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$$\rho(x) = -G(-x^2)/[xH(-x^2)].$$

$$-\rho_0 - \alpha_0 \leq \pi/2 + 2\pi k \quad \rho = 2\gamma_0 + (1/2)[\text{sg } A_1 + \text{sg } A_2]$$

$$\sum_{j=1}^n A_j \rho^j \quad \Delta_L \arg f(z) = (\pi/2)(S_1 - S_2)$$

$$G(u) = \prod_{k=1}^n (u + u_k) G_0(u), \quad \rho(x) = -G(-x^2)/[xH(-x^2)].$$

$$\rho = 2\gamma_0 + (1/2)[\text{sg } A_1 + \text{sg } A_2]$$

$$\sum_{j=1}^n A_j \rho^j \quad \rho(x) = -G(-x^2)/[xH(-x^2)].$$

$$-\pi/2 + 2\pi k \leq \rho_0 - \alpha_0 \leq \pi/2 + 2\pi k$$

$$\rho = 2\gamma_0 + (1/2)[\text{sg } A_1 + \text{sg } A_2]$$

$$\sum_{j=1}^n A_j \rho^j \quad G(u) = \prod_{k=1}^n (u + u_k) G_0(u)$$

Preliminary

Intended Use

The purpose of this report is to develop contribution rates required to fund the Washington State retirement systems based on the funding policy described in this section. However, this is not a rate-setting valuation so these results are informational only. 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 rules (GASB).

Contribution Rates

The Office of the State Actuary (OSA) determined the member and employer contribution rates as a percentage of salary. The summary table on the right shows contribution rates based on the 2012 valuation along with rates from the previous valuation. The **Actuarial Exhibits** section of this report shows how we developed these rates.

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 become effective at the beginning of the 2015-17 Biennium.

	Contribution Rates			
	Plan 1		Plan 2/3	
	2012	2011	2012	2011
PERS				
Member*	6.00%	6.00%	4.83%	4.92%
Total Employer	9.15%	9.03%	9.15%	9.03%
TRS				
Member*	6.00%	6.00%	4.95%	4.96%
Total Employer	10.68%	10.21%	10.68%	10.21%
SERS				
Member*	N/A	N/A	4.59%	4.64%
Total Employer	N/A	N/A	9.80%	9.64%
PSERS				
Member	N/A	N/A	6.07%	6.22%
Total Employer	N/A	N/A	10.28%	10.22%
LEOFF				
Member	0.00%	0.00%	7.74%	7.57%
Employer	0.00%	0.00%	4.64%	4.54%
State	0.00%	0.00%	3.10%	3.03%
WSPRS				
Member	6.44%	6.31%	6.44%	6.31%
Employer (State)	7.76%	7.63%	7.76%	7.63%

Employer rates exclude administrative expense rate.

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

Contribution Rate-Setting Cycle

Under current Washington State law, in July of even-numbered years, the 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.

Funding Policy

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

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

- ◆ Provide a dependable and systematic process for funding the benefits to members and retirees of the Washington State Retirement Systems.
- ◆ Fully fund the retirement system Plans 2 and 3, and 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 Plan 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.

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 2012 Results

The following comments summarize the key changes from the last valuation. Please see the **Actuarial Certification Letter** for additional comments on the 2012 valuation results.

The actual rate of investment return for the plan year was below the assumed rate of 7.9 percent (7.5 percent assumed for LEOFF 2). The actual, annualized investment return on the market value of assets was 1.40 percent. The rate of investment return on the actuarial value of assets for the plan year was lower than the assumed rate of 7.9 percent (7.5 percent for LEOFF 2).

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

Overall, the liability changes were mixed, resulting in actuarial gains or losses, depending on the system. PERS, TRS, SERS, and WSPRS saw liabilities increase less than expected, resulting in actuarial gains. PSERS liabilities changed as expected, resulting in neither a gain nor a loss. LEOFF's liabilities were mixed; Plan 1 showed a liability loss while Plan 2 showed a liability gain. The key reasons for the liability gains include: salaries increased less than expected; more terminations in the Plans 2/3 than expected; and later retirements in the Plans 1 than expected. The key reason for liability losses comes from the increase in liabilities due to new entrants.

The present value of future salaries generally increased more than expected due to new entrants becoming active so the salary base for collecting contributions is larger and this results in an actuarial gain to the system.

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

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

Actuarial Liabilities

The table on the right 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, there would be enough money to pay all expected future benefit payments for current members.

The Present Value of Accrued (Earned) Benefits identifies the portion of the present value of future benefits that has been earned as of the valuation date based on the Projected Unit Credit (PUC) actuarial cost method. The Unfunded Actuarial Accrued Liability (UAAL) represents the excess, if any, of the Present Value of Future Benefits earned at the valuation date over the Actuarial Value of Assets. In other words, the UAAL equals the present value of benefits earned at the valuation date not covered by current actuarial assets.

See the **Actuarial Exhibits** section of this report for a summary of actuarial liabilities by system and plan and a disclosure of expected future benefit payments by year for each system and plan. Also, see the **Glossary** for brief explanations of the actuarial terms.

Actuarial Liabilities		
(Dollars in Millions)	2012	2011
All Systems		
Future Value of Fully Projected Benefits	\$436,402	\$436,095
Present Value of Fully Projected Benefits	79,396	77,147
Present Value of Accrued (Earned) Benefits	62,577	60,193
Unfunded Actuarial Accrued Liability*	\$4,132	\$3,797
Valuation Interest Rate**	7.90%	7.90%

*For PERS 1, TRS 1, and LEOFF 1.

**7.50% in LEOFF 2.

Assets

The table below shows the combined Market Value of Assets and Actuarial (or smoothed) Value of Assets along with approximate rates of investment return.

Assets		
(Dollars in Millions)	2012	2011
All Systems		
Market Value of Assets	\$56,753	\$57,350
Actuarial Value of Assets	63,122	60,654
Contributions*	1,754	1,456
Disbursements	3,137	2,980
Investment Return	747	10,121
Other**	\$39	\$53
Rate of Return on Assets***	1.40%	21.14%

*Employee and Employer.

**Includes transfers, restorations, payables, etc.

***This is the time-weighted rate of return on the Market Value of Assets, net of expenses. The Actuarial Value of Assets is used in determining contribution rates.

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

See the **Actuarial Exhibits** section of this report for a summary of assets by system

and plan, and for the development of the Actuarial Value of Assets.

Funded Status

The funded status helps readers evaluate the health of a pension plan. A history of funded status measured consistently over a defined period helps readers evaluate a plan's funding progress over time. The funded status represents the portion of the present value of earned benefits covered by today's actuarial assets. A plan with a 100 percent funded status has one dollar in actuarial assets for each dollar of earned (or accrued) liability at the valuation date. A plan more/less than 100 percent funded is not automatically considered over-funded/at-risk.

We use the PUC actuarial cost method to report the funded status of the plans. The PUC method takes into account future salary and service growth for purposes of determining future benefit amounts and eligibility for those benefits, but only reflects service credit earned at the valuation date for determining earned (or accrued) benefits.

Comparing the PUC liabilities to the Actuarial Value of Assets

Funded Status		
(Dollars in Millions)	2012	2011
All Systems		
a. Projected Unit Credit Liability	\$62,577	\$60,193
b. Market Value of Assets	56,753	57,350
c. Deferred Gains/(Losses)	(6,369)	(3,304)
d. Actuarial Value of Assets (b-c)	63,122	60,654
e. Unfunded Liability (a-d)	(\$545)	(\$461)
f. Projected Unit Credit Funded Ratio (d/a)	101%	101%

Note: Totals may not agree due to rounding.

provides an appropriate measure of a plan's funded status. Under current GASB rules, the PUC method is one of several acceptable measures of a plan's funded status. Use of another cost method could also be considered appropriate and could produce materially different results.

We did not use the PUC cost method to determine contribution requirements in this valuation. Please see the **Glossary** for a more detailed explanation of PUC.

The following table displays the funded status for all the systems combined. We provide this table for summarization purposes only. 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. We also provide a history of funded status since 1986 and funded status under alternate assumptions and methods in the **Actuarial Exhibits** section.

Participant Data

The table below summarizes participant data used in the actuarial valuation for the plan year ending June 30, 2012, along with information from last year's valuation. See the **Participant Data** section of this report for participant data summarized by system and plan.

Participant Data		
All Systems	2012	2011
Active Members		
Number	289,727	293,276
Total Salaries (in millions)	\$16,245	\$16,313
Average Annual Salary	\$56,069	\$55,623
Average Attained Age	47.8	47.5
Average Service	12.4	12.1
Retirees and Beneficiaries		
Number	143,942	138,337
Average Annual Benefit	\$21,321	\$21,023
Terminated Members		
Number Vested	51,808	50,120
Number "Non-Vested"	116,109	113,601

Key Assumptions

This table displays key economic assumptions used in the actuarial valuation. These assumptions were unchanged from last year's valuation. See the *Actuarial Methods and Assumptions* in the **Appendix** for a detailed listing of assumptions used in this valuation.

Key Assumptions	
All Systems	
Valuation Interest Rate*	7.90%
Salary Increase	3.75%
Inflation	3.00%
Growth in Membership**	0.95%

*7.50% in LEOFF 2.

**0.80% in TRS; 1.25% in LEOFF.

Used for the amortization of PERS 1, TRS 1, and LEOFF 1 UAAL only.