60-64	0	2	0	0	2	4	3	0	1	0	0	0	0	**12**
	$0	$4,147	$0	$0	$2,501	$2,389	$2,646	$0	*	$0	$0	$0	$0	**$2,619**
65-69	0	0	0	1	0	4	1	0	0	0	0	0	0	**6**
	$0	$0	$0	*	$0	$3,472	*	$0	$0	$0	$0	$0	$0	**$3,753**
70-74	0	0	0	0	0	1	0	1	0	0	0	0	0	**2**
	$0	$0	$0	$0	$0	*	$0	*	$0	$0	$0	$0	$0	**$1,745**
75-79	0	1	0	0	0	0	0	1	1	0	0	0	0	**3**
	$0	*	$0	$0	$0	$0	$0	*	*	$0	$0	$0	$0	**$1,521**
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	**0**	**7**	**2**	**7**	**10**	**23**	**5**	**3**	**3**	**0**	**0**	**0**	**0**	**60**
	$0	**$2,958**	**$2,787**	**$2,583**	**$2,662**	**$2,815**	**$2,925**	**$827**	**$802**	**$0**	**$0**	**$0**	**$0**	**$2,587**

Average:	Age	56.9	Males	1
	Years Retired	6.9	Females	59

**Monthly benefit omitted for privacy reasons.*

Historical Data

Historical Data										
(Dollars in Millions)	**2014**	**2013**	**2012**	**2011**	**2010**	**2009**	**2008**	**2007***	**2006**	**2005**
Contribution Information**										
Employer Rate	4.74%	4.78%	4.64%	4.54%	4.54%	4.44%	4.34%	4.56%	4.66%	4.86%
State Rate	3.17%	3.19%	3.10%	3.03%	3.03%	2.96%	2.89%	3.04%	3.11%	3.24%
Employee Rate	7.91%	7.97%	7.74%	7.57%	7.57%	7.40%	7.23%	7.60%	7.77%	8.10%
Funded Status										
Entry Age Normal Liability	$8,069	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Projected Unit Credit Liability	$7,629	$6,859	$6,071	$5,576	$5,078	$4,349	$3,786	$3,386	$3,323	$2,932
Market Value of Assets	$9,251	$7,637	$6,640	$6,366	$5,081	$4,309	$5,315	$5,185	$4,339	$3,614
Actuarial Value of Assets	$8,638	$7,862	$7,222	$6,621	$6,043	$5,564	$5,053	$4,360	$3,844	$3,329
Unfunded Liability (EAN)	($569)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Unfunded Liability (PUC)	($1,009)	($1,003)	($1,150)	($1,044)	($965)	($1,215)	($1,266)	($974)	($521)	($397)
Funded Ratio (EAN)	107.1%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Funded Ratio (PUC)	113.2%	114.6%	118.9%	118.7%	119.0%	127.9%	133.4%	128.8%	115.7%	113.5%
Participant Data										
Number of Actives	16,773	16,687	16,720	16,805	16,775	16,951	16,626	16,099	15,718	15,168
Total Annual Salaries	$1,661	$1,597	$1,560	$1,535	$1,490	$1,443	$1,345	$1,234	$1,172	$1,092
Number of Terminated Vested	749	698	689	655	781	672	649	629	597	570
Number of Terminated, Not Vested	1,618	1,565	1,558	1,617	1,707	1,663	1,531	1,433	1,362	1,285
Number of Retirees and Beneficiaries	3,235	2,782	2,344	2,015	1,639	1,367	1,134	924	779	574
Total Annual Benefits	$130	$105	$82	$65	$49	$38	$29	$22	$17	$11
Assumptions										
Valuation Interest Rate	7.50%	7.50%	7.50%	7.50%	8.00%	8.00%	8.00%	5.94%	8.00%	8.00%
Salary Increase	5.24%	5.30%	5.43%	5.61%	6.55%	6.61%	6.61%	5.49%	7.40%	7.40%
Inflation***	3.00%	3.00%	3.00%	3.00%	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%	1.25%	0.94%	1.25%	1.25%
Actuarial Experience										
Return on Market Value	18.93%	12.31%	1.45%	21.08%	12.99%	(22.64%)	(1.33%)	16.61%	15.77%	17.55%
Return on Actuarial Value	7.79%	6.41%	6.25%	6.15%	4.84%	5.72%	11.04%	10.03%	10.80%	9.30%
Salary Increase	5.28%	3.91%	3.22%	3.48%	5.35%	6.69%	7.65%	4.31%	5.50%	5.90%
Inflation	1.22%	2.54%	3.17%	0.78%	0.44%	4.48%	3.79%	3.73%	3.02%	1.57%
Growth in Membership	0.37%	(0.45%)	(0.87%)	(0.12%)	0.17%	1.53%	2.62%	1.83%	2.66%	1.85%
COLA	1.22%-3%	2.54%-3%	3.00%	0.78%-3%	0.44%-3%	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.*

***Historical contribution rates shown are the actuarially calculated rates and may not match those adopted by the LEOFF 2 Board.*

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

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 are not covered by current plan assets.

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