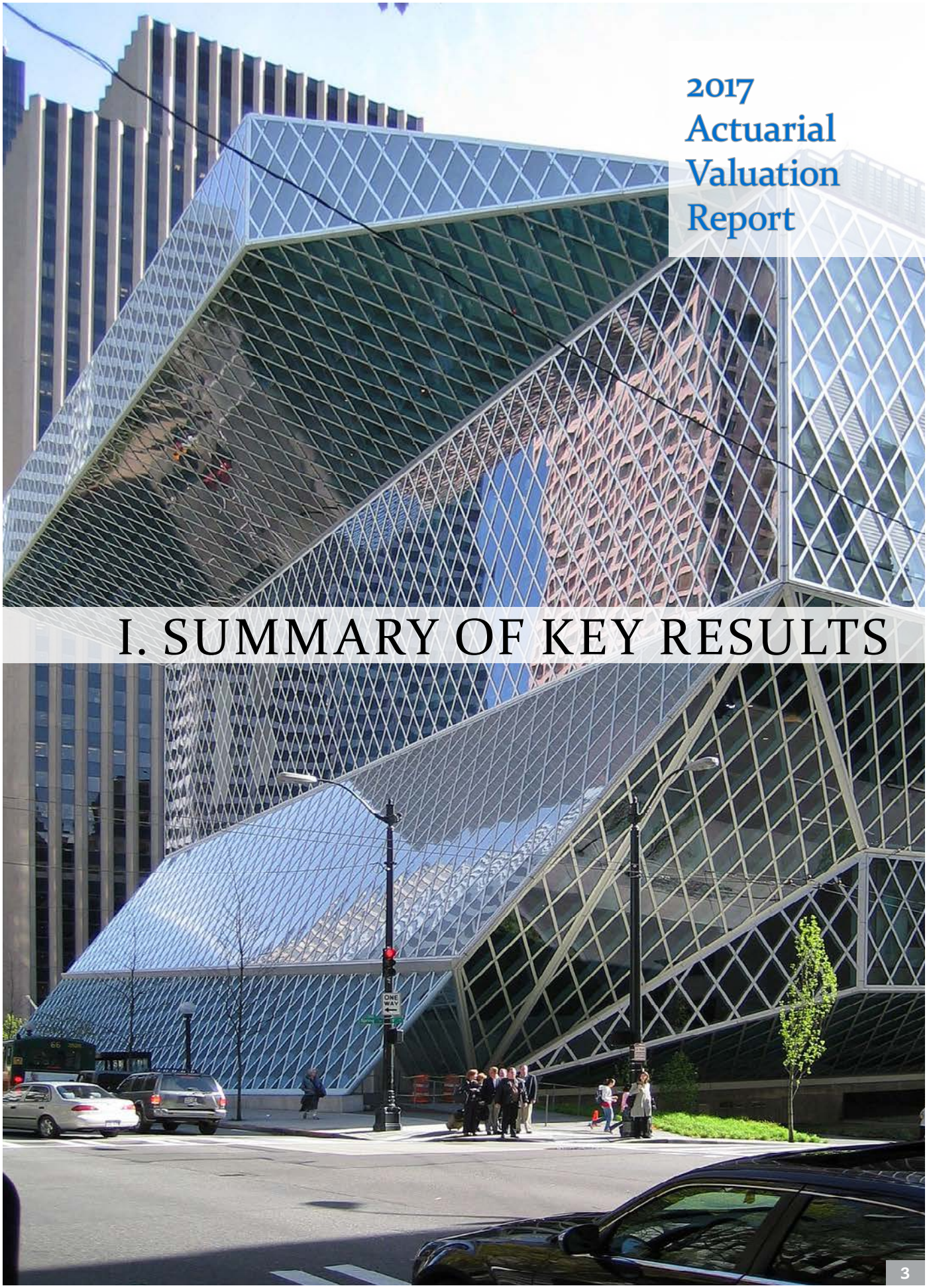

2017
Actuarial
Valuation
Report

I. SUMMARY OF KEY RESULTS

Intended Use

The purpose of this report is to develop contribution rates required to fund the Washington State retirement systems for the 2019-21 Biennium based on a June 30, 2017, measurement date and based on the funding policy described in this section. This report provides information on the contribution rates, funding progress, and developments in the plans over the past year. This report also discloses the data, assumptions, and methods we used to develop the contribution rates. This report is not intended to satisfy the accounting requirements under the Governmental Accounting Standards Board (GASB) rules.

Similarly, this actuarial valuation is not intended to report on the overall health or financial condition of the pension system. Such information can be found in the 2017 Report on Financial Condition (RFC), which the Office of the State Actuary (OSA) issues every two years. The key measures we use in the RFC to assess the health of a pension plan include funding level, adequacy and affordability of contributions, and risk.

Contribution Rates

Calculated Contribution Rates				
	Plan 1		Plans 2/3	
	2017	2016	2017	2016
PERS				
Member*	6.00%	6.00%	7.90%	8.34%
Total Employer	12.68%	13.50%	12.68%	13.50%
TRS				
Member*	6.00%	6.00%	7.77%	7.98%
Total Employer	15.33%	16.18%	15.33%	16.18%
SERS				
Member*	N/A	N/A	8.25%	8.46%
Total Employer	N/A	N/A	13.01%	14.51%
PSERS				
Member	N/A	N/A	7.20%	6.98%
Total Employer	N/A	N/A	11.96%	12.03%
LEOFF				
Member	0.00%	0.00%	8.59%	7.91%
Employer	0.00%	0.00%	5.15%	4.75%
State	0.00%	0.00%	3.44%	3.16%
WSPRS				
Member	8.45%	7.68%	8.45%	7.68%
Employer (State)	22.13%	24.86%	22.13%	24.86%

Employer rates exclude administrative expense rate.

**Plan 3 members do not contribute to the defined benefit plan.*

We determine the member and employer contribution rates as a percentage of salary. The summary table to the left shows contribution rates based on the 2017 valuation along with rates from the previous valuation. Throughout this report, we reconcile how plan experience compared to our assumptions over the valuation year. In doing so, we compare the contribution rates calculated under this valuation against those rates calculated under the 2016 valuation. Please note, however, that the contribution rates expressed for the 2016 valuation were not collected, as that was not a rate-setting year under the current contribution rate-setting cycle. The Actuarial Exhibits section of this report shows how we developed the contribution rates for 2017.

No member or employer/state contributions are required for the Law Enforcement Officers' and Fire Fighters' Retirement System (LEOFF) Plan 1 when the plan remains fully funded. See RCW 41.26.080(2).

Minimum employer contribution rates adopted by the Legislature for the Public Employees' Retirement System (PERS) Plan 1 and the Teachers' Retirement System (TRS) Plan 1 became effective at the beginning of the 2015-17 Biennium. Employer contribution rates for PERS 1 and TRS 1 in the table to the left remain above the minimums.

In addition to calculating contribution rates in this report, we also estimate contribution rates for future biennia based upon projected assets and liabilities. These projected rates can be found on our website, but please note that these rates are subject to change based on modifications to plan provisions, assumptions, and the actuarial experience of the systems.

Contribution Rate-Setting Cycle

Under current Washington State law, in July of even-numbered years, the Pension Funding Council (PFC) reviews the basic contribution rates calculated by OSA based on an actuarial valuation performed on asset, participant, and plan information compiled in odd-numbered years. In calculating basic contribution rates, OSA applies the statutory funding policies described in this section.

The PFC may adopt changes to contribution rates by an affirmative vote of at least four members. The basic rates adopted

by the PFC will remain in place for the ensuing biennium, subject to revision by the Legislature. The LEOFF 2 Board performs these duties for LEOFF 2 under the same cycle.

RCW 41.45.070 requires that a temporary and supplemental contribution rate increase be charged to fund the cost of benefit enhancements enacted following the adoption of the basic rates. Supplemental contribution rates are included in the basic rates at the beginning of the next contribution rate-setting cycle.

For reference, the table to the right compares the member and total employer contribution rates that were adopted by the PFC against the rates that were calculated by OSA.

2019-21 Contribution Rates		
	Calculated	Adopted
PERS 1		
Member	6.00%	6.00%
Total Employer	12.68%	12.68%
PERS 2/3		
Member*	7.90%	7.90%
Total Employer	12.68%	12.68%
TRS 1		
Member	6.00%	6.00%
Total Employer	15.33%	15.33%
TRS 2/3		
Member*	7.77%	7.77%
Total Employer	15.33%	15.33%
SERS 2/3		
Member*	8.25%	8.25%
Total Employer	13.01%	13.01%
PSERS 2		
Member	7.20%	7.20%
Total Employer	11.96%	11.96%
LEOFF 1		
Member	0.00%	0.00%
Employer	0.00%	0.00%
State	0.00%	0.00%
LEOFF 2**		
Member	8.59%	8.59%
Employer	5.15%	5.15%
State	3.44%	3.44%
WSPRS 1/2		
Member	8.45%	8.45%
Employer (State)	22.13%	22.13%

Employer rates exclude administrative expense rate.
**Plan 3 members do not contribute to the defined benefit plan.*
***The LEOFF 2 Board adopts contribution rates for LEOFF 2.*

Funding Policy

Washington State relies on systematic actuarial funding to finance the on-going cost of the state retirement systems. Under this financing approach, we reduce the cost of future pension payments by the expected long-term return on invested contributions.

The state's funding policy is found in Chapter 41.45 RCW — Actuarial Funding of State Retirement Systems. It includes the following goals:

- Provide a dependable and systematic process for funding the benefits to members and retirees of the Washington State retirement systems.
- Fully fund the retirement system Plans 2 and 3, and Washington State Patrol Retirement System (WSPRS), as provided by law.
- Fully amortize the total cost of LEOFF Plan 1 not later than June 30, 2024.
- Fully amortize the Unfunded Actuarial Accrued Liability (UAAL) in PERS Plan 1 and TRS Plan 1 within a rolling ten-year period using methods and assumptions that balance needs for increased benefit security, decreased contribution rate volatility, and affordability of pension contribution rates.
- Establish long-term employer contribution rates that will remain a relatively predictable proportion of future state budgets.
- Fund, to the extent feasible, all benefits for Plans 2 and 3 members over the working lives of those members so that the taxpayers who receive the benefit of those members' service pay the cost of those benefits.

Based on the funding policy, the same contribution rate is charged to employers within each system regardless of the plan in which employees hold membership (except for LEOFF). In addition, all benefit increases that become effective after June 30, 2009, for PERS Plan 1 and TRS Plan 1 members, are funded over a fixed ten-year period.

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.

The Washington State Investment Board (WSIB) directs the investment of retirement system contributions. RCW 43.33A.110 requires WSIB to maximize investment returns at a prudent level of risk.

Comments on 2017 Results

Many factors can influence how actuarial valuation results change from one measurement date to the next. Those factors include changes in the covered population, changes in plan provisions, assumptions and methods, and experience that varies from our expectations.

For this valuation, we changed our economic assumptions, consistent with the assumptions adopted by the PFC and the LEOFF 2 Board.

- We lowered the valuation interest rate from 7.70 percent to 7.50 percent for all systems except LEOFF 2. For LEOFF 2, we lowered the valuation interest rate from 7.50 percent to 7.40 percent.
- We lowered assumed general salary growth from 3.75 percent to 3.50 percent for all systems.
- We lowered assumed inflation from 3.00 percent to 2.75 percent for all systems.

These assumption changes, along with above-expected investment returns over the valuation year, led most plans to experience a higher funded status and lower calculated contribution rates than we reported in the last valuation.

While we made no significant changes to our actuarial methods, there were a number of plan provision changes. These included the implementation of an ad-hoc COLA increase for Plan 1 annuitants in PERS and TRS, a change of membership in PSERS, and the addition of Post-Traumatic Stress Disorder to the list of occupational diseases for LEOFF. See the Summary of Plan Provisions section of this report for more details.

In July 2018, the LEOFF 2 Board also adopted a new funding policy which raises the LEOFF 2 minimum normal cost rates from 90 percent of the Entry Age Normal Cost (EANC) to 100 percent of the EANC. This policy change is reflected in the calculated rates for this report.

In terms of annual plan experience, the actual rate of investment return on the Market Value of Assets (MVA) was 13.44 percent, which was above the assumed rate. The rate of investment return on the Actuarial (or smoothed) Value of Assets (AVA) was 9.17 percent, which was also higher than expected for the valuation year. Salaries for the PERS plans, TRS 2/3, and LEOFF 2 grew less than expected, while salaries for all other plans grew more than expected. With regard to the covered population, the most significant change we observed occurred in WSPRS Plan 2, whose active population increased by approximately 16 percent over the valuation year.

Detailed gain and loss information by system can be found in the Actuarial Exhibits section of this report. Please see the Actuarial Certification Letter for additional comments on the valuation results.

Actuarial Liabilities

The next table summarizes key measures of actuarial liability along with the liabilities from last year's valuation. The Future Value of Fully Projected Benefits represents the total expected value of all future benefit payments for all members of all systems as of the valuation date. The Present Value of Fully Projected Benefits represents today's value of the Future Value of Fully Projected Benefits when we discount future benefit payments with the valuation interest rate. In other words, if we invest the Present Value of Fully Projected Benefits as a lump sum amount at the valuation date and earn the valuation interest rate each year, we expect there would be enough money to pay all expected future benefit payments for current members.

The Actuarial Accrued Liability identifies the portion of the present value of future benefits that has been accrued as of the valuation date based on the Entry Age Normal (EAN) actuarial cost method.

Actuarial Liabilities

(Dollars in Millions)	2017	2016
All Systems		
Future Value of Fully Projected Benefits	$655,649	$658,821
Present Value of Fully Projected Benefits	110,871	105,250
Actuarial Accrued Liability*	$92,791	$88,170
Valuation Interest Rate**	7.50%	7.70%

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

***7.40% in LEOFF 2.*

See the Actuarial Exhibits section of this report for a summary of actuarial liabilities by system and plan. For projected benefit payments by year for each system and plan, please visit the Interactive Reports page on our website. Also, see the Glossary on our website for brief explanations of the actuarial terms.

Assets		
(Dollars in Millions)	2017	2016
All Systems		
Market Value of Assets (MVA)	$84,853	$75,273
Actuarial Value of Assets (AVA)	80,168	74,345
Contributions[1]	3,084	2,866
Disbursements	4,093	3,910
Investment Return	10,505	1,760
Other[2]	$83	$66
MVA Return[3]	13.44%	2.65%
AVA Return[4]	9.17%	5.41%

[1] *Employee and Employer.*

[2] *Includes transfers, restorations, payables, etc.*

[3] *Time-weighted rate of return on the Market Value of Assets, net of expenses.*

[4] *The Actuarial Value of Assets is used in determining contribution rates.*

Assets

The table to the left shows the combined MVA and AVA along with approximate rates of investment return for all the systems combined.

To limit the volatility in contribution rates and funded status due to short-term market fluctuations, we smooth (or defer recognition of) the difference between actual and expected annual investment returns over a period not to exceed eight years. The AVA equals the MVA less the Total Deferred Investment Gains and (Losses) at the valuation date. The AVA can never be less than 70 percent or greater than 130 percent of the MVA.

See the Actuarial Exhibits section of this report for a summary of assets by system and plan, and 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 actuarial accrued liability covered by today's actuarial assets. A plan with a 100 percent funded status has one dollar in actuarial assets for each dollar of accrued liability at the valuation date. A plan with a funded status of at least 100 percent is generally considered to be on target with its financing plan. However, a plan more/less than 100 percent funded is not automatically considered over-funded/at-risk.

The table to the right displays the funded status for all the systems combined. We provide this table for summarization purposes only. Absent a qualified merger or plan termination, assets from an individual qualified retirement plan may not be used to fund benefits from another plan. See the Actuarial Exhibits section of this report for the funded status by system and plan.

Funded Status		
(Dollars in Millions)	2017	2016
All Systems		
a. Accrued Liability*	$92,791	$88,170
b. Market Value of Assets	84,853	75,273
c. Deferred Gains/(Losses)	4,685	928
d. Actuarial Value of Assets (b - c)	80,168	74,345
Unfunded Liability (a - d)	$12,623	$13,825
Funded Ratio (d / a)	86%	84%

Note: Totals may not agree due to rounding.

**Liabilities valued using Entry Age Normal cost method.*

Participant Data		
All Systems	**2017**	**2016**
Active Members		
Number	317,677	309,022
Total Salaries (in Millions)	$20,031	$18,894
Average Annual Salary	$63,054	$61,141
Average Attained Age	46.8	47.1
Average Service	11.5	11.7
Retirees and Beneficiaries		
Number	177,685	170,771
Average Annual Benefit	$22,768	$22,474
Terminated Members		
Number Vested	61,519	60,092
Number Non-Vested	135,108	130,036

Participant Data

The table to the left summarizes participant data used in the actuarial valuation for the plan year ending June 30, 2017, along with information from last year's valuation. See the Participant Data section of this report for participant data summarized by system and plan.

Key Assumptions

This table displays key economic assumptions used in the actuarial valuation. With this valuation, we lowered the assumed valuation interest rate from 7.70 to 7.50 percent for all plans except LEOFF 2. LEOFF 2's assumed valuation interest rate decreased from 7.50 to 7.40 percent. For all systems, we also lowered the assumed general salary growth from 3.75 to 3.50 percent and lowered assumed inflation from 3.00 to 2.75 percent.

Key Assumptions	
All Systems	
Valuation Interest Rate*	7.50%
General Salary Increase	3.50%
Inflation	2.75%
Growth in Membership**	0.95%

**7.40% in LEOFF 2.*

***1.25% in TRS. Used for the amortization of PERS 1 and TRS 1 UAAL only.*