WASHINGTON STATE

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

2011 Actuarial Valuation Report

Office of the State Actuary
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Report Preparation

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

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Table of Contents

Letter of Introduction
Law Enforcement Officers' and Fire Fighters'
Retirement System Plan 2
Actuarial Valuation Report
As of June 30, 2011
September 2012

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, 2011, 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,

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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) determined 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 2011 valuation along with comparable rates from the previous valuation. The **Actuarial Exhibits** section of this report shows how we developed these rates.

Contribution Rates		
	2011	2010
Member	7.57%	7.57%
Employer*	4.54%	4.54%
State	3.03%	3.03%

**Excludes administrative expense rate.*

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

**Adopted for period 2013-17.*

***Excludes administrative expense rate.*

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. 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.

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 2011 Results

The following comments summarize the key changes from the last valuation.

The actual rate of investment return for the plan year was above the assumed rate of 7.5 percent. The actual, annualized investment return on the Market Value of Assets was 21.14 percent. The rate of investment return on the Actuarial Value of Assets was lower than the assumed rate of 7.5 percent.

Gains or losses to liabilities and salaries also impact contribution rates. These occur when annual economic and demographic experience differs from our long-term assumptions or when there are changes in plan provisions, actuarial assumptions, or methods. We summarize gains/losses for the total employer contribution rate below.

Overall, liabilities increased less than expected, resulting in an actuarial gain. The key reason for liability gains was that salaries increased less than expected. The key reason for liability losses comes from the increases in liabilities due to new entrants.

The present value of future salaries increased more than expected because of new members joining LEOFF Plan 2. As a result, the salary base for collecting contributions is larger. This results in an actuarial gain to the plan.

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

Detailed gain and loss information can be found in the **Actuarial Exhibits** section of this report.

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 Projected Unit Credit (PUC) actuarial cost method. The Unfunded Actuarial Accrued Liability (UAAL) represents the excess, if any, of the Present Value of Accrued (Earned) 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)	**2011**	**2010**
Future Value of Fully Projected Benefits	$65,000	$64,201
Present Value of Fully Projected Benefits	$8,720	$8,204
Present Value of Accrued Benefits	$5,576	$5,078
Unfunded Actuarial Accrued Liability	N/A	N/A
Valuation Interest Rate	7.50%	7.50%

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. To limit the volatility in contribution rates and funded status due to short-term market volatility, 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)	**2011**	**2010**
Market Value of Assets	$6,366	$5,081
Actuarial Value of Assets	6,621	6,043
Contributions*	263	257
Disbursements	71	58
Investment Return	1,084	569
Other**	$8	$6
Rate of Return on Assets***	21.14%	13.21%

**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 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.

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.

The table below 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.

Funded Status		
(Dollars in Millions)	2011	2010
a. Present Value of Accrued Benefits	$5,576	$5,078
b. Market Value of Assets	$6,366	$5,081
c. Deferred Gains/(Losses)	($255)	($961)
d. Actuarial Value of Assets (b-c)	$6,621	$6,043
e. Unfunded Liability (a-d)	($1,044)	($965)
f. Funded Ratio (d/a)	119%	119%

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, 2011, along with comparable information from last year's valuation. See the **Participant Data** section of this report for additional information.

Participant Data		
	2011	2010
Active Members		
Number	16,805	16,775
Total Salaries (in millions)	$1,535	$1,490
Average Annual Salary	$91,322	$88,828
Average Attained Age	42.7	42.2
Average Service	13.8	13.3
Retirees and Beneficiaries		
Number	2,015	1,639
Average Annual Benefit	$32,486	$29,851
Terminated Members		
Number Vested	655	781
Number "Non-Vested"	1,617	1,707

Key Assumptions

The table to the right displays key economic assumptions used in the actuarial valuation for the plan year ending June 30, 2011. See the **Actuarial Methods and Assumptions** in the Appendix for a detailed listing of assumptions used in this 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

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, 2011
September 2012

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, 2011, 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. The Board adopted updates to the demographic assumptions as part of their review of the *2001 – 2006 Experience Study* results and adoption of the associated contribution rates. Additionally, the Board adopted new disability assumptions in the 2010 Interim. See the *LEOFF 2 Disability Experience Study* available on the LEOFF 2 website. 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

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Actuarial Certification Letter
Page 2 of 2

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. This temporary funding policy produces contribution rates, at June 30, 2011, 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
Actuary

Contribution Rates

Member and Employer Rate Summary		
	2011	2010
Member	7.57%	7.57%
Employer*	4.54%	4.54%
State (Normal Cost)	3.03%	3.03%
State (Plan 1 UAAL)	0.00%	0.00%
Total State	3.03%	3.03%

**Excludes administrative expense rate.*

Development of Employer/State Rates		
		LEOFF 2
a.	Total Normal Cost	15.14%
b.	Employee Normal Cost (a x 50%)	7.57%
c.	Total Employer/State Normal Cost (a - b)	7.57%
d.	State Normal Cost (a x 20%)	3.03%
e.	Employer Normal Cost (c - d)*	4.54%
f.	Cost to Amortize UAAL	0.00%
g.	Total Employer Contribution Rate (e + f)**	4.54%

**Excludes administrative expense rate.*

***The state pays 20% of the total normal cost for LEOFF 2. This reduces the total employer contribution rate from 7.57% to 4.54%.*

The tables on the following page show the development of the normal cost rates. Consistent with the Law Enforcement Officers' and Fire Fighters' (LEOFF) Retirement System 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	$65,000
b.	Present Value of Fully Projected Benefits	8,718
c.	Valuation Assets	6,621
d.	Unfunded Fully Projected Benefits (b - c)	2,097
e.	Plan 1 Present Value of Future Salaries (PVS)	N/A
f.	Plan 2 PVS	16,910
g.	Weighted PVS (2e + 2f)	$33,821
h.	Employee Normal Cost (d / g)	6.20%
i.	Employee Minimum Contribution Rate	7.57%
j.	Employee Contribution Rate with Minimum	7.57%
k.	Change In Plan Provisions (Laws of 2012)	0.00%
l.	Employee Contribution Rate (j + k)	7.57%
2. Calculation of Employer/State Normal Cost Rate		
a.	Present Value of Fully Projected Benefits	$8,718
b.	Valuation Assets	6,621
c.	Unfunded Fully Projected Benefits (a - b)	2,097
d.	Present Value of Employee Contributions	1,049
e.	Employer/State Responsibility (c - d)	$1,049
f.	Plan 2 PVS	$16,910
g.	Employer/State Normal Cost (e / f)	6.20%
h.	Employer/State Minimum Contribution Rate	7.57%
i.	Employer/State Contribution Rate with Minimum	7.57%
j.	Change In Plan Provisions (Laws of 2012)	0.00%
k.	Total Employer/State Contribution Rate (i + j)	7.57%
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	$10,328
b.	Present Value of Fully Projected Benefits (PVFB)	4,150
c	Valuation Assets	5,565
d.	Actuarial Present Value of Future Normal Costs	0
e.	UAAL (b - c - d)	(1,415)
f.	Expected UAAL Contributions to 2013	0
g.	Remaining UAAL (e - f)	($1,415)
h.	Amortization Date	6/30/2024
i.	Present Value of Projected Salaries beyond 2013	$14,911
j.	Preliminary Contribution Rate (g/ i)*	(9.49%)
k.	Change In Plan Provisions (Laws of 2012)	0.00%
l.	Contribution Rate to Amortize the UAAL (j + k)*	(9.49%)

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	$6,832
Termination	90
Death	65
Disability	402
Return of Contributions on Termination	79
Return of Contributions on Death	84
Total Active	**$7,552**
Inactive Members	
Terminated	$130
Service Retired	901
Disability Retired	84
Survivors	50
Total Inactive	**$1,166**
Laws of 2012	**2**
2011 Total	**$8,720**
2010 Total	**$8,204**

Note: Totals may not agree due to rounding.

Present Value of Accrued (Earned) Benefits*	
(Dollars in Millions)	**LEOFF 2**
Active Members	
Retirement	$3,962
Termination	53
Death	46
Disability	254
Return of Contributions on Termination	46
Return of Contributions on Death	48
Total Active	**$4,409**
Inactive Members	
Terminated	$130
Service Retired	901
Disability Retired	84
Survivors	50
Total Inactive	**$1,166**
Laws of 2012	**1**
2011 Total	**$5,576**
2010 Total	**$5,078**

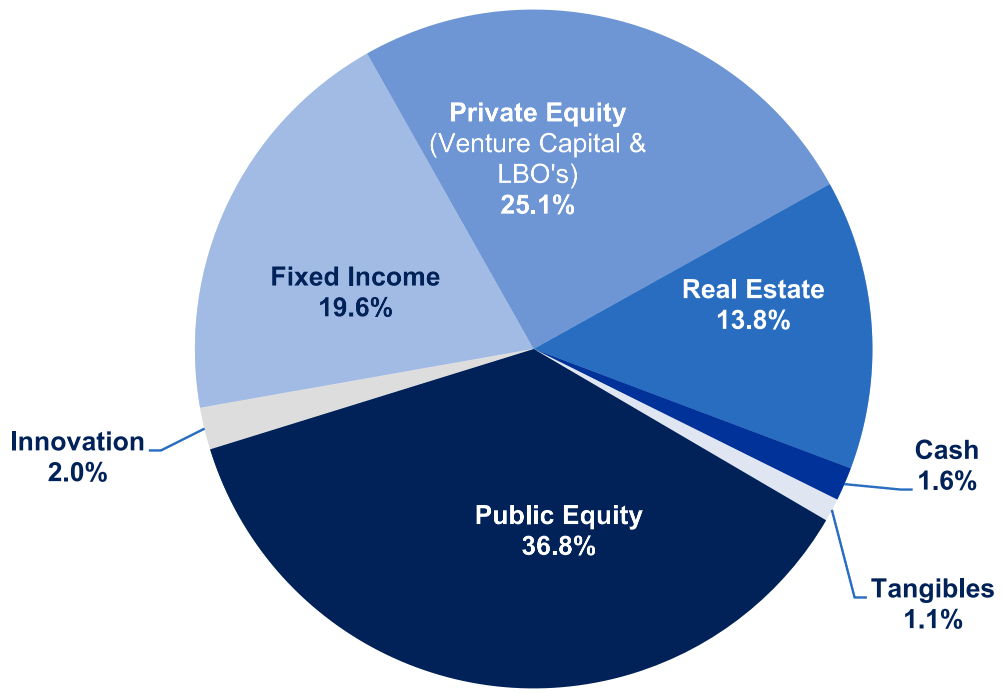
Note: Totals may not agree due to rounding.

**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)	Future	Present		Future	Present
Year	Value	Value	Year	Value	Value
2011	$96	$93	2061	$1,008	$26
2012	123	110	2062	933	23
2013	153	128	2063	859	19
2014	186	144	2064	786	16
2015	222	160	2065	714	14
2016	261	175	2066	645	12
2017	301	188	2067	577	10
2018	344	200	2068	513	8
2019	391	212	2069	452	7
2020	440	221	2070	394	5
2021	491	230	2071	340	4
2022	548	238	2072	291	3
2023	609	246	2073	246	3
2024	672	253	2074	205	2
2025	737	258	2075	169	2
2026	804	262	2076	137	1
2027	875	265	2077	110	1
2028	947	267	2078	87	1
2029	1,020	268	2079	67	0
2030	1,094	267	2080	51	0
2031	1,166	265	2081	39	0
2032	1,239	262	2082	29	0
2033	1,311	258	2083	21	0
2034	1,380	252	2084	15	0
2035	1,446	246	2085	10	0
2036	1,508	238	2086	7	0
2037	1,565	230	2087	5	0
2038	1,619	222	2088	3	0
2039	1,668	212	2089	2	0
2040	1,707	202	2090	1	0
2041	1,739	192	2091	1	0
2042	1,764	181	2092	1	0
2043	1,781	170	2093	0	0
2044	1,791	159	2094	0	0
2045	1,790	148	2095	0	0
2046	1,781	137	2096	0	0
2047	1,766	126	2097	0	0
2048	1,745	116	2098	0	0
2049	1,717	106	2099	0	0
2050	1,681	97	2100	0	0
2051	1,639	88	2101	0	0
2052	1,593	79	2102	0	0
2053	1,542	71	2103	0	0
2054	1,485	64	2104	0	0
2055	1,426	57	2105	0	0
2056	1,363	51	2106	0	0
2057	1,296	45	2107	0	0
2058	1,226	40	2108	0	0
2059	1,155	35	2109	0	0
2060	$1,082	$30	2110	$0	$0
			Total	**$65,000**	**$8,720**

Plan Assets

Retirement Commingled Trust Fund (CTF) Asset Allocation



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**
2010 Market Value	**$5,081**
Revenue	
Contributions	
Employee	131
Employer/State	132
Total Contributions	263
Investment Return	1,084
Restorations	5
Transfers In	3
Miscellaneous	0
Total Revenue	**$1,355**
Disbursements	
Monthly Benefits	62
Refunds	8
Total Benefits	70
Transfers Out	0
Expenses	1
Total Disbursements	**$71**
Payables	$0
2011 Market Value	**$6,366**
2011 Actuarial Value	**$6,621**
Ratio (AV/MV)	**104%**

Note: Totals may not agree due to rounding.

Calculation of Actuarial Value of Assets				
(Dollars in Millions)				**LEOFF 2**
a.	Market Value at 6/30/2011			$6,366
b.	Deferred Gains and (Losses)			
	Plan Year Ending	**Years Deferred**	**Years Remaining**	
	6/30/2011	8	7	612
	6/30/2010	5	3	131
	6/30/2009	8	5	(1,033)
	6/30/2008	8	4	(246)
	6/30/2007	8	3	174
	9/30/2006	8	2	71
	9/30/2005	8	1	36
	Total Deferral			($255)
c.	Market Value less Deferral (a - b)			$6,621
d.	70% of Market Value of Assets			$4,456
e.	130% of Market Value of Assets			$8,275
f.	**Actuarial Value of Assets***			**$6,621**

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.	2010 Market Value (at WSIB)	$5,066
b.	Total Cash Flow	198
c.	2011 Market Value (at WSIB)	6,349
d.	Actual Return (c - b - a)	$1,085
e.	Weighted Asset Amount	$5,150
f.	Expected Return (7.5% x e)	386
g.	Investment Gain/(Loss) for Prior Year (d - f)	699
h.	Dollar-Weighted Rate of Return	21.08%

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) 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. A plan more/less than 100 percent funded is not automatically considered over-funded/at-risk.

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		$5,576	$4,135
Valuation Assets		$6,621	$5,565
Unfunded Liability		($1,044)	($1,430)
Funded Ratio			
	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 2011 AVR for development of LEOFF 1 values.

**Liabilities valued using the PUC cost method at an interest rate of 7.5% for LEOFF 2, 7.9% 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		$6,645	$4,523
Valuation Assets		$6,621	$5,565
Unfunded Liability		$24	($1,043)
Funded Ratio			
	2011	**100%**	**123%**
	2010	99%	116%
	2009	107%	114%
	2008	111%	117%
	2007	107%	111%

Note: Totals may not agree due to rounding. See the 2011 AVR for development of LEOFF 1 values.
**Liabilities valued using the PUC cost method at an interest rate of 6.5% for LEOFF 2, 6.9% 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		$4,737	$3,802
Valuation Assets		$6,621	$5,565
Unfunded Liability		($1,884)	($1,763)
Funded Ratio			
	2011	**140%**	**146%**
	2010	141%	139%
	2009	152%	137%
	2008	159%	141%
	2007	154%	135%

Note: Totals may not agree due to rounding. See the 2011 AVR for development of LEOFF 1 values.
**Liabilities valued using the PUC cost method at an interest rate of 8.5% for LEOFF 2, 8.9% 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		$5,458
Market Value of Assets		$5,185
Unfunded Liability		$273
Funded Ratio		
	2011	**95%**
	2010	82%
	2009	76%
	2008	107%
	2007	114%
	2006	102%
	2005	94%
	2004	82%

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**
2010 Contribution Rate Before Laws of 2011	**(5.13%)**
Remove Rate Floor / Ceiling	(0.48%)
2010 Adjusted Contribution Rate	**(5.61%)**
Liability Gains/Losses	(0.67%)
Asset Gains/Losses	0.56%
Present Value of Future Salaries Gains/Losses	(0.23%)
Incremental Changes	(1.11%)
Other Gains/Losses	0.05%
Total Change	**(1.40%)**
2011 Preliminary Contribution Rate	**(7.01%)**
Increase from Applied Rate Floor	0.55%
Decrease from Applied Rate Ceiling	0.00%
Laws of 2012	0.00%
2011 Adjusted Contribution Rate	**(6.46%)**

**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**
2010 Normal Cost Before Laws of 2011	3.03%
Remove Rate Floor / Ceiling	(0.48%)
2010 Adjusted Normal Cost Rate	**2.55%**
Liabilities	
Salaries	(0.20%)
Termination	0.00%
Retirement	(0.01%)
Growth / Return to Work	0.14%
Other Liabilities	0.03%
Total Liability Gains/Losses	**(0.04%)**
Asset Gains/Losses	**0.00%**
Present Value of Future Salaries Gains/Losses	**(0.04%)**
Incremental Changes	
Plan Change	0.00%
Method Change	0.00%
Assumption Change	0.00%
Correction Change	0.00%
Total Incremental Changes Gains/Losses	**0.00%**
Other Gains/Losses	0.01%
Total Change	**(0.07%)**
2011 Preliminary Normal Cost	**2.48%**
Increase from Applied Rate Floor	0.55%
Laws of 2012	0.00%
2011 Adjusted Normal Cost	**3.03%**

**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**
2010 UAAL Rate Before Laws of 2011	(8.16%)
Remove Rate Floor / Ceiling	0.00%
2010 Adjusted UAAL Rate	**(8.16%)**
Liabilities	
Salaries	(0.04%)
Termination	0.00%
Retirement	(0.03%)
Return to Work	0.00%
Inflation (CPI)	(0.74%)
Other Liabilities	0.18%
Total Liability Gains/Losses	**(0.63%)**
Asset Gains/Losses	**0.56%**
Present Value of Future Salaries Gains/Losses	**(0.19%)**
Incremental Changes	
Plan Change	0.00%
Method Change	0.00%
Assumption Change	(1.11%)
Correction Change	0.00%
Total Incremental Changes Gains/Losses	**(1.11%)**
Other Gains/Losses	**0.04%**
Total Change	**(1.33%)**
2011 Preliminary UAAL Rate	**(9.49%)**
Increase from Applied Rate Ceiling	0.00%
Laws of 2012	0.00%
2011 Adjusted UAAL Rate	**(9.49%)**

**The contribution rate is the UAAL rate for plan 1. No contributions to LEOFF 1 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

- Fish and Wildlife Enforcement Officers Service Credit Transfer (Chapter 248, Laws of 2012).

Assumption Changes

- We changed the medical inflation assumptions associated with non-pension benefits payable to members and survivors in LEOFF.

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	$8,706
PUC Liability	5,565
Actuarial Value of Assets	6,621
Unfunded Liability	(1,056)
Employer Contribution Rate*	**4.54%**
After Changes	
PVFB	$8,720
PUC Liability	5,576
Actuarial Value of Assets	6,621
Unfunded Liability	(1,044)
Employer Contribution Rate*	**4.54%**
Increase/(Decrease) in Rate	**0.00%**

Before and after changes include actuarial gains and losses for the year ending 6/30/2011.
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	123
Higher Education	104
Community Colleges	0
K-12	0
Counties	2,741
County Sub Divisions	219
First Class Cities	4,982
Other Cities	4,966
Ports	179
Education Service District	0
Fire Districts	3,491
Public Utility District	0
Water Districts	0
Energy Northwest	0
Unions	0
TOTAL	**16,805**

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	
2010 Actives	16,775
Transfers	0
Hires/Rehires	615
New Retirees	(291)
Deaths	(20)
Terminations	(274)
2011 Actives	**16,805**
2010 Annuitants	1,639
New Retirees	350
Annuitant Deaths	(11)
New Survivors	39
Other	(2)
2011 Annuitants	**2,015**
Ratio of Actives to Annuitants	**8.34**

Summary of Plan Participants

Summary of Plan Participants		
	2011	**2010**
Active Members		
Number	16,805	16,775
Total Salaries (Millions)	$1,535	$1,490
Average Age	42.7	42.2
Average Service	13.8	13.3
Average Salary	$91,322	$88,828
Terminated Members		
Number Vested	655	781
Number "Non-Vested"	1,617	1,707
Retirees		
Number of Retirees (All)	2,015	1,639
Average Monthly Benefit, All Retirees	$2,707	$2,488
Number of New "Service Retirees"	317	237
Average Monthly Benefit, New "Service Retirees"	$3,716	$3,228

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.

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.

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. We smooth that year's asset gains (or losses) based on the scale in the table on the right.

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%

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	
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).*

Economic Assumptions

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 medical inflation assumptions associated with non-pension benefits payable to members and survivors in LEOFF.

- ♦ We changed the long-term economic assumptions for interest rate, general salary growth, and inflation consistent with the Pension Funding Council adoption in 2011. This change impacts the results for LEOFF 1 only.

Our mortality rates include an assumption for future mortality improvements. We took three distinct steps to build our mortality assumptions. First, we applied mortality improvements to the RP-2000 mortality table using 50 percent of Scale AA to 2003, the midpoint of our latest experience study period. Next, we developed age offsets for each system and plan. Finally, we projected the mortality rates into the future, also using 50 percent of Scale AA, to reflect continued mortality improvements.

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 others who are younger than they are. 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.

As an example, consider a healthy LEOFF Plan 2 male, age 50. To project the RP-2000 mortality rates to 2003, we use the following equation:

RP-2000 rate x (1 – 50% Scale AA)^3.

For a 50-year-old male, this is 0.002138 x (1 – 0.0090)^3 = 0.002081. Now we have the so-called “RP-2003” rate. However, we expect the age 50 member to have the experience of a 49-year-old. The corresponding age 49 male rate for RP-2003 is 0.001945. As a last step, we complete the projection of mortality improvements to the given year (2034 for LEOFF Plan 2). This gives a final mortality rate of 0.001469 for a LEOFF Plan 2 male.

The tables on the following pages show RP-2000 and 50 percent of Scale AA, both published by the Society of Actuaries. The tables that follow show the age offsets we used, the year to which we projected mortality improvements, and the resulting projected mortality rates for each plan. Please see the *2001-2006 Experience Study* for more details regarding the development of these rates.

RP-2000 Mortality Rates			50% Scale AA		
Combined Healthy Table					
Age	Male	Female	Age	Male	Female
20	0.000345	0.000191	20	0.0095	0.0080
21	0.000357	0.000192	21	0.0090	0.0085
22	0.000366	0.000194	22	0.0085	0.0085
23	0.000373	0.000197	23	0.0075	0.0080
24	0.000376	0.000201	24	0.0065	0.0075
25	0.000376	0.000207	25	0.0050	0.0070
26	0.000378	0.000214	26	0.0030	0.0060
27	0.000382	0.000223	27	0.0025	0.0060
28	0.000393	0.000235	28	0.0025	0.0060
29	0.000412	0.000248	29	0.0025	0.0060
30	0.000444	0.000264	30	0.0025	0.0050
31	0.000499	0.000307	31	0.0025	0.0040
32	0.000562	0.000350	32	0.0025	0.0040
33	0.000631	0.000394	33	0.0025	0.0045
34	0.000702	0.000435	34	0.0025	0.0050
35	0.000773	0.000475	35	0.0025	0.0055
36	0.000841	0.000514	36	0.0025	0.0060
37	0.000904	0.000554	37	0.0025	0.0065
38	0.000964	0.000598	38	0.0030	0.0070
39	0.001021	0.000648	39	0.0035	0.0075
40	0.001079	0.000706	40	0.0040	0.0075
41	0.001142	0.000774	41	0.0045	0.0075
42	0.001215	0.000852	42	0.0050	0.0075
43	0.001299	0.000937	43	0.0055	0.0075
44	0.001397	0.001029	44	0.0060	0.0075
45	0.001508	0.001124	45	0.0065	0.0080
46	0.001616	0.001223	46	0.0070	0.0085
47	0.001734	0.001326	47	0.0075	0.0090
48	0.001860	0.001434	48	0.0080	0.0090
49	0.001995	0.001550	49	0.0085	0.0090
50	0.002138	0.001676	50	0.0090	0.0085
51	0.002449	0.001852	51	0.0095	0.0080
52	0.002667	0.002018	52	0.0100	0.0070
53	0.002916	0.002207	53	0.0100	0.0060
54	0.003196	0.002424	54	0.0100	0.0050
55	0.003624	0.002717	55	0.0095	0.0040
56	0.004200	0.003090	56	0.0090	0.0030
57	0.004693	0.003478	57	0.0085	0.0025
58	0.005273	0.003923	58	0.0080	0.0025
59	0.005945	0.004441	59	0.0080	0.0025
60	0.006747	0.005055	60	0.0080	0.0025
61	0.007676	0.005814	61	0.0075	0.0025
62	0.008757	0.006657	62	0.0075	0.0025
63	0.010012	0.007648	63	0.0070	0.0025
64	0.011280	0.008619	64	0.0070	0.0025

RP-2000 Mortality Rates			50% Scale AA		
Combined Healthy Table					
Age	Male	Female	Age	Male	Female
65	0.012737	0.009706	65	0.0070	0.0025
66	0.014409	0.010954	66	0.0065	0.0025
67	0.016075	0.012163	67	0.0065	0.0025
68	0.017871	0.013445	68	0.0070	0.0025
69	0.019802	0.014860	69	0.0070	0.0025
70	0.022206	0.016742	70	0.0075	0.0025
71	0.024570	0.018579	71	0.0075	0.0030
72	0.027281	0.020665	72	0.0075	0.0030
73	0.030387	0.022970	73	0.0075	0.0035
74	0.033900	0.025458	74	0.0075	0.0035
75	0.037834	0.028106	75	0.0070	0.0040
76	0.042169	0.030966	76	0.0070	0.0040
77	0.046906	0.034105	77	0.0065	0.0035
78	0.052123	0.037595	78	0.0060	0.0035
79	0.057927	0.041506	79	0.0055	0.0035
80	0.064368	0.045879	80	0.0050	0.0035
81	0.072041	0.050780	81	0.0045	0.0035
82	0.080486	0.056294	82	0.0040	0.0035
83	0.089718	0.062506	83	0.0040	0.0035
84	0.099779	0.069517	84	0.0035	0.0035
85	0.110757	0.077446	85	0.0035	0.0030
86	0.122797	0.086376	86	0.0035	0.0025
87	0.136043	0.096337	87	0.0030	0.0020
88	0.150590	0.107303	88	0.0025	0.0020
89	0.166420	0.119154	89	0.0025	0.0015
90	0.183408	0.131682	90	0.0020	0.0015
91	0.199769	0.144604	91	0.0020	0.0015
92	0.216605	0.157618	92	0.0015	0.0015
93	0.233662	0.170433	93	0.0015	0.0010
94	0.250693	0.182799	94	0.0015	0.0010
95	0.267491	0.194509	95	0.0010	0.0010
96	0.283905	0.205379	96	0.0010	0.0010
97	0.299852	0.215240	97	0.0010	0.0005
98	0.315296	0.223947	98	0.0005	0.0005
99	0.330207	0.231387	99	0.0005	0.0005
100	0.344556	0.237467	100	0.0005	0.0005
101	0.358628	0.244834	101	0.0000	0.0000
102	0.371685	0.254498	102	0.0000	0.0000
103	0.383040	0.266044	103	0.0000	0.0000
104	0.392003	0.279055	104	0.0000	0.0000
105	0.397886	0.293116	105	0.0000	0.0000
106	0.400000	0.307811	106	0.0000	0.0000
107	0.400000	0.322725	107	0.0000	0.0000
108	0.400000	0.337441	108	0.0000	0.0000
109	0.400000	0.351544	109	0.0000	0.0000
110	0.400000	0.364617	110	0.0000	0.0000

Scale AA represents annual improvements in mortality rates.

	Projected Mortality Assumptions				Projected Disabled Mortality Assumptions				
	LEOFF				LEOFF				
	Plan 1 - 2019		Plan 2 - 2034		Plan 1 - 2019		Plan 2 - 2034		
Offsets	-1	1	-1	1	2	2	0	0	
Age	Male	Female	Male	Female	Male	Female	Male	Female	Age
20	0.000288	0.000165	0.000249	0.000146	0.000306	0.000166	0.016316	0.005670	20
21	0.000290	0.000165	0.000253	0.000145	0.000316	0.000168	0.016598	0.005573	21
22	0.000303	0.000168	0.000267	0.000148	0.000322	0.000171	0.016885	0.005573	22
23	0.000316	0.000173	0.000282	0.000153	0.000328	0.000178	0.017474	0.005670	23
24	0.000329	0.000180	0.000298	0.000160	0.000337	0.000186	0.018082	0.005768	24
25	0.000340	0.000188	0.000316	0.000169	0.000350	0.000196	0.019034	0.005867	25
26	0.000353	0.000199	0.000337	0.000182	0.000372	0.000210	0.020379	0.006071	26
27	0.000360	0.000210	0.000347	0.000192	0.000393	0.000221	0.020730	0.006071	27
28	0.000364	0.000221	0.000351	0.000202	0.000423	0.000236	0.020730	0.006071	28
29	0.000375	0.000236	0.000361	0.000216	0.000476	0.000275	0.020730	0.006071	29
30	0.000393	0.000280	0.000378	0.000260	0.000536	0.000319	0.020730	0.006283	30
31	0.000423	0.000324	0.000408	0.000305	0.000602	0.000365	0.020730	0.006501	31
32	0.000476	0.000365	0.000458	0.000343	0.000669	0.000402	0.020730	0.006501	32
33	0.000536	0.000399	0.000516	0.000373	0.000737	0.000435	0.020730	0.006391	33
34	0.000602	0.000431	0.000580	0.000400	0.000802	0.000466	0.020730	0.006283	34
35	0.000669	0.000462	0.000645	0.000425	0.000862	0.000497	0.020730	0.006176	35
36	0.000737	0.000493	0.000710	0.000451	0.000918	0.000532	0.020730	0.006071	36
37	0.000802	0.000528	0.000772	0.000478	0.000971	0.000571	0.020730	0.005968	37
38	0.000855	0.000566	0.000817	0.000510	0.001016	0.000617	0.020379	0.005867	38
39	0.000903	0.000612	0.000857	0.000547	0.001065	0.000671	0.020035	0.005768	39
40	0.000948	0.000671	0.000892	0.000599	0.001123	0.000738	0.019696	0.005768	40
41	0.000992	0.000738	0.000927	0.000660	0.001189	0.000812	0.019362	0.005768	41
42	0.001040	0.000812	0.000965	0.000725	0.001266	0.000892	0.019034	0.005768	42
43	0.001096	0.000892	0.001009	0.000797	0.001354	0.000973	0.018712	0.005768	43
44	0.001160	0.000973	0.001060	0.000869	0.001437	0.001057	0.018394	0.005768	44
45	0.001236	0.001048	0.001121	0.000929	0.001527	0.001135	0.018082	0.005670	45
46	0.001322	0.001126	0.001189	0.000990	0.001623	0.001217	0.018781	0.006122	46
47	0.001403	0.001208	0.001253	0.001055	0.001724	0.001305	0.019450	0.006588	47
48	0.001491	0.001305	0.001322	0.001140	0.001830	0.001414	0.020094	0.007188	48
49	0.001584	0.001414	0.001394	0.001234	0.002076	0.001564	0.020712	0.007820	49
50	0.001683	0.001577	0.001469	0.001388	0.002239	0.001724	0.021307	0.008629	50
51	0.001786	0.001738	0.001548	0.001540	0.002429	0.001906	0.021879	0.009495	51
52	0.002026	0.001937	0.001743	0.001743	0.002640	0.002134	0.022427	0.010597	52
53	0.002203	0.002169	0.001895	0.001981	0.002999	0.002438	0.023348	0.011788	53
54	0.002409	0.002478	0.002072	0.002298	0.003480	0.002826	0.024267	0.013069	54
55	0.002662	0.002872	0.002307	0.002704	0.003926	0.003238	0.025619	0.014436	55
56	0.003047	0.003290	0.002661	0.003145	0.004454	0.003711	0.027012	0.015889	56
57	0.003566	0.003741	0.003137	0.003603	0.005063	0.004235	0.028447	0.017132	57
58	0.004023	0.004235	0.003566	0.004079	0.005792	0.004820	0.029934	0.018102	58
59	0.004527	0.004820	0.004013	0.004643	0.006600	0.005544	0.030949	0.019074	59
60	0.005104	0.005544	0.004524	0.005340	0.007529	0.006348	0.031995	0.020057	60
61	0.005839	0.006348	0.005215	0.006114	0.008691	0.007293	0.033656	0.021065	61
62	0.006653	0.007293	0.005943	0.007024	0.009791	0.008219	0.034823	0.022115	62
63	0.007651	0.008219	0.006886	0.007916	0.011146	0.009255	0.036687	0.023229	63
64	0.008761	0.009255	0.007885	0.008914	0.012628	0.010445	0.038044	0.024430	64

	Projected Mortality Assumptions (Continued) LEOFF				Projected Disabled Mortality Assumptions (Continued) LEOFF				
	Plan 1 - 2019		Plan 2 - 2034		Plan 1 - 2019		Plan 2 - 2034		
Offsets	-1	1	-1	1	2	2	0	0	
Age	Male	Female	Male	Female	Male	Female	Male	Female	Age
65	0.009871	0.010445	0.008883	0.010060	0.014088	0.011598	0.039514	0.025739	65
66	0.011236	0.011598	0.010189	0.011171	0.015765	0.012821	0.041830	0.027180	66
67	0.012730	0.012821	0.011544	0.012348	0.017468	0.014170	0.043622	0.028769	67
68	0.014088	0.014170	0.012679	0.013648	0.019402	0.015964	0.044818	0.030523	68
69	0.015638	0.015964	0.014074	0.015376	0.021468	0.017689	0.046948	0.032452	69
70	0.017189	0.017689	0.015353	0.017038	0.023645	0.019676	0.048450	0.034565	70
71	0.019246	0.019518	0.017191	0.018658	0.026337	0.021663	0.050972	0.036242	71
72	0.021295	0.021663	0.019021	0.020708	0.029382	0.024009	0.053731	0.038690	72
73	0.023645	0.023817	0.021120	0.022597	0.032841	0.026255	0.056741	0.040626	73
74	0.026337	0.026255	0.023525	0.024910	0.036604	0.028927	0.060008	0.043400	74
75	0.029620	0.028695	0.026657	0.027021	0.041107	0.031652	0.064631	0.045576	75
76	0.033107	0.031652	0.029796	0.029805	0.045748	0.034891	0.068478	0.048671	76
77	0.037199	0.035172	0.033732	0.033370	0.051331	0.038831	0.073824	0.052853	77
78	0.041775	0.038831	0.038169	0.036842	0.057587	0.042922	0.079573	0.056404	78
79	0.046867	0.042922	0.043146	0.040723	0.065070	0.047507	0.085714	0.060175	79
80	0.052585	0.047507	0.048777	0.045073	0.073395	0.052666	0.092234	0.064186	80
81	0.058993	0.052666	0.055134	0.049968	0.082474	0.058478	0.099118	0.068467	81
82	0.066658	0.058478	0.062769	0.055482	0.092602	0.065037	0.106350	0.073050	82
83	0.074584	0.065037	0.070232	0.061705	0.102790	0.072564	0.111993	0.077967	83
84	0.083810	0.072564	0.079516	0.068846	0.114883	0.081053	0.119761	0.083254	84
85	0.093349	0.081706	0.088566	0.078106	0.127467	0.091266	0.125690	0.090472	85
86	0.103619	0.092001	0.098310	0.088610	0.141310	0.102473	0.131700	0.098361	86
87	0.115809	0.103298	0.110706	0.100242	0.157422	0.114879	0.140160	0.106977	87
88	0.129529	0.114879	0.124756	0.111481	0.175153	0.126958	0.148954	0.114405	88
89	0.143596	0.127979	0.138304	0.125130	0.190777	0.140538	0.155426	0.124455	89
90	0.159968	0.140538	0.155235	0.137409	0.208834	0.153186	0.171339	0.133080	90
91	0.176563	0.153186	0.171339	0.149775	0.225279	0.165890	0.186624	0.142249	91
92	0.193860	0.165890	0.189544	0.162196	0.243644	0.177926	0.205827	0.151967	92
93	0.210514	0.179357	0.205827	0.176685	0.260360	0.190846	0.222036	0.164733	93
94	0.227092	0.190846	0.222036	0.188004	0.276337	0.201512	0.238219	0.176685	94
95	0.245603	0.201512	0.241945	0.198510	0.294206	0.211504	0.258545	0.188004	95
96	0.262454	0.211504	0.258545	0.208354	0.309824	0.220060	0.274410	0.198510	96
97	0.278559	0.221829	0.274410	0.220171	0.324476	0.229199	0.289823	0.211611	97
98	0.296571	0.229199	0.294354	0.227486	0.341810	0.235574	0.309980	0.220171	98
99	0.312314	0.235574	0.309980	0.233814	0.355770	0.242883	0.324640	0.227486	99
100	0.329712	0.244834	0.329712	0.244834	0.371685	0.254498	0.344556	0.237467	100
101	0.344556	0.254498	0.344556	0.254498	0.383040	0.266044	0.358628	0.244834	101
102	0.358628	0.266044	0.358628	0.266044	0.392003	0.279055	0.371685	0.254498	102
103	0.371685	0.279055	0.371685	0.279055	0.397886	0.293116	0.383040	0.266044	103
104	0.383040	0.293116	0.383040	0.293116	0.400000	0.307811	0.392003	0.279055	104
105	0.392003	0.307811	0.392003	0.307811	0.400000	0.322725	0.397886	0.293116	105
106	0.397886	0.322725	0.397886	0.322725	0.400000	0.337441	0.400000	0.307811	106
107	0.400000	0.337441	0.400000	0.337441	0.400000	0.351544	0.400000	0.322725	107
108	0.400000	0.351544	0.400000	0.351544	0.400000	0.351544	0.400000	0.337441	108
109	0.400000	0.351544	0.400000	0.351544	0.400000	0.351544	0.400000	0.351544	109
110	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	110

Improvements in mortality are projected to the year specified for each plan based on 50% of Scale AA.

	Service Retirement		Disablement*		Ratio of Survivors Selecting Annuities**		
	LEOFF 1	LEOFF 2	LEOFF 1	LEOFF 2	LEOFF 1	LEOFF 2	
Age	Male & Female	Male & Female	Male & Female	Male & Female	Male & Female	Male & Female	Age
20	0.00	0.00	0.0010	0.0001	0.00	0.00	20
21	0.00	0.00	0.0010	0.0002	0.00	0.00	21
22	0.00	0.00	0.0010	0.0002	0.00	0.00	22
23	0.00	0.00	0.0010	0.0002	0.00	0.00	23
24	0.00	0.00	0.0010	0.0003	0.00	0.00	24
25	0.00	0.00	0.0010	0.0003	0.00	0.00	25
26	0.00	0.00	0.0024	0.0004	0.00	0.00	26
27	0.00	0.00	0.0038	0.0005	0.00	0.00	27
28	0.00	0.00	0.0052	0.0005	0.00	0.00	28
29	0.00	0.00	0.0066	0.0007	0.00	0.00	29
30	0.00	0.00	0.0080	0.0008	0.00	0.00	30
31	0.00	0.00	0.0094	0.0009	0.00	0.00	31
32	0.00	0.00	0.0107	0.0010	0.00	0.00	32
33	0.00	0.00	0.0121	0.0011	0.00	0.00	33
34	0.00	0.00	0.0135	0.0012	0.00	0.00	34
35	0.00	0.00	0.0149	0.0013	0.00	0.07	35
36	0.00	0.00	0.0163	0.0015	0.00	0.07	36
37	0.00	0.00	0.0190	0.0018	0.00	0.07	37
38	0.00	0.00	0.0205	0.0020	0.00	0.07	38
39	0.00	0.00	0.0220	0.0021	0.00	0.07	39
40	0.00	0.00	0.0235	0.0023	0.57	0.17	40
41	0.00	0.00	0.0249	0.0024	0.57	0.17	41
42	0.00	0.00	0.0264	0.0025	0.57	0.17	42
43	0.00	0.00	0.0279	0.0027	0.57	0.17	43
44	0.00	0.00	0.0360	0.0028	0.57	0.17	44
45	0.00	0.00	0.0400	0.0030	0.57	0.27	45
46	0.00	0.00	0.0468	0.0033	0.57	0.27	46
47	0.00	0.00	0.0532	0.0038	0.57	0.27	47
48	0.00	0.00	0.0592	0.0044	0.57	0.27	48
49	0.00	0.00	0.0648	0.0049	0.57	0.27	49

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 2011 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 0.607 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	
Age	Male & Female	Male & Female	Male & Female	Male & Female	Male & Female	Male & Female	Age
50	0.07	0.05	0.0700	0.0056	0.57	0.30	50
51	0.07	0.04	0.0748	0.0061	0.57	0.30	51
52	0.07	0.04	0.0792	0.0065	0.57	0.30	52
53	0.07	0.09	0.0832	0.0070	0.57	0.30	53
54	0.11	0.11	0.0868	0.0075	0.57	0.30	54
55	0.12	0.14	0.0900	0.0080	0.57	0.40	55
56	0.12	0.14	0.0928	0.0084	0.57	0.40	56
57	0.15	0.14	0.0952	0.0090	0.57	0.40	57
58	0.16	0.19	0.0972	0.0095	0.57	0.40	58
59	0.16	0.19	0.0988	0.0097	0.57	0.40	59
60	0.23	0.19	0.1000	0.0100	0.57	0.53	60
61	0.25	0.24	0.1008	0.0104	0.57	0.53	61
62	0.25	0.24	0.1012	0.0107	0.60	0.57	62
63	0.25	0.24	0.1012	0.0110	0.60	0.57	63
64	0.25	0.24	0.1008	0.0114	0.60	0.57	64
65	0.25	0.24	0.1000	0.0118	0.60	0.57	65
66	0.25	0.24	0.0756	0.0121	0.60	0.57	66
67	0.25	0.24	0.0544	0.0125	0.60	0.57	67
68	0.25	0.24	0.0364	0.0129	0.60	0.57	68
69	0.25	0.24	0.0216	0.0133	0.60	0.57	69
70	1.00	1.00	0.0000	0.0000	0.60	0.57	70
71	1.00	1.00	0.0000	0.0000	0.60	0.57	71
72	1.00	1.00	0.0000	0.0000	0.60	0.57	72
73	1.00	1.00	0.0000	0.0000	0.60	0.57	73
74	1.00	1.00	0.0000	0.0000	0.60	0.57	74
75	1.00	1.00	0.0000	0.0000	0.60	0.57	75
76	1.00	1.00	0.0000	0.0000	0.60	0.57	76
77	1.00	1.00	0.0000	0.0000	0.60	0.57	77
78	1.00	1.00	0.0000	0.0000	0.60	0.57	78
79	1.00	1.00	0.0000	0.0000	0.60	0.57	79
80+	1.00	1.00	0.0000	0.0000	0.60	0.57	80+

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 2011 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 0.607 for duty-related deaths.*

	Termination		Percent Vested*		Step Salary Increases		
	LEOFF 1	LEOFF 2	LEOFF 1	LEOFF 2	LEOFF		
Service Years	Male & Female	Male & Female	Male & Female	Male & Female	% Increase	Salary Ratio	Service Years
0	0.1072	0.1070	0.00	0.00	11.00%	1.840	0
1	0.0482	0.0481	0.00	0.00	11.00%	1.657	1
2	0.0246	0.0245	0.00	0.00	7.70%	1.493	2
3	0.0217	0.0216	0.00	0.00	6.10%	1.386	3
4	0.0206	0.0204	0.00	0.00	4.00%	1.307	4
5	0.0198	0.0197	1.00	0.24	2.80%	1.256	5
6	0.0194	0.0193	1.00	0.24	2.00%	1.222	6
7	0.0193	0.0192	1.00	0.24	1.60%	1.198	7
8	0.0180	0.0179	1.00	0.24	1.50%	1.179	8
9	0.0175	0.0174	1.00	0.24	1.40%	1.162	9
10	0.0172	0.0170	1.00	0.24	1.70%	1.146	10
11	0.0153	0.0151	1.00	0.24	1.30%	1.127	11
12	0.0151	0.0150	1.00	0.24	1.30%	1.112	12
13	0.0145	0.0144	1.00	0.27	1.30%	1.098	13
14	0.0116	0.0114	1.00	0.27	1.30%	1.084	14
15	0.0108	0.0107	1.00	0.27	1.30%	1.070	15
16	0.0106	0.0105	1.00	0.27	1.10%	1.056	16
17	0.0085	0.0084	1.00	0.33	1.10%	1.045	17
18	0.0087	0.0086	1.00	0.44	1.10%	1.033	18
19	0.0086	0.0085	1.00	0.44	1.10%	1.022	19
20	0.0088	0.0087	1.00	0.69	1.10%	1.011	20
21	0.0085	0.0084	1.00	0.82	0.00%	1.000	21
22	0.0082	0.0081	1.00	0.88	0.00%	1.000	22
23	0.0076	0.0075	1.00	0.91	0.00%	1.000	23
24	0.0072	0.0071	1.00	0.91	0.00%	1.000	24

Rates have been rounded for display purposes.

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

	Termination (Continued)		Percent Vested* (Continued)		Step Salary Increases (Continued)		
	LEOFF 1	LEOFF 2	LEOFF 1	LEOFF 2	LEOFF		
Service Years	Male & Female	Male & Female	Male & Female	Male & Female	% Increase	Salary Ratio	Service Years
25	0.0067	0.0066	1.00	0.91	0.00%	1.000	25
26	0.0077	0.0076	1.00	0.91	0.00%	1.000	26
27	0.0070	0.0069	1.00	0.91	0.00%	1.000	27
28	0.0062	0.0061	1.00	0.91	0.00%	1.000	28
29	0.0018	0.0017	1.00	0.91	0.00%	1.000	29
30	0.0016	0.0015	1.00	0.91	0.00%	1.000	30
31	0.0016	0.0015	1.00	0.91	0.00%	1.000	31
32	0.0016	0.0015	1.00	0.91	0.00%	1.000	32
33	0.0016	0.0015	1.00	0.91	0.00%	1.000	33
34	0.0016	0.0015	1.00	0.91	0.00%	1.000	34
35	0.0016	0.0015	1.00	0.91	0.00%	1.000	35
36	0.0016	0.0015	1.00	0.91	0.00%	1.000	36
37	0.0016	0.0015	1.00	0.91	0.00%	1.000	37
38	0.0016	0.0015	1.00	0.91	0.00%	1.000	38
39	0.0016	0.0015	1.00	0.91	0.00%	1.000	39
40	0.0016	0.0015	1.00	0.91	0.00%	1.000	40
41	0.0016	0.0015	1.00	0.91	0.00%	1.000	41
42	0.0016	0.0015	1.00	0.91	0.00%	1.000	42
43	0.0016	0.0015	1.00	0.91	0.00%	1.000	43
44	0.0016	0.0015	1.00	0.91	0.00%	1.000	44
45	0.0016	0.0015	1.00	0.91	0.00%	1.000	45
46	0.0016	0.0015	1.00	0.91	0.00%	1.000	46
47	0.0016	0.0015	1.00	0.91	0.00%	1.000	47
48	0.0016	0.0015	1.00	0.91	0.00%	1.000	48
49	0.0016	0.0015	1.00	0.91	0.00%	1.000	49
50	0.0016	0.0015	1.00	0.91	0.00%	1.000	50

Rates have been rounded for display purposes.

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

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

Duty-Related Death Assumption	
	Duty Death Rate*
LEOFF 1	0.0376%
LEOFF 2	0.0376%

**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. We increase these rates by 10% for a death resulting in payment of the special lump sum duty-death benefit.*

Member/Beneficiary Age Difference (In Years)		
	Male Member	Female Member
LEOFF	3	(2)

Age difference is Member age minus Beneficiary age.

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

LEOFF 2 Duty-Related Disability Assumption	
Age	Duty Disability Rate*
20	97.15%
25	95.71%
30	94.30%
35	92.85%
40	91.45%
50	85.75%
55+	82.90%

**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).	33.86%

Average Ratio of Survivors of Inactive Deaths Selecting Annuities*	
LEOFF 2	26%

**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	0.866	0.891

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	8.46%

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

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 *2011 Other Post-Employment Benefits Actuarial Valuation Report* (OPEB Report) or assumptions referenced below.

Medical Inflation

- **Current and Future Survivors, and Future Disabilities:** Uniform Medical Plan (UMP) 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	$3058.40
Employer			
	Member	Pre-Medicare	$12,895.81
		Medicare	7,854.30
	Spouse	Pre-Medicare	11,457.78
		Medicare	7,392.38
	Child	Pre-Medicare	$3962.35
Total Disabilities			
State-Provided Medicare Subsidy			
	Age	**Annual Subsidy**	
	Less than 25	$6472.80	
	25-27	4084.80	
	28 and Above	$1,156.80	

Future Survivors *(Covered under PEBB Options)*			
		Annual Premium	
Family Member	**Category**	**Medical**	**Dental**
Survivor			
	Pre-Medicare	$6,115.56	$571.56
	Medicare	$2,329.56	$571.56
Child			
	Pre-Medicare	$4,530.48	$571.56

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.
- ♦ While DRS reports salaries earned during the year prior to the valuation date, 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

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	Civil Marriages (C 3 L 12); DFW Service Credit Transfer (C 248 L 12)

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

Early Retirement Factors		
Years Early	**LEOFF 2***	**Subsidized 3%****
0	1.000	1.00
1	0.910	0.97
2	0.830	0.94
3	0.757	0.91
4	0.691	N/A
5	0.631	N/A
6	0.577	N/A
7	0.527	N/A
8	0.483	N/A
9	0.442	N/A
10	0.405	N/A
11	0.371	N/A
12	0.341	N/A
13	0.313	N/A
14	0.287	N/A
15	0.264	N/A
16	0.242	N/A
17	0.223	N/A
18	0.205	N/A
19	0.188	N/A
20	0.173	N/A
21	0.159	N/A
22	0.147	N/A
23	0.135	N/A
24	0.125	N/A
25	0.115	N/A
26	0.106	N/A
27	0.100	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.*

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	6	18	11	8	0	1	0	0	0	0	0	0	0	44
	$57,814	$53,182	$71,923	$66,253	$0	*	$0	$0	$0	$0	$0	$0	$0	$61,425
25-29	23	75	84	184	159	146	0	0	0	0	0	0	0	671
	$58,471	$60,663	$68,816	$72,472	$74,760	$79,658	$0	$0	$0	$0	$0	$0	$0	$72,320
30-34	20	54	66	140	174	585	125	0	0	0	0	0	0	1,164
	$60,137	$63,158	$72,178	$73,135	$76,112	$82,544	$84,596	$0	$0	$0	$0	$0	$0	$78,799
35-39	17	31	38	80	98	524	668	131	0	0	0	0	0	1,587
	$59,809	$61,783	$72,935	$73,534	$74,795	$81,669	$88,837	$89,586	$0	$0	$0	$0	$0	$83,673
40-44	9	14	23	49	58	326	612	698	199	0	0	0	0	1,988
	$61,531	$63,989	$73,845	$71,551	$73,872	$82,942	$86,936	$94,020	$96,812	$0	$0	$0	$0	$88,569
45-49	5	13	6	16	20	134	301	404	663	112	0	0	0	1,674
	$60,187	$67,254	$64,695	$68,605	$78,632	$79,644	$88,511	$93,088	$99,808	$108,392	$0	$0	$0	$94,067
50-54	6	5	3	9	8	54	116	178	383	339	126	0	0	1,227
	$57,917	$97,582	$91,753	$87,618	$74,439	$78,325	$86,205	$91,496	$96,742	$103,376	$112,969	$0	$0	$97,263
55-59	5	5	2	4	4	33	46	88	141	156	239	0	0	723
	$69,494	$84,491	$118,490	$80,079	$124,026	$73,351	$83,468	$88,104	$95,593	$102,151	$108,324	$0	$0	$98,396
60-64	0	1	0	3	2	13	16	20	45	40	62	0	0	202
	$0	*	$0	$57,124	$67,529	$79,790	$82,220	$90,163	$93,226	$98,083	$103,633	$0	$0	$94,466
65-69	0	1	0	0	0	3	1	3	8	7	7	0	0	30
	$0	*	$0	$0	$0	$62,836	*	$78,690	$86,358	$91,545	$94,722	$0	$0	$87,233
70 & Over	0	0	0	0	0	0	1	0	1	0	0	0	0	2
	$0	$0	$0	$0	$0	$0	*	$0	*	$0	$0	$0	$0	$98,649
Total	**91**	**217**	**233**	**493**	**523**	**1,819**	**1,886**	**1,522**	**1,440**	**654**	**434**	**0**	**0**	9,312
	$60,010	**$62,955**	**$71,699**	**$72,759**	**$75,610**	**$81,571**	**$87,569**	**$92,673**	**$97,876**	**$103,493**	**$108,783**	**$0**	**$0**	$88,237

Average:	Age	42.6	Number of Participants:	Vested	7,531	Males	8,417	Early Retirement Eligible:	**541**
	Service	13.6		Not Vested	1,781	Females	895	Normal Retirement Eligible:	**1,337**

**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	9	21	17	12	1	0	0	0	0	0	0	0	0	60
	$49,817	$51,846	$60,021	$75,325	*	$0	$0	$0	$0	$0	$0	$0	$0	$58,584
25-29	30	54	90	134	99	127	0	0	0	0	0	0	0	534
	$52,511	$58,438	$65,291	$73,933	$79,801	$85,464	$0	$0	$0	$0	$0	$0	$0	$73,536
30-34	27	35	63	111	111	463	146	0	0	0	0	0	0	956
	$55,820	$58,255	$68,288	$76,540	$80,898	$87,753	$90,888	$0	$0	$0	$0	$0	$0	$82,870
35-39	10	24	46	51	59	380	502	98	0	0	0	0	0	1,170
	$53,305	$65,149	$67,008	$74,649	$76,492	$88,321	$94,918	$101,554	$0	$0	$0	$0	$0	$89,455
40-44	14	8	23	31	34	271	520	485	167	1	0	0	0	1,554
	$56,173	$67,201	$68,357	$74,745	$78,844	$89,112	$93,688	$101,490	$105,993	*	$0	$0	$0	$95,111
45-49	2	7	7	8	8	108	213	355	411	141	3	0	0	1,263
	$58,000	$88,279	$68,272	$80,218	$86,820	$88,402	$91,907	$102,493	$108,368	$114,341	$107,962	$0	$0	$102,171
50-54	2	0	4	2	4	46	91	202	311	286	183	0	0	1,131
	$83,385	$0	$82,219	$58,032	$95,957	$95,969	$89,879	$98,420	$106,079	$112,406	$119,787	$0	$0	$106,569
55-59	1	2	3	2	1	23	39	69	143	162	202	0	0	647
	*	$76,013	$113,611	$115,575	*	$91,362	$87,652	$97,435	$104,521	$113,990	$116,474	$0	$0	$108,244
60-64	0	1	0	1	1	14	11	14	34	31	50	0	0	157
	$0	*	$0	*	*	$107,386	$96,028	$101,156	$105,948	$110,120	$111,332	$0	$0	$106,464
65-69	0	0	0	0	0	2	4	3	4	5	1	0	0	19
	$0	$0	$0	$0	$0	$102,952	$106,550	$94,510	$113,232	$102,953	*	$0	$0	$104,922
70 & Over	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	$108,488
Total	**95**	**152**	**253**	**352**	**318**	**1,435**	**1,526**	**1,227**	**1,070**	**626**	**439**	**0**	**0**	**7,493**
	$54,580	**$60,485**	**$67,197**	**$75,217**	**$79,688**	**$88,517**	**$93,245**	**$101,081**	**$106,759**	**$113,071**	**$117,197**	**$0**	**$0**	**$95,156**

Average:	Age	42.8	Number of Participants:	Vested	6,161	Males	7,062	Early Retirement Eligible:	**473**
	Service	14.1		Not Vested	1,332	Females	431	Normal Retirement Eligible:	**1,239**

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

Age/Years Retired Distribution

Attained Age	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & Over	Total
Age and Years Retired Distribution of Service Retired Law Enforcement Officers (Number of Service Retired Members and Average Monthly Benefit) — LEOFF Plan 2 — Attained Years Retired														
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	38	37	10	13	2	0	0	0	0	0	0	0	0	**100**
	$3,359	$3,061	$3,587	$3,242	$3,154	$0	$0	$0	$0	$0	$0	$0	$0	**$3,252**
55-59	38	96	77	87	73	119	0	0	0	0	0	0	0	**490**
	$3,536	$3,745	$2,981	$2,700	$2,790	$2,647	$0	$0	$0	$0	$0	$0	$0	**$3,014**
60-64	20	29	15	28	29	149	26	0	0	0	0	0	0	**296**
	$2,932	$3,468	$2,870	$3,212	$2,872	$2,335	$1,506	$0	$0	$0	$0	$0	$0	**$2,576**
65-69	5	7	11	5	11	56	49	0	0	0	0	0	0	**144**
	$2,246	$3,092	$3,022	$1,884	$2,321	$2,124	$1,249	$0	$0	$0	$0	$0	$0	**$1,953**
70-74	0	1	1	1	2	21	17	3	0	0	0	0	0	**46**
	$0	*	*	*	$2,182	$1,691	$1,396	$299	$0	$0	$0	$0	$0	**$1,552**
75-79	0	0	0	0	1	2	5	4	0	0	0	0	0	**12**
	$0	$0	$0	$0	*	$2,269	$1,136	$891	$0	$0	$0	$0	$0	**$1,292**
80-84	0	0	0	0	0	0	1	2	3	0	0	0	0	**6**
	$0	$0	$0	$0	$0	$0	*	$1,543	$842	$0	$0	$0	$0	**$1,199**
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	**101**	**170**	**114**	**134**	**118**	**347**	**98**	**9**	**3**	**0**	**0**	**0**	**0**	**1,094**
	$3,286	**$3,525**	**$2,998**	**$2,829**	**$2,753**	**$2,369**	**$1,340**	**$838**	**$842**	**$0**	**$0**	**$0**	**$0**	**$2,687**

Average:	Age	60.2	Males	1,002
	Years Retired	4.5	Females	92

**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	16	19	5	4	5	0	0	0	0	0	0	0	0	49
	$4,183	$3,354	$3,840	$2,981	$2,957	$0	$0	$0	$0	$0	$0	$0	$0	$3,603
55-59	34	43	42	23	31	36	0	0	0	0	0	0	0	209
	$4,908	$4,094	$3,327	$3,540	$2,971	$2,507	$0	$0	$0	$0	$0	$0	$0	$3,571
60-64	17	24	16	25	15	77	10	0	0	0	0	0	0	184
	$4,666	$4,205	$3,325	$3,875	$3,100	$2,630	$2,172	$0	$0	$0	$0	$0	$0	$3,267
65-69	2	5	7	7	10	25	14	0	0	0	0	0	0	70
	$4,407	$2,426	$3,056	$2,292	$2,489	$2,380	$2,075	$0	$0	$0	$0	$0	$0	$2,455
70-74	0	2	0	2	1	11	9	5	0	0	0	0	0	30
	$0	$1,580	$0	$3,568	*	$2,223	$1,815	$788	$0	$0	$0	$0	$0	$1,877
75-79	0	0	0	0	0	0	7	8	0	0	0	0	0	15
	$0	$0	$0	$0	$0	$0	$1,666	$1,064	$0	$0	$0	$0	$0	$1,345
80-84	0	0	0	0	0	0	0	2	2	0	0	0	0	4
	$0	$0	$0	$0	$0	$0	$0	$2,317	$770	$0	$0	$0	$0	$1,544
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	**69**	**93**	**70**	**61**	**62**	**149**	**40**	**15**	**3**	**0**	**0**	**0**	**0**	**562**
	$4,666	**$3,827**	**$3,336**	**$3,498**	**$2,896**	**$2,528**	**$1,969**	**$1,139**	**$603**	**$0**	**$0**	**$0**	**$0**	**$3,165**

Average:	Age	61.0	Males	541
	Years Retired	4.4	Females	21

**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	6	4	6	1	10	1	0	0	0	0	0	0	30
	$1,305	$2,302	$1,301	$1,439	*	$1,052	*	$0	$0	$0	$0	$0	$0	$1,451
50-54	0	3	2	3	1	8	3	0	0	0	0	0	0	20
	$0	$2,135	$3,539	$3,227	*	$1,646	$522	$0	$0	$0	$0	$0	$0	$1,957
55-59	2	2	2	7	6	18	4	0	0	0	0	0	0	41
	$1,739	$2,259	$1,515	$3,217	$2,864	$2,473	$822	$0	$0	$0	$0	$0	$0	$2,403
60-64	2	3	4	3	2	21	4	0	1	0	0	0	0	40
	$2,010	$3,296	$3,386	$2,274	$1,950	$2,563	$1,536	$0	*	$0	$0	$0	$0	$2,457
65-69	0	0	0	0	1	5	1	0	0	0	0	0	0	7
	$0	$0	$0	$0	*	$1,343	*	$0	$0	$0	$0	$0	$0	$1,722
70-74	0	0	0	0	0	0	2	0	0	0	0	0	0	2
	$0	$0	$0	$0	$0	$0	$809	$0	$0	$0	$0	$0	$0	$809
75-79	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	*
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**	**14**	**12**	**19**	**11**	**62**	**15**	**0**	**1**	**0**	**1**	**0**	**0**	**141**
	$1,684	**$2,473**	**$2,405**	**$2,508**	**$2,533**	**$2,076**	**$1,012**	**$0**	*****	**$0**	*****	**$0**	**$0**	**$2,080**

Average:	Age	55.8	Males	116
	Years Retired	5.4	Females	25

**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	2	0	0	2	5	0	0	0	0	0	0	0	9
	$0	$2,528	$0	$0	$1,178	$856	$0	$0	$0	$0	$0	$0	$0	$1,299
50-54	0	5	3	2	1	5	1	0	0	0	0	0	0	17
	$0	$2,565	$3,610	$2,671	*	$1,854	*	$0	$0	$0	$0	$0	$0	$2,393
55-59	1	5	3	6	4	9	2	0	0	0	0	0	0	30
	*	$3,591	$2,856	$3,086	$2,940	$2,772	$2,778	$0	$0	$0	$0	$0	$0	$3,032
60-64	0	1	3	3	1	10	2	0	0	0	0	0	0	20
	$0	*	$3,322	$3,877	*	$2,582	$1,443	$0	$0	$0	$0	$0	$0	$2,838
65-69	0	2	0	1	0	5	1	2	0	0	0	0	0	11
	$0	$3,095	$0	*	$0	$2,076	*	$648	$0	$0	$0	$0	$0	$1,912
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	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	1	15	9	12	8	34	6	2	0	0	0	0	0	87
	*	$3,094	$3,263	$3,078	$2,154	$2,197	$1,920	$648	$0	$0	$0	$0	$0	$2,541

Average:	Age	56.8	Males	75
	Years Retired	4.9	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)
(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	15	5	3	2	4	0	0	0	0	0	0	0	29
	$0	$892	$1,467	$2,268	$943	$2,081	$0	$0	$0	$0	$0	$0	$0	$1,301
50-54	3	9	3	1	1	9	0	0	0	0	0	0	0	26
	$3,318	$716	$1,529	*	*	$1,682	$0	$0	$0	$0	$0	$0	$0	$1,617
55-59	0	4	2	1	2	9	0	0	0	0	0	0	0	18
	$0	$249	$2,496	*	$1,530	$1,770	$0	$0	$0	$0	$0	$0	$0	$1,403
60-64	0	2	2	0	1	4	1	0	0	0	0	0	0	10
	$0	$179	$1,123	$0	*	$2,359	*	$0	$0	$0	$0	$0	$0	$1,498
65-69	0	1	0	0	0	1	2	0	0	0	0	0	0	4
	$0	*	$0	$0	$0	*	$1,542	$0	$0	$0	$0	$0	$0	$1,895
70-74	0	1	0	0	0	0	2	2	0	0	0	0	0	5
	$0	*	$0	$0	$0	$0	$1,367	$564	$0	$0	$0	$0	$0	$802
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	**3**	**32**	**12**	**5**	**6**	**27**	**5**	**2**	**0**	**0**	**0**	**0**	**0**	**92**
	$3,318	**$773**	**$1,597**	**$2,052**	**$1,659**	**$1,849**	**$1,295**	**$564**	**$0**	**$0**	**$0**	**$0**	**$0**	**$1,430**

Average:	Age	52.3	Males	3
	Years Retired	4.1	Females	89

**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	1	3	2	2	0	3	0	0	0	0	0	0	0	11
	*	$716	$2,627	$3,800	$0	$1,788	$0	$0	$0	$0	$0	$0	$0	$2,080
50-54	0	3	1	1	0	3	0	0	0	0	0	0	0	8
	$0	$3,320	*	*	$0	$2,641	$0	$0	$0	$0	$0	$0	$0	$3,141
55-59	0	1	2	1	0	3	1	1	0	0	0	0	0	9
	$0	*	$2,714	*	$0	$1,979	*	*	$0	$0	$0	$0	$0	$1,765
60-64	0	1	0	0	1	3	0	0	0	0	0	0	0	5
	$0	*	$0	$0	*	$2,602	$0	$0	$0	$0	$0	$0	$0	$3,001
65-69	0	0	1	0	0	1	0	1	0	0	0	0	0	3
	$0	$0	*	$0	$0	*	$0	*	$0	$0	$0	$0	$0	$2,980
70-74	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	*
75-79	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	*
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	1	0	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	**1**	**8**	**6**	**4**	**1**	**13**	**1**	**5**	**0**	**0**	**0**	**0**	**0**	**39**
	*	**$2,100**	**$2,836**	**$3,991**	*	**$2,296**	*	**$660**	**$0**	**$0**	**$0**	**$0**	**$0**	**$2,312**

Average:	Age	54.9	Males	1
	Years Retired	5.4	Females	38

**Monthly benefit omitted for privacy reasons.*

Historical Data

Historical Data										
(Dollars in Millions)	**2011**	**2010**	**2009**	**2008**	**2007***	**2006**	**2005**	**2004**	**2003**	**2002**
Contribution Information										
Employer Rate	4.54%	4.54%	4.44%	4.34%	4.56%	4.66%	4.86%	4.57%	4.32%	3.84%
State Rate	3.03%	3.03%	2.96%	2.89%	3.04%	3.11%	3.24%	3.03%	2.88%	2.57%
Employee Rate	7.57%	7.57%	7.40%	7.23%	7.60%	7.77%	8.10%	7.60%	7.20%	6.41%
Funded Status										
Projected Unit Credit Liability	$5,576	$5,078	$4,349	$3,786	$3,386	$3,323	$2,932	$2,521	$2,194	$1,937
Market Value of Assets	$6,366	$5,081	$4,309	$5,315	$5,185	$4,339	$3,614	$2,984	$2,541	$2,136
Actuarial Value of Assets	$6,621	$6,043	$5,564	$5,053	$4,360	$3,844	$3,329	$2,947	$2,740	$2,646
Unfunded Liability	($1,044)	($965)	($1,215)	($1,266)	($974)	($521)	($397)	($426)	($547)	($709)
Funded Ratio	118.7%	119.0%	127.9%	133.4%	128.8%	115.7%	113.5%	116.9%	124.9%	136.6%
Participant Data										
Number of Actives	16,805	16,775	16,951	16,626	16,099	15,718	15,168	14,754	14,560	14,011
Total Annual Salaries	$1,535	$1,490	$1,443	$1,345	$1,234	$1,172	$1,092	$1,020	$967	$902
Number of Terminated Vested	655	781	672	649	629	597	570	521	439	376
Number of Terminated, Not Vested	1,617	1,707	1,663	1,531	1,433	1,362	1,285	1,233	1,186	1,137
Number of Retirees and Beneficiaries	2,015	1,639	1,367	1,134	924	779	574	432	316	244
Total Annual Benefits	$65	$49	$38	$29	$22	$17	$11	$8	$5	$3
Assumptions										
Valuation Interest Rate	7.50%	8.00%	8.00%	8.00%	5.94%	8.00%	8.00%	8.00%	8.00%	8.00%
Salary Increase	5.61%	6.55%	6.61%	6.61%	5.49%	7.40%	7.40%	7.60%	7.70%	7.80%
Inflation**	3.00%	3.50%	3.50%	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%	0.94%	1.25%	1.25%	1.25%	1.25%	1.25%
Actuarial Experience										
Return on Market Value	21.08%	12.99%	(22.64%)	(1.33%)	16.61%	15.77%	17.55%	13.64%	15.13%	(6.31%)
Return on Actuarial Value	6.15%	4.84%	5.72%	11.04%	10.03%	10.80%	9.30%	4.10%	0.60%	0.10%
Salary Increase	3.48%	5.35%	6.69%	7.65%	4.31%	5.50%	5.90%	5.20%	4.80%	7.00%
Inflation	0.78%	0.44%	4.48%	3.79%	3.73%	3.02%	1.57%	1.41%	1.81%	3.55%
Growth in Membership	(0.12%)	0.17%	1.53%	2.62%	1.83%	2.66%	1.85%	0.33%	2.59%	1.73%
COLA***	0.78%-3%	0.44%-3%	3.00%	3.00%	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 8 percent (7.5 percent for LEOFF 2).

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 commonly select an asset valuation method that smooths the effects of short-term volatility in the market value of assets.

Dollar-Weighted Rate of Return

The internal rate of return. This signifies the rate of return during a period with respect to the beginning balance and cash flows that occur during the period. Dollar-Weighted returns measure the actual impact the pension plan experiences during the period, which includes returns based on the timing of the cash flows during the period.

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 if all assumptions are realized and benefit provisions remain unchanged.

Funded Ratio

The ratio of a plan's current assets to the present value of earned pensions. Actuaries use several methods to measure a plan's assets and liabilities.

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).

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.

Present Value of Future Salaries (PVFS)

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

Time-Weighted Rate of Return

The geometric average rate of return. This signifies the rate of return during a period without respect to cash flows that occur during the period. Investment manager performance is typically based on time-weighted returns since they have no control over when the cash flows occur.

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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