

WASHINGTON STATE  
**2022 ACTUARIAL  
VALUATION**

AUGUST • 2023



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



# Office of the State Actuary

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**To obtain a copy of this report in alternative format call 360.786.6140 or for TDD 711.**

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## Office of the State Actuary

*“Supporting financial security for generations.”*

### Letter of Introduction and Actuarial Certification Actuarial Valuation Report As of June 30, 2022

August 2023

This report documents the results of an actuarial valuation of the following Washington State retirement systems.

- ❖ Public Employees’ Retirement System (PERS).
- ❖ Teachers’ Retirement System (TRS).
- ❖ School Employees’ Retirement System (SERS).
- ❖ Public Safety Employees’ Retirement System (PSERS).
- ❖ Law Enforcement Officers’ and Fire Fighters’ Retirement System (LEOFF).
- ❖ Washington State Patrol Retirement System (WSPRS).

The purpose of this valuation is to provide an update on the funding progress of the systems listed above based on a June 30, 2022, valuation/measurement date. This report represents a “non-rate setting” valuation, meaning we do not provide calculated contribution rates for the systems. Instead, we update key plan funding measures and reflect material developments in the plan over the past year. This report should not be used for other purposes and is not intended to satisfy the accounting requirements under the Governmental Accounting Standards Board rules. Please replace this report with a more recent report when available.

This report is organized in the following sections:

1. Summary of Key Results.
2. Actuarial Exhibits.
3. Participant Data.
4. Actuarial Assumptions and Methods.
5. Resource.

The **Summary of Key Results** provides a high-level summary of the valuation results for all systems combined including commentary on risk, funding policy, and key plan provisions. The **Actuarial Exhibits** provide detailed actuarial asset and liability information by retirement system. The **Participant Data** section provides key metrics of the participant data for each retirement system such as headcounts, average benefits, and average salary. **Actuarial Assumptions and Methods** contains principal actuarial assumptions and methods used in this valuation. The **Resource** section outlines additional supplemental information found on our website.

# LETTER OF INTRODUCTION AND ACTUARIAL CERTIFICATION

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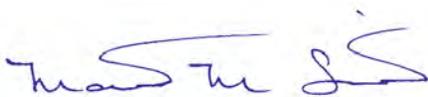
For all plans except for LEOFF 2, the economic assumptions used in this valuation were prescribed by the Pension Funding Council (PFC) and are subject to revision by the Legislature. For LEOFF 2, the economic assumptions are prescribed by the LEOFF 2 Retirement Board. Please see our [2021 Economic Experience Study](#) (EES) for further information. We developed the demographic assumptions used in this valuation during the [2013-2018 Demographic Experience Study](#). The Legislature prescribed the actuarial cost and asset valuation methods. In our opinion, all data, methods, assumptions, and calculations are reasonable for the purposes of this measurement and are in conformity with generally accepted actuarial principles and standards of practice as of the date of this publication. The use of different data, methods, or assumptions could also be reasonable and could produce materially different results.

The Department of Retirement Systems (DRS) provided us with audited member and beneficiary data. We checked the data for reasonableness based on the purpose of the valuation. The Washington State Investment Board (WSIB) and DRS provided audited financial and asset information. We relied on all the information provided as complete and accurate; however, we did make adjustments (noted in the report) to reflect certain material changes occurring after the June 30, 2022, measurement date.

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. The Risk Assessment [page](#) of our website provides information to help readers assess the financial risks to the pension systems from unexpected experience. The Commentary on Risk [page](#) of our website provides additional risk education.

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. We encourage you to submit any questions you might have concerning this report to our mailing address or email address at [state.actuary@leg.wa.gov](mailto:state.actuary@leg.wa.gov).

Sincerely,



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



Kyle Stineman, ASA, MAAA  
Actuary



# I. SUMMARY OF KEY RESULTS

## COMMENTS ON 2022 VALUATION RESULTS

Many factors influence actuarial valuation results from one measurement date to the next. These factors include changes in the plan provisions, changes in funding policy, changes in assumptions or methods, changes in the covered population and plan experience.

### CHANGES IN PLAN PROVISIONS

Laws passed during the 2023 Legislative Session that impacted the results in this report through benefit enhancements include the following:

- ❖ [Substitute House Bill \(SHB\) 1007](#) – Provides fully subsidized interruptive military service credit to members of the state retirement systems who received an expeditionary medal during any armed conflict.
- ❖ [House Bill 1055](#) – Expands PSERS eligibility to include public safety telecommunicators.
- ❖ [SHB 1056](#) – Removes restrictions on returning to work with a DRS employer for “2008 Early Retirement Factor (ERF)” recipients and prospectively recalculates benefits for “2000 ERF” recipients who retired after September 1, 2008, in PERS, TRS, and SERS.
- ❖ [Senate Bill 5350](#) – Provides a one-time, 3 percent Cost-Of-Living Adjustment (COLA) for eligible PERS I and TRS I retirees up to a maximum of \$110 per month.

The laws noted above represent material changes to benefit plan provisions from the 2023 Legislative Session and are not meant to be exhaustive.

### CHANGES IN FUNDING POLICY

[Engrossed Substitute Senate Bill \(ESSB\) 5294](#) (Chapter 396, Laws of 2023) modified the funding policy for PERS I and TRS I. This law included the following:

- ❖ Prescribes Base Unfunded Actuarial Accrued Liability (UAAL) contribution rates through Fiscal Year (FY) 2027.
  - Amortization of past benefit improvements are unchanged under this new funding policy.
- ❖ A reduction of minimum contribution rates to 0.50 percent, if required, beginning in FY 2028.
- ❖ An appropriation of \$250 million to the TRS I trust scheduled for June 30, 2023.

Please see the **Funding Policy and Contribution-Rate Setting Process** section for more information.

### CHANGES IN ASSUMPTIONS OR METHODS

- ❖ This valuation does not include any changes to economic or demographic assumptions since the prior valuation.
- ❖ We made adjustments to TRS I assets, LEOFF 2 assets, and LEOFF 2 participant data to reflect certain material changes occurring after the June 30, 2022, measurement date.

Please see the **Actuarial Assumptions and Methods** section of this report for more information and further method and assumption changes since the last valuation.

## CHANGES IN COVERED POPULATION AND PLAN EXPERIENCE

- ❖ The actual rate of investment return on the Market Value of Assets (MVA), for all plans, was 0.22 percent for fiscal year ending June 30, 2022.
- ❖ All systems experienced a higher-than-expected number of terminations that exceeded prior valuation experience. This is reflective of the Great Resignation<sup>1</sup> that began in 2021 as well as impacts from the [August 9, 2021 mandate by the Governor](#) requiring vaccination for state executive and small cabinet agencies.
- ❖ The active population declined over FY 2022 for the public safety systems of PSERS, LEOFF, and WSPRS.
- ❖ Most systems experienced a larger number of new hires than in prior valuations (except for PSERS and WSPRS). In particular, SERS had very high levels of new hires with roughly 20 percent of the current active population hired during FY 2022.
- ❖ Salaries grew notably more than expected for members of SERS 2/3 and LEOFF 2.

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

## ACTUARIAL LIABILITIES

The following table summarizes key measures of actuarial liability along with the liabilities from last year's valuation. The Present Value of Fully Projected Benefits (PVFB) represents the total expected value of all future benefits payments for current members when discounted at the valuation interest rate. The Actuarial Accrued Liability identifies the portion of the PVFB that has been accrued or "earned" as of the valuation date based on the Entry Age Normal (EAN) actuarial cost method.

Actuarial Liabilities		
(Dollars in Millions)	2022	2021
<b>All Systems</b>		
<b>Present Value of Fully Projected Benefits</b>	\$160,589	\$151,397
<b>Actuarial Accrued Liability</b>	\$130,623	\$123,621
<b>Valuation Interest Rate</b>	7.00%	7.00%

See the **Actuarial Exhibits** section of this report for a summary of actuarial liabilities by system and plan.

<sup>1</sup>Maury Gittleman, "[The 'Great Resignation' in perspective](#)", *Monthly Labor Review*, U.S. Bureau of Labor Statistics, July 2022.

## ASSETS

The following table shows the combined MVA and Actuarial Value of Assets (AVA) along with the approximate rates of investment returns for all the systems combined.

We develop an AVA to limit the volatility in the reported funded status due to annual investment earnings. We smooth (or defer recognition of) the difference between actual and expected annual investment returns over a specific period not to exceed eight years.

Assets		
(Dollars in Millions)	2022	2021
<b>All Systems</b>		
<b>Market Value of Assets (MVA)</b>	\$136,492	\$137,256
<b>Actuarial Value of Assets (AVA)*</b>	125,026	115,005
<b>Member/Employer Contributions</b>	4,246	4,590
<b>Disbursements</b>	(5,720)	(5,331)
<b>Investment Return</b>	273	32,879
<b>Other Revenue</b>	\$202	\$165
<b>MVA Return**</b>	0.22%	31.62%
<b>AVA Return*</b>	9.71%	10.45%

\*The AVA is used in determining contribution rates and funded status.

\*\*Dollar-weighted rate of return on the MVA, net of expenses. Please note the dollar-weighted investment return may differ from the time-weighted investment return published by the WSIB for the same period.

See the **Actuarial Exhibits** section of this report for a summary of assets by system and plan, and for the development of the AVA.

## FUNDED STATUS

The following table displays a summary of combined funded status across all retirement systems included in this report. Please see the **Actuarial Exhibits** section for information on individual systems and plans.

Funded Status		
(Dollars in Millions)	2022	2021
<b>All Systems</b>		
<b>a. Accrued Liability*</b>	\$130,623	\$123,621
<b>b. Market Value of Assets</b>	136,492	137,256
<b>c. Deferred Gains/(Losses)</b>	11,466	22,251
<b>d. Actuarial Value of Assets (b - c)</b>	125,026	115,005
<b>Unfunded Liability (a - d)</b>	<b>\$5,597</b>	<b>\$8,616</b>
<b>Funded Ratio (d / a)</b>	<b>96%</b>	<b>93%</b>

Note: Totals may not agree due to rounding.

\*Liabilities valued using Entry Age Normal cost method.

# I. SUMMARY OF KEY RESULTS

Funded status is one of several measures that helps explain the health of a pension plan. The funded status represents the portion of the actuarial accrued liabilities covered by today's actuarial assets. This means a plan with 100 percent funded status has one dollar in actuarial assets for each dollar of accrued liabilities at the valuation date. A plan with funded status around 100 percent is generally considered to be on target with funding. However, funded status above/below 100 percent is not automatically considered over-funded/at-risk. The funded statuses presented in this report are not sufficient to determine whether a plan has enough assets to terminate or settle the plan obligations. Furthermore, a plan with a funded status above 100 percent may still require ongoing contributions. See the [2021 Actuarial Valuation Report](#) (AVR) (the last "rate-setting valuation") for additional details.

## SUMMARY OF PARTICIPANT DATA

The following table summarizes participant data used in the actuarial valuation for the plan year ending June 30, 2022, along with information from the 2021 valuation. See the **Participant Data** section of this report for participant data summarized by system and plan.

Participant Data		
All Systems	2022	2021
Active Members		
Number	339,636	334,165
Average Annual Salary	\$78,865	\$75,933
Average Attained Age	46.1	46.4
Average Service	10.6	11.1
Retirees and Beneficiaries		
Number	216,729	207,844
Average Annual Benefit	\$25,741	\$25,096
Terminated Members		
Number Vested	70,302	65,657
Number Non-Vested*	168,695	159,398

*\*Members who terminated without a vested lifetime benefit but are eligible for a refund of their employee contributions with interest that currently reside in the trust.*

## KEY ECONOMIC ASSUMPTIONS

This table shows key economic assumptions used in this actuarial valuation. There were no changes in these assumptions from our prior year's valuation. Please see our 2021 EES for information on the development of these assumptions and the asset allocation policy.

Key Assumptions	
All Systems	
Valuation Interest Rate	7.00%
General Salary Growth	3.25%
Inflation	2.75%

## COMMENTARY ON RISK

Actuarial Standards of Practice (ASOP) guide actuaries when performing and communicating their work. [ASOP No. 51 – Assessment and Disclosure of Risk Associated with Measuring Pension Obligations and Determining Pension Plan Contributions](#) 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 hundreds of assumptions, such as the level of returns on future investments, rates of retirement and mortality, and the future salary growth for active members. In some cases, small changes in these assumptions or unexpected plan experience can lead to significant changes in measurements, like the calculation of a plan’s contribution rates or the projection of a plan’s funded status. This can affect plan risk, and these sensitivities can evolve as the plans grow and mature over time. The Legislature’s response to these changes and their action governing the state’s pension system also affects plan risk. To help readers better understand some of these risks and their potential impacts, we have a [Commentary on Risk webpage](#) which can be found on our website.

## FUNDING POLICY AND CONTRIBUTION-RATE SETTING PROCESS

Washington State relies on systematic actuarial funding to finance the ongoing cost of the state retirement systems. Under this financing approach, we reduce the cost of future pension payments by the expected long-term return on invested contributions. The state’s funding policy is found in [Chapter 41.45 Revised Code of Washington \(RCW\) – Actuarial Funding of State Retirement Systems](#). If all actuarial assumptions are realized and all future contributions required under the funding policy are made, we expect the funding policy to accumulate sufficient assets to provide for all future benefits for current members when due.

Under current Washington State law, the PFC reviews, and may adopt, contribution rates developed in odd-numbered year valuations. During their July 2022 meeting, the PFC considered calculated contribution rates from the 2021 AVR and adopted rates for the 2023-25 Biennium. The Legislature may revise those rates through subsequent actions. Furthermore, newly enacted benefit improvements may result in additional supplemental rates effective on September 1. The following table shows key information for the contribution rate-setting process in the current and subsequent biennia.

Contribution Rate-Setting Process			
	Contribution Rate Collection Period*		
	2023-25 Biennium	2025-27 Biennium	2027-29 Biennium
<b>Actuarial Valuation Date</b>	June 30, 2021	June 30, 2023	June 30, 2025
<b>Asset Returns Included</b>	Returns through June 30, 2021	Returns through June 30, 2023	Returns through June 30, 2025
<b>Rates Adopted During</b>	Summer of 2022	Summer of 2024	Summer of 2026

*\*PFC-adopted contribution rates are subject to change by the Legislature.*

We did not calculate contribution rates as part of this non-rate setting valuation.

## PROJECTED CONTRIBUTION RATES

In addition to calculating contribution rates in the 2021 AVR, we also estimate contribution rates for future biennia based upon projected assets and liabilities. These projected rates can be found on our website and will be available in the fall of 2023.

Please note that these projected rates are subject to change based on modifications to plan provisions, assumptions, and the actual experience of the systems.

## SUMMARY OF PLAN PROVISIONS

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Please see the plan provisions section of the [prior valuation](#) for a list of key plan provisions that change frequently. Our website contains information on [COLAs](#) and a [Summary on Plan Provisions](#) that infrequently change.

Not reflected in this report is the reduction of interest applied to Plans 1 and 2 employee contributions to the defined benefit plans from 5.5 percent to 2.75 percent, effective July 1, 2022. This change will primarily impact members who elect to receive a return of contributions upon termination from employment and will first be reflected in the 2023 AVR. Otherwise, no significant plan provisions were excluded from this valuation.



## II. ACTUARIAL EXHIBITS

### KEY RESULTS BY SYSTEM

The following tables show select liability, salary, assets, and funded status measurements for each system and plan as of June 30, 2022.

Actuarial Results by System					
	PERS		TRS		SERS
<i>(Dollars in Millions)</i>	Plan 1	Plan 2/3	Plan 1	Plan 2/3	Plan 2/3
<b>Present Value of Fully Projected Benefits</b>					
Active Members	\$232	\$39,201	\$66	\$22,344	\$6,471
Inactive Members	10,834	27,928	7,979	9,559	4,545
<b>2022 Total</b>	<b>\$11,065</b>	<b>\$67,129</b>	<b>\$8,045</b>	<b>\$31,902</b>	<b>\$11,016</b>
<b>Present Value of Projected Salaries to Current Members (PVS)</b>					
Plan 1	\$134	N/A	\$25	N/A	N/A
Plan 2	N/A	\$88,854	N/A	\$31,821	\$12,576
Plan 3	N/A	26,523	N/A	57,957	11,761
<b>2022 Total</b>	<b>\$134</b>	<b>\$115,376</b>	<b>\$25</b>	<b>\$89,778</b>	<b>\$24,337</b>
<b>Entry Age Normal Actuarial Accrued Liability</b>					
Active Members	\$213	\$27,318	\$63	\$13,636	\$4,167
Inactive Members	10,834	27,928	7,979	9,559	4,545
<b>2022 Total (A)</b>	<b>\$11,047</b>	<b>\$55,247</b>	<b>\$8,041</b>	<b>\$23,195</b>	<b>\$8,712</b>
<b>Assets</b>					
Market Value of Assets	\$9,093	\$58,834	\$7,071	\$23,144	\$8,747
<b>Actuarial Value of Assets (B)</b>	<b>\$8,294</b>	<b>\$53,863</b>	<b>\$6,472</b>	<b>\$21,254</b>	<b>\$8,026</b>

Funded Ratio					
Unfunded Accrued Liability (A) - (B)	\$2,753	\$1,384	\$1,569	\$1,941	\$686
<b>2022 Funded Ratio (B) / (A)</b>	<b>75%</b>	<b>97%</b>	<b>80%</b>	<b>92%</b>	<b>92%</b>
Historical Funded Ratio					
2021	71%	95%	73%	90%	91%
2020	69%	98%	71%	93%	93%
2019	65%	96%	66%	91%	91%
2018	60%	91%	63%	90%	89%
2017	57%	89%	60%	91%	88%
2016	56%	87%	61%	89%	87%
2015	58%	88%	64%	92%	89%

Note: Totals may not agree due to rounding.

## II. ACTUARIAL EXHIBITS

Actuarial Results by System (Continued)					
	PSERS	LEOFF		WSPRS	Total
(Dollars in Millions)	Plan 2	Plan 1	Plan 2	Plan 1/2	All Systems
<b>Present Value of Fully Projected Benefits</b>					
Active Members	\$2,029	\$18	\$14,111	\$686	\$85,157
Inactive Members	272	4,186	8,907	1,223	75,433
<b>2022 Total</b>	<b>\$2,302</b>	<b>\$4,204</b>	<b>\$23,018</b>	<b>\$1,909</b>	<b>\$160,589</b>
<b>Present Value of Projected Salaries to Current Members (PVS)</b>					
Plan 1	N/A	\$2	N/A	\$133	\$293
Plan 2	\$6,671	N/A	\$28,558	977	169,458
Plan 3	N/A	N/A	N/A	N/A	96,241
<b>2022 Total</b>	<b>\$6,671</b>	<b>\$2</b>	<b>\$28,558</b>	<b>\$1,110</b>	<b>\$265,992</b>
<b>Entry Age Normal Actuarial Accrued Liability</b>					
Active Members	\$901	\$18	\$8,430	\$446	\$55,191
Inactive Members	272	4,186	8,907	1,223	75,433
<b>2022 Total (A)</b>	<b>\$1,173</b>	<b>\$4,204</b>	<b>\$17,336</b>	<b>\$1,669</b>	<b>\$130,623</b>
<b>Assets</b>					
Market Value of Assets	\$1,272	\$6,989	\$19,612	\$1,730	\$136,492
<b>Actuarial Value of Assets (B)</b>	<b>\$1,180</b>	<b>\$6,376</b>	<b>\$17,985</b>	<b>\$1,576</b>	<b>\$125,026</b>

Funded Ratio					
Unfunded Accrued Liability (A) - (B)	(\$7)	(\$2,172)	(\$648)	\$93	\$5,597
<b>2022 Funded Ratio (B) / (A)</b>	<b>101%</b>	<b>152%</b>	<b>104%</b>	<b>94%</b>	<b>96%</b>
Historical Funded Ratio					
2021	98%	146%	104%	92%	93%
2020	101%	148%	113%	97%	95%
2019	101%	141%	111%	95%	92%
2018	96%	135%	108%	93%	89%
2017	95%	131%	109%	92%	86%
2016	94%	126%	105%	91%	84%
2015	95%	125%	105%	98%	86%

Note: Totals may not agree due to rounding.

Please keep in mind a few important notes on funded status. A plan with a funded status above 100 percent will still require future contributions if the plan has not yet accumulated sufficient assets to cover the PVFB. As of this valuation, only LEOFF I is projected to have sufficient assets without ongoing contributions. The funded status will change if calculated using assumptions and methods that vary from this report. Please visit our Interactive Reports [webpage](#) for funded status measures that vary by interest rate and asset valuation method under the latest rate setting valuation (2021 AVR).

### PLAN ASSETS

The following tables show the MVA changes from the previous valuation and development of the AVA. We calculated the AVA by smoothing or deferring investment gains or losses and recognizing past deferred assets consistent with funding policy in [RCW 41.45.035](#). Please visit the Asset Valuation Method section in our Actuarial Methods [webpage](#) for more information.

Change in Assets					
(Dollars in Millions)	PERS		TRS		SERS
	Plan 1	Plan 2/3	Plan 1	Plan 2/3	Plan 2/3
<b>Reconciliation of Market Value of Assets</b>					
<b>2021 AVR Market Value</b>	<b>\$9,626</b>	<b>\$59,057</b>	<b>\$7,177</b>	<b>\$22,782</b>	<b>\$8,660</b>
Remove Prior Adjustments to 2021 AVR	0	0	0	0	0
<b>2021 Unadjusted Market Value</b>	<b>\$9,626</b>	<b>\$59,057</b>	<b>\$7,177</b>	<b>\$22,782</b>	<b>\$8,660</b>
Contributions	612	1,429	510	829	334
Investment Returns	24	115	17	43	16
Other Revenue*	2	83	0	72	20
Disbursements	(1,170)	(1,850)	(867)	(582)	(282)
Adjustments to 2022 Market Value	0	0	\$234**	0	0
<b>2022 AVR Market Value (A)</b>	<b>\$9,093</b>	<b>\$58,834</b>	<b>\$7,071</b>	<b>\$23,144</b>	<b>\$8,747</b>
<b>Development of Actuarial Value of Assets</b>					
<b>Deferred Investment Gain/(Loss)**</b>					
Plan Year Ending 6/30/2022	(\$537)	(\$3,424)	(\$403)	(\$1,333)	(\$505)
Plan Year Ending 6/30/2021	1,334	8,116	995	3,122	1,188
Plan Year Ending 6/30/2020	(57)	0	(43)	0	0
Plan Year Ending 6/30/2019	0	0	0	0	0
Plan Year Ending 6/30/2018	0	0	0	0	0
Plan Year Ending 6/30/2017	60	280	51	100	39
Plan Year Ending 6/30/2016	0	0	0	0	0
<b>Total Deferred Investment Gain/(Loss) (B)</b>	<b>\$799</b>	<b>\$4,971</b>	<b>\$599</b>	<b>\$1,890</b>	<b>\$721</b>
<b>2022 Actuarial Value (A) - (B)</b>	<b>\$8,294</b>	<b>\$53,863</b>	<b>\$6,472</b>	<b>\$21,254</b>	<b>\$8,026</b>
<b>Ratio (Actuarial Value/Market Value)</b>	<b>91%</b>	<b>92%</b>	<b>92%</b>	<b>92%</b>	<b>92%</b>

\*Includes additional annuity purchases and service credit purchases.

\*\*Adjusted the Market Value of Assets to reflect \$250 million appropriation scheduled for June 30, 2023, discounted to the valuation date, under ESSB 5294 (Chapter 396, Laws of 2023).

\*\*\*The investment losses for plan year ending 6/30/2022 are smoothed over a 7-year period. Please see the 2021 AVR for a list of smoothing periods for the remaining plan years.

## II. ACTUARIAL EXHIBITS

Change in Assets (Continued)					
	PSERS	LEOFF		WSPRS	Total
(Dollars in Millions)	Plan 2	Plan 1	Plan 2	Plan 1/2	All Systems
<b>Reconciliation of Market Value of Assets</b>					
<b>2021 AVR Market Value</b>	<b>\$1,200</b>	<b>\$7,343</b>	<b>\$19,637</b>	<b>\$1,775</b>	<b>\$137,256</b>
Remove Prior Adjustments to 2021 AVR	0	0	(450)*	0	(450)
<b>2021 Unadjusted Market Value</b>	<b>\$1,200</b>	<b>\$7,343</b>	<b>\$19,187</b>	<b>\$1,775</b>	<b>\$136,807</b>
Contributions	89	0	415	29	4,246
Investment Returns	2	17	37	4	273
Other Revenue**	0	0	22	3	202
Disbursements	(19)	(370)	(499)	(81)	(5,720)
2022 Adjustments to Market Value	0	0	451*	0	684
<b>2022 AVR Market Value (A)</b>	<b>\$1,272</b>	<b>\$6,989</b>	<b>\$19,612</b>	<b>\$1,730</b>	<b>\$136,492</b>
<b>Development of Actuarial Value of Assets</b>					
<b>Deferred Investment Gain/(Loss)***</b>					
Plan Year Ending 6/30/2022	(\$72)	(\$414)	(\$1,112)	(\$101)	(\$7,903)
Plan Year Ending 6/30/2021	160	1,026	2,643	245	18,828
Plan Year Ending 6/30/2020	0	(44)	0	0	(145)
Plan Year Ending 6/30/2019	0	0	0	0	0
Plan Year Ending 6/30/2018	0	0	0	0	0
Plan Year Ending 6/30/2017	4	46	97	10	686
Plan Year Ending 6/30/2016	0	0	0	0	0
<b>Total Deferred Investment Gain/(Loss) (B)</b>	<b>\$91</b>	<b>\$613</b>	<b>\$1,628</b>	<b>\$154</b>	<b>\$11,466</b>
<b>2022 Actuarial Value (A) - (B)</b>	<b>\$1,180</b>	<b>\$6,376</b>	<b>\$17,985</b>	<b>\$1,576</b>	<b>\$125,026</b>
<b>Ratio (Actuarial Value/Market Value)</b>	<b>93%</b>	<b>91%</b>	<b>92%</b>	<b>91%</b>	<b>92%</b>

\*Re-stated the 2021 Market Value of Assets adjustment to include the balance of the Benefit Improvement Account, as of the current valuation date, to reflect the transfer into the LEOFF 2 trust under [SHB 1701](#) (Chapter 125, Laws of 2022).

\*\*Includes additional annuity purchases and service credit purchases.

\*\*\*The investment losses for plan year ending 6/30/2022 is smoothed over a 7-year period. Please see the 2021 AVR for a list of smoothing periods for the remaining plan years.

Investment Gains and (Losses) for Fiscal Year					
(Dollars in Millions)	PERS 1	PERS 2/3*	TRS 1	TRS 2/3*	SERS 2/3*
<b>a. 2021 Market Value**</b>	\$9,572	\$59,017	\$7,136	\$22,774	\$8,650
<b>b. Total Cash Flow</b>	(538)	(351)	(350)	298	69
<b>c. 2022 Market Value**</b>	9,059	58,791	6,804	23,122	8,737
<b>d. Actual Return (c - b - a)</b>	<b>\$25</b>	<b>\$125</b>	<b>\$18</b>	<b>\$50</b>	<b>\$18</b>
<b>e. Weighted Asset Amount</b>	\$9,314	\$58,860	\$6,971	\$22,926	\$8,681
<b>f. Expected Return (7.0% x e)</b>	652	4,120	488	1,605	608
<b>g. Investment Gain/(Loss) for Prior Year (d - f)</b>	(\$627)	(\$3,995)	(\$470)	(\$1,555)	(\$589)
<b>h. Dollar-Weighted Rate of Return**</b>	0.27%	0.21%	0.25%	0.22%	0.21%

Note: Totals may not agree due to rounding.

\*Excludes defined contribution portion of Plan 3 assets.

\*\*Source: Washington State Investment Board.

Investment Gains and (Losses) for Fiscal Year (Continued)					
(Dollars in Millions)	PSERS 2	LEOFF 1	LEOFF 2	WSPRS 1/2	Total
<b>a. 2021 Market Value*</b>	\$1,199	\$7,342	\$19,121	\$1,773	\$136,583
<b>b. Total Cash Flow</b>	69	(372)	(65)	(50)	(1,290)
<b>c. 2022 Market Value*</b>	1,270	6,988	19,095	1,727	135,593
<b>d. Actual Return (c - b - a)</b>	<b>\$2</b>	<b>\$18</b>	<b>\$39</b>	<b>\$4</b>	<b>\$299</b>
<b>e. Weighted Asset Amount</b>	\$1,233	\$7,160	\$19,094	\$1,749	\$135,988
<b>f. Expected Return (7.0% x e)</b>	86	501	1,337	122	9,519
<b>g. Investment Gain/(Loss) for Prior Year (d - f)</b>	(\$84)	(\$483)	(\$1,297)	(\$118)	(\$9,220)
<b>h. Dollar-Weighted Rate of Return*</b>	0.16%	0.25%	0.21%	0.23%	0.22%

Note: Totals may not agree due to rounding.

\*Source: Washington State Investment Board.

Additional information on the Retirement Commingled Trust Fund, including the asset allocation policy, can be found in the most recent EES.

### ACTUARIAL GAIN/LOSS

Actuaries use gain/loss analysis to compare actual changes to assumed changes from various sources with respect to assets, liabilities, and salaries. We also use this analysis to determine:

- ❖ The accuracy of our valuation model and annual processing.
- ❖ Why unfunded liability changed.
  - We observe changes to contribution rates during rate-setting AVRs.
- ❖ The reasonableness of the actuarial assumptions.

Actuarial gains will reduce unfunded liabilities and increase funded status; actuarial losses will increase unfunded liabilities and decrease funded status. Under a reasonable set of actuarial assumptions, actuarial gains and losses will offset over long-term experience periods. The following tables display actuarial gains and losses expressed as the change in unfunded PVFB. Unfunded PVFB is the difference between PVFB (today's value of all future benefits for current members when discounted at the valuation

## II. ACTUARIAL EXHIBITS

interest rate) and the AVA. It is used in the development of normal cost contribution rates in rate-setting valuations. This is a useful metric for actuarial gain/loss because it reflects changes in liabilities during FY 2022 along with any changes in plan assets.

Change in Unfunded PVFB by Source					
(Dollars in Millions)	PERS		TRS		SERS
	Plan 1	Plan 2/3	Plan 1	Plan 2/3	Plan 2/3
<b>2021 Unfunded PVFB Before Laws of 2022</b>	<b>\$3,152</b>	<b>\$13,895</b>	<b>\$2,093</b>	<b>\$10,158</b>	<b>\$2,648</b>
<b>Expected Change</b>	(163)	(721)	(107)	(238)	(165)
<b>Expected 2022 Unfunded PVFB</b>	<b>\$2,989</b>	<b>\$13,174</b>	<b>\$1,986</b>	<b>\$9,920</b>	<b>\$2,483</b>
<b>Liabilities</b>					
<b>Salaries</b>	\$3	\$353	\$0	\$250	\$312
<b>Termination</b>	(0)	(769)	0	(389)	(183)
<b>Retirement</b>	2	17	0	16	3
<b>Disability</b>	0	17	0	6	2
<b>Mortality</b>	(63)	(51)	(22)	10	1
<b>Growth/Return to Work</b>	1	1,755	0	1,283	554
<b>New TAP 3 Annuity Purchases</b>	0	40	0	68	18
<b>Other Liabilities</b>	22	56	(2)	(20)	13
<b>Total Liability Gains/(Losses)</b>	<b>(\$35)</b>	<b>\$1,417</b>	<b>(\$23)</b>	<b>\$1,223</b>	<b>\$721</b>
<b>Assets*</b>					
<b>Contributions</b>	(\$243)	\$163	(\$266)	\$80	\$2
<b>New TAP 3 Annuity Purchases</b>	N/A	(38)	N/A	(64)	(18)
<b>Disbursements</b>	(4)	(48)	2	(28)	(13)
<b>Investment Returns</b>	(249)	(1,298)	(195)	(489)	(188)
<b>Total Asset Gains/(Losses)</b>	<b>(\$496)</b>	<b>(\$1,221)</b>	<b>(\$459)</b>	<b>(\$501)</b>	<b>(\$216)</b>
<b>Incremental Changes</b>					
<b>Plan Change</b>	\$151	\$0	\$146	\$0	\$0
<b>Method Change</b>	0	0	0	0	0
<b>Assumption Change</b>	0	0	0	0	0
<b>Correction Change</b>	0	0	0	0	0
<b>Experience Study Change</b>	0	0	0	0	0
<b>Other Changes</b>	0	0	(234)**	0	0
<b>Total Incremental Changes Gains/(Losses)</b>	<b>\$151</b>	<b>\$0</b>	<b>(\$87)</b>	<b>\$0</b>	<b>\$0</b>
<b>Other Gains/(Losses)</b>	0	0	(0)	0	(0)
<b>2022 Results</b>					
<b>Total Change</b>	<b>(\$380)</b>	<b>\$196</b>	<b>(\$570)</b>	<b>\$722</b>	<b>\$505</b>
<b>2022 Preliminary Unfunded PVFB</b>	<b>\$2,609</b>	<b>\$13,370</b>	<b>\$1,416</b>	<b>\$10,642</b>	<b>\$2,988</b>
<b>Laws of 2023</b>	\$163	(\$104)	\$157	\$6	\$1
<b>2022 Adjusted Unfunded PVFB</b>	<b>\$2,771</b>	<b>\$13,266</b>	<b>\$1,573</b>	<b>\$10,648</b>	<b>\$2,989</b>

Note: Totals may not agree due to rounding.

\*Asset Gain/Loss performed on AVA not MVA.

\*\*Adjusted assets to reflect \$250 million appropriation scheduled for June 30, 2023, discounted to the valuation date, under ESSB 5294 (Chapter 396, Laws of 2023).

## II. ACTUARIAL EXHIBITS

Change in Unfunded PVFB by Source (Continued)				
	PSERS	LEOFF		WSPRS
(Dollars in Millions)	Plan 1	Plan 1	Plan 2	Plan 1/2
<b>2021 Unfunded PVFB Before Laws of 2022</b>	<b>\$1,035</b>	<b>(\$1,933)*</b>	<b>\$4,580*</b>	<b>\$407</b>
Expected Change	(38)	(135)	(113)	(12)
<b>Expected 2022 Unfunded PVFB</b>	<b>\$997</b>	<b>(\$2,068)</b>	<b>\$4,467</b>	<b>\$394</b>
Liabilities				
Salaries	\$8	(\$0)	\$475	(\$7)
Termination	(173)	0	(203)	(53)
Retirement	(1)	(0)	58	(8)
Disability	1	0	1	1
Mortality	1	(27)	(2)	4
Growth/Return to Work	127	0	605	16
Other Liabilities	(9)	104**	37	14
<b>Total Liability Gains/(Losses)</b>	<b>(\$47)</b>	<b>\$77</b>	<b>\$971</b>	<b>(\$34)</b>
Assets***				
Contributions	18	(0)	(18)	8
Disbursements	8	7	(1)	2
Investment Returns	(23)	(187)	(400)	(40)
<b>Total Asset Gains/(Losses)</b>	<b>\$3</b>	<b>(\$180)</b>	<b>(\$419)</b>	<b>(\$31)</b>
Incremental Changes				
Plan Change	13	0	0	0
Method Change	0	0	0	0
Assumption Change	0	0	0	0
Correction Change	0	0	0	0
Experience Study Change	0	0	0	0
Other Changes	0	0	0	0
<b>Total Incremental Changes Gains/(Losses)</b>	<b>\$13</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
Other Gains/(Losses)	0	0	(0)	(0)
2022 Results				
<b>Total Change</b>	<b>(\$31)</b>	<b>(\$104)</b>	<b>\$552</b>	<b>(\$65)</b>
<b>2022 Preliminary Unfunded PVFB</b>	<b>\$966</b>	<b>(\$2,172)</b>	<b>\$5,019</b>	<b>\$329</b>
Laws of 2023	\$155	\$0	\$14	\$3
<b>2022 Adjusted Unfunded PVFB</b>	<b>\$1,121</b>	<b>(\$2,172)</b>	<b>\$5,033</b>	<b>\$332</b>

Note: Totals may not agree due to rounding.

\*Includes the liabilities from benefit improvements under SHB 1701 (Chapter 125, Laws of 2022) and [Substitute Senate Bill 5791](#) (Chapter 168, Laws of 2022).

\*\*Includes actuarial gains or losses due to inflation. LEOFF 1 annuitants receive COLAs fully indexed to Seattle area Consumer Price Index.

\*\*\*Asset Gain/Loss performed on AVA not MVA.



## III. PARTICIPANT DATA

The Department of Retirement Systems administers nine retirement systems for state and local public employees. Retirement system membership is determined according to the participant’s occupation and employer. Employees covered by each system are defined in separate chapters of the RCW.

<p><b>PERS</b>—Public Employees’ Retirement System  <a href="#">Chapter 41.40 RCW</a></p>	<p>State employees; employees of all counties and most cities (some exceptions are Tacoma, Seattle, and Spokane); non-teaching employees of institutions of higher learning and community colleges; employees of ports, service districts, Energy Northwest, public utility districts, and judges first elected or appointed after June 30, 1988.</p>
<p><b>TRS</b>—Teachers’ Retirement System  <a href="#">Chapter 41.32 RCW</a></p>	<p>Certificated teachers; administrators; and educational staff associates.</p>
<p><b>SERS</b>—School Employees’ Retirement System  <a href="#">Chapter 41.35 RCW</a></p>	<p>Classified school district employees and educational service district employees.</p>
<p><b>PSERS</b>—Public Safety Employees’ Retirement System  <a href="#">Chapter 41.37 RCW</a></p>	<p>Correction officers (state, state community, county, city, and local community); state park rangers; enforcement officers with the Liquor and Cannabis Board, Washington State Patrol (commercial vehicle), Gambling Commission, and the Department of Natural Resources; public safety telecommunicators; security staff and nurses working at certain state institutions and local correctional departments.</p>
<p><b>LEOFF</b>—Law Enforcement Officers’ and Fire Fighters’ Retirement System  <a href="#">Chapter 41.26 RCW</a></p>	<p>Fire fighters; emergency medical technicians; law enforcement officers including sheriffs; university, port, city police officers, and enforcement officers with the Department of Fish and Wildlife.</p>
<p><b>WSPRS</b>—Washington State Patrol Retirement System  <a href="#">Chapter 43.43 RCW</a></p>	<p>Commissioned officers of the Washington State Patrol.</p>

The following tables show participant data changes from the prior valuation to this year’s valuation. We divide the participant data into two main categories:

- ❖ **Actives** — Members actively employed and accruing benefits in the plan.
- ❖ **Annuitants** — Members and beneficiaries receiving post-retirement benefits from the plan.

We also provide the ratio of active to annuitant members. This is one way to track overall plan maturity, and its associated risks, with a smaller ratio indicating a more mature plan. Risks can emerge over time just by the nature of a pension plan growing or maturing. For example, as a plan matures – with fewer active, contributing members relative to the retiree population – the plan’s obligations become larger relative to its source of contributions. Additional [Commentary on Risk](#) can be found on our website.

### III. PARTICIPANT DATA

Reconciliation of Active and Annuitant Data								
	PERS				TRS			
	Plan 1	Plan 2	Plan 3	Total	Plan 1	Plan 2	Plan 3	Total
<b>2021 Actives</b>	875	124,648	38,109	163,632	164	24,166	55,127	79,457
Transfers*	0	(31)	31	0	0	(6)	6	0
Hires/Rehires	24	19,804	5,086	24,914	1	5,116	3,552	8,669
New Retirees	(232)	(3,990)	(607)	(4,829)	(53)	(327)	(1,206)	(1,586)
Deaths	(4)	(257)	(56)	(317)	0	(20)	(45)	(65)
Terminations	(30)	(12,933)	(5,336)	(18,299)	(1)	(1,888)	(3,276)	(5,165)
<b>2022 Actives</b>	<b>633</b>	<b>127,241</b>	<b>37,227</b>	<b>165,101</b>	<b>111</b>	<b>27,041</b>	<b>54,158</b>	<b>81,310</b>
<b>2021 Annuitants</b>	42,726	63,481	7,157	113,364	30,683	6,571	16,892	54,146
New Retirees	305	5,935	943	7,183	77	530	2,054	2,661
Annuitant Deaths	(2,347)	(1,774)	(107)	(4,228)	(1,316)	(119)	(155)	(1,590)
New Survivors	332	450	65	847	216	24	83	323
Other	(21)	(31)	(4)	(56)	(10)	(5)	(4)	(19)
<b>2022 Annuitants</b>	<b>40,995</b>	<b>68,061</b>	<b>8,054</b>	<b>117,110</b>	<b>29,650</b>	<b>7,001</b>	<b>18,870</b>	<b>55,521</b>
<b>Ratio Actives to Annuitants</b>	<b>0.02</b>	<b>1.87</b>	<b>4.62</b>	<b>1.41</b>	<b>&lt;0.01</b>	<b>3.86</b>	<b>2.87</b>	<b>1.46</b>

Note: Figures exclude legal order payees entitled to a portion of member benefits under a court-ordered property division.

\*Excludes new members who initially default to Plan 2 at hire and subsequently elect to join Plan 3 within the same valuation year.

Reconciliation of Active and Annuitant Data (Continued)				
	SERS			PSERS
	Plan 2	Plan 3	Total	Plan 2
<b>2021 Actives</b>	28,686	33,509	62,195	9,132
Transfers*	(18)	18	0	0
Hires/Rehires	9,641	3,768	13,409	1,130
New Retirees	(867)	(926)	(1,793)	(106)
Deaths	(64)	(61)	(125)	(17)
Terminations	(3,853)	(4,482)	(8,335)	(1,817)
<b>2022 Actives</b>	<b>33,525</b>	<b>31,826</b>	<b>65,351</b>	<b>8,322</b>
<b>2021 Annuitants</b>	12,219	12,320	24,539	459
New Retirees	1,412	1,593	3,005	146
Annuitant Deaths	(240)	(193)	(433)	(4)
New Survivors	75	74	149	7
Other	(3)	(9)	(12)	0
<b>2022 Annuitants</b>	<b>13,463</b>	<b>13,785</b>	<b>27,248</b>	<b>608</b>
<b>Ratio Actives to Annuitants</b>	<b>2.49</b>	<b>2.31</b>	<b>2.40</b>	<b>13.69</b>

Note: Figures exclude legal order payees entitled to a portion of member benefits under a court-ordered property division.

\*Excludes new members who initially default to Plan 2 at hire and subsequently elect to join Plan 3 within the same valuation year.

### III. PARTICIPANT DATA

Reconciliation of Active and Annuitant Data (Continued)							
	LEOFF			WSPRS			All Systems
	Plan 1	Plan 2	Total	Plan 1	Plan 2	Total	
<b>2021 Actives</b>	13	18,683	18,696	318	735	1,053	334,165
Hires/Rehires	0	1,770	1,770	0	47	47	49,939
New Retirees	(2)	(907)	(909)	(65)	(1)	(66)	(9,289)
Deaths	0	(26)	(26)	(1)	(1)	(2)	(552)
Terminations	0	(895)	(895)	(10)	(106)	(116)	(34,627)
<b>2022 Actives</b>	<b>11</b>	<b>18,625</b>	<b>18,636</b>	<b>242</b>	<b>674</b>	<b>916</b>	<b>339,636</b>
<b>2021 Annuitants</b>	6,516	7,574	14,090	1,243	3	1,246	207,844
New Retirees	2	1,061	1,063	69	1	70	14,128
Annuitant Deaths	(332)	(69)	(401)	(20)	0	(20)	(6,676)
New Survivors	147	46	193	17	1	18	1,537
Other	(2)	(15)	(17)	0	0	0	(104)
<b>2022 Annuitants</b>	<b>6,331</b>	<b>8,597</b>	<b>14,928</b>	<b>1,309</b>	<b>5</b>	<b>1,314</b>	<b>216,729</b>
<b>Ratio Actives to Annuitants</b>	<b>&lt;0.01</b>	<b>2.17</b>	<b>1.25</b>	<b>0.18</b>	<b>134.80</b>	<b>0.70</b>	<b>1.57</b>

Note: Figures exclude legal order payees entitled to a portion of member benefits under a court-ordered property division.

## SUMMARY OF PLAN PARTICIPANTS

Summary of Plan Participants								
PERS	2022				2021			
	Plan 1	Plan 2	Plan 3	Plans 2/3	Plan 1	Plan 2	Plan 3	Plans 2/3
<b>Active Members</b>								
<b>Number</b>	633	127,241	37,227	164,468	875	124,648	38,109	162,757
<b>Total Salaries (Dollars in Millions)</b>	\$46	\$9,905	\$2,826	\$12,731	\$62	\$9,430	\$2,739	\$12,169
<b>Average Age</b>	69.6	46.7	44.6	46.2	68.4	47.3	44.2	46.6
<b>Average Service</b>	26.3	10.9	8.9	10.5	26.2	11.6	8.8	10.9
<b>Average Salary</b>	\$72,662	\$77,844	\$75,924	\$77,410	\$70,726	\$75,650	\$71,871	\$74,765
<b>Terminated Members</b>								
<b>Vested</b>	196	30,662	7,340	38,002	240	29,001	6,705	35,706
<b>Non-Vested*</b>	2,160	127,116	0	127,116	2,275	122,008	0	122,008
<b>Total Terminated</b>	<b>2,356</b>	<b>157,778</b>	<b>7,340</b>	<b>165,118</b>	<b>2,515</b>	<b>151,009</b>	<b>6,705</b>	<b>157,714</b>
<b>Annuitants</b>								
<b>Service Retired**</b>	35,324	62,032	7,508	69,540	36,920	57,657	6,674	64,331
<b>Disability Retired</b>	600	1,703	97	1,800	655	1,776	96	1,872
<b>Survivors</b>	5,071	4,326	449	4,775	5,151	4,048	387	4,435
<b>Total Annuitants</b>	<b>40,995</b>	<b>68,061</b>	<b>8,054</b>	<b>76,115</b>	<b>42,726</b>	<b>63,481</b>	<b>7,157</b>	<b>70,638</b>
<b>Avg. Monthly Benefit, All Annuitants***</b>	\$2,327	\$2,083	\$1,142	\$1,984	\$2,284	\$1,986	\$1,087	\$1,895
<b>Number of New Service Retirees</b>	300	5,890	940	6,830	378	5,288	786	6,074
<b>Avg. Benefit, New Service Retirees***</b>	\$2,628	\$2,622	\$1,421	\$2,457	\$2,712	\$2,517	\$1,230	\$2,351

Note: Totals may not agree due to rounding. Figures exclude legal order payees entitled to a portion of member benefits under a court-ordered property division.

\*Members who terminated without a vested lifetime benefit but are eligible for a refund of their employee contributions with interest that currently reside in the trust.

\*\*Includes retirements from active and terminated with vested status.

\*\*\*Excludes additional Total Allocation Portfolio (TAP) annuities purchased from Plan 3 defined contribution accounts. For more information on TAP annuities, please see the table at the end of this section.

### III. PARTICIPANT DATA

Summary of Plan Participants (Continued)								
TRS	2022				2021			
	Plan 1	Plan 2	Plan 3	Plans 2/3	Plan 1	Plan 2	Plan 3	Plans 2/3
<b>Active Members</b>								
<b>Number</b>	111	27,041	54,158	81,199	164	24,166	55,127	79,293
<b>Total Salaries (Dollars in Millions)</b>	\$12	\$2,346	\$5,579	\$7,925	\$18	\$2,027	\$5,422	\$7,449
<b>Average Age</b>	71.3	41.3	47.0	45.1	70.1	41.7	46.8	45.3
<b>Average Service</b>	34.8	7.3	14.9	12.4	34.4	7.8	14.7	12.6
<b>Average Salary</b>	\$109,417	\$86,761	\$103,015	\$97,602	\$110,479	\$83,869	\$98,350	\$93,936
<b>Terminated Members</b>								
<b>Vested</b>	63	3,465	8,769	12,234	82	3,042	8,503	11,545
<b>Non-Vested*</b>	186	8,396	0	8,396	224	7,852	0	7,852
<b>Total Terminated</b>	<b>249</b>	<b>11,861</b>	<b>8,769</b>	<b>20,630</b>	<b>306</b>	<b>10,894</b>	<b>8,503</b>	<b>19,397</b>
<b>Annuitants</b>								
<b>Service Retired**</b>	26,435	6,628	18,033	24,661	27,440	6,205	16,126	22,331
<b>Disability Retired</b>	378	66	94	160	403	75	96	171
<b>Survivors</b>	2,837	307	743	1,050	2,840	291	670	961
<b>Total Annuitants</b>	<b>29,650</b>	<b>7,001</b>	<b>18,870</b>	<b>25,871</b>	<b>30,683</b>	<b>6,571</b>	<b>16,892</b>	<b>23,463</b>
<b>Avg. Monthly Benefit, All Annuitants***</b>	\$2,385	\$2,381	\$1,486	\$1,728	\$2,362	\$2,282	\$1,411	\$1,655
<b>Number of New Service Retirees</b>	74	529	2,048	2,577	108	489	1,694	2,183
<b>Avg. Benefit, New Service Retirees***</b>	\$3,605	\$2,979	\$1,885	\$2,110	\$3,876	\$2,669	\$1,714	\$1,928

Note: Totals may not agree due to rounding. Figures exclude legal order payees entitled to a portion of member benefits under a court-ordered property division.

\*Members who terminated without a vested lifetime benefit but are eligible for a refund of their employee contributions with interest that currently reside in the trust.

\*\*Includes retirements from active and terminated with vested status.

\*\*\*Excludes additional TAP annuities purchased from Plan 3 defined contribution accounts. For more information on TAP annuities, please see the table at the end of this section.

### III. PARTICIPANT DATA

Summary of Plan Participants (Continued)						
SERS	2022			2021		
	Plan 2	Plan 3	Plans 2/3	Plan 2	Plan 3	Plans 2/3
<b>Active Members</b>						
<b>Number</b>	33,525	31,826	65,351	28,686	33,509	62,195
<b>Total Salaries (Dollars in Millions)</b>	\$1,441	\$1,461	\$2,902	\$1,185	\$1,403	\$2,588
<b>Average Age</b>	47.2	49.9	48.5	49.0	49.6	49.3
<b>Average Service</b>	7.2	10.1	8.6	8.5	10.1	9.3
<b>Average Salary</b>	\$42,981	\$45,893	\$44,399	\$41,295	\$41,873	\$41,606
<b>Terminated Members</b>						
<b>Vested</b>	7,193	9,911	17,104	6,662	9,405	16,067
<b>Non-Vested*</b>	22,259	0	22,259	19,773	0	19,773
<b>Total Terminated</b>	<b>29,452</b>	<b>9,911</b>	<b>39,363</b>	<b>26,435</b>	<b>9,405</b>	<b>35,840</b>
<b>Annuitants</b>						
<b>Service Retired**</b>	12,572	13,168	25,740	11,385	11,756	23,141
<b>Disability Retired</b>	269	86	355	269	90	359
<b>Survivors</b>	622	531	1,153	565	474	1,039
<b>Total Annuitants</b>	<b>13,463</b>	<b>13,785</b>	<b>27,248</b>	<b>12,219</b>	<b>12,320</b>	<b>24,539</b>
<b>Avg. Monthly Benefit, All Annuitants***</b>	\$1,038	\$588	\$810	\$1,006	\$566	\$785
<b>Number of New Service Retirees</b>	1,402	1,587	2,989	1,280	1,275	2,555
<b>Avg. Benefit, New Service Retirees***</b>	\$1,137	\$682	\$895	\$1,052	\$629	\$841

Note: Totals may not agree due to rounding. Figures exclude legal order payees entitled to a portion of member benefits under a court-ordered property division.

\*Members who terminated without a vested lifetime benefit but are eligible for a refund of their employee contributions with interest that currently reside in the trust.

\*\*Includes retirements from active and terminated with vested status.

\*\*\*Excludes additional TAP annuities purchased from Plan 3 defined contribution accounts. For more information on TAP annuities, please see the table at the end of this section.

Summary of Plan Participants <i>(Continued)</i>		
PSERS	2022	2021
<b>Active Members</b>		
<b>Number</b>	8,322	9,132
<b>Total Salaries</b> <i>(Dollars in Millions)</i>	\$661	\$684
<b>Average Age</b>	41.7	40.8
<b>Average Service</b>	6.3	5.8
<b>Average Salary</b>	\$79,452	\$74,920
<b>Terminated Members</b>		
<b>Vested</b>	1,094	796
<b>Non-Vested*</b>	5,571	4,521
<b>Total Terminated</b>	<b>6,665</b>	<b>5,317</b>
<b>Annuitants</b>		
<b>Service Retired**</b>	565	424
<b>Disability Retired</b>	23	22
<b>Survivors</b>	20	13
<b>Total Annuitants</b>	<b>608</b>	<b>459</b>
<b>Avg. Monthly Benefit, All Annuitants</b>	\$1,184	\$1,092
<b>Number of New Service Retirees</b>	144	92
<b>Avg. Benefit, New Service Retirees</b>	\$1,438	\$1,424

*Note: Totals may not agree due to rounding. Figures exclude legal order payees entitled to a portion of member benefits under a court-ordered property division.*

*\*Members who terminated without a vested lifetime benefit but are eligible for a refund of their employee contributions with interest that currently reside in the trust.*

*\*\*Includes retirements from active and terminated with vested status.*

### III. PARTICIPANT DATA

Summary of Plan Participants (Continued)						
LEOFF	2022			2021		
	Plan 1	Plan 2	Total	Plan 1	Plan 2	Total
<b>Active Members</b>						
<b>Number</b>	11	18,625	18,636	13	18,683	18,696
<b>Total Salaries (Dollars in Millions)</b>	\$1	\$2,405	\$2,406	\$2	\$2,289	\$2,291
<b>Average Age</b>	69.4	41.7	41.7	68.3	42.3	42.4
<b>Average Service</b>	44.8	12.4	12.4	43.2	13.1	13.1
<b>Average Salary</b>	\$129,212	\$129,107	\$129,107	\$122,559	\$122,513	\$122,513
<b>Terminated Members</b>						
<b>Vested</b>	0	1,437	1,437	0	1,115	1,115
<b>Non-Vested*</b>	23	2,872	2,895	26	2,626	2,652
<b>Total Terminated</b>	<b>23</b>	<b>4,309</b>	<b>4,332</b>	<b>26</b>	<b>3,741</b>	<b>3,767</b>
<b>Annuitants**</b>						
<b>Service Retired***</b>	2,073	7,606	9,679	2,172	6,698	8,870
<b>Disability Retired</b>	2,524	615	3,139	2,658	543	3,201
<b>Survivors</b>	1,734	376	2,110	1,686	333	2,019
<b>Total Annuitants</b>	<b>6,331</b>	<b>8,597</b>	<b>14,928</b>	<b>6,516</b>	<b>7,574</b>	<b>14,090</b>
<b>Avg. Monthly Benefit, All Annuitants</b>	\$4,953	\$4,906	\$4,926	\$4,719	\$4,684	\$4,692
<b>Number of New Service Retirees</b>	2	980	982	2	821	823
<b>Avg. Benefit, New Service Retirees</b>	\$9,235	\$5,888	\$5,895	\$10,109	\$5,597	\$5,608

Note: Totals may not agree due to rounding. Figures exclude legal order payees entitled to a portion of member benefits under a court-ordered property division.

\*Members who terminated without a vested lifetime benefit but are eligible for a refund of their employee contributions with interest that currently reside in the trust.

\*\*Includes adjustments to reflect newly retired members who selected a higher retirement benefit in lieu of a lump sum payment under SHB 1701 (Chapter 125, Laws of 2022).

\*\*\*Includes retirements from active and terminated with vested status.

### III. PARTICIPANT DATA

Summary of Plan Participants (Continued)						
WSPRS	2022			2021		
	Plan 1	Plan 2	Total	Plan 1	Plan 2	Total
<b>Active Members</b>						
Number	242	674	916	318	735	1,053
Total Salaries (Dollars in Millions)	\$31	\$71	\$102	\$40	\$75	\$115
Average Age	50.8	35.4	39.5	50.4	34.7	39.5
Average Service	23.9	9.2	13.1	23.6	8.6	13.1
Average Salary	\$129,205	\$104,758	\$111,217	\$126,512	\$101,438	\$109,010
<b>Terminated Members</b>						
Vested	69	103	172	62	44	106
Non-Vested*	12	100	112	16	77	93
Disability Retired**	32	0	32	35	0	35
<b>Total Terminated</b>	<b>113</b>	<b>203</b>	<b>316</b>	<b>113</b>	<b>121</b>	<b>234</b>
<b>Annuitants</b>						
Service Retired***	1,106	3	1,109	1,054	2	1,056
Survivors	203	2	205	189	1	190
<b>Total Annuitants</b>	<b>1,309</b>	<b>5</b>	<b>1,314</b>	<b>1,243</b>	<b>3</b>	<b>1,246</b>
Avg. Monthly Benefit, All Annuitants	\$5,153	\$1,668	\$5,140	\$4,996	\$959	\$4,851
Number of New Service Retirees	69	1	70	56	1	57
Avg. Benefit, New Service Retirees	\$6,149	N/A	\$6,099	\$6,483	N/A	\$6,378

Note: Totals may not agree due to rounding. Figures exclude legal order payees entitled to a portion of member benefits under a court-ordered property division.

\*Members who terminated without a vested lifetime benefit but are eligible for a refund of their employee contributions with interest that currently reside in the trust.

\*\*Benefits provided outside of pension funds.

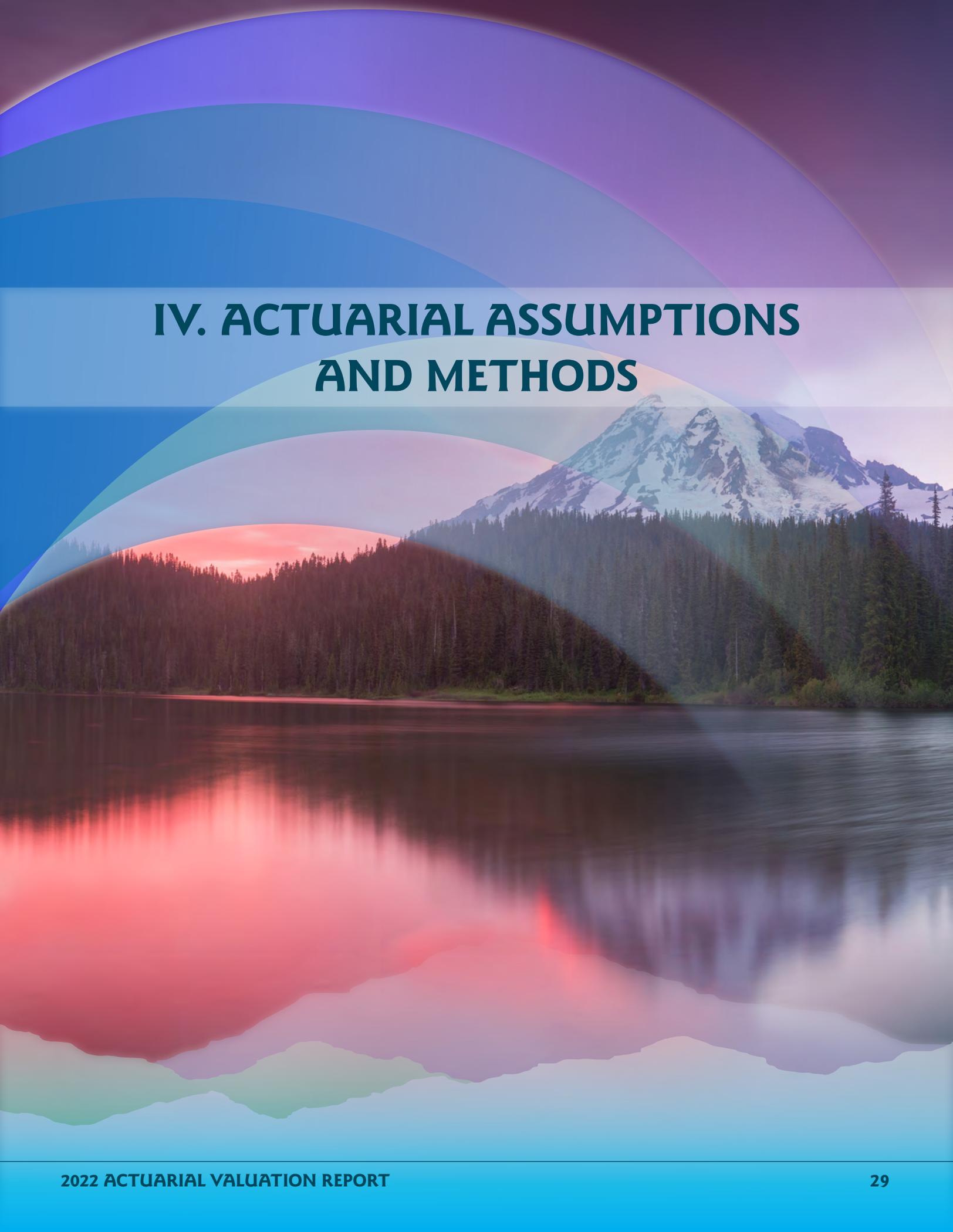
\*\*\*Includes retirements from active and terminated with vested status.

### III. PARTICIPANT DATA

The following table provides summary statistics for Plan 3 retirees of PERS, TRS, and SERS purchasing TAP annuities. These annuities are purchased at retirement from a member's defined contribution account. Assets and liabilities for TAP annuities are included in our actuarial measurements. Please see the [DRS website](#) for more information on TAP and other types of annuities offered by the retirement systems.

Summary of Plan 3 Members with TAP Annuities			
	PERS 3	TRS 3	SERS 3
<b>Number</b>	1,075	2,220	1,251
<b>Average Age</b>	67.8	68.7	69.9
<b>Avg. Monthly TAP Annuity Benefit, All Annuitants</b>	\$1,467	\$1,575	\$792
<b>Number of New Purchasers in FY 2022</b>	117	182	98
<b>Avg. Purchase Price, New Purchasers*</b>	\$328,500	\$350,400	\$179,300
<b>Avg. Monthly Benefit, New Purchasers</b>	\$1,742	\$1,800	\$967

*\*Purchased with funds from the member's Plan 3 defined contribution account.*



## **IV. ACTUARIAL ASSUMPTIONS AND METHODS**

## IV. ACTUARIAL ASSUMPTIONS AND METHODS

The section below lists the methods and assumptions that change regularly or are new since the last valuation report. Please see our Actuarial Methods webpage for descriptions of the actuarial cost methods and asset valuation method we use for this valuation, and please see our [Actuarial Assumptions](#) webpage for descriptions of all remaining assumptions.

### CHANGES IN METHODS AND ASSUMPTIONS SINCE THE LAST VALUATION

- ❖ Consistent with ESSB 5294 (Chapter 396, Laws of 2023), we adjusted the TRS Plan 1 assets to reflect an appropriated \$250 million lump sum contribution scheduled to occur June 30, 2023. This is an additional contribution, over and above, [the standard normal cost and UAAL rates](#) collected over retirement system salaries.
- ❖ We adjusted LEOFF 2 liabilities and plan assets in relation to SHB 1701 (Chapter 125, Laws of 2022). This bill provided an increase to pension benefits, moved assets from the LEOFF 2 Benefit Improvement Account (BIA) to the trust fund making those assets available to fund current law benefits, and adjusted minimum contribution rate policy. We originally incorporated the impacts of this legislation in the 2021 AVR. For this year's valuation, we made the following adjustments:
  - Using supplemental information provided by DRS, we modified the 2022 participant data file to reflect higher retirement benefits for newly retired members of LEOFF 2 who selected the tiered service credit multiplier. This modification accounts for the higher monthly benefits, and retroactive payments to the date of retirement, that were provided to these members near the start of calendar year 2023.
  - We included the balance of the LEOFF 2 BIA as of June 30, 2022, to model the transfer to the LEOFF 2 trust directed under SHB 1701 (Chapter 125, Laws of 2022). Previously, we relied on the June 30, 2021, BIA balance.
  - We updated liabilities associated with retiree lump sum benefit payments based on actual payment information supplied by DRS and the new valuation date.
- ❖ Consistent with the 2021 AVR, we continue to include an adjustment to the WSPRS general salary growth assumption for FY 2023 of 10.00 percent to reflect the increases included in the 2022 supplemental budget ([Chapter 297, Laws of 2022](#), Sec 913 [2] and 914 [2]). It's our understanding this increase will apply to all troopers and will be granted in addition to other salary increases for experience and promotions. Therefore, we did not adjust our service-based salary increases assumption.
- ❖ We updated our valuation programming to reflect legislation passed during the 2022 Legislative Session.
  - Cost-of-living adjustment programming to reflect PERS and TRS Plan 1 annuitants who are not receiving a basic minimum, alternate minimum, or temporary disability benefit with a one-time permanent 3 percent increase to their monthly benefit, not to exceed a maximum of \$110 per month ([Chapter 52, Laws of 2022](#)).
  - Disability benefit programming to reflect an enhanced disability benefit for PSERS members who experience a qualifying catastrophic disability on the job ([Chapter 22, Laws of 2022](#)). Please see our fiscal note for the details on these new plan provisions and our [website](#) for changes in our assumptions.
- ❖ We considered but did not make changes to our model to reflect the recent period of high inflation. With the exception of LEOFF Plan 1, COLAs are prescribed or capped at 3 percent. We will continue to monitor our inflation assumption as part of our valuation process and future economic experience studies. We will also continue to monitor short-term salary increases and may make temporary, one-time assumption changes, when deemed necessary.

### COMMENTS ON VALUATION MODEL

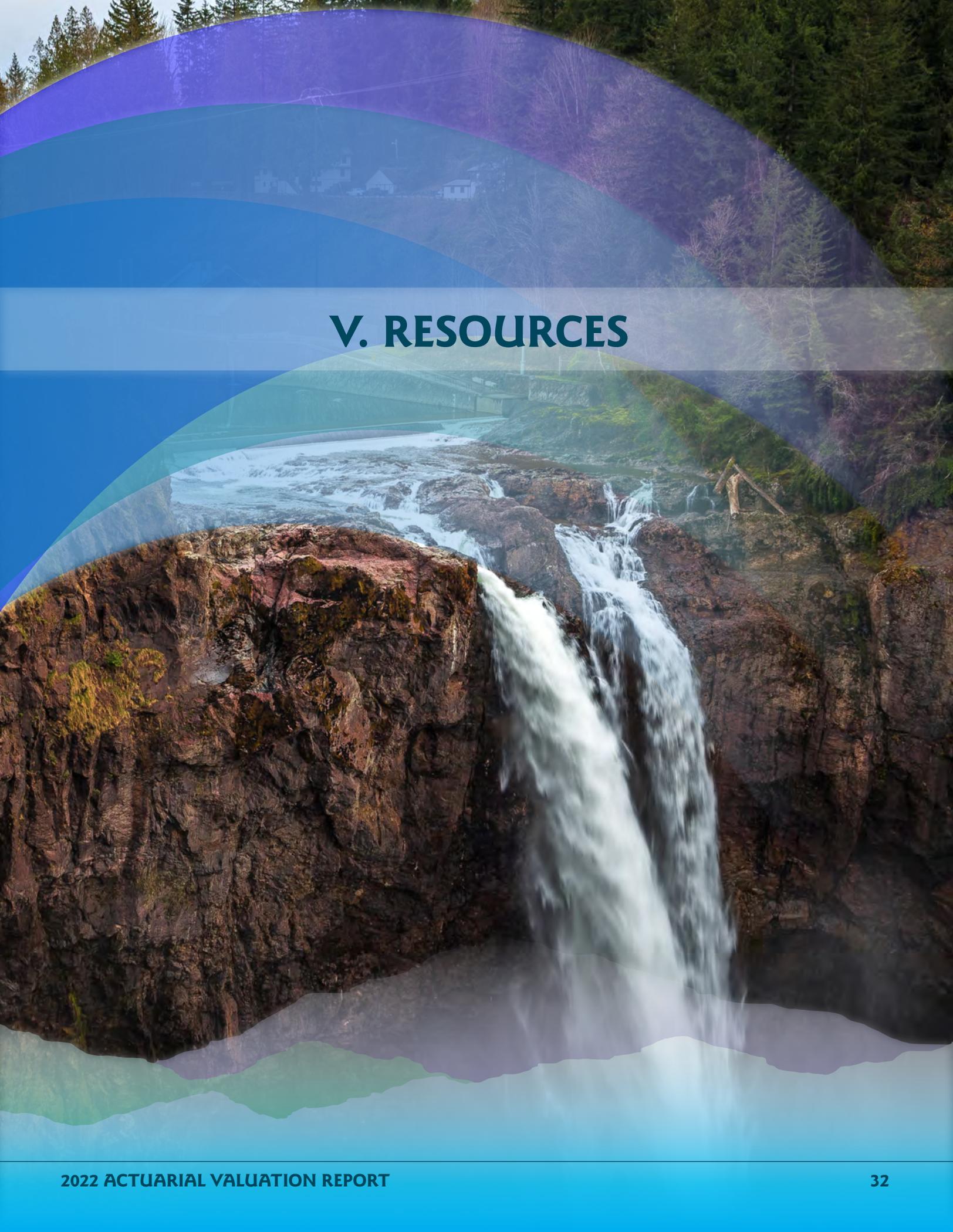
As required under [ASOP No. 56 – Modeling](#), we share the following comments related to our reliance on the ProVal® software developed by [Winklevoss Technologies](#).

- ❖ We understand this software model was primarily created for use by actuaries when performing valuations and projections of pension and retiree medical plans. The use of the model for this analysis is appropriate given it's intended purpose.

## IV. ACTUARIAL ASSUMPTIONS AND METHODS

- ❖ To assess the general operation of the model, we reviewed the output for reasonableness. This includes comparing the results to our simplified estimates done in Microsoft Excel and examining sample lives to confirm the programming is working as intended. We are not aware of any known weaknesses or limitations of the model that have a material impact on the results.
- ❖ The PFC hires auditors to independently review and replicate the results of rate-setting valuations. This process provides an additional reasonableness check of the model output.

Additionally, we considered how the use of different inputs to the model (e.g., data/assumptions/provisions) produce different results and evaluated the relative impacts to our expectations. This allows us to gain a deeper knowledge of the model's important dependencies and major sensitivities.



## V. RESOURCES

### [THE OFFICE OF THE STATE ACTUARY'S WEBSITE](#)

Our website contains additional information and educational material not included in this report. The site also contains an archive of prior Actuarial Valuation Reports and 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.

### [AGE DISTRIBUTIONS](#)

Tables summarizing valuation statistics by system, plan, and member/annuitant age as of the latest rate-setting valuation.

### [HISTORICAL DATA](#)

Tables summarizing valuation statistics by retirement system and valuation period.

### [PRIOR ACTUARIAL VALUATION REPORTS](#)

Archive of valuations over the past several years.

### [2021 REPORT ON FINANCIAL CONDITION AND ECONOMIC EXPERIENCE STUDY](#)

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

### [2013-2018 DEMOGRAPHIC EXPERIENCE STUDY](#)

Most recent report examining demographic behavior within each of the retirement systems.

### [RISK ASSESSMENT](#)

Information examining the effect of unexpected experience on the retirement systems.

### [COMMENTARY ON RISK](#)

Educational information on the risks inherent in our actuarial measurements and how these measurements could vary under different circumstances.

### [CONTRIBUTION RATE PROJECTIONS](#)

Forecasts for future contribution rates based on projected assets and liabilities.

### [INTERACTIVE REPORTS](#)

Set of reports displaying funded status, projected benefit payments, and contribution rates as of the latest rate-setting valuation.



WASHINGTON STATE  
**2022 ACTUARIAL  
VALUATION**

AUGUST • 2023



Office of the State Actuary

*“Supporting financial security for generations.”*