SUMMARY OF RESULTS

BRIEF SUMMARY OF BILL: This bill merges the assets and liabilities of TRS Plan 1 and LEOFF Plan 1, and makes other statutory changes to meet this goal. This bill also provides a one-time, lump-sum bonus of $5,000 per eligible LEOFF 1 member.

COST SUMMARY

Impact on Contribution Rates *(Effective 09/01/2016 - 08/31/2017)*		
Fiscal Year 2017 State Budget	**TRS**	**LEOFF 1**
Employee (Plan 1)	0.00%	0.00%
Total Employer	(1.99%)	0.00%

Budget Impacts			
(Dollars in Millions)	**2016-2017**	**2017-2019**	**25-Year**
General Fund-State	($75.4)	($243.8)	($1,477.0)
Local Government	($30.8)	($99.6)	($603.3)
Total Employer	($106.1)	($343.3)	($2,080.2)

Note: We use long-term assumptions to produce our short-term budget impacts. Therefore, our short-term budget impacts will likely vary from estimates produced from other short-term budget models.

HIGHLIGHTS OF ACTUARIAL ANALYSIS

- LEOFF 1 is currently expected to have a surplus at the end of the plan's life. In other words, if all assumptions are realized in the future, LEOFF 1 will have assets remaining after all benefits for plan members and beneficiaries have been paid.
- The funding policy for the merged plan will apply the expected LEOFF 1 surplus to the future contribution requirements of the merged plan. This results in an expected long-term total employer savings of about $2.1 billion through reduced contribution requirements over the next 25 years.
- The fiscal impact of the merger, however, depends heavily on future economic outlooks. For example, under a very pessimistic outlook, where the merged plan would have insufficient assets in the future to cover all projected benefits, the merger results in a cost to employers of $4.3 billion over the next 30 years. A very pessimistic or worse outlook occurs in 5 percent of our simulations of future economic outlooks.
- We did not prepare full risk analysis for this fiscal note. We may prepare a revised fiscal note in the future that includes this analysis.

See the remainder of this fiscal note for additional details on the summary and highlights presented here.

WHAT IS THE PROPOSED CHANGE?

Summary Of Change

This bill impacts the following systems:

- Teachers' Retirement System Plan 1 (TRS 1).
- Law Enforcement Officers' and Fire Fighters' Retirement System Plan 1 (LEOFF 1).

This bill merges the assets and liabilities of TRS 1 and LEOFF 1 and makes other statutory changes to meet this goal. LEOFF 1 will be administered as a separate tier of the TRS 1 plan.

The Department of Retirement Systems (DRS) must request a determination letter from the Internal Revenue Service (IRS). The merger is null and void if a determination letter indicates the merger is in conflict with Internal Revenue Code, and the conflict cannot be remedied. The results of a determination letter do not impact the changes to Unfunded Actuarial Accrued Liability (UAAL) rates.

This section of the actuarial fiscal note only addresses the changes that impact the pricing of the bill. Please see the legislative staff bill reports for a full list of changes.

Benefits

Pension benefits are not changed. However, eligible members of LEOFF 1 are provided with a one-time, lump-sum bonus of $5,000. This lump-sum bonus is payable on January 3, 2017, for all retired members. For active and terminated-vested members of LEOFF 1 who have not yet retired, this lump-sum bonus is payable with interest at retirement.

Funding Policy

LEOFF 1

No contributions are required for LEOFF 1 members and employers, except for the administrative rate charged by DRS to employers of active members.

TRS 1

The TRS 1 funding policy is largely unchanged (see below for current funding policy), except for the following:

- The assets and liabilities of LEOFF 1 are merged into TRS 1.
- UAAL rates for TRS 1 employers are set at 4.24 percent starting September 1, 2016 and continuing through August 31, 2021.
- A new minimum UAAL rate is set at 4.24 percent beginning September 1, 2021, and continuing until the actuarial value of assets in the merged plan equals 100 percent of the actuarial accrued liability.

Effective Date: September 1, 2016.

What Is The Current Situation?

Both TRS 1 and LEOFF 1 were closed to new members in 1977. The following summary describes only the aspects of current plan provisions necessary to illustrate the impact of the changes described above. Please see the *DRS Handbook* for a full list of plan provisions.

TRS 1

There are two types of contributions to TRS 1: (1) Contributions for the ongoing costs of the plan, and (2) Contributions for past costs or the UAAL.

(1) Members and employers make contributions toward the ongoing cost of the plan. Contribution rates for Plan 1 members are set in statute at 6 percent. Employer contributions are set by the Pension Funding Council (PFC), subject to revision by the Legislature.

(2) A separate UAAL rate is charged to employers in addition to the ongoing contribution rate. The UAAL rate is calculated on a rolling ten-year amortization, as a level percentage of projected system payroll. Beginning September 1, 2015, a minimum 5.75 percent UAAL rate was established, and remains in effect until the actuarial value of assets in TRS 1 equals 100 percent of the actuarial accrued liability.

LEOFF 1

The Legislature has stated its intent to fully amortize the costs of LEOFF 1 by June 30, 2024, and the PFC is directed to adopt biennial "basic rates" for LEOFF 1 that are sufficient to achieve this goal.

Currently, RCW 41.26.080 provides that no member or employer contribution is required for LEOFF 1 unless the most recent actuarial valuation report shows the plan has unfunded liabilities. As of June 30, 2014, the measurement date for the latest actuarial valuation, LEOFF 1 has a surplus of $1.1 billion and a funded status of 127 percent on an actuarial-value basis (i.e., using the actuarial value of assets and the current long-term expected rate of return on investments of 7.8 percent per year to determine the present value of earned pension obligations).

For purposes of this fiscal note, we assume the prior funding policy would resume if LEOFF 1 were to come out of its fully-funded state. That is, when the LEOFF 1 UAAL resurfaces under pessimistic outlooks in our analysis, we assume remaining LEOFF 1 members and their local employers would each contribute 6 percent of LEOFF 1 salaries, and the remaining required contributions would be allocated through the state's general fund.

Who Is Impacted And How?

The bill does not change benefits for any members of LEOFF 1 or TRS 1, except for the $5,000 lump-sum bonus for LEOFF 1 members.

Additionally, this bill does not impact any TRS 1 members through increased or decreased contribution rates because TRS 1 member contribution rates are set in statute at 6 percent of salary. The bill also stipulates that LEOFF 1 members and employers will not contribute to the merged plan. This provision eliminates the possibility of future LEOFF 1 member or employer contributions.

TRS 1 employers are expected to pay lower UAAL contribution rates over a shorter period of time. However, under pessimistic economic conditions, TRS 1 employers may ultimately pay higher UAAL contribution rates over a longer period of time (compared to current law).

WHY THIS BILL HAS A SAVINGS AND WHO RECEIVES IT

Why This Bill Has A Savings

This bill has an expected savings because it merges a plan currently in surplus (LEOFF 1) with a plan that is not in surplus (TRS 1). When we apply the existing TRS 1 funding policy to a smaller (combined) unfunded liability, the result is smaller expected contribution requirements.

To help illustrate the impact from the bill, we begin by displaying the projected UAAL under current law, and then show the impact of the proposed merger. We display an "N/A" once the plan is expected to remain fully funded under each of the scenarios we present as defined below.

In addition to our "Expected" case, we show how the projected UAAL could vary under different economic environments. We used 2,000 simulated economic environments before and after the merger to illustrate a range of possible outcomes. Each simulated economic environment is equally likely to occur under our model.

We categorize these outcomes into four additional scenarios, from "Very Optimistic" to "Very Pessimistic". The likelihood of these scenarios is defined as follows. We observe 5 percent of our simulated outcomes are at the very optimistic level or better. Similarly, we observe 25 percent of our simulated outcomes are at the optimistic level or better. Comparatively, 5 and 25 percent of our simulated outcomes are at the very pessimistic and pessimistic levels or worse, respectively.

Before The Merger (Current Law)

The following table shows that the LEOFF 1 surplus (or negative unfunded liability) is expected to remain under most outcomes. Under current LEOFF 1 funding policy, no contributions are collected when the plan is in surplus and the surplus remains in the fund until the last benefit is paid.

LEOFF 1 UAAL, Before Merger					
(Dollars in Millions)					
Year	Very Optimistic	Optimistic	Expected	Pessimistic	Very Pessimistic
2014	($1,168)	($1,168)	($1,168)	($1,168)	($1,168)
2017	N/A	N/A	N/A	N/A	($367)
2020	N/A	N/A	N/A	N/A	$620
2023	N/A	N/A	N/A	N/A	$1,270
2026	N/A	N/A	N/A	N/A	$1,495
2029	N/A	N/A	N/A	N/A	$1,740
2032	N/A	N/A	N/A	N/A	$2,908
2035	N/A	N/A	N/A	N/A	$2,686
2038	N/A	N/A	N/A	N/A	$2,250
2041	N/A	N/A	N/A	N/A	$1,746
2044	N/A	N/A	N/A	N/A	$1,218
2047	N/A	N/A	N/A	N/A	$802
2050	N/A	N/A	N/A	N/A	$492

The next table shows that under its current funding policy, if all assumptions are realized ("Expected" column), TRS 1 is expected to be fully amortized at 2026 through future employer contributions and investment returns.

TRS 1 UAAL, Before Merger					
(Dollars in Millions)					
Year	Very Optimistic	Optimistic	Expected	Pessimistic	Very Pessimistic
2014	$2,838	$2,838	$2,838	$2,838	$2,838
2017	$2,640	$2,875	$3,063	$3,237	$3,500
2020	$268	$1,428	$2,089	$2,726	$3,891
2023	N/A	N/A	$1,117	$2,461	$4,210
2026	N/A	N/A	N/A	$1,896	$4,078
2029	N/A	N/A	N/A	$1,037	$3,423
2032	N/A	N/A	N/A	$33	$2,575
2035	N/A	N/A	N/A	N/A	$1,253
2038	N/A	N/A	N/A	N/A	$168
2041	N/A	N/A	N/A	N/A	N/A
2044	N/A	N/A	N/A	N/A	N/A
2047	N/A	N/A	N/A	N/A	N/A
2050	N/A	N/A	N/A	N/A	N/A

After The Merger

The table below shows that under the merged plan with new funding requirements, the merged plan is expected to be fully funded in 2024.

LEOFF 1 / TRS 1 UAAL, After Merger					
(Dollars in Millions)					
Year	Very Optimistic	Optimistic	Expected	Pessimistic	Very Pessimistic
2014	$1,670	$1,670	$1,670	$1,670	$1,670
2017	$1,154	$1,616	$1,982	$2,319	$2,815
2020	N/A	N/A	$1,016	$2,323	$4,642
2023	N/A	N/A	$111	$2,782	$6,297
2026	N/A	N/A	N/A	$2,954	$6,532
2029	N/A	N/A	N/A	$2,670	$5,814
2032	N/A	N/A	N/A	$1,894	$5,078
2035	N/A	N/A	N/A	$972	$4,140
2038	N/A	N/A	N/A	$39	$3,131
2041	N/A	N/A	N/A	N/A	$1,900
2044	N/A	N/A	N/A	N/A	$305
2047	N/A	N/A	N/A	N/A	N/A
2050	N/A	N/A	N/A	N/A	N/A

The funding policy of the merged plan will apply the expected LEOFF 1 surplus to the TRS 1 UAAL. This serves to reduce the expected TRS 1 UAAL and lower the associated future contribution requirements of the merged plan if all assumptions are realized.

The fiscal impact of the merger, however, depends heavily on future economic outlooks. Please see **How The Results Change When The Assumptions Change** section of this fiscal note for further information on how the expected costs of this bill can vary from our best-estimate assumptions.

Who Will Receive These Savings?

Based on the funding policy for the merged plan, the expected savings of the merged plan will be realized by TRS employers and state budgets through decreases in the Plan 1 UAAL contribution rates.

As noted above, TRS 1 member rates are set in statute and do not change under this bill. Under pessimistic outcomes (where the LEOFF 1 UAAL could resurface in the future) LEOFF 1 members and their employers do not make contributions to the merged plan under this bill.

HOW WE VALUED THESE SAVINGS

Assumptions We Made

We performed what we call "current law" scenario analysis in this fiscal note. Under current law scenarios, we assume no future funding shortfalls and no future benefit improvements.

In the **Actuarial Results** section for liability, salary, contribution rate, and budget changes, we applied current law scenarios and made no assumption changes.

For the projections before the merger, we assumed that the State, through GF-S contributions, would fully amortize any future LEOFF 1 unfunded liability not covered by LEOFF 1 members and employers, by 2024.

Based upon historical LEOFF 1 headcounts as shown in the table, we expect approximately 7,450 members and beneficiaries will be eligible for the bonus as of the effective date of the bill.

LEOFF 1	2015*	2014	2013	2012	2011	2010	2009
Counts	7,589	7,727	7,873	8,031	8,183	8,310	8,445

**Preliminary.*

Otherwise, we developed these savings using the same assumptions as disclosed in the *June 30, 2014, Actuarial Valuation Report* (AVR) and as described on the Projections Disclosures webpage of the Office of the State Actuary website.

How We Applied These Assumptions

Using our projection system, we calculated expected liabilities, assets, and benefit payments in LEOFF 1 and TRS 1 using current assumptions and methods. We recorded the expected contributions in each year of the projection. This established the expected contribution requirements before the merger.

Next, we combined projected assets and liabilities for LEOFF 1 and TRS 1. Then we applied the funding policy specified in the bill to the new assets and liabilities. We recorded the expected contributions in each year of the projection. This established the expected contributions in the merged plan. We then compared the contributions before and after the merger to determine the expected savings under this bill.

We modeled the LEOFF 1 member bonus as a one-time benefit payment during 2017 in our projection system. This provision, by itself, lowers the assets and increases future UAAL contribution rates under the merger. We ignored any interest adjustment on deferred payments for the few remaining active members because the impact is immaterial to this pricing.

Special Data Needed

We developed these savings using the same assets and data as disclosed in the AVR. In addition, we recognized investment returns of 4.93 percent through June 30, 2015, when estimating projected asset values.

ACTUARIAL RESULTS

How The Liabilities Changed

The bill does not change benefits for LEOFF 1 or TRS 1, except for the one-time $5,000 lump-sum bonus for LEOFF 1 members. Multiplying the $5,000 lump-sum by 7,450 (expected eligible members) amounts to an assumed total distribution of about $37.3 million, payable on January 3, 2017. Otherwise, this bill is not expected to impact the present value of future benefits payable under either plan.

How The Present Value Of Future Salaries (PVFS) Changed

This bill will impact the actuarial funding of the affected plans by decreasing the PVFS of the members of LEOFF 1 as shown below. We assume that current law requires any LEOFF 1 UAAL that may emerge to be funded by the state as a contribution rate collected over all LEOFF salaries. The decrease in PVFS resulting from the bill represents the change in funding policy under the merged plan, where all UAAL contributions will be collected over TRS salaries only.

UAAL Present Value of Future Salaries			
(The Value of the Future Salaries Used to Fund the UAAL)			
(Dollars in Millions)	**Current**	**Increase**	**Total**
TRS	$40,877	$0	$40,877
LEOFF	$10,206	($10,206)	$0
TRS 1 / LEOFF 1 Merged*			**$40,877**

Note: Totals may not agree due to rounding.

**TRS 1/LEOFF 1 merged plan contribution rates collected over TRS salaries only.*

How The Contribution Rates Changed

We show the expected contribution rate differences by year in the table below. Please see **Appendix A** for further details on how the projected contribution rates change under different economic environments.

TRS 1 / LEOFF 1 Contribution Rates *(If all Assumptions are Realized)*				
	LEOFF 1	**TRS 1**	**TRS 1 / LEOFF 1 Merged***	**Difference**
Fiscal Year	**Current Law**	**Current Law**	**After Merger**	
2017	0.00%	6.23%	4.24%	(1.99%)
2018	0.00%	7.20%	4.24%	(2.96%)
2019	0.00%	7.20%	4.24%	(2.96%)
2020	0.00%	6.55%	4.24%	(2.31%)
2021	0.00%	6.55%	4.24%	(2.31%)
2022	0.00%	5.75%	4.24%	(1.51%)
2023	0.00%	5.75%	4.24%	(1.51%)
2024	0.00%	5.75%	1.18%	(4.57%)
2025	0.00%	5.75%	0.00%	(5.75%)
2026	0.00%	3.32%	0.00%	(3.32%)
2027	0.00%	0.00%	0.00%	0.00%

**Collected over TRS salaries only.*

How This Impacts Budgets And Employees

We show the expected savings under this bill in the table below. Please see the **How The Results Change When The Assumptions Change** section of this fiscal note for further details on how the projected budget impacts change under different economic environments.

Budget Impacts *(If all Assumptions are Realized)*			
(Dollars in Millions)	**TRS**	**LEOFF**	**Total**
2016-2017			
General Fund	($75.4)	$0.0	($75.4)
Non-General Fund	0.0	0.0	0.0
Total State	**($75.4)**	**$0.0**	**($75.4)**
Local Government	(30.8)	0.0	(30.8)
Total Employer	**($106.1)**	**$0.0**	**($106.1)**
Total Employee	**$0.0**	**$0.0**	**$0.0**
2017-2019			
General Fund	($243.8)	$0.0	($243.8)
Non-General Fund	0.0	0.0	0.0
Total State	**($243.8)**	**$0.0**	**($243.8)**
Local Government	(99.6)	0.0	(99.6)
Total Employer	**($343.3)**	**$0.0**	**($343.3)**
Total Employee	**$0.0**	**$0.0**	**$0.0**
2015-2041			
General Fund	($1,477.0)	$0.0	($1,477.0)
Non-General Fund	0.0	0.0	0.0
Total State	**($1,477.0)**	**$0.0**	**($1,477.0)**
Local Government	(603.3)	0.0	(603.3)
Total Employer	**($2,080.2)**	**$0.0**	**($2,080.2)**
Total Employee	**$0.0**	**$0.0**	**$0.0**

Note: Totals may not agree due to rounding. We use long-term assumptions to produce our short-term budget impacts. Therefore, our short-term budget impacts will likely vary from estimates produced from other short-term budget models.

The analysis of this bill does not consider any other proposed changes to the systems. The combined effect of several changes to the systems could exceed the sum of each proposed change considered individually.

As with the costs developed in the actuarial valuation, the emerging costs of the systems will vary from those presented in the AVR or this fiscal note to the extent that actual experience differs from the actuarial assumptions.

How The Risk Measures Changed

We did not prepare full risk analysis for this fiscal note. We may prepare a revised fiscal note in the future that includes this analysis.

HOW THE RESULTS CHANGE WHEN THE ASSUMPTIONS CHANGE

As mentioned previously, the fiscal impact of the merger depends heavily on future economic outlooks. To determine the sensitivity of the actuarial results to the best-estimate assumptions or methods selected for this pricing, we calculated the budget impact of this bill under outcomes ranging from Very Optimistic to Very Pessimistic using stochastic analysis.

The table below shows fiscal cost impacts for those outcomes, along with our best-estimate ("Expected") fiscal impact, when we use the methods and assumptions described in the body of this fiscal note.

Budget Impacts - Varying Economic Scenarios					
(Dollars in Millions)	**Very Optimistic**	**Optimistic**	**Expected**	**Pessimistic**	**Very Pessimistic**
2016-2017					
General Fund	($75)	($75)	($75)	($75)	($75)
Non-General Fund	$0	$0	$0	$0	$0
Total State	**($75)**	**($75)**	**($75)**	**($75)**	**($75)**
Local Government	($31)	($31)	($31)	($31)	($31)
Total Employer	**($106)**	**($106)**	**($106)**	**($106)**	**($106)**
Total Employee	**$0**	**$0**	**$0**	**$0**	**$0**
2017-2019					
General Fund	($191)	($220)	($244)	($269)	($311)
Non-General Fund	$0	$0	$0	$0	$0
Total State	**($191)**	**($220)**	**($244)**	**($269)**	**($311)**
Local Government	($78)	($90)	($100)	($110)	($127)
Total Employer	**($269)**	**($310)**	**($343)**	**($379)**	**($438)**
Total Employee	**$0**	**$0**	**$0**	**$0**	**$0**
2015-2041					
General Fund	($418)	($1,034)	($1,477)	($1,024)	($363)
Non-General Fund	$0	$0	$0	$0	$0
Total State	**($418)**	**($1,034)**	**($1,477)**	**($1,024)**	**($363)**
Local Government	($171)	($422)	($603)	($418)	($148)
Total Employer	**($589)**	**($1,456)**	**($2,080)**	**($1,442)**	**($511)**
Total Employee	**$0**	**$0**	**$0**	**$0**	**$0**
2015-2048					
General Fund	($418)	($1,034)	($1,477)	($1,024)	$3,041
Non-General Fund	$0	$0	$0	$0	$0
Total State	**($418)**	**($1,034)**	**($1,477)**	**($1,024)**	**$3,041**
Local Government	($171)	($422)	($603)	($418)	$1,242
Total Employer	**($589)**	**($1,456)**	**($2,080)**	**($1,442)**	**$4,283**
Total Employee	**$0**	**$0**	**$0**	**$0**	**$0**

Note: Assumes plan(s) will be funded at the actuarially required level and that no benefit improvements will occur in the future.

The savings in the 2016-17 Fiscal Year does not change under varying economic conditions because the contribution rates adopted under current law and this bill are fixed during that period. The savings in the 2017-19 Biennium, however, increase as economic conditions worsen because current law contribution rates (before the merger) will increase while they remain fixed at 4.24 percent under this bill (after the merger) through August 31, 2021.

When economic conditions improve over expected conditions, we see that the merger results in a smaller fiscal savings in the long term. This occurs because the number of years earlier that the TRS 1 UAAL is paid off under the merger declines in comparison to current law funding under these economic conditions.

When economic conditions worsen, we see the savings of the merger decline, ultimately resulting in a long-term cost to the system. This happens in the pessimistic scenarios because under the funding policy stated in the bill, contribution requirements are lowered on the expectation of a long-term LEOFF 1 surplus and the current surplus becomes an unfunded liability over time. Under this outcome, the merged plan will have to make up the lost contributions plus lost assumed investment earnings.

WHAT THE READER SHOULD KNOW

The Office of the State Actuary ("we") prepared this fiscal note based on our understanding of the bill as of the date shown in the footer. We intend this fiscal note to be used by the Legislature during the 2016 Legislative Session only.

We advise readers of this fiscal note to seek professional guidance as to its content and interpretation, and not to rely upon this communication without such guidance. Please read the analysis shown in this fiscal note as a whole. Distribution of, or reliance on, only parts of this fiscal note could result in its misuse, and may mislead others.

ACTUARY'S CERTIFICATION

The undersigned hereby certifies that:

1. The actuarial cost methods are appropriate for the purposes of this pricing exercise.
2. The actuarial assumptions used are appropriate for the purposes of this pricing exercise.
3. The data on which this fiscal note is based are sufficient and reliable for the purposes of this pricing exercise.
4. Use of another set of methods, assumptions, and data may also be reasonable, and might produce different results.
5. We believe that the data, assumptions, and methods used in our stochastic analysis are reasonable and appropriate for the purposes of this pricing exercise. The use of another set of data, assumptions, and methods, however, could also be reasonable and could produce materially different results.
6. We prepared this fiscal note for the Legislature during the 2016 Legislative Session.
7. We prepared this fiscal note and provided opinions in accordance with Washington State law and accepted actuarial standards of practice as of the date shown in the footer of this fiscal note.

The undersigned, with actuarial credentials, meets the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

While this fiscal note is meant to be complete, the undersigned is available to provide extra advice and explanations as needed.

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

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APPENDIX A – HOW THE CONTRIBUTION RATES CHANGED

State Contribution Rates, Before Merger - LEOFF 1					
Fiscal Year	Very Optimistic	Optimistic	Expected	Pessimistic	Very Pessimistic
2017	0.00%	0.00%	0.00%	0.00%	0.00%
2018	0.00%	0.00%	0.00%	0.00%	0.00%
2019	0.00%	0.00%	0.00%	0.00%	0.00%
2020	0.00%	0.00%	0.00%	0.00%	0.00%
2021	0.00%	0.00%	0.00%	0.00%	0.00%
2022	0.00%	0.00%	0.00%	0.00%	3.28%
2023	0.00%	0.00%	0.00%	0.00%	3.28%
2024	0.00%	0.00%	0.00%	0.00%	40.21%
2025	0.00%	0.00%	0.00%	0.00%	0.00%

Employer Contribution Rates, Before Merger - TRS 1					
Fiscal Year	Very Optimistic	Optimistic	Expected	Pessimistic	Very Pessimistic
2017	6.23%	6.23%	6.23%	6.23%	6.23%
2018	6.56%	6.91%	7.20%	7.51%	8.02%
2019	6.56%	6.91%	7.20%	7.51%	8.02%
2020	5.90%	5.90%	6.55%	7.17%	8.31%
2021	5.90%	5.90%	6.55%	7.17%	8.31%
2022	0.00%	5.75%	5.75%	5.75%	7.76%
2023	0.00%	5.75%	5.75%	5.75%	7.76%
2024	0.00%	0.00%	5.75%	5.75%	7.52%
2025	0.00%	0.00%	5.75%	5.75%	7.52%
2026	0.00%	0.00%	3.32%	5.75%	7.04%
2027	0.00%	0.00%	0.00%	5.75%	7.04%
2028	0.00%	0.00%	0.00%	5.75%	6.31%
2029	0.00%	0.00%	0.00%	5.75%	6.31%
2030	0.00%	0.00%	0.00%	5.75%	5.75%
2031	0.00%	0.00%	0.00%	5.75%	5.75%
2032	0.00%	0.00%	0.00%	5.75%	5.75%
2033	0.00%	0.00%	0.00%	5.75%	5.75%
2034	0.00%	0.00%	0.00%	0.00%	5.75%
2035	0.00%	0.00%	0.00%	0.00%	5.75%
2036	0.00%	0.00%	0.00%	0.00%	5.75%
2037	0.00%	0.00%	0.00%	0.00%	5.75%
2038	0.00%	0.00%	0.00%	0.00%	5.75%
2039	0.00%	0.00%	0.00%	0.00%	5.75%
2040	0.00%	0.00%	0.00%	0.00%	5.75%
2041	0.00%	0.00%	0.00%	0.00%	0.00%
2042	0.00%	0.00%	0.00%	0.00%	0.00%

Employer Contribution Rates, After Merger - LEOFF 1 / TRS 1					
Fiscal Year	Very Optimistic	Optimistic	Expected	Pessimistic	Very Pessimistic
2017	4.24%	4.24%	4.24%	4.24%	4.24%
2018	4.24%	4.24%	4.24%	4.24%	4.24%
2019	4.24%	4.24%	4.24%	4.24%	4.24%
2020	4.24%	4.24%	4.24%	4.24%	4.24%
2021	4.24%	4.24%	4.24%	4.24%	4.24%
2022	0.00%	0.00%	4.24%	4.32%	7.67%
2023	0.00%	0.00%	4.24%	4.31%	7.67%
2024	0.00%	0.00%	1.18%	4.24%	9.44%
2025	0.00%	0.00%	0.00%	4.24%	9.44%
2026	0.00%	0.00%	0.00%	4.24%	10.09%
2027	0.00%	0.00%	0.00%	4.24%	10.09%
2028	0.00%	0.00%	0.00%	4.24%	9.64%
2029	0.00%	0.00%	0.00%	4.24%	9.64%
2030	0.00%	0.00%	0.00%	4.24%	8.48%
2031	0.00%	0.00%	0.00%	4.24%	8.48%
2032	0.00%	0.00%	0.00%	4.24%	7.32%
2033	0.00%	0.00%	0.00%	4.24%	7.32%
2034	0.00%	0.00%	0.00%	4.24%	6.15%
2035	0.00%	0.00%	0.00%	4.24%	6.15%
2036	0.00%	0.00%	0.00%	4.24%	5.13%
2037	0.00%	0.00%	0.00%	4.24%	5.13%
2038	0.00%	0.00%	0.00%	4.24%	4.24%
2039	0.00%	0.00%	0.00%	4.24%	4.24%
2040	0.00%	0.00%	0.00%	0.00%	4.24%
2041	0.00%	0.00%	0.00%	0.00%	4.24%
2042	0.00%	0.00%	0.00%	0.00%	4.24%
2043	0.00%	0.00%	0.00%	0.00%	4.24%
2044	0.00%	0.00%	0.00%	0.00%	4.24%
2045	0.00%	0.00%	0.00%	0.00%	4.24%
2046	0.00%	0.00%	0.00%	0.00%	4.24%
2047	0.00%	0.00%	0.00%	0.00%	0.00%
2048	0.00%	0.00%	0.00%	0.00%	0.00%
2049	0.00%	0.00%	0.00%	0.00%	0.00%
2050	0.00%	0.00%	0.00%	0.00%	0.00%

Note that under a Very Optimistic scenario, the fixed 4.24 percent contribution rate may not be required for all five years as provided under the bill.

The pattern of contribution rate changes on the next page under the Very Pessimistic scenario can be explained as follows. Initially, contribution rate requirements are fixed and lower than required under current law (years 2017-21). The combination of smaller contributions earlier in the projection and poor economic environments under this scenario lead to higher contribution rate requirements than under current law (years 2022-35).

The contribution rates then gradually decline under the merger back down to the 4.24 percent rate floor, below the 5.75 percent rate floor under current law (years 2036-40). The merged plan UAAL rate floor must then be collected six years longer than our standard 25-year budget impact table (years 2041-46) due to the poor investment returns under this scenario.

Impact on TRS UAAL Rates					
Fiscal Year	**Very Optimistic**	**Optimistic**	**Expected**	**Pessimistic**	**Very Pessimistic**
2017	(1.99%)	(1.99%)	(1.99%)	(1.99%)	(1.99%)
2018	(2.32%)	(2.67%)	(2.96%)	(3.27%)	(3.78%)
2019	(2.32%)	(2.67%)	(2.96%)	(3.27%)	(3.78%)
2020	(1.66%)	(1.66%)	(2.31%)	(2.93%)	(4.07%)
2021	(1.66%)	(1.66%)	(2.31%)	(2.93%)	(4.07%)
2022	0.00%	(5.75%)	(1.51%)	(1.43%)	(0.09%)
2023	0.00%	(5.75%)	(1.51%)	(1.44%)	(0.09%)
2024	0.00%	0.00%	(4.57%)	(1.51%)	1.92%
2025	0.00%	0.00%	(5.75%)	(1.51%)	1.92%
2026	0.00%	0.00%	(3.32%)	(1.51%)	3.05%
2027	0.00%	0.00%	0.00%	(1.51%)	3.05%
2028	0.00%	0.00%	0.00%	(1.51%)	3.33%
2029	0.00%	0.00%	0.00%	(1.51%)	3.33%
2030	0.00%	0.00%	0.00%	(1.51%)	2.73%
2031	0.00%	0.00%	0.00%	(1.51%)	2.73%
2032	0.00%	0.00%	0.00%	(1.51%)	1.57%
2033	0.00%	0.00%	0.00%	(1.51%)	1.57%
2034	0.00%	0.00%	0.00%	4.24%	0.40%
2035	0.00%	0.00%	0.00%	4.24%	0.40%
2036	0.00%	0.00%	0.00%	4.24%	(0.62%)
2037	0.00%	0.00%	0.00%	4.24%	(0.62%)
2038	0.00%	0.00%	0.00%	4.24%	(1.51%)
2039	0.00%	0.00%	0.00%	4.24%	(1.51%)
2040	0.00%	0.00%	0.00%	0.00%	(1.51%)
2041	0.00%	0.00%	0.00%	0.00%	4.24%
2042	0.00%	0.00%	0.00%	0.00%	4.24%
2043	0.00%	0.00%	0.00%	0.00%	4.24%
2044	0.00%	0.00%	0.00%	0.00%	4.24%
2045	0.00%	0.00%	0.00%	0.00%	4.24%
2046	0.00%	0.00%	0.00%	0.00%	4.24%
2047	0.00%	0.00%	0.00%	0.00%	0.00%
2048	0.00%	0.00%	0.00%	0.00%	0.00%
2049	0.00%	0.00%	0.00%	0.00%	0.00%
2050	0.00%	0.00%	0.00%	0.00%	0.00%

GLOSSARY OF ACTUARIAL TERMS

Actuarial Accrued Liability: Computed differently under different funding methods, the actuarial accrued liability generally represents the portion of the present value of fully projected benefits attributable to service credit that has been earned (or accrued) as of the valuation date.

Actuarial Present Value: The value of an amount or series of amounts payable or receivable at various times, determined as of a given date by the application of a particular set of actuarial assumptions (i.e. interest rate, rate of salary increases, mortality, etc.).

Aggregate Funding Method: The Aggregate Funding Method is a standard actuarial funding method. The annual cost of benefits under the Aggregate Method is equal to the normal cost. The method does not produce an unfunded actuarial accrued liability. The normal cost is determined for the actuarial accrued group rather than on an individual basis.

Entry Age Normal Cost Method (EANC): The EANC method is a standard actuarial funding method. The annual cost of benefits under EANC is comprised of two components:

- Normal cost.
- Amortization of the unfunded actuarial accrued liability.

The normal cost is determined on an individual basis, from a member's age at plan entry, and is designed to be a level percentage of pay throughout a member's career.

Normal Cost: Computed differently under different funding methods, the normal cost generally represents the portion of the cost of projected benefits allocated to the current plan year.

Projected Unit Credit (PUC) Liability: The portion of the APV of future benefits attributable to service credit that has been earned to date (past service) based on the PUC method.

Projected Benefits: Pension benefit amounts that are expected to be paid in the future taking into account such items as the effect of advancement in age as well as past and anticipated future compensation and service credits.

Unfunded PUC Liability: The excess, if any, of the Present Value of Benefits calculated under the PUC cost method over the Valuation Assets. This is the portion of all benefits earned to date that are not covered by plan assets.

Unfunded Actuarial Accrued Liability (UAAL): The excess, if any, of the actuarial accrued liability over the actuarial value of assets. In other words, the present value of benefits earned to date that are not covered by plan assets.

GLOSSARY OF RISK TERMS

Affordability: Measures the affordability of the pension systems. Affordability risk measures the chance that pension contributions will cross certain thresholds with regards to the General-Fund and contribution rates.

"Current Law": Scenarios in which assumptions about Legislative behavior are excluded. These scenarios show projections regarding the current state of Washington statutes.

Optimistic: A measurement of the pension system under favorable conditions (above expected investment returns, for example). Optimistic refers to the 75^{th} percentile, where there is a 25 percent chance of the measurement being better and 75 percent chance of the measurement being worse. Very optimistic refers to the 95^{th} percentile.

"Past Practices": Scenarios in which assumptions regarding Legislative behavior are introduced. These assumptions include actual contributions below what are actuarially required and improving benefits over time. These scenarios are meant to project past behavior into the future.

Pay-Go: The trust fund runs out of assets, and payments from the General-Fund must be made to meet contractual obligations.

Pessimistic: A measurement of the pension system under unfavorable conditions (below expected investment returns, for example). Pessimistic refers to the 25^{th} percentile, where there is a 75 percent chance of the measurement being better and 25 percent chance of the measurement being worse. Very pessimistic refers to the 5^{th} percentile.

Premature Pay-Go: Pay-go payments, measured in today's value, which might be considered "significant" in terms of the potential impact on the General-Fund.

Risk: Measures the risk metrics of the pension systems, including the chance that the pension systems will prematurely run out of assets, the amount of potential pay-go contributions, and the chance that the funded status will cross a certain threshold.

Risk Tolerance: The amount of risk an individual or group is willing to accept with regards to the likelihood and severity of unfavorable outcomes.