

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



# 2019 ACTUARIAL VALUATION

OCTOBER 2020



Office of the State Actuary  
*"Supporting financial security for generations."*





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## Office of the State Actuary

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# TABLE OF CONTENTS

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Acknowledgments . . . . .	iii
Introduction Letter . . . . .	1
<b>Section One: Summary of Key Results . . . . .</b>	<b>3</b>
Intended Use . . . . .	5
Funding Policy . . . . .	5
Contribution Rates . . . . .	5
Actuarial Liabilities . . . . .	6
Assets . . . . .	6
Funded Status . . . . .	7
Participant Data . . . . .	7
Key Changes Since the Prior Valuation . . . . .	8
Changes to Future Valuations. . . . .	8
<b>Section Two: Actuarial Exhibits . . . . .</b>	<b>11</b>
Actuarial Certification Letter . . . . .	13
Contribution Rates . . . . .	15
Actuarial Liabilities . . . . .	17
Assets . . . . .	20
Funded Status . . . . .	23
Economic Experience . . . . .	25
Demographic Experience. . . . .	26
Actuarial Gain/Loss. . . . .	27
Effect of Plan, Method, Assumption, and Correction Changes. . . . .	28
<b>Section Three: Participant Data . . . . .</b>	<b>29</b>
Participant Data . . . . .	31
<b>Section Four: Appendices . . . . .</b>	<b>35</b>
Actuarial Assumptions. . . . .	37
Actuarial Methods. . . . .	42
Summary of Plan Provisions . . . . .	43
Commentary on Risk. . . . .	47
Other Liability Information . . . . .	48
The Office of the State Actuary’s Website. . . . .	49





# Office of the State Actuary

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## Volunteer Fire Fighters' and Reserve Officers' Relief and Pension Fund Actuarial Valuation Report As of June 30, 2019

October 2020

As required under Revised Code of Washington (RCW) [Chapter 41.24.320](#), this report documents the results of the actuarial valuation which the Office of the State Actuary (OSA) performed on the Volunteer Fire Fighters' and Reserve Officers' (VFF) 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, 2019, under the funding policy established by the Board for Volunteer Fire Fighters and Reserve Officers (the Board). 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](mailto:state.actuary@leg.wa.gov). We also invite you to visit our website ([leg.wa.gov/osa](http://leg.wa.gov/osa)) for further reference information.

Sincerely,

Michael T. Harbour, ASA, MAAA  
Actuary

Kyle Stineman, ASA, MAAA  
Senior Actuarial Analyst





Section One:

# Summary of Key Results



## INTENDED USE

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The purpose for performing the 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.
- Measure the pension system's funding progress.
- Compare actual experience with assumptions used.
- Detect significant demographic changes.
- Highlight key plan, assumption, and method changes since the last valuation.

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

## FUNDING POLICY

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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 (FIPT) 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

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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.

As of the date of this valuation, June 30, 2019, the plan's current level of assets exceeds its combined pension and relief Present Value of Future Benefits (PVFB). This results in the calculation of a negative relief contribution rate.

For reference, the following table displays the annual contributions, per person, collected by the Board for the calendar year 2020. The volunteer fire fighter member rates are set in statute but the Board reviews contributions for Reserve Law Enforcement Officers (RLEO) and Emergency Medical Technicians (EMT) every fall. Employers of RLEOs and EMTs pay the full cost of their benefits. Under current funding policy, the state also collects taxes on fire insurance premiums to help fund plan costs.

## SECTION ONE: SUMMARY OF KEY RESULTS

Please note that volunteer fire fighter rates may increase as early as January 1, 2021. A provision of [Engrossed Substitute Senate Bill \(ESSB\) 5829](#), which passed during the 2020 Legislative Session, increased the fixed contribution rates set in statute; see [RCW 41.24.030](#) for additional detail.

Required Annual Contributions Per Person		
Valuation Year	2018	2019
<b>Pension Rate</b>		
Normal Cost Rate	\$100	\$108
UAAL Rate	0	0
<b>Total Pension Rate</b>	<b>\$100</b>	<b>\$108</b>
<b>Relief Rate</b>		
Normal Cost Rate	(\$412)	(\$94)

2020 Collected Annual Contributions Per Person	
<b>Volunteer Fire Fighters</b>	
<b>Pension Rate</b>	
Member Fee	\$30
Employer Fee	30
<b>Relief Rate</b>	
Employer Fee	\$30
<b>RLEOs and EMTs</b>	
<b>Pension Rate</b>	
Member Fee	\$30
Employer Fee	105
<b>Relief Rate</b>	
Employer Fee	\$235

## ACTUARIAL LIABILITIES

The table to the right summarizes key measures of actuarial liability along with the liabilities from last year's valuation. The PVFB 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 EAN Accrued Liability identifies the portion of the PVFB that has been accrued as of the valuation date based on the EAN actuarial cost method.

Actuarial Liabilities		
(Dollars in Millions)	2018	2019
<b>Present Value of Future Benefits</b>		
Pension Benefits	\$194.5	\$230.5
Relief Benefits	\$18.2	\$18.1
<b>Pension Plan*</b>		
EAN Accrued Liability	\$190.7	\$226.0
UAAL	\$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.

## 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 Actuarial Value of Assets (AVA) equals the Market Value of Assets (MVA) less the total deferred investment gains (and losses) at the valuation date. The AVA can

Assets		
(Dollars in Millions)	2018	2019
<b>Assets (Measured at End of Year)</b>		
MVA	\$245.3	\$260.6
MVA Return*	8.9%	8.3%
AVA	\$230.3	\$248.7
AVA Return	10.9%	10.4%
<b>Revenues and Disbursements</b>		
Contributions	\$0.9	\$0.9
Net Fire Insurance Premium Tax	7.2	7.6
Investment Earnings	20.3	20.6
Disbursements	(\$13.0)	(\$13.7)

\*This is the dollar-weighted rate of return on the MVA.

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.

## 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 AAL covered by the AVA. 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		
<i>(Dollars in Millions)</i>	2018	2019
<b>a. Entry Age Normal Accrued Liability</b>	\$190.7	\$226.0
<b>b. Actuarial Value of Assets Allocated to Pensions</b>	190.7	226.0
<b>c. Unfunded Liability (a - b)</b>	0.0	0.0
<b>d. Funded Ratio (b / a)</b>	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 following changes in plan membership since last year's valuation.

Changes in Participant Data			
	2018	2019	Percent Change
<b>Actives</b>			
<b>Number of Active Members in Relief Plan</b>	10,785	10,089	(6%)
<b>Number of Active Members in Pension Plan</b>	8,960	8,428	(6%)
<b>Percent of Volunteers Covered by Pension Plan</b>	83%	84%	1%
<b>Average Age</b>	42.1	42.5	1%
<b>Average Years of Service</b>	10.6	10.7	1%
<b>Inactives</b>			
<b>Number of Retirees/Beneficiaries</b>	4,494	4,602	2%
<b>Number of Terminated Vested Members</b>	6,181	6,187	0%
<b>Number of Survivors (Line of Duty)</b>	8	9	13%
<b>Number of Members with Permanent Disabilities</b>	11	11	0%

## KEY CHANGES SINCE THE PRIOR VALUATION

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Since the [2018 Volunteer Fire Fighters' and Reserve Officers' Relief and Pension Fund Actuarial Valuation Report](#) (VAVR), the plan realized economic and demographic experience that differed from our long-term assumptions. The actual experience from the most recent data and assets, among other changes, can increase (or decrease) the estimated plan contribution rates.

**Economic Experience** – The investment Rate Of Return (ROR) and the FIPT are key factors that impact the assets of the plan. The rate of investment return on the AVA for the plan year was higher than the assumed rate of 7.0 percent. The FIPT was consistent with the amount expected and the tax continues to comprise approximately 90 percent of plan contributions. In general, better than expected economic experience will reduce contribution rates. Due to board funding policy there is no impact to the pension plan contribution rate but the relief rate will decrease. Please see the **Actuarial Exhibits** section for the Board's funding policy

**Demographic Experience** – We set demographic assumptions to estimate when members are expected to stop volunteering (via termination, retirement, disability) or when retirees are expected to start/stop receiving benefit payments.

Consistent with recent valuations, we observed a higher number of terminations and members delaying retirement than anticipated; this experience reduced plan costs. Overall, the pension plan obligations differed by less than 1 percent from what we expected.

Detailed information on demographic experience can be found in the **Actuarial Exhibits** section of this report.

**Other Changes** – ESSB 5829, which passed during the 2020 Legislative Session, enhanced benefits for members. Specifically, current and future retirees will receive a larger benefit upon retirement. This law change increased total plan liabilities by approximately 18 percent, which is the main source of the change in plan costs since the last valuation.

A key addition to this report is the discussion of Commentary on Risk. As required under our Actuarial Standards of Practice (ASOP), this communication includes analysis around ASOP 51. Please see the **Appendices** section for a discussion on risk.

Please see the **Actuarial Certification Letter** for additional comments on the 2019 valuation results.

## CHANGES TO FUTURE VALUATIONS

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The following changes are expected to be incorporated in future actuarial valuations:

**Changes to Funding Policy** – Our office worked with the actuarial firm Milliman to perform an audit of the funding methodology of the pension and relief plans. Any findings and takeaways will be presented to the Board in 2021.

**Review of Demographic Assumptions** – The demographic assumptions for members contributing to the pension system are in the process of being reviewed and updated. This includes retirement rates, termination rates, and mortality rates, among other demographic assumptions. A report summarizing the results of our analysis and key takeaways will be produced in 2021.

**Review of Asset Assumptions** – It is our understanding that the Board is working with the Washington State Investment Board (WSIB) to study the plan's asset allocation. Any changes to the asset allocation may impact the ROR assumption. Additionally, our office is working with the Office of the State Treasurer (OST) to analyze the reasonableness of the ROR assumption related to their investments.





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, 2019

October 2020

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, 2019, 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 [2018 Other Postemployment Benefits \(OPEB\) Actuarial Valuation Report](#). These trend rates and other healthcare-related assumptions were either set or reviewed 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 established a fund to provide for both pension and relief benefits. The Board adopted the policy to pre-fund the pension benefits using the Entry Age Normal (EAN) Actuarial Funding Method. The Board adopted the amortization policy for the Unfunded Actuarial Accrued Liability (UAAL), the investment Rate Of Return (ROR) assumption, and the asset valuation method used in this valuation. The Board also adopted the policy to pre-fund the relief benefits using the Aggregate Actuarial Funding Method. We believe the asset valuation method is reasonable for its intended purpose of addressing contribution rate volatility when applied in combination with these funding methods and the current asset



allocation. 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 (FIPT), 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. The Washington State Investment Board (WSIB) and the Office of the State Treasurer (OST) 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 the Office of the State Actuary (OSA) are actively working together to further improve the quality of the data. We use this data for 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.

This valuation includes the cost of [Engrossed Substitute Senate Bill \(ESSB\) 5829](#) (Chapter 144, Laws of 2020) that enhanced member benefits. At the earliest, the benefit enhancements commence on July 1, 2022, and are reliant upon a determination letter from the Internal Revenue Service (IRS). We reviewed the Actuarial Standards of Practices (ASOPs) as well as discussed with the Board and chose to include this cost in the valuation. We assume these benefit enhancements commence on July 1, 2022. Within the **Appendix**, we provide the calculated contribution rates excluding the cost of this bill; the Board has the option to adopt rates for 2021 that do not reflect the benefit enhancements since they are dependent on the IRS ruling.

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,

Michael T. Harbour, ASA, MAAA  
Actuary

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

## CONTRIBUTION RATES

We used the EAN Funding Method to determine the pension contribution rates as a level dollar amount. This method divides the contribution rate into two parts: a NC rate and a rate to amortize the 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, could amplify the annual volatility of the relief contribution rate.

As of the date of this valuation, June 30, 2019, 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 contribution rate.

Required Annual Contributions Per Person	
Pension Rate	
Entry Age Normal Cost	\$108
Cost of UAAL	\$0
<b>Total Pension Rate</b>	<b>\$108</b>
Relief Rate	
<b>Aggregate Normal Cost</b>	<b>(\$94)</b>

*Note: Totals may not agree due to rounding.*

*\*The administrative expenses are approximately \$49 per person for this valuation.*

Development of Pension Plan Normal Cost*	
(Dollars in Thousands)	Total
<b>Future Value of Fully Projected Benefits</b>	\$764,116
a. Present Value of Fully Projected Benefits (PVFB)	230,540
b. Entry Age Normal Actuarial Accrued Liability (AAL)	226,038
c. Present Value of Future Normal Costs (PVFNC) (a - b)	4,503
d. Present Value of Future Service (PVFS)**	41,740
<b>e. Per Person Entry Age Normal Cost (c / d, in Dollars)</b>	<b>\$108</b>

*Note: Totals may not agree due to rounding.*

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

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

<b>Development of Pension Plan UAAL</b>	
<i>(Dollars in Thousands)</i>	<b>Total</b>
<b>Future Value of Fully Projected Benefits</b>	<b>\$764,116</b>
a. Present Value of Fully Projected Benefits (PVFB)	230,540
b. Actuarial Value of Assets (AVA) Allocated to Pensions	226,038
c. Unfunded PVFB (a - b)	4,503
d. Present Value of Future Normal Costs (PVFNC)	4,503
<b>e. Unfunded Actuarial Accrued Liability (UAAL) (c - d)</b>	<b>\$0</b>
f. Contribution to Amortize the UAAL (Rolling 15-Year)	0
g. Number of Active Members in Pension Plan	8,428
<b>h. Per Person UAAL Contribution (f / g, in Dollars)</b>	<b>\$0</b>

*Note: Totals may not agree due to rounding.*

<b>Development of Relief Plan Normal Cost</b>	
<i>(Dollars in Thousands)</i>	<b>Total</b>
<b>Future Value of Fully Projected Benefits</b>	<b>\$44,326</b>
a. Present Value of Fully Projected Benefits (PVFB)	\$18,069
b. Actuarial Value of Assets (AVA)*	\$22,640
c. Unfunded PVFB (a - b)	(\$4,571)
d. Present Value of Future Service (PVFS)**	48,564
<b>e. Per Person Aggregate Normal Cost (c / d, in Dollars)</b>	<b>(\$94)</b>

*Note: Totals may not agree due to rounding.*

*\*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.*



## ACTUARIAL LIABILITIES

Actuarial Liabilities—Pension Plan		
(Dollars in Thousands)	Entry Age Normal Actuarial Accrued Liability	Present Value of Fully Projected Benefits
<b>Active Members</b>		
Retirement	\$48,328	\$50,707
Termination	14,140	15,896
Death Benefits	1,300	1,406
Withdrawal	1,831	2,093
<b>Total Actives</b>	<b>\$65,599</b>	<b>\$70,102</b>
<b>Inactive Members</b>		
Retirees	\$96,240	\$96,240
Terminated Vested	56,048	56,048
Survivor	8,151	8,151
<b>Total Inactives</b>	<b>\$160,438</b>	<b>\$160,438</b>
<b>All Members</b>		
<b>2019 Total</b>	<b>\$226,038</b>	<b>\$230,540</b>
<b>2018 Total</b>	<b>\$190,705</b>	<b>\$194,454</b>

Note: Totals may not agree due to rounding.

Actuarial Liabilities—Relief Plan	
(Dollars in Thousands)	Present Value of Fully Projected Benefits
<b>Active Members</b>	
Duty Disability	\$1,073
Duty-Related Death	1,332
Medical and Temporary Disability	10,746
<b>Total Actives</b>	<b>\$13,151</b>
<b>Inactive Members</b>	
Survivor	\$2,485
Disability	2,433
<b>Total Inactives</b>	<b>4,917</b>
<b>All Members</b>	
<b>2019 Total</b>	<b>\$18,069</b>
<b>2018 Total</b>	<b>\$18,180</b>

Note: Totals may not agree due to rounding.

Pension—Fully Projected Benefit Payments								
<i>(Dollars in Thousands)</i>								
Year	Future Value	Present Value	Year	Future Value	Present Value	Year	Future Value	Present Value
2019	\$12,646	\$12,226	2053	\$11,808	\$1,144	2087	\$1,123	\$11
2020	13,496	12,193	2054	11,408	1,033	2088	979	9
2021	14,050	11,863	2055	11,020	933	2089	846	7
2022	16,643	13,134	2056	10,606	839	2090	724	6
2023	17,118	12,625	2057	10,250	758	2091	614	5
2024	17,543	12,092	2058	9,885	683	2092	514	4
2025	17,829	11,485	2059	9,508	614	2093	426	3
2026	18,099	10,896	2060	9,144	552	2094	348	2
2027	18,333	10,315	2061	8,783	495	2095	280	2
2028	18,472	9,713	2062	8,456	446	2096	222	1
2029	18,588	9,135	2063	8,109	399	2097	173	1
2030	18,635	8,559	2064	7,744	356	2098	133	1
2031	18,592	7,981	2065	7,381	318	2099	101	0
2032	18,501	7,422	2066	6,986	281	2100	76	0
2033	18,402	6,899	2067	6,594	248	2101	56	0
2034	18,300	6,412	2068	6,201	218	2102	41	0
2035	18,140	5,940	2069	5,819	191	2103	29	0
2036	17,937	5,490	2070	5,450	167	2104	21	0
2037	17,686	5,059	2071	5,094	146	2105	15	0
2038	17,409	4,654	2072	4,750	127	2106	11	0
2039	17,149	4,284	2073	4,419	111	2107	8	0
2040	16,903	3,946	2074	4,100	96	2108	6	0
2041	16,624	3,627	2075	3,794	83	2109	5	0
2042	16,327	3,329	2076	3,502	72	2110	4	0
2043	15,974	3,045	2077	3,222	62	2111	3	0
2044	15,560	2,772	2078	2,955	53	2112	3	0
2045	15,143	2,521	2079	2,701	45	2113	2	0
2046	14,737	2,293	2080	2,460	38	2114	2	0
2047	14,364	2,089	2081	2,232	33	2115	2	0
2048	13,956	1,896	2082	2,017	27	2116	1	0
2049	13,564	1,723	2083	1,814	23	2117	1	0
2050	13,122	1,557	2084	1,623	19	2118	1	0
2051	12,694	1,408	2085	1,445	16			
2052	12,257	1,271	2086	1,278	13			
						<b>Total</b>	<b>\$764,116</b>	<b>\$230,540</b>

Relief—Fully Projected Benefit Payments								
<i>(Dollars in Thousands)</i>								
Year	Future Value	Present Value	Year	Future Value	Present Value	Year	Future Value	Present Value
2019	\$2,170	\$2,097	2053	\$431	\$42	2087	\$105	\$1
2020	1,981	1,790	2054	407	37	2088	98	1
2021	1,834	1,549	2055	385	33	2089	91	1
2022	1,711	1,350	2056	362	29	2090	83	1
2023	1,609	1,187	2057	343	25	2091	76	1
2024	1,524	1,050	2058	324	22	2092	69	0
2025	1,449	933	2059	308	20	2093	62	0
2026	1,383	832	2060	293	18	2094	55	0
2027	1,323	744	2061	280	16	2095	48	0
2028	1,269	667	2062	268	14	2096	42	0
2029	1,218	599	2063	256	13	2097	36	0
2030	1,170	537	2064	246	11	2098	30	0
2031	1,124	482	2065	236	10	2099	26	0
2032	1,083	435	2066	228	9	2100	21	0
2033	1,045	392	2067	222	8	2101	17	0
2034	1,009	353	2068	216	8	2102	14	0
2035	974	319	2069	211	7	2103	11	0
2036	941	288	2070	206	6	2104	9	0
2037	909	260	2071	201	6	2105	7	0
2038	879	235	2072	196	5	2106	5	0
2039	849	212	2073	191	5	2107	4	0
2040	817	191	2074	186	4	2108	3	0
2041	785	171	2075	181	4	2109	2	0
2042	751	153	2076	175	4	2110	1	0
2043	717	137	2077	170	3	2111	1	0
2044	685	122	2078	164	3	2112	1	0
2045	656	109	2079	158	3	2113	0	0
2046	625	97	2080	152	2	2114	0	0
2047	596	87	2081	146	2	2115	0	0
2048	566	77	2082	140	2	2116	0	0
2049	538	68	2083	133	2	2117	0	0
2050	509	60	2084	126	2	2118	0	0
2051	483	54	2085	119	1			
2052	456	47	2086	112	1			
						<b>Total</b>	<b>\$44,326</b>	<b>\$18,069</b>

## ASSETS

Change in Market Value of Assets	
<i>(Dollars in Thousands)</i>	
<b>Market Value as of June 30, 2018</b>	<b>\$245,282</b>
Revenue	
Member Pension Contributions	\$54
Employer Pension Contributions	385
Relief Plan Contributions	412
Investment Earnings Net of Expenses	20,584
Net Fire Insurance Premium Tax (Net FIPT)*	7,639
<b>Total Revenue</b>	<b>\$29,075</b>
Disbursements	
Refunds	\$20
Expenses	1
Disability and Survivor Benefits	538
Miscellaneous	0
Medical Benefits	1,534
Retirement Pensions (Monthly and Lump Sums)	11,655
<b>Total Disbursements</b>	<b>\$13,748</b>
<b>Market Value as of June 30, 2019</b>	<b>\$260,609</b>

Note: Totals may not agree due to rounding.

\*Excludes \$508.5K allocated to the administrative account by BVFF. Actual administrative costs for the prior year were approximately \$495K.

Calculation of the Actuarial Value of Assets				
<i>(Dollars in Thousands)</i>				
<b>a. Market Value at 6/30/2018</b>				<b>\$260,609</b>
Deferred Gains and (Losses)				
Plan Year Ending	Original Deferred Gain/Loss	Years Deferred	Years Remaining	Current Deferred Gain/Loss
6/30/2019	3,117	2	1	1,559
6/30/2018	4,322	2	0	0
6/30/2017	12,591	7	4	7,195
6/30/2016	(9,146)	5	1	(1,829)
6/30/2015	(5,125)	3	0	0
6/30/2014	20,028	8	2	5,007
6/30/2013	7,845	5	0	0
<b>b. Total Deferral</b>				<b>\$11,931</b>
<b>c. Market Value less Deferral (a - b)</b>				<b>\$248,678</b>
d. 70% of Market Value of Assets				182,426
e. 130% of Market Value of Assets				338,792
<b>f. Actuarial Value of Assets*</b>				<b>\$248,678</b>
<b>g. Ratio of Actuarial Value to Market Value (f / a)</b>				<b>95%</b>

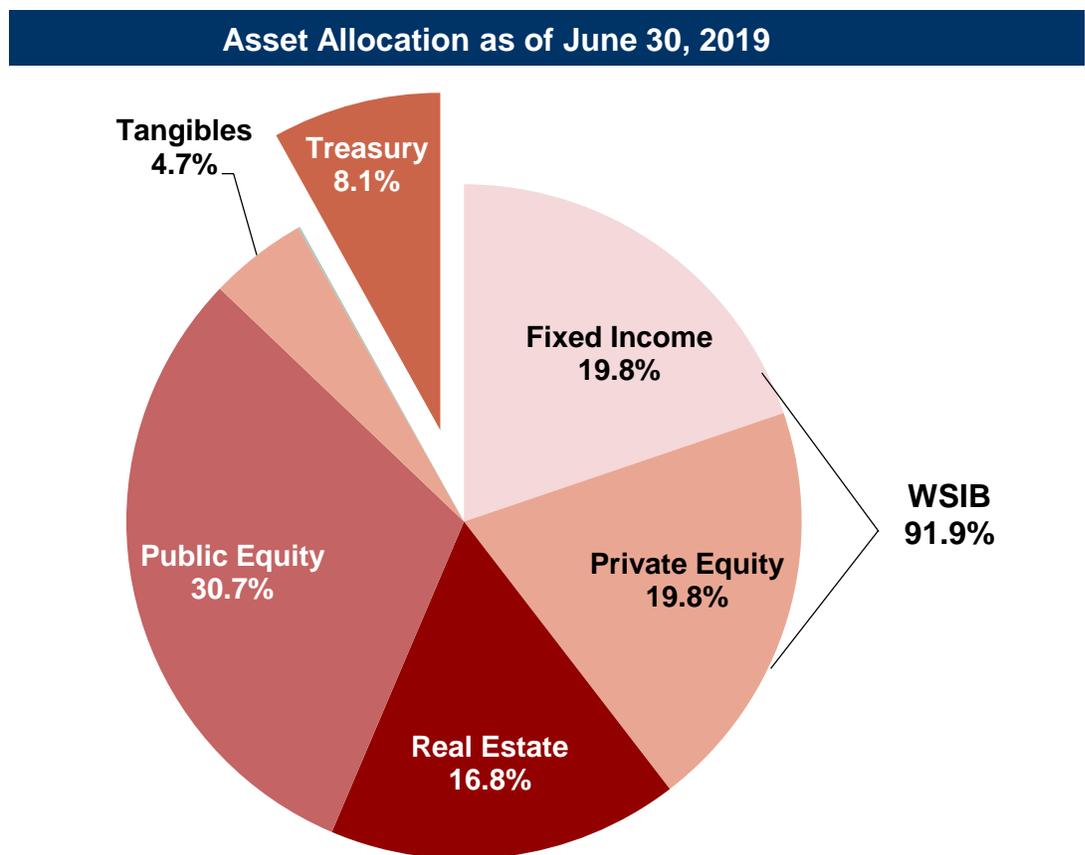
Note: Totals may not agree due to rounding.

\*The AVA may not exceed 130% nor drop below 70% of the AVA.

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 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<sup>1</sup>.

Plan assets are invested by OST and WSIB. The distribution of total plan assets between each account fluctuates by year and is monitored by the Board to ensure adequate assets in the OST 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 OST. The graph below shows details of the asset allocation for the plan.

<b>Allocation of Actuarial Value of Assets by Plan</b>			
<i>(Dollars in Millions)</i>	<b>Pension</b>	<b>Relief</b>	<b>Total</b>
<b>June 30, 2019</b>	<b>\$226.0</b>	<b>\$22.6</b>	<b>\$248.7</b>
<b>June 30, 2018</b>	190.7	\$39.6	230.3
<b>June 30, 2017</b>	190.2	\$22.2	212.4
<b>June 30, 2016</b>	190.0	\$10.8	200.8
<b>June 30, 2015</b>	188.5	\$6.0	194.5
<b>June 30, 2014</b>	185.5	\$3.5	189.0
<b>June 30, 2013</b>	182.5	\$0.0	182.5
<b>June 30, 2012</b>	170.3	\$7.4	177.6
<b>June 30, 2011</b>	167.8	\$5.8	173.6
<b>June 30, 2010</b>	\$165.6	\$3.1	\$168.8



*Note: Allocation for Cash and Innovation asset classes are both approximately 0.1%.  
Source: Washington State Investment Board.*

<sup>1</sup>The June 30, 2010, AVR was the first report that allocated a portion of the assets to the relief plan. Prior to that report, all assets were allocated to pensions.

SECTION TWO: ACTUARIAL EXHIBITS

To help track annual funding, we developed a table that compares the actuarial required costs of the plan to the expected income for the upcoming year. A net income means the plan is expected to collect more income than benefits that are earned (or accrued) in the given year.

2020 Actuarial Required Costs vs. Expected Income			
Actuarial Required Costs*			
	Count	Rate (Dollars in Ones)	Total
Pension Normal Cost	8,428	\$108	\$909
Pension UAAL (Surplus)	8,428	0	0
Relief Normal Cost	10,089	\$0	\$0
<b>Total Actuarial Costs for Pension and Relief Plans</b>			<b>\$909</b>
Expected Income			
State			
<b>Expected Net FIPT**</b>			<b>\$7,868</b>
Pension			
	Count	Rate (Dollars in Ones)	Total
VFF Member and Employer	8,303	\$30 + \$30	\$498
RLEOs and EMTs	125	\$135	17
<b>Total Pension</b>			<b>\$515</b>
Relief			
	Count	Rate (Dollars in Ones)	Total
VFF Employer	9,926	\$30	\$298
RLEOs and EMTs	163	\$235	38
<b>Total Relief</b>			<b>\$336</b>
Total State, Pension, and Relief Contributions			
<b>Total Income</b>			<b>\$8,719</b>
<b>Net Income (Income Less Actuarial Costs)</b>			<b>\$7,810</b>

Note: Totals displayed in thousands and may not agree due to rounding.

\*Assumes \$0 contribution rate if the plan is in a surplus funded position.

\*\*Assumes 3% growth from prior year's net FIPT which is approximately the ten-year average annual growth.



## 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 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 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 PVFB and the pension's Present Value of Future Normal Cost (PVFNC). 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 [2010 VAVR](#), 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.

<b>Pension Funded Status on Actuarial Value Basis</b>	
<i>(Dollars in Thousands)</i>	
<b>Entry Age Normal Accrued Liability</b>	\$226,038
<b>Actuarial Value of Assets</b>	226,038
<b>Unfunded Liability</b>	\$0
<b>Funded Ratio</b>	
<b>June 30, 2019**</b>	<b>100%</b>
<b>June 30, 2018</b>	100%
<b>June 30, 2017*</b>	100%
<b>June 30, 2016</b>	100%
<b>June 30, 2015*</b>	100%
<b>June 30, 2014*</b>	100%
<b>June 30, 2013*</b>	99%
<b>June 30, 2012</b>	100%
<b>June 30, 2011</b>	100%
<b>June 30, 2010</b>	100%

\*Actuarial assumptions changed.

\*\*Benefits increased.

## SECTION TWO: ACTUARIAL EXHIBITS

We do not calculate an actuarial accrued liability for the relief plan since the relief benefits are paid as they are incurred. A member cannot earn (or accrue) additional relief benefits as their service increases. As such, a funded status is not calculated for relief. Please see the Development of Relief Plan Normal Cost table in the **Actuarial Exhibits** section for a comparison of the PVFB to the assets on hand for (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.

<b>Pension Funded Status at Variable Interest Rate Assumptions</b>			
<i>(Dollars in Thousands)</i>	<b>6.25% ROR</b>	<b>7.00% ROR</b>	<b>7.75% ROR</b>
<b>Entry Age Normal Accrued Liability</b>	\$246,434	\$226,038	\$208,400
<b>Actuarial Value of Assets</b>	246,434	226,038	208,400
<b>Unfunded Liability</b>	\$0	\$0	\$0
<b>Funded Ratio</b>			
<b>June 30, 2019**</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>
<b>June 30, 2018</b>	100%	100%	100%
<b>June 30, 2017*</b>	100%	100%	100%
<b>June 30, 2016</b>	97%	100%	100%
<b>June 30, 2015*</b>	94%	100%	100%
<b>June 30, 2014*</b>	93%	100%	100%
<b>June 30, 2013*</b>	91%	99%	100%
<b>June 30, 2012</b>	96%	100%	100%
<b>June 30, 2011</b>	95%	100%	100%
<b>June 30, 2010</b>	93%	100%	100%

\*Actuarial assumptions changed.

\*\*Benefits increased.

## 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 investments return a rate of 7.0 percent per year, net of expenses. The investment return assumption represents the average annual ROR 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. The following table displays the dollar-weighted annual ROR over the last ten years, which shows the short-term volatility of the investment returns.

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.

Annual Rate of Return	
Year	
2019	8.30%
2018	8.93%
2017	13.23%
2016	2.48%
2015	4.42%
2014	18.69%
2013	11.97%
2012	1.64%
2011	19.18%
2010	10.38%
10-Year Average Return*	
Average	9.77%

\*Based on Geometric Return.

- 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)
2019	\$7,639
2018	7,227
2017	6,646
2016	7,235
2015	5,903
2014	6,383
2013	5,958
2012	5,602
2011	5,815
2010	5,685
2009	\$5,794
10-Year Annual Growth*	
Average	2.8%

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

\*Based on Geometric Return.

## 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 2019 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 as part of our demographic experience studies.

Actual vs. Expected Demographic Counts (Pension Plan)			
Counts by Decrement Type	Actual	Expected	Act/Exp
<b>Members Who Join the Plan</b>			
New Volunteers	1,085	N/A	N/A
Return to Work	258	N/A	N/A
<b>Members Who Leave the Plan</b>			
Termination*	1,510	1,091	1.38
Retirement	85	236	0.36
<b>Member Deaths</b>			
Actives	8	21	0.37
Retiree	148	149	0.99
Survivor	14	14	1.00
Terminated Vested	19	124	0.15

\*Approximately 80 terminations were members who were retirement eligible.



## ACTUARIAL GAIN/LOSS

Since the 2018 VAVR, key actuarial gains and losses impacted the results of this valuation as displayed in the following table. Lower than expected liabilities will reduce contribution rates and higher than expected liabilities will increase contribution rates.

Changes from assets and Present Value of Future Service (PVFS) will also impact the calculated contribution rates. We observed higher than the expected rate of investment return (7 percent) with an AVA of 10.4 percent. Additionally, new hires since the prior valuation led to higher than expected PVFS (as well as liabilities). In isolation, higher than expected assets and PVFS results in a decrease in contribution rates.

Change in Liability by Source		
<i>(Dollars in Millions)</i>	Pension	Relief
<b>Actual Liability for 2018 Valuation</b>	<b>\$194.5</b>	<b>\$18.2</b>
Expected Disbursements	(12.1)	(2.2)
Interest	13.2	1.2
<b>Expected Liability for 2019 Valuation</b>	<b>195.6</b>	<b>17.2</b>
Changes in Experience	(0.6)	0.8
Other Changes	35.6	0.1
<b>Actual Liability for 2019 Valuation</b>	<b>\$230.5</b>	<b>\$18.1</b>

Difference Between Actual and Expected Liability		
Liability (Gain)/Loss	Pension	Relief
<b>Changes in Experience</b>		
Termination	(\$1.1)	(\$1.2)
Retirement	(0.1)	0.0
Disability	0.0	(0.2)
Mortality	0.1	0.2
New Entrants	1.0	2.1
Other Liabilities*	(0.5)	(0.1)
<b>Total</b>	<b>(\$0.6)</b>	<b>\$0.8</b>
<b>Other Changes</b>		
Changes to Actuarial Assumptions	\$0.0	\$0.0
Changes to Actuarial Methods	0.0	0.0
Laws of 2020	35.6	0.1
<b>Total</b>	<b>\$35.6</b>	<b>\$0.1</b>

*Note: Totals may not agree due to rounding.*

*\*For Pension, we made a correction to an annuitant record which resulted in approximately \$300,000 in savings.*

## EFFECT OF PLAN, METHOD, ASSUMPTION, AND CORRECTION CHANGES

### Plan Changes

- **Benefit Enhancements** – The legislature passed ESSB 5829 during the 2020 Legislative Session which enhanced benefits for current and future retirees. This law change increases the base retirement benefit from \$50 to \$100 as well as allows for additional service accruals beyond 25 years. Additionally, this law change will increase future fixed contribution rates for volunteer fire fighters as well as calculated rates for RLEOs and EMTs. Please see [ESSB 5829 \(Chapter 144, Laws of 2020\)](#) for additional details.

### Method Changes

- **Present Value of Future Service** – For pension contribution rate calculation purposes, we now extend the PVFS beyond 25 years since members can continue to accrue benefits as a result of the law change described above. Previous to the benefit enhancement, members stopped contributing to the pension plan once they reach the maximum 25 years of service credit.

### Assumption Changes

- **Termination Rates** – The termination rates were reduced for members with 25+ years of service to reflect the benefit enhancement from the 2020 Legislative Session. We expect fewer members will leave the plan (prior to retirement eligibility), since they would be able to continue accruing a pension benefit beyond 25 years of service.

### Corrections

- None.

Per Person Annual Contribution Rates				
Valuation Year	2018 Final	Changes to Data & Assets*	Changes to Laws, Assumptions, & Methods**	2019 Final
<b>Pension Rate</b>				
Normal Cost Rate	\$100	\$1	\$7	\$108
UAAL Rate	0	0	\$0	0
<b>Total Pension Rate</b>	<b>\$100</b>	<b>\$1</b>	<b>\$7</b>	<b>\$108</b>
<b>Relief Rate</b>				
<b>Normal Cost Rate</b>	<b>(\$412)</b>	<b>(\$401)</b>	<b>\$719</b>	<b>(\$94)</b>

\*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 corrections and plan, assumption, and method changes.

Section Three:  
**Participant  
Data**





## PARTICIPANT DATA

Membership Data					
Actives	2015	2016	2017	2018	2019
<b>Number of Members in Relief System</b>	<b>11,831</b>	<b>11,532</b>	<b>11,184</b>	<b>10,785</b>	<b>10,089</b>
Average Age	40.7	40.8	41.2	41.2	41.8
Average Total Service	9.7	9.6	9.7	9.5	9.8
Number of Emergency Medical Technicians	62	65	62	47	51
Number of Reserve Law Enforcement Officers	216	190	162	140	112
Number of Rehires Receiving a Pension	82	76	93	70	85
<b>Number of Members in Pension System</b>	<b>9,802</b>	<b>9,434</b>	<b>9,223</b>	<b>8,960</b>	<b>8,428</b>
Percent of Volunteers Covered	83%	82%	82%	83%	84%
Average Age	41.6	41.9	42.1	42.1	42.5
Average Total Service	10.8	10.8	10.8	10.6	10.7
Average Pension Benefit Service	8.9	9.0	9.0	8.9	9.2
Number of Emergency Medical Technicians	28	30	26	22	25
Number of Reserve Law Enforcement Officers	185	158	137	127	100
<b>Retirees</b>					
<b>Number of Retirees/Beneficiaries</b>	<b>4,296</b>	<b>4,367</b>	<b>4,446</b>	<b>4,494</b>	<b>4,602</b>
Average Age	75.0	74.9	75.0	75.2	75.4
Number of New Retirees	180	202	216	205	251
Average Annual Benefit	\$2,232	\$2,245	\$2,266	\$2,287	\$2,314
<b>Total Annual Benefit Payments (Dollars in Millions)</b>	<b>\$9.6</b>	<b>\$9.8</b>	<b>\$10.1</b>	<b>\$10.3</b>	<b>\$10.7</b>
<b>Terminated Vested</b>					
<b>Number of Terminated Vested</b>	<b>6,197</b>	<b>6,263</b>	<b>6,120</b>	<b>6,181</b>	<b>6,187</b>
<b>Relief Annuities</b>					
<b>Number of Duty-Death Survivors</b>	<b>11</b>	<b>11</b>	<b>9</b>	<b>8</b>	<b>9</b>
Average Age	69.2	67.7	70.9	70.1	69.9
Average Annual Benefit	\$21,718	\$22,045	\$22,260	\$22,736	\$22,736
<b>Number of Duty-Related Disabled</b>	<b>12</b>	<b>12</b>	<b>12</b>	<b>11</b>	<b>11</b>
Average Age	67.0	68.0	69.0	68.7	69.9
Average Annual Benefit	\$24,256	\$24,252	\$24,118	\$23,976	\$23,976

### Pension Active Members—Age and Membership Service Distribution

Membership Service	Attained Age									Total
	< 25	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60+	
1	352	177	164	113	75	45	34	26	48	1,034
2	265	143	117	93	73	56	32	36	44	859
3-4	312	221	214	185	110	89	66	70	93	1,360
5-9	147	321	249	241	225	168	134	100	183	1,768
10-14	6	71	136	193	176	150	130	104	146	1,112
15-19			50	124	147	115	131	96	150	813
20-24				42	84	97	112	109	165	609
25 +					31	86	155	212	389	873
<b>Total</b>	<b>1,082</b>	<b>933</b>	<b>930</b>	<b>991</b>	<b>921</b>	<b>806</b>	<b>794</b>	<b>753</b>	<b>1,218</b>	<b>8,428</b>

### Relief Active Members—Age and Membership Service Distribution

Membership Service	Attained Age									Total
	< 25	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60+	
1	694	319	266	198	131	76	60	41	100	1,885
2	351	198	157	113	86	72	41	47	62	1,127
3-4	361	253	239	205	119	97	73	83	119	1,549
5-9	162	346	261	252	234	173	143	116	231	1,918
10-14	6	76	141	196	176	157	136	113	187	1,188
15-19			51	126	148	115	132	99	162	833
20-24				42	84	97	112	110	173	618
25 +					31	86	155	214	485	971
<b>Total</b>	<b>1,574</b>	<b>1,192</b>	<b>1,115</b>	<b>1,132</b>	<b>1,009</b>	<b>873</b>	<b>852</b>	<b>823</b>	<b>1,519</b>	<b>10,089</b>



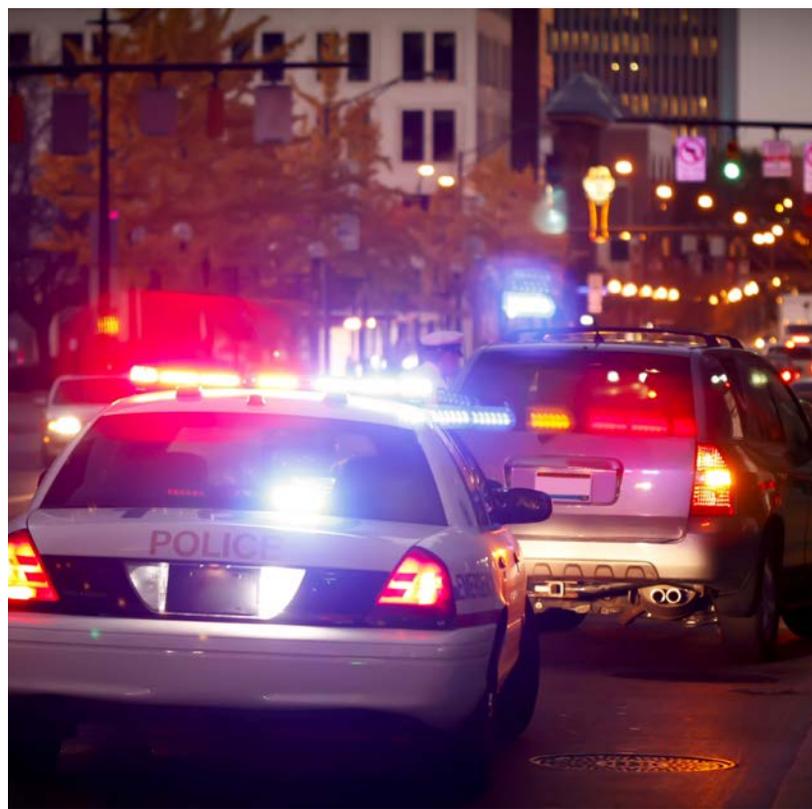
Pension Retirees*					
Age	Number of Retirees	Average Annual Benefit	Age	Number of Retirees	Average Annual Benefit
60	37	\$1,495	76	238	\$2,244
61	8	1,717	77	197	2,416
62	32	1,854	78	162	2,218
63	39	2,183	79	160	2,223
64	59	1,996	80	165	2,263
65	209	2,612	81	167	2,023
66	192	2,542	82	156	2,084
67	213	2,539	83	116	2,189
68	198	2,513	84	106	2,171
69	205	2,412	85	93	2,319
70	239	2,384	86	97	2,302
71	230	2,434	87	54	2,210
72	281	2,242	88	74	2,168
73	218	2,368	89	58	2,119
74	218	2,299	90+	171	2,267
75	210	\$2,384	<b>Total</b>	<b>4,602</b>	<b>\$2,314</b>

\*Includes beneficiaries of service retirees.

Line-of-Duty Death Survivors		
Age	Number of Survivors	Average Annual Benefit
<60	2	\$22,736
60-74	3	22,736
75-89	4	22,736
90+	0	0
<b>Total</b>	<b>9</b>	<b>\$22,736</b>

Retirees with Disabilities		
Age	Number of Survivors	Average Annual Benefit
<60	1	\$22,736
60-74	6	24,251
75-89	4	23,872
90+	0	0
<b>Total</b>	<b>11</b>	<b>\$23,976</b>





Section Four:  
**Appendices**



# ACTUARIAL ASSUMPTIONS

## 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 0.005 percent for all active members, which equates to approximately 0.5 expected duty-related disabilities per year.
- **Termination Rates** – Termination rates are modeled as a function of Membership Service.
- **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%

\*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 [2007-12 Demographic Experience Study](#), which contains more details on the development of these tables.

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+	9%

\*The service based reduction factors for pension benefits improve at 10, 15, 20, and 25 years of membership service.

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 <i>(Continued)</i>									
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.

## Pension Benefit Assumptions

- Purchase of Membership Service Credit** – We assume all eligible members will purchase service credit 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. Consistent with the benefit provisions of ESSB 5829 (Chapter 144, Laws of 2020), service credits above 25 years will be granted prospectively after the effective date of the bill.
- 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 following table. These assumptions are consistent with those selected for PERS 2 as developed during the *2007-12 Demographic Experience Study*.
- 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 as developed during the *2007-12 Demographic Experience Study*.

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	\$132.15	Medical Inflation
Member Physicals	\$11.00	0.00%
Temporary Disability	\$10.51	2.50%

- Annual Medical Inflation** – To estimate future medical costs, we chose to apply the medical inflation assumptions from our *2018 OPEB Actuarial Valuation Report*. Based on the self-insured nature of the VFF relief plan, we assume the medical inflation is consistent with the Uniform Medical Plan Non-Medicare Costs trend, excluding the provision for excise taxes since we assume they do not apply to this plan. Please see the Medical Inflation table on the next page for additional information.

- **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.

We determined this assumption remains reasonable for purposes of this valuation. However, we intend to review further as part of our *2021 Economic Experience Study*, noting the recent changes to Federal Reserve inflation policy.

- **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.

Medical Inflation	
Valuation Year	Rate
2018	7.7%
2019	6.3%
2020	6.0%
2021-2022	5.2%
2023-2025	5.3%
2026-2033	5.4%
2034-2042	5.5%
2043-2044	5.4%
2045-2048	5.3%
2049-2060	5.2%
2061-2064	5.1%
2065	5.0%
2066	4.9%
2067-2068	4.8%
2069	4.7%
2070	4.6%
2071-2072	4.5%
2073+	4.4%

## Miscellaneous Assumptions

- **Valuation Interest Rate** – We assume an annual investment ROR of 7.0 percent.
  - The assumed 7.0 percent investment ROR for the plan assets is based upon a weighted average of the expected ROR for the assets in the OST and the WSIB accounts. The WSIB investment assumption is consistent with our long-term expectations from the most recent economic experience study. Assets held by the OST are invested in short-term bonds. On a long-term basis, we assume the OST investments earn 3.5 percent per year and the WSIB investments earn 7.4 percent per year net of expenses. After discussions with OST, we considered adjustments to the investment return assumption for OST assets. We decided not to update the assumption after we determined any changes would not impact our weighted average total return on assets. We intend to review these assumptions next year as part of the potential change to the plan's asset allocation.

- **Percent Male** – We assume the population is 90 percent male, consistent with the Law Enforcement Officers' and Fire Fighters' (LEOFF) Plan 2 as developed during the 2007-12 Demographic Experience Study. We only use this assumption when the gender of a spouse is unknown. Otherwise, we use the gender as reported by the Board.

## ACTUARIAL METHODS

### Asset Valuation Method

An asset valuation method is generally used to adjust the MVA and smooth the effects of short-term volatility. The adjusted assets are called the 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 MVA to reflect the difference between the actual investment return and the expected investment return during each of the last eight years at the annual recognition rates per year displayed in the table to the right.

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.

### Actuarial Cost Method

The EAN Actuarial Cost Method is comprised of two components:

- NC.
- 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 PVFB over the PVFNC and the AVA. In other words, the amount of liabilities that are not covered by the sum of current assets and future contributions.

$$\text{In equation form: UAAL} = \text{PVFB} - \text{PVFNC} - \text{AVA.}$$

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.

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

*Note: The AVA may not exceed 130% nor drop below 70% of the MVA.*

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 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 pension and relief members.

## SUMMARY OF PLAN PROVISIONS

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The following pension and relief benefits are provided to VFF members:

- 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 2019 payment amounts.** The contribution amounts that are fixed in statute are expected to change as early as January 1, 2021; please see [Chapter 41.24.030 RCW](#) for details.

## 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.
  - RLEOs and EMTs are required to pay the full amount adopted annually by the Board. That amount for the 2020 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 RLEOs and EMTs are required to pay the full amount adopted annually by the Board. That amount for the 2020 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](#)

The following monthly retirement benefits reflect provisions prior to the passage of ESSB 5829. We will update this section of the report upon approval by the IRS and implementation by the Board.

- 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 Membership Service Factor for Retirement table.
- The monthly pension benefit formula is:  
$$(\$50 + \$10 \times \text{Benefit Service}) \times (\text{Membership Service Factor}) \times (\text{Age Factor})$$
- "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+
<b>Factor</b>	20%	35%	75%	100%

## AGE FACTOR FOR RETIREMENT

Age Factor						
Age	60	61	62	63	64	65
<b>Factor</b>	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.

### 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.

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.*

## RESERVE LAW ENFORCEMENT OFFICERS

- Chapter 11, Laws of 1995 extended the membership provisions of the pension plan to include RLEOs. The pension provisions mirror those of the EMSDs.
- Chapter 148, Laws of 1999 extended the membership provisions of the relief plan to include RLEOs. 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<sup>2</sup>

[RCW 41.24.150](#)

We rely on the Board for actual relief annuity amounts paid during the year. For the 2019 valuation, there was no change in these relief annuity amounts from the prior year.

- **Duty Disability** – Members receive temporary duty disability payments of \$3,789.26 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 \$1,894.63 per month, their spouse receives \$378.94, and each dependent child receives \$163.44. Disability benefits are subject to a maximum of \$3,789.26 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.

<sup>2</sup>Disability payments display the amount of payments as of the valuation date of this report.

## DEATH BENEFITS<sup>3</sup>

### [RCW 41.24.160](#), [41.24.230](#)

We rely on the Board for actual relief annuity amounts paid during the year. For the 2019 valuation, there was no change in these relief annuity amounts from the prior year.

- **Survivors** – Surviving spouses of members who die while on active duty shall be paid \$1,894.63 monthly. An additional \$530.53 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.

## COMMENTARY ON RISK

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Actuarial Standards of Practice guide actuaries when performing and communicating their work. ASOP number 51 is specific to communicating risk in defined benefit pension plans, particularly in how actual future measurements may differ significantly from expected future measurements. In the course of developing our actuarial valuation we make economic and demographic assumptions such as the level of returns on future investments. In some cases, small changes in these assumptions or unexpected plan experience can lead to significant changes in measurements, like the calculation of the plan's contribution rates or funded status. This can affect plan risk, and these sensitivities can evolve as the plans grow and mature over time. The Board's response to these changes also affects plan risk.

To help assess the risk to the VFF retirement plan, we have added analysis to this report to help readers better understand some of these key risks and their potential impacts on the retirement system. We identified Investment, Plan Funding, and Relief Costs as the key risks to the plan.

- **Investment Risk** – The retirement plan assumes an annual 7 percent rate of investment return which relies on WSIB and OST to invest its assets. Currently, the Board targets allocating 90 percent of its assets to WSIB. Relative to OST, WSIB assets are riskier which can yield higher returns but are also more volatile. The expected return is not guaranteed, so the volatility in riskier asset classes can also result in lower returns.

It is our understanding that the Board is working with the WSIB to study the plan's asset allocation. Any changes to the asset allocation may impact the ROR assumption. As an example, they may shift the asset allocation to target lower risk/less volatile or more liquid investments. A change of this nature could reduce our expectations for return on investments, thus increasing liabilities and potentially lowering funded status. The Pension Funded Status at Variable Interest Rate Assumptions table, found in the **Actuarial Exhibits** section, provides an illustration of these potential impacts.

<sup>3</sup>Death payments display the amount of payments as of the valuation date of this report.

- **Plan Funding Risk** – The plan is funded through contributions and investment earnings on those contributions. Risks to the plan may emerge if future contributions are changed in a significant way.

Contributions come from plan members and employers, as well as the Net FIPT. Contributions from the latter comprise approximately 90 percent of the plan’s non-investment revenues. As shown in the Premium Taxes Contributed to Plan table, found in the **Actuarial Exhibits** section, the Net FIPT has been steadily increasing. However, any notable change to this funding source could have material impacts to the funding of the plan. As the plan continues to mature, and the ratio of retirees to actives grows, the plan becomes more reliant on the Net FIPT.

- **Risk of Significant Relief Plan Costs** – The relief plan covers medical expenses for active VFF members, so we make assumptions for the total annual amount of medical expenses per person. During the *2018 Relief Experience Study*, we observed a “significant event” (or rather, a single medical expense larger than \$500,000) had only occurred once over a twelve-year period; however, we acknowledge that these events could occur more frequently. If more significant events occur than expected, then this will have a negative impact on cash flows as well as potentially increasing the number of members receiving relief annuities.

This section provides a high-level discussion of some key risks identified for VFF, but there are several methods available for assessing risk as discussed in the “Ways to Measure Risk” section on our [Washington State Retirement Systems Commentary on Risk](#) webpage. This webpage provides additional background and commentary on assessing plan risk. We recommend the Board, with OSA’s assistance, continues to monitor these risks and others that may be of interest.

## OTHER LIABILITY INFORMATION

Given the IRS conditions tied to the new legislation, it is our understanding that the Board may adopt contribution rates for 2021 that exclude the cost of the recent benefit enhancements. For informational purposes, we provide the calculated contribution rates with and without these costs.

Required Annual Contributions Per Person		
	Excludes Benefit Enhancement	Includes Benefit Enhancement
<b>Pension Benefits</b>		
Entry Age Normal Cost	\$101	\$108
Cost of UAAL	\$0	\$0
<b>Total Pension Rate</b>	<b>\$101</b>	<b>\$108</b>
<b>Relief Benefits</b>		
<b>Aggregate Normal Cost</b>	<b>(\$813)</b>	<b>(\$94)</b>

## THE OFFICE OF THE STATE ACTUARY'S WEBSITE

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Our website ([leg.wa.gov/osa](http://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.

### **[2019 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](#)**

The report on demographic behavior that we relied on when performing this actuarial valuation.

### **[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



# 2019 ACTUARIAL VALUATION



OCTOBER 2020



Office of the State Actuary  
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