WASHINGTON STATE VOLUNTEER FIRE FIGHTERS' AND RESERVE OFFICERS' RELIEF AND PENSION FUND

2017 ACTUARIAL VALUATION

OCTOBER 2018

BOARD FOR VOLUNTEER FIRE FIGHTERS AND RESERVE OFFICERS

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REPORT PREPARED BY THE OFFICE OF THE STATE ACTUARY

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Office of the State Actuary

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As required under RCW 41.24.320, this report documents the results of the actuarial valuation which the Office of the State Actuary (we) performed on the Volunteer Fire Fighters' and Reserve Officers' Relief and Pension Fund of Washington.

Our primary purpose for performing this valuation is to determine the pension and relief contribution requirements for the plan as of June 30, 2017, under the funding policy established by the Board for Volunteer Fire Fighters and Reserve Officers. This valuation also provides information on the funding progress and developments in the plan over the past year. We organized this report into the following four sections:

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

The **Summary of Key Results** provides a high-level summary of the valuation results. The next two sections of the report provide detailed actuarial asset and liability information and membership data. The **Appendices** summarize the actuarial assumptions and methods, major plan provisions, and supporting information used to perform this valuation.

We encourage you to submit any questions concerning this report to our mailing address or our e-mail address at state.actuary@leg.wa.gov. We also invite you to visit our website (leg.wa.gov/osa) for further reference information.

Sincerely,

Lisa A. Won, ASA, FCA, MAAA
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SECTION ONE:

Summary of Key Results

Intended Use

The purpose for performing the Volunteer Fire Fighters' and Reserve Officers' (VFF) Relief and Pension Fund Actuarial Valuation is to:

- Develop contribution rates to pre-fund the pension and relief benefits under the funding policy established by the Board for Volunteer Fire Fighters and Reserve Officers (the Board).
- Measure the pension system's funding progress.
- Compare actual experience with assumptions used.
- Detect significant demographic changes.
- Highlight significant plan, assumption, and method changes.

We do not intend this report to satisfy the accounting requirements under the Governmental Accounting Standards Board rules.

Funding Policy

The Board relies on systematic actuarial funding to finance the on-going cost of the pension and relief plans. Under this financing approach, we reduce the cost of future pension and relief payments by the expected long-term return on invested contributions. The plan's assets are first allocated to pre-fund the pension benefits. Any assets above the pension plan's accrued liability are allocated to the relief plan. This is a cost-sharing plan that relies on contributions from employees and employers, while the state contributes 40 percent of the annual Fire Insurance Premium Tax collected. Please refer to the **Appendices** for additional details on the actuarial funding methods. If all actuarial assumptions are realized and all future contributions required under this funding policy are made, we expect the funding policy to accumulate sufficient assets to provide for all future benefits for current members when due.

Contribution Rates

We determine the pension and relief contribution rates by performing an actuarial valuation. Consistent with current Board funding policy, we determine the per-person level dollar contribution rate required to pre-fund pension benefits using the Entry Age Normal (EAN) Funding Method. This rate includes the Normal Cost (NC) rate, plus a rate to amortize the Unfunded Actuarial Accrued Liability (UAAL). We determine the per-person level dollar contribution rate required to pre-fund relief benefits using the Aggregate Funding Method.

Per Person Annual Contributions		
Valuation Year	**2016**	**2017**
Pension Rate		
Employee	$30	$30
Employer	30	30
State	40	40
Normal Cost Rate	$100	$100
State UAAL Rate	0	0
Total Pension Rate	$100	$100
Relief Rate		
Employer	$30	$30
State	203	(100)
Total Relief Rate	$233	($70)
Operating Expenses		
Administration and Expenses	$33	$41

Members of the pension plan and their employers are charged a set pension rate. Only employers of members are charged a set rate for relief costs. Emergency medical service districts and reserve law enforcement officers' employers pay the full cost of their benefits. Under current funding policy, the state covers all remaining plan costs through the collection of taxes on fire insurance premiums.

The operating expense rate is not actually collected and is provided here for informational purposes only. We determined this rate based on actual annual costs from the prior year.

This year, due primarily to strong asset performance and an update to the relief benefit assumptions, the plan's current level of assets exceeds its combined pension and relief present value of future benefits. This results in the calculation of a negative relief rate.

Actuarial Liabilities

The following table summarizes key measures of actuarial liability along with the liabilities from last year's valuation. The Present Value of Future Benefits represents the total expected value of all future benefit payments for all members discounted back to the valuation date using the valuation interest rate. The Entry Age Normal Accrued Liability identifies the portion of the Present Value of Future Benefits that has been accrued as of the valuation date based on the EAN actuarial cost method.

Actuarial Liabilities		
(Dollars in Millions)	**2016**	**2017**
Present Value of Future Benefits		
Pension Benefits	$193.9	$194.0
Relief Benefits	$23.8	$18.4
Pension Plan*		
Entry Age Normal Accrued Liability	$190.0	$190.2
Unfunded Actuarial Accrued Liability	$0.0	$0.0
Valuation Interest Rate	7.00%	7.00%

**We do not calculate an actuarial accrued liability for the relief plan since the relief benefits are paid as they are incurred. Relief benefits are not earned or accrued as a member's service increases.*

Assets

Consistent with the Board's adopted funding policy, assets are first allocated to the pension benefits. Any assets above the pension's Actuarial Accrued Liability (AAL) are then allocated to the relief benefits.

To limit the volatility in funded status due to short-term market fluctuations, we smooth (or defer recognition of) the difference between actual and expected annual investment returns over a period not to exceed eight years. The AVA equals the MVA less the total deferred investment gains and (losses) at the valuation date. The AVA can never be less than 70 percent or greater than 130 percent of the MVA. See the **Actuarial Exhibits** section of this report for the development of the AVA.

Assets		
(Dollars in Millions)	**2016**	**2017**
Market Value of Assets (MVA)	$208.7	$229.8
Actuarial Value of Assets (AVA)	200.8	212.4
Contributions*	1.0	0.9
Disbursements	12.5	13.1
Investment Return	5.1	26.6
Other**	7.2	6.6
MVA Return***	2.5%	13.2%
AVA Return	5.5%	8.6%

**Includes Employee, Employer, and Relief contributions.*

***Includes the Fire Insurance Premium Tax less Administrative Expenses.*

****This is the dollar-weighted rate of return on the Market 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 actuarial accrued liability covered by today's actuarial assets. A plan with a 100 percent funded status has one dollar in actuarial assets for each dollar of accrued liability at the valuation date.

Based on the current funding policy, any assets above the pension plan AAL are allocated to fund the relief benefits. As a result, the pension plan would remain 100 percent funded when total assets exceed the pension AAL. We do not calculate an AAL for the relief plan since the relief benefits are paid as they are incurred. Relief benefits are not earned or accrued as a member's service increases. As such, a funded status for the relief plan is not calculated.

Pension Funded Status		
(Dollars in Millions)	**2016**	**2017**
a. Entry Age Normal Accrued Liability	$190.0	$190.2
b. Actuarial Value of Assets Allocated to Pensions	190.0	190.2
c. Unfunded Liability (a - b)	0.0	0.0
d. Funded Ratio (b / a)	100%	100%

Note: Totals may not agree due to rounding.

Participant Data

Changes in the size and composition of plan membership play a major role in the results of the valuation. We observed the below changes in plan membership since last year's valuation.

Changes in Participant Data			
	2016	2017	Percent Increase
Actives			
Number of Active Members in Relief Plan	11,532	11,184	(3%)
Number of Active Members in Pension Plan	9,434	9,223	(2%)
Percent of Volunteers Covered by Pension Plan	82%	82%	1%
Average Age	41.9	42.1	1%
Average Years of Service	10.8	10.8	(0%)
Inactives			
Number of Retirees/Beneficiaries	4,367	4,446	2%
Number of Terminated Vested Members	6,263	6,120	(2%)
Number of Survivors (Line of Duty)	11	9	(18%)
Number of Members with Permanent Disabilities	12	12	0%

Actuarial Gain/Loss

The following table describes the various sources that contribute to the change in contribution rates from one year to the next. For each source, we compare the actual amount experienced by the plan to the amount we assumed. Any difference will increase or decrease the contribution requirements accordingly. The changes in contribution rates shown in the following table represent a summary of the Pension and Relief contribution rates. The Actuarial Gain/Loss tables in the **Actuarial Exhibits** section of the report provide further detail.

Change in Contribution Rates by Source			
	Pension NC*	Pension UAAL	Relief NC
2016 Contribution Rate	**$99.92**	**$0.00**	**$232.58**
Liability (Gains) / Losses	13.28	(25.60)	(1.40)
Asset (Gains) / Losses	0.00	25.60	(212.92)
PV of Future Service (Gains) / Losses	(12.89)	0.00	(1.59)
Other (Gains) / Losses	0.00	0.00	(0.01)
Total Change	**$0.39**	**$0.00**	**($215.92)**
2017 Preliminary Rate (Before 2018 Changes)	**$100.31**	**$0.00**	**$16.66**
Incremental Changes (Gains) / Losses	0.13	0.00	(86.33)
Laws of 2018	0.00	0.00	0.00
2017 Contribution Rate	**$100.44**	**$0.00**	**($69.67)**

**Please see the Methods section of the Appendix for details on the modified version of the EAN cost method used. Non- standard sources of annual gain/loss are produced as a result.*

Significant Changes since the Prior Valuation

The following comments summarize the key changes from the last valuation. Please see the **Actuarial Certification Letter** for additional comments on the 2017 valuation results.

Since the *2016 Volunteer Fire Fighters' and Reserve Officers' Relief and Pension Fund Actuarial Valuation Report* (VAVR), one of the key impacts to the plan can be attributed to the continued decline in overall active membership counts. An actuarial valuation does not assume new members join the system, however if more members leave the system than expected, it can have a significant impact on the results of the valuation.

Another key impact was the update to the relief benefit assumptions this year to reflect the *2018 Relief Experience Study*. As part of this study, we updated assumptions such as the rate of duty deaths and the annual medical claims cost per member. In general, the relief benefit assumptions decreased, which reduced the expected future obligations to the plan, and in turn decreased the relief contribution rates.

The plan also experienced actuarial gains and losses as a result of economic and demographic experience that differed from our long-term assumptions. 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.

The investment rate of return and the Fire Insurance Premium Tax are key factors that impact the assets of the plan. The rate of investment return on the actuarial value of assets for the plan year was higher than the assumed rate of 7.0 percent. These strong returns combined with the funds received from the Fire Insurance Premium Tax decreased the contribution rates calculated for this valuation.

Some key demographic assumptions include termination, retirement, disability and death rates. The plan experienced both actuarial gains and losses on these demographic assumptions. Some liabilities increased less than expected due to events such as higher turnover and fewer active duty-related disablements and deaths, both of which decreased contribution rates. At the same time, other liabilities increased more than expected due to new members joining the plan, which increased contribution rates. In addition, new members joining the plan increase the Present Value of Future Service, so the number of years for collecting contributions is larger and this results in an actuarial gain to the system, which lowers contribution rates.

The combined impact of all these changes results in the calculation of a negative relief contribution rate. This is due to the plan's current level of assets exceeding its total pension and relief liabilities. We will continue to monitor this relief rate over the next few years.

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

SECTION TWO:

Actuarial Exhibits

Office of the State Actuary

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Actuarial Certification Letter
Volunteer Fire Fighters' and Reserve Officers' Relief and Pension Fund
Actuarial Valuation Report
As of June 30, 2017

October 2018

We prepared this report for the Board for Volunteer Fire Fighters and Reserve Officers (the Board). This report documents the results of the actuarial valuation we performed on the Volunteer Fire Fighters' and Reserve Officers' Pension and Relief Benefits as defined under Chapter 41.24 of the Revised Code of Washington. The primary purpose for performing this valuation is to determine the contribution requirements for the pension and relief plans as of the valuation date June 30, 2017, consistent with the Board's adopted funding policy. 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.

To produce the valuation results summarized in this report, we performed calculations requiring assumptions about future economic and demographic events. We applied the relief-related demographic assumptions developed in the *2018 Relief Experience Study*. We also utilized termination and retirement assumptions developed in the *VFFRPF 2008-2013 Pension Experience Study*. Several other demographic assumptions rely on experience from other Washington State retirement systems and are detailed in the *2007-2012 Demographic Experience Study*. We relied on the medical trend rates from the *2017 Other Post-Employment Benefits Actuarial Valuation Report*. These trend rates and other healthcare-related assumptions were set by a healthcare actuary, since we do not have healthcare expertise.

We believe that the assumptions and methods used in the 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 Board adopted the investment rate of return assumption, the amortization policy for the Unfunded Actuarial Accrued Liability (UAAL), and the asset valuation method used in this valuation. We believe the asset valuation method will reduce the UAAL contribution rate volatility produced by the Entry Age Normal (EAN) Actuarial Funding Method when used in combination with the existing asset allocation policy of the Washington State Investment Board (WSIB). The combination of the current asset smoothing method with any other funding method or asset allocation policy may not be appropriate.

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The Board established a fund to provide for both pension and relief benefits. The Board adopted the policy to pre-fund the pension benefits using the EAN Actuarial Funding Method. The Board also adopted the policy to pre-fund the relief benefits using the Aggregate Actuarial Funding Method. Unless noted otherwise, we selected all other assumptions and methods used in this valuation.

Under current funding policy, certain plan costs are paid by members, employers, and the state. The contribution rate charged to individual members or employers is not intended to cover the full actuarial costs of the plan. However, annual plan income (including state contributions from fire insurance premium taxes, but excluding investment income), continues to exceed the annual actuarial requirements for the plan.

Future actuarial measurements may differ significantly from the current measurements presented in this report if plan experience differs from that anticipated by the assumptions or if changes occur in the methods, assumptions, plan provisions or applicable law. We have not performed analysis of the potential range of such future measurements for the purposes of this valuation.

The Board provided us with member, beneficiary, and relief benefit data. We checked the data for reasonableness as appropriate based on the purpose of the valuation. WSIB and the Office of the State Treasurer provided financial and asset information. An audit of the data and financial information 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 Board and OSA are actively working together to further improve the quality of the data. We previously recommended the Board implement a new data collection process for the relief benefits. A more detailed reporting of medical expenditures on an individual member basis and collecting additional beneficiary data is important in preparing for future experience studies. We use experience studies to set the assumptions upon which the projected costs of the plan are based. In addition, continued improvement in the quality of the participant data will increase the reliability of future valuation results.

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 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,

Lisa A. Won, ASA, FCA, MAAA
Deputy State Actuary

Michael Harbour, ASA, MAA
Actuary

Contribution Rates

We used the Entry Age Normal (EAN) Funding Method to determine the pension contribution rates as a level dollar amount. This method divides the contribution rate into two parts: a Normal Cost (NC) rate and a rate to amortize the Unfunded Actuarial Accrued Liability (UAAL). We used the Aggregate Funding Method to determine the relief contribution rates as a level dollar amount.

The total pension contribution rate, which is the sum of the NC and UAAL pension rates, and the relief contribution rate should be sufficient to fund all projected pension and relief benefits of today's members. However, this assumes:

- Member contributions, employer contributions, and premium taxes are collected regularly.
- Benefit provisions remain the same.
- Assumptions prove reasonable.

We do not expect a smooth pattern of future contributions due to the variability of the premium tax on fire insurance policies. The plan receives a portion of the annual premium taxes, which serve as a main source of revenue for the system. See the **Actuarial Methods** section for more detail. Additionally, the method for allocating assets between the pension and relief plans, as well as the method for allocating the Fire Insurance Premium Tax between the pension and administrative expense funds, could amplify the annual volatility of the relief contribution rate.

Pension and Relief Plans Required Annual Contributions		
	Per Person*	**Total**
Pension Benefits	*(Dollars in Ones)*	*(Dollars in Thousands)*
Entry Age Normal Cost	$100	$926
Cost of UAAL	$0	0
Total Pension Rate	**$100**	**$926**
Relief Benefits		
Aggregate Normal Cost	($70)	($779)
Total Relief Rate	**($70)**	**($779)**
Operating Expenses		
Administration and Expenses**	**$41**	**$460**
Total for Pension, Relief, and Expenses	**$72**	**$607**

**The Per Person rate is based on the number of active members in the data.*

***Estimated using actual dollars.*

Note: Totals may not agree due to rounding.

Development of Pension Plan Normal Cost*	
(Dollars in Thousands)	**Total**
Future Value of Fully Projected Benefits	$627,839
a. Present Value of Fully Projected Benefits (PVFB)	194,037
b. Entry Age Normal Actuarial Accrued Liability (AAL)	190,185
c. Present Value of Future Normal Costs (PVFNC) (a - b)	3,852
d. Present Value of Future Service (PVFS)**	38,350
e. Per Person Entry Age Normal Cost (c / d in Dollars)	**$100**
f. Number of Active Members in Pension Plan	9,223
g. Entry Age Normal Cost (e x f)	$926

**Please see the Methods section of the Appendix for details on the modified version of the EAN cost method used.*

***We calculated the Pension PVFS over all active pension members.*

Note: Totals may not agree due to rounding.

Development of Pension Plan UAAL	
(Dollars in Thousands)	**Total**
Future Value of Fully Projected Benefits	$627,839
a. Present Value of Fully Projected Benefits (PVFB)	194,037
b. Actuarial Value of Assets (AVA) Allocated to Pensions	190,185
c. Unfunded PVFB (a - b)	3,852
d. Present Value of Future Normal Costs (PVFNC)	3,852
e. Unfunded Actuarial Accrued Liability (UAAL) (c - d)	**$0**
f. Contribution to Amortize the UAAL (Rolling 15-Year)	$0
g. Number of Active Members in Pension Plan	9,223
h. Per Person UAAL Contribution (f / g in Dollars)	**$0**

Note: Totals may not agree due to rounding.

Development of Relief Plan Normal Cost	
(Dollars in Thousands)	**Total**
Future Value of Fully Projected Benefits	$44,962
a. Present Value of Fully Projected Benefits (PVFB)	18,419
b. Actuarial Value of Assets (AVA)*	22,171
c. Unfunded PVFB (a - b)	(3,752)
d. Present Value of Future Service (PVFS)**	53,855
e. Per Person Aggregate Normal Cost (c / d in Dollars)	**($70)**
f. Number of Active Members in Relief Plan	11,184
g. Aggregate Normal Cost (e x f)	($779)

**We use the excess assets above those allocated to the pension plan for purposes of calculating an aggregate normal cost rate.*

***We calculated the Relief PVFS over all active relief members.*

Note: Totals may not agree due to rounding.

This year, due primarily to strong asset performance and an update to the relief benefit assumptions, the plan's current level of assets exceeds its combined pension and relief present value of future benefits. This results in the calculation of a negative relief rate.

Actuarial Liabilities

Present Value of Benefits – Pension Plan*		
(Dollars in Thousands)		
Liability Measures	**EAN AAL****	**Fully Projected**
Active Members		
Retirement	$40,315	$42,215
Termination	12,714	14,306
Death Benefits	1,140	1,232
Withdrawal	1,723	1,991
Total Actives	**$55,893**	**$59,745**
Inactive Members		
Retirees	$80,795	$80,795
Terminated Vested	46,616	46,616
Survivor	6,881	6,881
Total Inactives	**$134,292**	**$134,292**
2017 Total	**$190,185**	**$194,037**
2016 Total	**$189,958**	**$193,888**

**Includes pension benefits only.*

***Entry Age Normal Actuarial Accrued Liability.*

Note: Totals may not agree due to rounding.

Present Value of Benefits – Relief Plan*	
(Dollars in Thousands)	
Liability Measures	**Fully Projected**
Active Members	
Duty Disability	$1,159
Duty-Related Death	1,479
Medical and Temporary Disability	10,805
Total Actives	**$13,442**
Inactive Members	
Survivor	$2,338
Disability	2,639
Total Inactives	**$4,977**
2017 Total	**$18,419**
2016 Total	**$23,812**

**Includes relief benefits only.*

Note: Totals may not agree due to rounding.

Fully Projected Benefit Payments

(Dollars in Thousands)

VFF - Pension Benefits

Year	Future Value	Present Value	Year	Future Value	Present Value	Year	Future Value	Present Value	Year	Future Value	Present Value
2017	$12,416	$12,003	2042	$12,715	$2,265	2067	$4,614	$151	2092	$306	$2
2018	12,910	11,664	2043	12,377	2,060	2068	4,331	133	2093	248	1
2019	13,288	11,220	2044	12,014	1,869	2069	4,058	116	2094	198	1
2020	13,662	10,781	2045	11,647	1,693	2070	3,794	102	2095	156	1
2021	13,949	10,288	2046	11,268	1,531	2071	3,541	89	2096	121	1
2022	14,274	9,838	2047	10,932	1,388	2072	3,296	77	2097	93	0
2023	14,575	9,389	2048	10,564	1,254	2073	3,061	67	2098	70	0
2024	14,844	8,937	2049	10,224	1,134	2074	2,836	58	2099	52	0
2025	15,008	8,444	2050	9,839	1,020	2075	2,619	50	2100	38	0
2026	15,159	7,971	2051	9,475	918	2076	2,412	43	2101	27	0
2027	15,293	7,516	2052	9,114	825	2077	2,214	37	2102	20	0
2028	15,350	7,050	2053	8,765	742	2078	2,026	32	2103	14	0
2029	15,372	6,598	2054	8,458	669	2079	1,846	27	2104	10	0
2030	15,345	6,156	2055	8,144	602	2080	1,675	23	2105	7	0
2031	15,253	5,719	2056	7,832	541	2081	1,514	19	2106	4	0
2032	15,122	5,299	2057	7,545	487	2082	1,361	16	2107	3	0
2033	14,986	4,907	2058	7,253	438	2083	1,217	14	2108	2	0
2034	14,837	4,541	2059	6,960	392	2084	1,081	11	2109	1	0
2035	14,650	4,190	2060	6,680	352	2085	954	9	2110	1	0
2036	14,419	3,854	2061	6,399	315	2086	835	8	2111	1	0
2037	14,160	3,538	2062	6,117	282	2087	725	6	2112	0	0
2038	13,876	3,240	2063	5,827	251	2088	624	5	2113	0	0
2039	13,596	2,967	2064	5,516	222	2089	531	4	2114	0	0
2040	13,325	2,717	2065	5,212	196	2090	447	3	2115	0	0
2041	$13,029	$2,483	2066	$4,908	$172	2091	$372	$2	2116	$0	$0
									Total	$627,839	$194,037

Fully Projected Benefit Payments

(Dollars in Thousands)

VFF - Relief Benefits

Year	Future Value	Present Value	Year	Future Value	Present Value	Year	Future Value	Present Value	Year	Future Value	Present Value
2017	$2,034	$1,966	2042	$776	$138	2067	$139	$5	2092	$50	$0
2018	1,889	1,706	2043	746	124	2068	133	4	2093	45	0
2019	1,784	1,507	2044	717	112	2069	127	4	2094	40	0
2020	1,693	1,336	2045	688	100	2070	123	3	2095	35	0
2021	1,614	1,191	2046	658	89	2071	119	3	2096	31	0
2022	1,548	1,067	2047	627	80	2072	115	3	2097	26	0
2023	1,489	959	2048	595	71	2073	112	2	2098	22	0
2024	1,436	864	2049	563	62	2074	110	2	2099	19	0
2025	1,386	780	2050	530	55	2075	107	2	2100	15	0
2026	1,338	703	2051	496	48	2076	105	2	2101	12	0
2027	1,292	635	2052	463	42	2077	103	2	2102	10	0
2028	1,248	573	2053	430	36	2078	101	2	2103	8	0
2029	1,206	518	2054	397	31	2079	98	1	2104	6	0
2030	1,165	467	2055	365	27	2080	96	1	2105	5	0
2031	1,125	422	2056	334	23	2081	93	1	2106	3	0
2032	1,088	381	2057	306	20	2082	90	1	2107	2	0
2033	1,053	345	2058	279	17	2083	87	1	2108	2	0
2034	1,019	312	2059	254	14	2084	84	1	2109	1	0
2035	986	282	2060	233	12	2085	81	1	2110	1	0
2036	956	255	2061	214	11	2086	77	1	2111	1	0
2037	926	231	2062	197	9	2087	73	1	2112	0	0
2038	897	210	2063	182	8	2088	69	1	2113	0	0
2039	869	190	2064	168	7	2089	64	0	2114	0	0
2040	840	171	2065	155	6	2090	59	0	2115	0	0
2041	$809	$154	2066	$146	$5	2091	$55	$0	2116	$0	$0
									Total	**$44,962**	**$18,419**

Assets

Change in Market Value of Assets	
(Dollars in Thousands)	
Market Value as of June 30, 2016	**$208,662**
Revenue	
Member Pension Contributions	$69
Employer Pension Contributions	403
Relief Plan Contributions	444
Investment Earnings Net of Expenses	26,646
Net Fire Insurance Premium Tax*	6,646
Total Revenue	**$34,208**
Disbursements	
Refunds	$19
Expenses	22
Disability and Survivor Benefits	532
Miscellaneous	0
Medical Benefits	1,442
Retirement Pensions (monthly and lump sums)	11,055
Total Disbursements	**$13,071**
Market Value as of June 30, 2017	**$229,799**

**BVFF allocated $800k to their admin account. Actual admin costs for the prior year were approximately $460k.*

Note: Totals may not agree due to rounding.

Calculation of the Actuarial Value of Assets			
Assets as of June 30, 2016			
(Dollars in Thousands)			
a. Market Value of Assets			$208,662
b. Deferred Investment Gains (Losses)			7,870
c. Actuarial Value of Assets (a - b)			$200,792
d. Ratio of Actuarial Value to Market Value (c / a)			96%
Assets as of June 30, 2017			
(Dollars in Thousands)			
a. Market Value at 6/30/2017			**$229,799**
b. Deferred Gains and (Losses)			
Plan Year Ending	Years Deferred	Years Remaining	
6/30/2017	7	6	10,793
6/30/2016	5	3	(5,488)
6/30/2015	3	0	0
6/30/2014	8	4	10,014
6/30/2013	5	0	0
6/30/2012	6	0	0
6/30/2011	8	1	2,124
Total Deferral			**$17,443**
c. Market Value less Deferral (a - b)			**$212,356**
d. 70% of Market Value of Assets			$160,859
e. 130% of Market Value of Assets			$298,739
f. Actuarial Value of Assets*			**$212,356**
g. Ratio of Actuarial Value to Market Value (f / a)			**92%**

**The actuarial value of assets may not exceed 130% nor drop below 70% of the Market Value of Assets.*

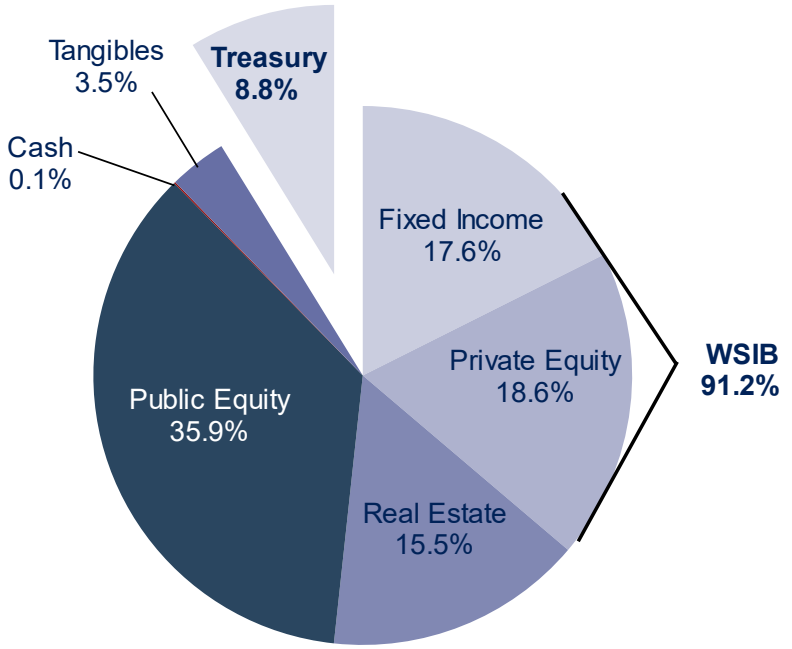
Note: Totals may not agree due to rounding.

The Board for Volunteer Fire Fighters and Reserve Officers (the Board) established the plan's asset fund to pay for both pension and relief benefits. They chose to allocate the assets to pensions up to the Actuarial Accrued Liability (AAL) for the pension plan with any remaining assets allocated to relief benefits. The following table summarizes the allocation of the assets to the pension and relief plans.

Allocation of Actuarial Value of Assets by Plan			
(Dollars in Millions)	**Pension**	**Relief**	**Total**
June 30, 2017	**$190.2**	**$22.2**	**$212.4**
June 30, 2016	190.0	10.8	200.8
June 30, 2015	188.5	6.0	194.5
June 30, 2014	185.5	3.5	189.0
June 30, 2013	182.5	0.0	182.5
June 30, 2012	170.3	7.4	177.6
June 30, 2011	167.8	5.8	173.6
June 30, 2010	$165.6	$3.1	$168.8

The assumed 7.0 percent investment Rate of Return (ROR) for the plan assets is based upon a weighted average of the expected ROR for the assets in the Treasury and the Washington State Investment Board (WSIB) accounts. Assets held in the Treasury are invested in short-term bonds. On a long-term basis, we expect the Treasury investments to earn 3.5 percent per year and the WSIB investments to earn 7.4 percent per year net of expenses. The distribution of total plan assets between each account fluctuates by year and is monitored by the Board to ensure adequate assets in the Treasury account to make benefit payments. Currently, the Board has a target of investing 90 percent of its assets with WSIB and 10 percent of its assets with the Treasury. The graph below shows details of the asset allocation for the plan.

Asset Allocation as of June 30, 2017



Note: Innovation allocation was 0.03%.
Source: Washington State Investment Board.

Annual Income vs. Costs	
(Dollars in Thousands)	
Pension and Relief Plans	**Total**
Actuarial Costs	
Entry Age Normal Cost	$926
UAAL (Surplus)	$0
Total Pension	$926
Relief Aggregate Normal Cost	$0
Total Actuarial Costs	**$926**
Income	
State	
Fire Insurance Premium Tax	$7,446
Allocation to Administrative Fund	($800)
Total State	**$6,646**
Pension	
Employee	$272
Employer	$272
Other Pension*	$16
Total Pension	**$560**
Relief	
Employer**	$329
Other Relief*	$0
Total Relief	**$329**
Total Income	**$7,534**
Surplus (Deficit) Income	**$6,608**

**Emergency Medical Technicians and Reserve Law Enforcement Officers pay the full cost of their benefits, as caclulated in this valuation (minimum $0).*

***Relief fees based on the rate of $30.00 per member.*

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 today's value of the earned pensions of its members. For this valuation report, we present the funded status on an Actuarial Value Basis (AVB). This measure compares the Actuarial Value of Assets (AVA) to the pension plan's EAN accrued liabilities calculated using a long-term interest rate assumption.

The funded status on an AVB assumes the plan is on-going and therefore uses the same long-term assumptions and methods to develop the assets and liabilities as used in determining the contribution requirements of the plan. We do not 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.

We use an asset valuation method to determine the AVA. This asset valuation method smooths the inherent volatility in the Market Value of Assets (MVA) by deferring a portion of annual investment gains or losses for a certain number of years.

Investment gains and losses occur when the annual return on investments varies from the long-term assumed rate of 7.0 percent. The AVA provides a more stable measure of the plan's assets on an on-going basis.

We use the EAN actuarial cost method to determine the present value of earned pensions (or accrued liability). The accrued liability is based on the difference between the pension's Present Value of Future Benefits and the pension's Present Value of Future Normal Cost. In other words, the accrued liability is the difference between today's value of all projected pension benefits paid by the plan and today's value of the future normal costs required by the pension plan's actuarial funding method. The EAN cost method determines each year's normal cost as a level annual amount that, if collected from each member's entry age to their projected retirement age, would completely fund their projected pension benefits. The EAN 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.

The funded status serves as an independent measure to assess the pension system's funding progress and is a consistent measure to compare to the funded statuses of other retirement systems. However, differences in assumptions between retirement systems can diminish the value of such comparisons.

Based on the funding policy adopted by the Board starting with the June 30, 2010, actuarial valuation, any assets above the pension plan AAL are allocated to fund the relief benefits. As a result, the funded status of the pension plan would remain 100 percent when total assets exceed the pension plan AAL.

We do not calculate an actuarial accrued liability for the relief plan since the relief benefits are paid as they are incurred. Relief benefits are not earned or accrued as a member's service increases. As such, a funded status is not calculated. Please see the Development of Relief Plan Normal Cost for a comparison of the present value of future relief benefits to the assets on hand for (allocated to) relief benefits.

Pension Funded Status on Actuarial Value Basis			
(Dollars in Thousands)			
Entry Age Normal Accrued Liability	**$190,185**		
Actuarial Value of Assets	**190,185**		
Unfunded Liability	**$0**		
Funded Ratio			
June 30, 2017[1]	**100%**	December 31, 2003	116%
June 30, 2016	100%	December 31, 2002[2]	122%
June 30, 2015[1]	100%	December 31, 2001[1]	142%
June 30, 2014[1]	100%	December 31, 2000[1]	144%
June 30, 2013[1]	99%	December 31, 1999	132%
June 30, 2012	100%	December 31, 1998[2]	120%
June 30, 2011	100%	December 31, 1997	144%
June 30, 2010	100%	December 31, 1996	129%
June 30, 2009[2]	102%	December 31, 1995[1]	118%
June 30, 2008	105%	December 31, 1994	112%
June 30, 2007[1]	107%	December 31, 1993[1]	114%
December 31, 2006	103%	December 31, 1992	108%
December 31, 2005[1]	95%	December 31, 1991[2]	103%
December 31, 2004	113%	December 31, 1990	111%

[1] *Actuarial assumptions changed.*

[2] *Benefits increased.*

Note: Prior to 2007, we used the Projected Unit Credit Liability to calculate the pension funded status. Beginning with the 2010 valuation, excess assets above the Pension AAL are allocated to Relief benefits.

Generally speaking, under current funding policy, when a plan is less/more than 100 percent funded, we expect higher/lower contribution requirements in the near term to return the plan to a 100 percent funded status over time. A plan with a funded status above 100 percent may require future contributions if the plan has not yet accumulated sufficient assets to pay both the expected cost of benefits that have been earned today and the expected cost of benefits that will be earned by current members in the future.

The funded status measures presented in this report are not sufficient to determine whether a plan has enough assets to terminate or settle the plan obligations.

The present value of actuarial liabilities is sensitive to the interest rate assumption. The following table shows how the funded status changes when we use different interest rate assumptions. We calculated the liabilities using a 6.25 percent and 7.75 percent ROR to show this sensitivity.

Pension Funded Status at Variable Interest Rate Assumptions			
(Dollars in Thousands)	6.25% ROR	7.00% ROR	7.75% ROR
Entry Age Normal Accrued Liability	**$207,123**	**$190,185**	**$175,530**
Actuarial Value of Assets	**207,123**	**190,185**	**175,530**
Unfunded Liability	**$0**	**$0**	**$0**
Funded Ratio			
June 30, 2017[1]	**100%**	**100%**	**100%**
June 30, 2016	97%	100%	100%
June 30, 2015[1]	94%	100%	100%
June 30, 2014[1]	93%	100%	100%
June 30, 2013[1]	91%	99%	100%
June 30, 2012	96%	100%	100%
June 30, 2011	95%	100%	100%
June 30, 2010	93%	100%	100%
June 30, 2009[2]	93%	102%	111%

[1] *Actuarial assumptions changed.*

[2] *Benefits increased.*

Note: Beginning with the 2010 valuation, excess assets above the Pension AAL are allocated to Relief benefits.

Economic Experience

The economic experience will reflect the current economic, financial, and inflationary environment. These factors can change more rapidly than the factors affecting our demographic assumptions.

- **Investment Returns** — We assume future investment returns at a rate of 7.0 percent per year, net of expenses. The investment return assumption represents the average annual rate of return we expect the assets of the plan to earn over the long-term. Actual annual investment performance over short-term periods will deviate from this long-term assumption. To reduce volatility on contribution rates and reported funded status, the Board adopted an asset smoothing method that limits short-term fluctuation due to the underlying volatility in the MVA. The dollar-weighted annual rate of return was 13.2 percent on the MVA for the year ending June 30, 2017 (the valuation date).
- **Premium Tax** — The state's contribution to the plan is made through the premium tax paid on fire insurance policies. The level of annual premium tax fluctuates because the amount of the contribution equals the total amount paid by insurers to guarantee associations, which varies from year to year. Each year 40 percent of this premium tax is contributed to the plan, and this amount has historically been split between an administrative fund and a pension fund. Only the pension fund portion is used to calculate contribution rates.

Premium Taxes Contributed to Plan			
Year	*(Dollars in Thousands)*		
2017	$6,646	2003	$4,112
2016	7,235	2002	3,605
2015	5,903	2001	3,320
2014	6,383	2000	2,869
2013	5,958	1999	2,706
2012	5,602	1998	2,285
2011	5,815	1997	2,539
2010	5,685	1996	2,973
2009	5,794	1995	2,330
2008	5,853	1994	2,370
2007	5,689	1993	2,016
2006	5,186	1992	1,736
2005	4,808	1991	2,081
2004	$4,726	1990	$1,892

Note: Premium Taxes shown above are net of administrative expenses.

Demographic Experience

The table below displays the various ways members enter and exit the VFF system. For each, we compare the actual counts to our expected counts over the 2017 valuation period, and calculate the ratio of the two in the "Act/Exp" column. Due to the relatively small population of the VFF system, we do expect to see some variation in these ratios on an annual basis. However, over the long term, we anticipate that our expected counts for each will model the actual counts closely, with the exception of new entrants since our valuations do not assume new members join the system. To help ensure our expected counts for each mode of exit are reasonable, we re-evaluate how we calculate these every few years as part of our experience studies.

Actual vs. Expected Demographic Counts			
	Actual	Expected	Act/Exp
New Entrants	1,527	N/A	N/A
Retirements	74	221	0.33
Terminations	1,370	1,137	1.21
Active Deaths	12	22	0.53
Active Disabilities	0	1	0.00
Inactive Deaths*	352	278	1.27

**Excludes terminated and vested records that cashout or become missing records.*

Note: This year, the State Auditor's Office provided VFF with a list of deaths that had occurred before this valuation year. These late-reported deaths include five from active status and 167 from inactive status. These deaths are included in the above counts.

Actuarial Gain/Loss

Since the 2016 VAVR, the key actuarial gains and losses impacted the results of this valuation as follows.

- **Pension Normal Cost Rate experienced a net increase.**
  - Due to new members joining the system, we experienced a loss on pension liabilities but a gain on the Present Value of Future Service (PVFS). The net impact of these two was a loss, increasing rates.
  - An assumption update resulted in a rate increase.
- **Pension UAAL Rate remains at zero.**
  - Overall liability gains decreased contribution rates. Liability gains are primarily attributable to more inactive members dying than expected and more active members terminating than expected, while the losses are attributable to new members joining the pension plan and members returning to active volunteer service. This year, there were additional liability gains due to the inclusion of previously unreported death records.
  - The annual rate of investment return exceeded our expectation for this year. Combining this with the Fire Insurance Premium Tax, we see an asset gain, which decreases the pension UAAL contribution rate.
  - The AVA continues to exceed the accrued pension liability, so the pension UAAL remains at zero. The AVA amount that exceeds the accrued pension liability is included in the calculation of the relief contribution rate.
- **Relief Normal Cost Rate experienced a net decrease.**
  - The update of the relief benefit assumptions resulted in a gain, lowering contribution rates. In addition, the plan experienced gains from disability and mortality experience.
  - Due to new members joining the system, the plan experienced a loss on medical costs but a gain on the Present Value of Future Service (PVFS). The net impact of these two was a loss, increasing rates.
  - Additionally, excess assets from the pension fund are shifted to the relief fund, yielding an asset gain and lowering contribution rates.

This year, we also received a list of member deaths that had occurred prior to this valuation year, most of which were associated with inactive members. Taking these late-reported deaths into account results in the number of observed deaths for this year exceeding our expectation, resulting in a gain to the plan. The contribution rate most impacted by this data correction is the Pension UAAL rate. For example, of the $28.29 inactive mortality gain we calculated for the Pension UAAL rate, we estimate that approximately $22 of this gain is attributable to this data correction.

Change in Pension Normal Cost Rate by Source*	
2016 Pension Normal Cost Rate	**$99.92**
Liabilities	
Termination	($4.80)
Retirement	0.55
Mortality	0.21
Growth / Return to Work	16.17
Other Liabilities	1.15
Total Liabilities (Gains) / Losses	**$13.28**
PV of Future Service (Gains) / Losses	**($12.89)**
Other (Gains) / Losses	**$0.00**
Total Change	**$0.39**
2017 Preliminary Pension NC Rate (Before 2018 Changes)	**$100.31**
Incremental Changes	
Plan Changes	0.00
Method Changes	0.00
Assumption Changes	0.13
Correction Changes	0.00
Total Incremental Changes (Gains) / Losses	**$0.13**
Laws of 2018	0.00
2017 Pension Normal Cost Rate	**$100.44**

**Please see the Actuarial Methods section for details on the modified version of the EAN cost method used. Non-standard sources of annual gain/loss are produced as a result.*

Change in Pension UAAL Rate by Source	
2016 Pension UAAL Rate	**$0.00**
Liabilities	
Termination	($6.25)
Retirement	(1.04)
Mortality	
Active	1.28
Inactive	(28.29)
Growth / Return to Work	8.69
Other Liabilities	0.01
Total Liabilities (Gains) / Losses	**($25.60)**
Assets	
Investment Return	($110.28)
Allocation of Excess Pension Assets*	135.88
Total Assets (Gains) / Losses	**$25.60**
Other (Gains) / Losses	**$0.00**
Total Change	**$0.00**
2017 Preliminary Pension UAAL Rate (Before 2018 Changes)	**$0.00**
Incremental Changes	
Plan Changes	$0.00
Method Changes	0.00
Assumption Changes	0.00
Corrections	0.00
Total Incremental Changes (Gains) / Losses	**$0.00**
Laws of 2018	0.00
2017 Pension UAAL Rate	**$0.00**

**Based on the funding policy adopted by the Board, assets are allocated to pension benefits first (up to the pension plan accrued liability), and to relief second.*

Note: The gains and losses shown above include the impacts from this year's late reported deaths. For example, the inactive mortality gain shown above is $28.29. We estimate that approximately $22 of this gain is attributable to the late-reported deaths.

Change in Relief Normal Cost Rate by Source	
2016 Relief Normal Cost Rate	**$232.58**
Liabilities	
Termination	($7.79)
Retirement	0.19
Disability	(10.11)
Mortality	
Active	(10.76)
Inactive	(10.23)
Growth / Return to Work (Non-Medical)	18.31
Medical	
Continuing Actives	(18.59)
Growth / Return to Work	40.03
Other Non-Medical	(3.58)
Other Liabilities	1.11
Total Liabilities (Gains) / Losses	**($1.40)**
Assets	
Investment Return	($10.06)
Allocation of Excess Pension Assets*	(202.86)
Total Assets (Gains) / Losses	**($212.92)**
PV of Future Service (Gains) / Losses	**($1.59)**
Other (Gains) / Losses	**($0.01)**
Total Change	**($215.92)**
2017 Preliminary Relief NC Rate (Before 2018 Changes)	**$16.66**
Incremental Changes	
Plan Changes	$0.00
Method Changes	14.57
Assumption Changes	(100.90)
Correction Changes	0.00
Total Incremental Changes (Gains) / Losses	**($86.33)**
Laws of 2018	0.00
2017 Relief Normal Cost Rate	**($69.67)**

**Based on the funding policy adopted by the Board, assets are allocated to pension benefits first (up to the pension plan accrued liability), and to relief second.*

Effect of Plan, Method, Assumption, and Correction Changes

Plan Changes

- **None**.

Method Changes

- **Relief-Related Methodologies** — We updated two of our methodologies as part of the *2018 Relief Experience Study*. These changes involved developing load assumptions for child-related benefits and how we value medical benefits. Please see this study for further information and details.

Assumption Changes

- **Inflation Assumption** — We lowered the national inflation assumption from 2.75 percent to 2.50 percent. This results in a lower assumed Cost-of-Living Adjustment for applicable annuity-based benefits.
- **Medical Trend Rates** — The medical inflation rates were updated for consistency with our most recently published *2017 Other Post-Employment Benefits (OPEB) Actuarial Valuation Report*. We rely on the Uniform Medical Plan Non-Medicare trend without excise tax from this OPEB report to project inflation on medical payments that will be paid from the relief fund.
- **Relief Benefit Assumptions** — We updated a series of our relief-related assumptions, such as the rate of duty death and the annual medical claims cost per member, to reflect the *2018 Relief Experience Study*. Please see this study for a summary of assumption changes as well as for additional information.

Corrections

- **Member Death Data** — This valuation reflects data on previously unreported deaths identified by the State Auditor's Office.

Per Person Annual Contribution Rates				
Valuation Year	**2016 Final**	**Changes from Data & Assets***	**Changes from Assumptions & Methods****	**2017 Final**
Pension Rate				
Employee	$30	$0	$0	$30
Employer	30	0	0	30
State	40	0	0	40
Normal Cost Rate	$100	$0	$0	$100
State UAAL or (Surplus) Rate	0	0	0	0
Total Pension Rate	$100	$0	$0	$100
Relief Rate				
Employer	$30	$0	$0	$30
State	203	(217)	(86)	(100)
Total Relief Rate	$233	($217)	($86)	($70)

**This represents the impact on contribution rates resulting from updated asset values and demographics of the VFF population from the previous valuation date.*

***This represents the impact on contribution rates attributable to plan, method, and assumption changes.*

SECTION THREE:

Participant Data

Membership Data					
Actives	**2013**	**2014**	**2015**	**2016**	**2017**
Number of Members in Relief System	12,290	12,151	11,831	11,532	11,184
Average Age	40.6	40.4	40.7	40.8	41.2
Average Total Service	9.8	9.6	9.7	9.6	9.7
Number of Emergency Medical Technicians	64	73	62	65	62
Number of Reserve Law Enforcement Officer	228	227	216	190	162
Number of Active Members Also Receiving a Pension	86	54	82	76	93
Number of Members in Pension System	10,230	10,093	9,802	9,434	9,223
Percent of Volunteers Covered	83%	83%	83%	82%	82%
Average Age	41.6	41.5	41.6	41.9	42.1
Average Total Service	10.8	10.8	10.8	10.8	10.8
Average Pension Benefit Service	8.9	8.9	8.9	9.0	9.0
Number of Emergency Medical Technicians	35	35	28	30	26
Number of Reserve Law Enforcement Officer	203	198	185	158	137
Retirees					
Number of Retirees/Beneficiaries	4,117	4,208	4,296	4,367	4,446
Average Age	74.4	74.6	75.0	74.9	75.0
Number of New Retirees	214	220	180	202	216
Average Annual Benefit	$2,201	$2,217	$2,232	$2,245	$2,266
Total Annual Benefit Payments	$9,062,937	$9,330,521	$9,586,607	$9,804,953	$10,074,576
Terminated Vested					
Number of Terminated Vested	6,123	6,092	6,197	6,263	6,120
Relief Annuities					
Number of Duty-Death Survivors	14	11	11	11	9
Average Age	75.2	71.6	69.2	67.7	70.9
Average Annual Benefit	$20,984	$21,425	$21,718	$22,045	$22,260
Number of Duty-Related Disabled	13	14	12	12	12
Average Age	67.2	67.6	67.0	68.0	69.0
Average Annual Benefit	$23,571	$24,184	$24,256	$24,252	$24,118

Pension Active Members - Age and Membership Service Distribution										
Membership Service	Attained Age									
	< 25	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60+	Total
1	400	202	150	104	70	51	34	25	44	**1,080**
2	296	187	168	106	63	44	46	34	54	**998**
3-4	376	246	191	162	128	88	63	56	77	**1,387**
5-9	167	377	294	291	227	203	152	106	218	**2,035**
10-14	0	64	181	208	203	156	160	120	132	**1,224**
15-19	0	0	56	117	153	135	132	112	163	**868**
20-24	0	0	0	38	97	108	139	134	161	**677**
25 +	0	0	0	0	30	77	161	273	413	**954**
Total	1,239	1,076	1,040	1,026	971	862	887	860	1,262	**9,223**

Relief Active Members - Age and Membership Service Distribution										
Membership Service	Attained Age									
	< 25	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60+	Total
1	875	382	289	175	125	86	64	52	97	**2,145**
2	404	241	194	138	74	57	56	44	83	**1,291**
3-4	440	282	218	181	145	99	73	68	95	**1,601**
5-9	175	413	311	301	232	218	166	119	285	**2,220**
10-14	0	67	185	210	207	164	168	134	165	**1,300**
15-19	0	0	57	118	154	137	132	114	179	**891**
20-24	0	0	0	38	97	108	139	137	171	**690**
25 +	0	0	0	0	30	77	162	277	500	**1,046**
Total	1,894	1,385	1,254	1,161	1,064	946	960	945	1,575	**11,184**

Pension Retirees*					
Age	Number of Retirees	Average Annual Benefit	Age	Number of Retirees	Average Annual Benefit
60	39	$1,571	76	200	$2,292
61	16	1,562	77	166	2,197
62	26	1,902	78	173	2,233
63	41	1,921	79	175	2,021
64	55	1,906	80	177	2,085
65	110	2,322	81	134	2,186
66	197	2,550	82	131	2,072
67	215	2,451	83	119	2,231
68	212	2,362	84	106	2,326
69	208	2,352	85	97	2,170
70	267	2,332	86	71	2,180
71	242	2,340	87	91	2,189
72	229	2,367	88	63	2,264
73	207	2,308	89	58	2,079
74	225	2,348	90 +	168	2,317
75	228	$2,272	Total	**4,446**	**$2,266**

**Includes beneficiaries of service retirees.*

Line-of-Duty Death Survivors		
Age	Number of Survivors	Average Annual Benefit
<60	3	$22,260
60-74	1	22,260
75-89	4	22,260
90+	1	$22,260
Total	**9**	**$22,260**

Retirees with Disabilities		
Age	Number of Retirees	Average Annual Benefit
<60	1	$22,260
60-74	6	23,746
75-89	5	24,935
90+	0	$0
Total	**12**	**$24,118**

SECTION FOUR:

Appendices

Actuarial Assumptions

Probability of Termination	
Service Years*	All Ages
0	17%
1	18%
2	19%
3	19%
4	18%
5	15%
6	14%
7	13%
8	12%
9	11%
10	10%
11	9%
12	9%
13	9%
14	9%
15	7%
16	6%
17	6%
18	6%
19	5%
20	5%
21	5%
22	5%
23	6%
24	8%
25	13%
26	11%
27+	9%

**The service based reduction factors for pension benefits improve at 10, 15, 20, and 25 years of membership service. For calculating the Pension PVFS, we assume 100% termination at 25 years of service.*

Decrement Rates

- **Disability Rates** — To value disability benefits under the relief plan, we used the duty disability rates developed for the *2018 Relief Experience Study*. We assume a rate of duty disablement of 0.05 percent for all active members.
- **Termination Rates** — Termination rates are modeled as a function of Membership Service. Rates increase at 25 years when members reach the maximum pension benefit level.
- **Retirement Rates** — Retirement rates begin at age 60 for active members. We assume that terminated members with vested benefits will defer retirement to age 65.

Probability of Retirement*		
Age	MS** < 25	MS >= 25
59	0%	0%
60	7%	7%
61	9%	9%
62	11%	11%
63	9%	9%
64	12%	12%
65	38%	90%
66-79	19%	90%
80	100%	100%

**For calculating the Pension PVFS, we assume 100% retirement at 25 years of service.*

***Membership Service.*

- **Mortality Rates** — We use the Public Employees' Retirement System (PERS) mortality rates for the VFF plan. The PERS rates are based on the RP-2000 Combined Healthy and RP-2000 Disabled Mortality Tables with generational improvements using 100 percent of Scale BB with age offsets (-1 for male, -1 for females). The Society of Actuaries published both the RP-2000 and Scale BB tables. Please see our *website* for the actuarial valuation report, which contains more details on the development of these tables.

Base Mortality Rates and Projection Scale

	RP-2000 Healthy		100% Scale BB*			RP-2000 Healthy		100% Scale BB*	
Age	Male	Female	Male	Female	Age	Male	Female	Male	Female
19	0.000000	0.000000	0.000	0.000	42	0.001215	0.000852	0.003	0.003
20	0.000345	0.000191	0.003	0.003	43	0.001299	0.000937	0.003	0.003
21	0.000357	0.000192	0.003	0.003	44	0.001397	0.001029	0.003	0.003
22	0.000366	0.000194	0.003	0.003	45	0.001508	0.001124	0.003	0.003
23	0.000373	0.000197	0.003	0.003	46	0.001616	0.001223	0.003	0.003
24	0.000376	0.000201	0.003	0.003	47	0.001734	0.001326	0.003	0.003
25	0.000376	0.000207	0.003	0.003	48	0.001860	0.001434	0.003	0.003
26	0.000378	0.000214	0.003	0.003	49	0.001995	0.001550	0.003	0.003
27	0.000382	0.000223	0.003	0.003	50	0.002138	0.001676	0.003	0.003
28	0.000393	0.000235	0.003	0.003	51	0.002449	0.001852	0.003	0.003
29	0.000412	0.000248	0.003	0.003	52	0.002667	0.002018	0.003	0.003
30	0.000444	0.000264	0.003	0.003	53	0.002916	0.002207	0.003	0.003
31	0.000499	0.000307	0.003	0.003	54	0.003196	0.002424	0.003	0.004
32	0.000562	0.000350	0.003	0.003	55	0.003624	0.002717	0.003	0.005
33	0.000631	0.000394	0.003	0.003	56	0.004200	0.003090	0.003	0.006
34	0.000702	0.000435	0.003	0.003	57	0.004693	0.003478	0.004	0.007
35	0.000773	0.000475	0.003	0.003	58	0.005273	0.003923	0.005	0.008
36	0.000841	0.000514	0.003	0.003	59	0.005945	0.004441	0.006	0.009
37	0.000904	0.000554	0.003	0.003	60	0.006747	0.005055	0.007	0.010
38	0.000964	0.000598	0.003	0.003	61	0.007676	0.005814	0.008	0.011
39	0.001021	0.000648	0.003	0.003	62	0.008757	0.006657	0.009	0.012
40	0.001079	0.000706	0.003	0.003	63	0.010012	0.007648	0.010	0.012
41	0.001142	0.000774	0.003	0.003	64	0.011280	0.008619	0.011	0.012

**Scale BB represents annual improvements in mortality rates.*

Base Mortality Rates and Projection Scale (continued)									
	RP-2000 Healthy		100% Scale BB*			RP-2000 Healthy		100% Scale BB*	
Age	Male	Female	Male	Female	Age	Male	Female	Male	Female
65	0.012737	0.009706	0.012	0.012	88	0.150590	0.107303	0.013	0.012
66	0.014409	0.010954	0.013	0.012	89	0.166420	0.119154	0.012	0.012
67	0.016075	0.012163	0.014	0.012	90	0.183408	0.131682	0.011	0.011
68	0.017871	0.013445	0.015	0.012	91	0.199769	0.144604	0.010	0.010
69	0.019802	0.014860	0.015	0.012	92	0.216605	0.157618	0.009	0.009
70	0.022206	0.016742	0.015	0.012	93	0.233662	0.170433	0.008	0.008
71	0.024570	0.018579	0.015	0.012	94	0.250693	0.182799	0.007	0.007
72	0.027281	0.020665	0.015	0.012	95	0.267491	0.194509	0.006	0.006
73	0.030387	0.022970	0.015	0.012	96	0.283905	0.205379	0.005	0.005
74	0.033900	0.025458	0.015	0.012	97	0.299852	0.215240	0.004	0.004
75	0.037834	0.028106	0.015	0.012	98	0.315296	0.223947	0.004	0.004
76	0.042169	0.030966	0.015	0.012	99	0.330207	0.231387	0.003	0.003
77	0.046906	0.034105	0.015	0.012	100	0.344556	0.237467	0.003	0.003
78	0.052123	0.037595	0.015	0.012	101	0.358628	0.244834	0.002	0.002
79	0.057927	0.041506	0.015	0.012	102	0.371685	0.254498	0.002	0.002
80	0.064368	0.045879	0.015	0.012	103	0.383040	0.266044	0.001	0.001
81	0.072041	0.050780	0.015	0.012	104	0.392003	0.279055	0.001	0.001
82	0.080486	0.056294	0.015	0.012	105	0.397886	0.293116	0.000	0.000
83	0.089718	0.062506	0.015	0.012	106	0.400000	0.307811	0.000	0.000
84	0.099779	0.069517	0.015	0.012	107	0.400000	0.322725	0.000	0.000
85	0.110757	0.077446	0.015	0.012	108	0.400000	0.337441	0.000	0.000
86	0.122797	0.086376	0.015	0.012	109	0.400000	0.351544	0.000	0.000
87	0.136043	0.096337	0.014	0.012	110	1.000000	1.000000	0.000	0.000

**Scale BB represents annual improvements in mortality rates.*

For display purposes only, we show a unisex mortality in the following table based upon the percent male assumption described later in this section and applied it to the active and retired member population. We use the opposite percent male assumption when applying the mortality table to surviving spouses.

Mortality Rates Projected to 2032

Age	Member	Survivor	Disabled	Age	Member	Survivor	Disabled	Age	Member	Survivor	Disabled	Age	Member	Survivor	Disabled
19	0.000299	0.000187	0.019129	42	0.001004	0.000736	0.019129	65	0.007484	0.006038	0.032591	88	0.087097	0.067869	0.104351
20	0.000299	0.000187	0.019129	43	0.001071	0.000807	0.019129	66	0.008201	0.006774	0.032926	89	0.099392	0.075860	0.112402
21	0.000299	0.000187	0.019129	44	0.001147	0.000884	0.019129	67	0.009004	0.007617	0.033339	90	0.113494	0.086953	0.125693
22	0.000309	0.000189	0.019129	45	0.001236	0.000968	0.019129	68	0.009746	0.008430	0.033837	91	0.129217	0.099217	0.141199
23	0.000316	0.000192	0.019129	46	0.001335	0.001056	0.020238	69	0.010830	0.009325	0.035480	92	0.145453	0.112408	0.157947
24	0.000323	0.000195	0.019129	47	0.001432	0.001147	0.021353	70	0.011998	0.010309	0.037284	93	0.162948	0.126455	0.175811
25	0.000326	0.000199	0.019129	48	0.001538	0.001241	0.022474	71	0.013460	0.011608	0.039261	94	0.181573	0.141172	0.194802
26	0.000327	0.000203	0.019129	49	0.001650	0.001342	0.023600	72	0.014896	0.012877	0.041424	95	0.201179	0.156378	0.214615
27	0.000328	0.000209	0.019129	50	0.001772	0.001448	0.024735	73	0.016542	0.014321	0.043779	96	0.221632	0.171900	0.235142
28	0.000333	0.000217	0.019129	51	0.001900	0.001564	0.025877	74	0.018422	0.015922	0.046333	97	0.242824	0.187564	0.256315
29	0.000343	0.000227	0.019129	52	0.002171	0.001736	0.027025	75	0.020541	0.017660	0.049087	98	0.256315	0.196774	0.269308
30	0.000359	0.000240	0.019129	53	0.002364	0.001892	0.028176	76	0.022903	0.019522	0.052038	99	0.278096	0.211716	0.290962
31	0.000387	0.000256	0.019129	54	0.002578	0.002012	0.029282	77	0.025503	0.021539	0.055178	100	0.290962	0.219152	0.303245
32	0.000436	0.000296	0.019129	55	0.002819	0.002149	0.030383	78	0.028345	0.023750	0.058497	101	0.313131	0.232775	0.325700
33	0.000491	0.000337	0.019129	56	0.003187	0.002346	0.031480	79	0.031477	0.026207	0.061977	102	0.325700	0.240314	0.337629
34	0.000552	0.000380	0.019129	57	0.003571	0.002591	0.031594	80	0.034963	0.028956	0.065603	103	0.348625	0.257829	0.359640
35	0.000614	0.000419	0.019129	58	0.003867	0.002821	0.031679	81	0.038834	0.032028	0.069355	104	0.359640	0.268992	0.368712
36	0.000675	0.000458	0.019129	59	0.004208	0.003078	0.031745	82	0.043425	0.035499	0.073220	105	0.380708	0.290350	0.387409
37	0.000734	0.000497	0.019129	60	0.004595	0.003373	0.031804	83	0.048486	0.039392	0.077184	106	0.387409	0.303593	0.390781
38	0.000789	0.000535	0.019129	61	0.005051	0.003715	0.031868	84	0.054030	0.043760	0.081240	107	0.390781	0.317030	0.392273
39	0.000843	0.000576	0.019129	62	0.005568	0.004131	0.031949	85	0.060089	0.048668	0.085383	108	0.392273	0.330453	0.393744
40	0.000893	0.000623	0.019129	63	0.006167	0.004707	0.032114	86	0.066720	0.054195	0.089608	109	0.393744	0.343697	0.395154
41	0.000946	0.000675	0.019129	64	0.006845	0.005380	0.032324	87	0.076257	0.060648	0.096762	110	1.000000	1.000000	1.000000

Note: The projection year selected above is 15 years past the valuation date. This year was selected as a reasonble proxy for all members on average and is intended for illustrative purposes only. The valuation uses generational mortality rates as opposed to to a static projection year. These mortality rates were blended for display purposes using the 90% Male assumption. Utilizes PERS age offset assumption of -1 Male, -1 Female.

Pension Benefit Assumptions

- **Purchase of Membership Service Credit** — We assume all eligible members will purchase service credits for each year they did not make past pension contributions. As a result, we value all benefits, except for return of contributions, with eligibility and benefit amounts based on membership service instead of benefit service.
- **Ratio of Survivors Selecting Annuities** — Upon the death of a terminated vested member, we assume 31 percent of members will have a surviving spouse who elects to receive a pension annuity. This assumption includes both the probability that the member has a spouse and the probability that the spouse elects to receive an annuity, instead of a return of contributions. Upon the death of an active member, we assume this probability increases with age as shown in the table to the right. These assumptions are consistent with those selected for PERS 2.
- **Joint and Survivor Reduction Factor** — We assume a reduction factor of 0.836 will be applied to joint and survivor pension annuities. We base this assumption on the assumed age difference between male and female members and their spouses. We assume male members are three years older and female members are one year younger than their spouses, consistent with PERS 2.

Ratio of Survivors Selecting Annuities	
Age	**Rate**
39	0.00%
40	2.11%
45	13.85%
50	25.66%
55	37.46%
60	49.27%
62+	57.30%

Note: This assumption has been blended based upon our 90% Male assumption for display purposes only.

Relief Benefit Assumptions

Unless noted otherwise, the following assumptions were developed in the *2018 Relief Experience Study*.

- **Medical Costs** — We assume the following per person costs and annual inflation as described by the following table.

Medical Benefit Assumptions		
Assumption	**Per Person Costs**	**Assumed Inflation**
Medical Claims	$115.00	Medical Inflation
Member Physicals	$11.00	0.00%
Temporary Disability	$10.00	2.50%

- **Annual Medical Inflation** — To estimate future medical costs, we chose to apply the medical inflation assumptions from our *2017 Other Post-Employment Benefits Actuarial Valuation Report*. Based on the self-insured nature of the VFF relief plan, we assumed the medical inflation trend is consistent with the 2017 Uniform Medical Plan Non-Medicare rates excluding the provision for excise taxes since we assume they do not apply to this plan.

- **Annual Cost-of-Living Adjustment (COLA)** — We assume a 2.50 percent annual COLA for applicable annuity-based benefits since they are fully indexed benefits. COLAs provided for the relief benefits are based on the change in the Consumer Price Index (CPI) for U.S. Urban Wage Earners and Clerical Workers. COLAs are applied to temporary and permanent disability payments. Additionally, spouses and/or children of permanently disabled VFF relief members and spouses and/or children of VFF relief members killed in the line of duty will receive COLAs on their benefits. This assumption was developed as part of our *2017 Economic Experience Study*.
- **Duty-Related Death Rate** — We assume the VFF duty-related death rate is 1/20,000 = 0.005%, which equates to approximately 0.5 expected deaths per year. The duty-related death assumption is constant at all ages.
- **Member Duration on Temporary Disability** — We assume members who receive temporary disability benefits will return to active volunteering within six months. These benefits are included in the total relief costs.
- **Percent Married** — We assume that 65 percent of the active population is married. We apply this assumption to the duty-related death and disability annuities provided to the spouse of the member.
- **Duration of Spousal Long-Term Disability Annuity** — We assume a spouse receiving the Long-Term Disability beneficiary annuity will be paid for the member's lifetime. We do not make an assumption for divorce.
- **Duration of Spousal Duty-Related Death Annuity** — We assume a spouse receiving the duty-related death beneficiary annuity will be paid for the spouse's lifetime. We do not make an assumption for remarriage.
- **Child-Related Benefits** — To account for the expected costs of child benefits provided by the plan, we increase member duty-related disability benefits by 5 percent and beneficiary duty-related death benefits by 10 percent.

Miscellaneous Assumptions

- **Valuation Interest Rate** — We assumed an annual investment rate of return of 7.0 percent.
- **Percent Male** — We assume the population is 90 percent male, consistent with the Law Enforcement Officers' and Fire Fighters' (LEOFF) Plan 2. We only use this assumption when the gender of a spouse is unknown. Otherwise, we use the gender as reported by the Board for Volunteer Fire Fighters and Reserve Officers (the Board).

Medical Inflation

Valuation Year	Rate
2017 - 2018	6.7%
2019	7.0%
2020 - 2022	5.5%
2023 - 2024	5.6%
2025 - 2028	5.7%
2029 - 2037	5.8%
2038 - 2039	5.9%
2040	5.8%
2041 - 2042	5.7%
2043 - 2045	5.6%
2046 - 2053	5.5%
2054 - 2064	5.4%
2065	5.3%
2066	5.2%
2067	5.1%
2068 - 2069	5.0%
2070	4.9%
2071 - 2072	4.8%
2073	4.7%
2074 +	4.6%

Actuarial Methods

Asset Valuation Method

An asset valuation method is generally used to adjust the market value of assets and smooth the effects of short-term volatility. The adjusted assets are called the Actuarial Value of Assets (AVA) or valuation assets. The asset valuation method adopted by the Board provides up to eight years of smoothing for asset returns and is used in combination with the funding method (Actuarial Cost Method) described below.

We determine the AVA by adjusting the Market Value of Assets (MVA) to reflect the difference between the actual investment return and the expected investment return during each of the last eight years at the following annual recognition rates per year.

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.

Annual Gain/Loss		
Rate of Return	Smoothing Period	Annual Recognition
14% and Up	8 years	12.50%
13-14%	7 years	14.29%
12-13%	6 years	16.67%
11-12%	5 years	20.00%
10-11%	4 years	25.00%
9-10%	3 years	33.33%
8-9%	2 years	50.00%
6-8%	1 year	100.00%
5-6%	2 years	50.00%
4-5%	3 years	33.33%
3-4%	4 years	25.00%
2-3%	5 years	20.00%
1-2%	6 years	16.67%
0-1%	7 years	14.29%
0% and Lower	8 years	12.50%

Note: The actuarial value of assets may not exceed 130% nor drop below 70% of the market value of assets.

Actuarial Cost Method

The Entry Age Normal (EAN) Actuarial Cost Method is comprised of two components:

- Normal Cost (NC).
- Unfunded Actuarial Accrued Liability (UAAL).

We develop the pension contribution rate as the sum of the NC and an amount to amortize the UAAL.

We use the EAN Actuarial Cost Method to develop the pension contribution rates. The Pension NC is the level dollar amount, calculated individually, that would fund each member's pension benefits from their date of entry in the plan to their assumed retirement.

The UAAL represents the excess of the Present Value of Future Benefits (PVFB) over the Present Value of Future Normal Costs (PVFNC) and the AVA. In other words, the amount of liabilities that are not covered by the sum of current assets and future contributions.

In equation form: UAAL = PVFB – PVFNC – AVA.

Such an excess can arise for numerous reasons. For example:

- Benefits granted for service prior to establishment of the plan.
- Retroactive benefit increases or benefit improvements.
- Changes to actuarial assumptions and methods.
- Actual experience under the plan that varies from the assumptions.

We developed the UAAL contribution rate in this valuation as a level dollar amount, amortized over a rolling 15-year period. That means we recalculate the UAAL contribution rate each year using a new 15-year period.

We use the Aggregate Funding Method to calculate the relief contribution rates. Compared to the EAN Funding Method, the Aggregate Funding Method does not separately amortize a UAAL. The Relief NC is the level dollar amount that would fund all projected future relief benefits of today's members. The relief plan's NC contribution rate is developed by amortizing the relief's Unfunded PVFB over the Present Value of Future Service (PVFS) of the active relief group. The Unfunded PVFB represents the excess of the PVFB over the AVA allocated to the relief plan.

Present Value of Future Service

The actuarial cost methods utilize the PVFS for all applicable members to calculate the contribution rates. The expected total years of future service depends on when we assume members will leave active service. Our current termination, retirement, disability, and mortality rates reflect our best estimate of the future behavior of relief members.

Currently, the decrement rates extend beyond 25 years of service, which is the maximum number of pension payments members may make. For the purposes of determining the PVFS for pensions, we assume all members leave active service once they reach 25 years of service.

Operating Expenses

We used the actual administration and other miscellaneous expenses incurred last year to determine this year's operating expenses.

Summary of Plan Provisions

The following pension and relief benefits are provided to volunteer fire fighters.

- Optional membership in the retirement plan.
- Duty-related medical benefits.
- Temporary duty-related disability benefits.
- Permanent disability benefits for duty-related injuries.
- Death benefits for duty-related injuries.

These benefits are part of two distinct plans authorized by different sections of statute. The following section summarizes the benefits and contributions established under Chapter 41.24 RCW. This section is for reference only and does not detail the rules and regulations upon which the actuarial calculations are made. The dollars represent 2017 payment amounts.

Participation

RCW 41.24.010 (8)

- **"Participant"** means: (a) For purposes of relief, any reserve officer who is or may become eligible for relief under this chapter or any fire fighter or emergency worker; and (b) for purposes of retirement pension, any fire fighter, emergency worker, or reserve officer who is or may become eligible to receive a benefit of any type under the retirement provisions of this chapter, or whose beneficiary may be eligible to receive any such benefit.

Contributions

- **Pension** — If a member chooses to enroll, he/she contributes $30 annually and the municipality also contributes $30. Municipalities may pay the entire contribution for the member. Reserve law enforcement officers and emergency medical technicians are required to pay the full amount adopted annually by the Board. That amount for the 2018 calendar year was $135.
- **Relief** — VFF members do not make contributions to the relief fund. Municipalities contribute $30 annually on behalf of each member plus 1.5 percent of the annual salary of paid fire fighters not covered under LEOFF. Employers of reserve law enforcement officers and emergency medical technicians are required to pay the full amount adopted annually by the Board. That amount for the 2018 calendar year was $235.
- **Fire Insurance Premium Tax** — 40 percent of the net premium taxes on fire insurance policies are paid into the plan.

Pension Benefits

DEATH BENEFITS

RCW 41.24.180

Non-Duty Death — If the member had less than ten years of service, the spouse will receive a refund of member contributions without interest. If the member had ten or more years of service, the spouse may elect an annuity or a refund of member and employer contributions without interest. The annuity is the member's accrued benefit actuarially adjusted to reflect a 100 percent joint and survivor pension and further actuarially reduced to reflect the difference in the number of years between the fire fighter's age at death and age 65.

RETIREMENT PENSIONS

RCW 41.24.170

- Normal retirement is available at age 65 with at least ten years of membership service. Early retirement eligibility begins at age 60 with ten years of service, with the benefit amount reduced 8 percent per year when retirement occurs prior to age 65. In addition, under normal or early retirement, the pension is reduced for service less than 25 years as shown in the following table.
- The monthly pension benefit formula is:

  ($50 + $10 x Benefit Service) x (Membership Service Factor) x (Age Factor)

- "Benefit Service" is the number of years the member made pension contributions. "Membership Service" is the number of years the member was a member of the relief plan. The maximum monthly pension benefit is $300. There is no automatic post-retirement COLA applied to the benefit.

MEMBERSHIP SERVICE FACTOR FOR RETIREMENT

Membership Service Factor				
Membership Service	**10-14**	**15-19**	**20-24**	**25 +**
Factor	20%	35%	75%	100%

AGE FACTOR FOR RETIREMENT

Age Factor						
Age	**60**	**61**	**62**	**63**	**64**	**65**
Factor	60%	68%	76%	84%	92%	100%

ACTUARIALLY EQUIVALENT EARLY RETIREMENT REDUCTION FACTORS

We apply these factors to calculate the annuity benefit paid to survivors of active members who die from a non-duty related cause.

Actuarially Equivalent ERFs			
Member's Age	Factor	Member's Age	Factor
<35	10.0%	50	28.9%
35	10.0%	51	31.2%
36	10.6%	52	33.7%
37	11.4%	53	36.4%
38	12.2%	54	39.3%
39	13.1%	55	42.5%
40	14.0%	56	46.0%
41	15.1%	57	49.9%
42	16.2%	58	54.2%
43	17.4%	59	58.8%
44	18.7%	60	64.0%
45	20.0%	61	69.8%
46	21.5%	62	76.1%
47	23.2%	63	83.2%
48	24.9%	64	91.1%
49	26.9%	65	100.0%

Note: These factors are rounded for display purposes.

RETIREMENT OPTIONS

RCW 41.24.172

- The normal payment form of the benefit is a single-life annuity.
- Retirees have the option of selecting a 100 percent joint and survivor pop-up pension. The pension amount is reduced from the amount of the normal payment form to provide an ongoing survivor benefit. If the member dies first, the reduced pension continues to the spouse for their lifetime. If the spouse dies first, the pension pops up to the amount the member would have received under the single-life payment form.

EMERGENCY MEDICAL SERVICE DISTRICTS

- Chapter 331, Laws of 1993 extended the membership provisions of the pension and relief plans to include Emergency Medical Service District (EMSD) volunteers. The applicable RCW states the funding of the EMSD volunteers should be consistent with the most recent actuarial valuation.
- The funding of the system includes contributions from the members and their districts at a rate established in statute. The total of these is less than the normal cost. The balance of the normal cost comes from another revenue source: 40 percent of the state's premium tax on fire insurance policies. Since the premium tax is independent of the number of members, the addition of new

members lowers the system's funding. To prevent this, the entire normal cost and administration expenses are paid by the EMSDs and their volunteers. Volunteers pay the fixed dollar rate established in statute. The EMSDs pay the fixed dollar rate plus any excess cost.

RESERVE LAW ENFORCEMENT OFFICERS

- Chapter 11, Laws of 1995 extended the membership provisions of the pension plan to include Reserve Law Enforcement Officers. The pension provisions mirror those of the EMSDs.
- Chapter 148, Laws of 1999 extended the membership provisions of the relief plan to include Reserve Law Enforcement Officers. The relief provisions mirror those of the EMSDs.

REFUND OF CONTRIBUTIONS

Upon termination from the pension system, the member may elect to receive a refund of their contributions without interest. If the member chooses this option, he/she then forfeits any earned pension benefits.

BUYING BACK PAST SERVICE

If a member misses a pension contribution payment in any year following enrollment in the plan, they may make the contribution at a later date. Interest is added at a rate of 1 percent per month.

Relief Benefits

MEDICAL BENEFITS

RCW 41.24.035, 41.24.155, and 41.24.220

The Board will reimburse all duty-related medical charges, including:

- Physician fees, paid according to Labor and Industries' fee schedule.
- Hospital fees (room and care, x-rays, laboratory work, physical therapy).
- Screening physical exams for new entrants (up to $100 per new member).
- Mileage for extended treatment not available locally to VFF members.
- Vocational rehabilitation and prescriptions.

DISABILITY PAYMENTS

RCW 41.24.150

- **Duty Disability** — Members receive temporary duty disability payments of $3,710.02 per month for up to six months. If the member is on disability for six consecutive months then the member is considered to be permanently disabled and they receive $1,855.01 per month, their spouse receives $371.56, and each dependent child receives $160.04. Disability benefits are subject to a maximum of $3,710.02 per month. Spouses are not eligible to receive the beneficiary annuity if they get divorced from the VFF member.
- **Effective July 1, 2001** — Benefits are increased annually in line with the CPI Urban Wage Earners and Clerical Workers (CPI-W – All Cities).
- **Non-Duty Disability** — None.

DEATH BENEFITS

RCW 41.24.160, 41.24.230

- **Survivors** — Surviving spouses of members who die while on active duty shall be paid $1,855.01 monthly. An additional $519.49 is paid monthly to each of the member's surviving children while they are under 18 years old.
- **Effective July 1, 2001** — Benefits are increased annually in line with the U.S. CPI-W – All Cities.
- **Duty Death** — A lump sum of $214,000 will be paid to a member's survivor if the member was killed in the line of duty.
- **Funeral and Burial Expenses** — A lump sum of $2,000 is paid for members who die while on active duty. A $500 lump sum is paid at the time of death for members who receive disability benefits.

THE OFFICE OF THE STATE ACTUARY'S WEBSITE

Our website (leg.wa.gov/osa) contains additional information and educational material not included in this report. The site also contains an archive of other recent studies that OSA has produced. The following is a list of materials found on our website that could be useful to the reader.

GLOSSARY

Definitions for frequently used actuarial and pension terms.

PRIOR ACTUARIAL VALUATION REPORTS

Archive of valuations over the past several years.

2017 REPORT ON FINANCIAL CONDITION AND ECONOMIC EXPERIENCE STUDY

Report examining the financial health of the retirement systems and long-term economic assumptions.

2007-2012 DEMOGRAPHIC EXPERIENCE STUDY

Most recent report examining demographic behavior.

2018 RELIEF EXPERIENCE STUDY

Report documenting the results of an experience study on the assumptions related to relief benefits for the VFF Relief and Pension Fund.

WASHINGTON STATE VOLUNTEER FIRE FIGHTERS' AND RESERVE OFFICERS' RELIEF AND PENSION FUND

2017 ACTUARIAL VALUATION

OCTOBER 2018

Office of the
State Actuary

"Supporting financial security for generations."