SCPP · 2016 Merger Study

ACTUARIAL ANALYSIS

December 13, 2016

Senator Steve Conway, Chair
Representative Bruce Chandler, Vice Chair
Select Committee on Pension Policy
PO Box 40914
Olympia, Washington 98504

SUBJECT: TRANSMITTAL LETTER FOR ACTUARIAL SECTION OF MERGER STUDY

Pursuant to Section 106 of Chapter 36, Laws of 2016, we transmit the actuarial analysis we prepared in support of the Select Committee on Pension Policy's (SCPP) study of the merger proposed under Senate Bill (SB) 6668. We enclose the following materials for inclusion in the SCPP's report to the Legislature.

- An updated draft actuarial fiscal note for SB 6668.
- The materials the Office of the State Actuary presented to the SCPP during the 2016 Interim concerning actuarial analysis on the merger.
- Responses to actuarial questions the SCPP received from stakeholders during the survey on the merger.

We appreciated the opportunity to assist the SCPP with this study. Please let us know if you have any questions or need further assistance.

Sincerely,

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

cc: Select Committee on Pension Policy Members

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Responses to Actuarial Questions from Stakeholders

Actuarial Questions and Answers

Historical

1. *How did gainsharing impact the Teachers' Retirement System (TRS) Plan 1?*

   Answer: When gainsharing was in effect for TRS 1, it provided increases to the former Plan 1 Uniform Cost of Living Adjustment (COLA). From a funding and actuarial perspective, those past increases lowered the plan's funded status and increased the TRS 1 Unfunded Actuarial Accrued Liability (UAAL).

   a. *Is that partly why the Law Enforcement Officers' and Fire Fighters' (LEOFF) Plan 1 is in such good shape and TRS 1 is not?*

      Answer: No. LEOFF 1's funded status benefitted from below expected inflation. With the benefit of hindsight, we now know this experience gain resulted in LEOFF 1 collecting more in contributions than what was necessary. Those extra contributions also grew with additional investment earnings. No other plan benefitted from this experience to the same degree as LEOFF 1 because LEOFF 1 is the only plan in our state with a fully indexed (Consumer Price Index) post-retirement COLA.

2. *What is the funding history for each plan?*

   Answer: Please find historical funded status for both LEOFF 1 and TRS 1 in the tables below.

Historical Funded Status			
Year	LEOFF 1	Year	LEOFF 1
2015	**125%**	2000	136%
2014	127%	1999	125%
2013	125%	1998	117%
2012	135%	1997	108%
2011	135%	1996	89%
2010	127%	1995	80%
2009	125%	1994	68%
2008	128%	1993	68%
2007	123%	1992	65%
2006	117%	1991	66%
2005	114%	1990	65%
2004	109%	1989	65%
2003	112%	1988	66%
2002	119%	1987	69%
2001	129%	1986	57%

Note: EAN Cost Method used starting in 2014 (PUC previously).

Historical Funded Status			
Year	TRS 1	Year	TRS 1
2015	**64%**	2000	100%
2014	69%	1999	93%
2013	71%	1998	86%
2012	79%	1997	82%
2011	81%	1996	70%
2010	84%	1995	65%
2009	75%	1994	65%
2008	77%	1993	62%
2007	76%	1992	59%
2006	80%	1991	59%
2005	80%	1990	60%
2004	88%	1989	58%
2003	89%	1988	59%
2002	98%	1987	58%
2001	100%	1986	50%

Note: EAN Cost Method used starting in 2014 (PUC previously).

a. *Who paid what?*

Answer: Please find historical contribution rates on this website: www.drs.wa.gov/employer/EmployerHandbook/chpt6/tables/default.htm

3. *Is LEOFF 1 cost sharing the same as other plans?*

Answer: No. Generally speaking, member contribution rates in the Plans 1 were fixed at 6 percent. Plan 1 employers in Public Employees' Retierement System (PERS) and TRS contribute to the Plan 1 UAAL in addition to the normal cost. When LEOFF 1 had a UAAL, contributions to amortize the UAAL were made exclusively by the state through the General Fund-State budget.

Member contributions in LEOFF 1 ceased. Member contributions in PERS 1 and TRS 1 continue.

Plan 2 members share equally with their employers in the cost of their defined benefits. Plan 3 members do not share in the cost of their defined benefits, but generally receive half the defined benefit of a similarily situated Plan 2 member. The remaining Plan 3 retirement benefit is derived from member contributions (and assoicated investment earnings) to a defined contribution account.

a. *I.e., did the state only put in 20 percent of contributions?*

Answer: No. The state contributes 20 percent of the cost of **LEOFF 2** benefits. When the state made contributions to LEOFF 1, the state was exclusively responsible for amortizing the LEOFF 1 UAAL. Please see the table on the next page for a history of LEOFF 1 contributions by source.

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Total Employee, Employer, and State Contributions to LEOFF 1			
	Employer	Employee	State
(Dollars in Millions)			
1971	$4.3	$4.3	$0.0
1972	$4.9	$4.9	$0.0
1973	$5.4	$5.4	$0.0
1974	$5.9	$5.9	$0.0
1975	$6.5	$6.5	$0.0
1976	$7.1	$7.1	$39.8
1977	$7.8	$7.8	$39.7
1978	$8.6	$7.4	$63.7
1979	$8.8	$8.7	$62.5
1980	$9.3	$9.2	$81.7
1981	$9.6	$9.6	$81.2
1982	$10.4	$10.4	$56.7
1983	$10.5	$10.6	$178.1
1984	$10.7	$10.8	$128.7
1985	$10.9	$10.9	$93.1
1986	$10.9	$11.0	$139.1
1987	$11.4	$11.4	$138.4
1988	$11.7	$11.7	$52.5
1989	$12.0	$12.0	$46.2
1990	$10.6	$10.7	$56.8
1991	$10.8	$10.9	$54.4
1992	$10.4	$10.4	$70.3
1993	$10.4	$10.5	$54.7
1994	$9.8	$9.8	$61.3
1995	$9.5	$9.5	$65.5
1996	$8.9	$8.9	$70.9
1997	$8.2	$8.2	$66.7
1998	$7.6	$8.3	$50.4
1999	$7.2	$7.2	$48.8
2000	$6.3	$6.3	$0.0
Total	**$266.4**	**$266.3**	**$1,801.2**

After 2000, contributions are not required while the plan remains fully funded.

4. *What would have happened if there had been no general fund contributions to LEOFF 1?*

   a. *Or the Prior Act systems (e.g., City of Seattle)?*

   Answer: LEOFF 1 would have a significant unfunded liability today without those contributions. However, as noted in the table above, the state contributions to the LEOFF 1 UAAL comprise the majority of past LEOFF contributions.

5. *What is the year-by-year funded status and UAALs rate for TRS 1 since 2000?*

   Answer: Please see the table above for historical funded status.

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6. *What other bills (proposed or enacted) have "utilized the device of pension premium reduction at reduced or would have reduced the obligation of the state to make pension contributions"?*

   Answer: This question is not actuarial in nature.

Related to a Merger

7. *What is the financial situation before and after?*

   Answer: Please see the draft actuarial fiscal note in this study.

   a. *What does the "surplus" represent?*

      i. *Is it the excess of funds needed to pay benefits this month? This year?*

   b. *Is the surplus "real" or just projected?*

      i. *How reasonable is the investment return assumption?*

      ii. *What would it look like under alternate scenarios (e.g., 7 percent or 6 percent)?*

      Answer: These questions were answered during presentations from the Office of the State Actuary (OSA) to the Select Committee on Policy (SCPP) during the 2016 Interim. We have included those materials in the actuarial section of this report.

   c. *If the surplus disappears, would it be too late to insure the LEOFF 1 benefits?*

      i. *E.g., ensuring payment under a pay-go scenario versus insuring through plan immunization.*

      Answer: As of June 30, 2015, LEOFF 1 lacks sufficient assets to completely "immunize" or "settle" plan obligations. The decision to immunize or settle plan obligations is complex and would require analysis outside the scope of this study.

   d. *Would a merger be revenue neutral?*

   Answer: As noted in the draft actuarial fiscal note, the merger proposed under SB 6668 is expected to result in a savings to the state, but could result in a cost under very pessimistic future economic outlooks. Please see the actuarial fiscal note in this report for supporting information.

8. *How might the funds be used?*

   a. *Clarify: Usable across the merged plan vs. usable outside either of the retirement plans (other obligations).*

   b. *Should it be treated like a reserve for LEOFF 1 only?*

   c. *Can money be "skimmed out" of the fund during transfer from LEOFF 1 to TRS 1?*

   Answer: These questions are not actuarial in nature. Some are addressed in the legal and policy sections of this study.

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9. *What happens in the event of a deficit?*
   a. *If the funded status were 87 percent, would that mean I only get 87 percent of my current check amount?*
   b. *Before merger?*
   c. *After?*
   d. *Who pays what?*
   e. *Who will be paid first? (Overlap with legal/admin analysis)*
   f. *Could the state default on the pensions?*

   Answer: These questions are not actuarial in nature. Some are addressed in the legal and policy sections of this study.

10. *Would there be other costs (e.g., admin)?*

    Answer: Yes. Please see the Department of Retirement Systems' (DRS) section on administrative impacts in this report.

11. *How would a merger impact accounting and reporting?*
    a. *How would a merger impact financial reporting (GASB) for state and local governments?*

    Answer: As of this writing, DRS, in consultation with the Office of Financial Management and OSA, is reviewing this question.

12. *Who is constitutionally liable for future benefit payments?*

    Answer: This question is not actuarial in nature.

13. *Are there other options to address TRS 1 underfunding?*

    Answer: Yes.
    a. *What would the impact be if the TRS 1 UAAL rate was reduced without a merger?*

    Answer: If funding to the TRS 1 UAAL is reduced below the level actuarially required to eliminate the UAAL under state funding policy, we would expect the TRS 1 UAAL to persist, potentially increase, and lead to even higher future contribution requirements.

14. *Can the legislature raise taxes to meet pension obligations (pension or general)?*

    Answer: This question is not actuarial in nature.

15. *What is the position of professional actuarial associations about moving a retirement plan from surplus to unfunded?*

    Answer: OSA cannot and does not speak on behalf of professional actuarial associations.

SUMMARY OF RESULTS

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

COST SUMMARY

Impact on Contribution Rates *(Effective 09/01/2017 - 08/31/2019)*		
Fiscal Year 2018 State Budget	**TRS**	**LEOFF 1**
Employee (Plan 1)	0.00%	0.00%
Total Employer	(2.14%)	0.00%

Budget Impacts			
(Dollars in Millions)	**2017-2019**	**2019-2021**	**25-Year**
General Fund-State	($171.1)	($167.2)	($1,371.9)
Local Government	($69.9)	($68.3)	($560.4)
Total Employer	($241.0)	($235.5)	($1,932.2)

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 $1.9 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 $3.2 billion over the next 27 years. A very pessimistic or worse outlook occurs in 5 percent of our simulations of future economic outlooks.
- We observed that the proposed merger increases certain risks to the affected systems. See the **How The Risk Measures Changed** section of this draft fiscal note for further information.

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

WHAT IS THE PROPOSED CHANGE?

Summary Of Change

This proposal impacts the following systems:

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

This proposal 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. 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 draft actuarial fiscal note only addresses the changes that impact the pricing of the proposal.

<u>Benefits</u>

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, 2018, 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.

<u>Funding Policy</u>

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 5.05 percent starting September 1, 2017, and continuing through August 31, 2021.
- ❖ A new minimum UAAL rate is set at 5.05 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.

Assumed Effective Date: September 1, 2017.

HOW THIS PROPOSAL DIFFERS FROM SB 6668

This proposal is intended to reflect the provisions of SB 6668 (from the 2016 Legislative Session) rolled forward one year. Only the effective dates, and contribution rates (see **Funding Policy** above) are changed from that bill. If a new merger bill is introduced next legislative session, it may not match this proposal precisely. If so, the Office of the State Actuary (OSA) will produce new analysis accordingly. We urge readers to ensure the details of this and any future proposals align before using or relying on this analysis.

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) The normal cost, or contributions for the ongoing costs of the plan, and (2) The UAAL, or contributions for past costs.

(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, 2015, the measurement date for the latest actuarial valuation, LEOFF 1 has a surplus of $1.1 billion and a funded status of 125 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

7.7 percent per year to determine the present value of earned pension obligations).

For purposes of this draft fiscal note, we assume the prior funding policy would resume if LEOFF 1 were to come out of its fully-funded state before the year 2024. 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.

After the year 2024, a LEOFF 1 UAAL can still emerge under some pessimistic outlooks. When this occurs, we assume the UAAL will be amortized, through contributions from the General Fund-State (GF-S) exclusively, over a ten-year rolling period of total LEOFF system salary (LEOFF 1 and LEOFF 2 combined). This assumed funding method is similar to the current funding method for PERS 1 and TRS 1 except we do not assume a minimum contribution rate for LEOFF 1.

Who Is Impacted And How?

This proposal 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 proposal 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. This proposal 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 PROPOSAL HAS AN EXPECTED SAVINGS AND WHO RECEIVES IT

Why This Proposal Has An Expected Savings

This proposal 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 proposal, 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
2015	($1,090)	($1,090)	($1,090)	($1,090)	($1,090)
2018	N/A	N/A	N/A	N/A	($438)
2021	N/A	N/A	N/A	N/A	$286
2024	N/A	N/A	N/A	N/A	$434
2027	N/A	N/A	N/A	N/A	$1,113
2030	N/A	N/A	N/A	N/A	$1,141
2033	N/A	N/A	N/A	N/A	$1,411
2036	N/A	N/A	N/A	N/A	$1,229
2039	N/A	N/A	N/A	N/A	$1,238
2042	N/A	N/A	N/A	N/A	$815
2045	N/A	N/A	N/A	N/A	$671
2048	N/A	N/A	N/A	N/A	$381
2051	N/A	N/A	N/A	N/A	$265

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 2028 through future employer contributions and investment returns.

TRS 1 UAAL, Before Merger					
(Dollars in Millions)					
Year	Very Optimistic	Optimistic	Expected	Pessimistic	Very Pessimistic
2015	$3,187	$3,187	$3,187	$3,187	$3,187
2018	$2,674	$2,861	$3,029	$3,159	$3,338
2021	$834	$1,659	$2,270	$2,732	$3,617
2024	N/A	$268	$1,492	$2,428	$3,900
2027	N/A	N/A	$273	$1,733	$3,612
2030	N/A	N/A	N/A	$671	$2,879
2033	N/A	N/A	N/A	$6	$1,801
2036	N/A	N/A	N/A	N/A	$336
2039	N/A	N/A	N/A	N/A	$97
2042	N/A	N/A	N/A	N/A	N/A
2045	N/A	N/A	N/A	N/A	N/A
2048	N/A	N/A	N/A	N/A	N/A
2051	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 2026.

LEOFF 1 / TRS 1 UAAL, After Merger					
(Dollars in Millions)					
Year	Very Optimistic	Optimistic	Expected	Pessimistic	Very Pessimistic
2015	$2,097	$2,097	$2,097	$2,097	$2,097
2018	$1,051	$1,420	$1,752	$2,009	$2,384
2021	N/A	$20	$1,250	$2,184	$3,964
2024	N/A	N/A	$385	$2,315	$5,293
2027	N/A	N/A	N/A	$2,091	$5,458
2030	N/A	N/A	N/A	$1,586	$4,983
2033	N/A	N/A	N/A	$814	$4,273
2036	N/A	N/A	N/A	$36	$3,289
2039	N/A	N/A	N/A	N/A	$1,958
2042	N/A	N/A	N/A	N/A	$147
2045	N/A	N/A	N/A	N/A	N/A
2048	N/A	N/A	N/A	N/A	N/A
2051	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 the **How The Results Change When The Assumptions Change** section of this draft 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 proposal. 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 proposal.

HOW WE VALUED THESE COSTS

Assumptions We Made

In all areas other than the risk analysis section, we performed what we call "current law" scenario analysis in this draft 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.

After the year 2024, a LEOFF 1 UAAL can still emerge under some pessimistic outlooks. When this occurs, we assume the UAAL will be amortized, through contributions from the GF-S exclusively, over a ten-year rolling period of total LEOFF system salary (LEOFF 1 and LEOFF 2 combined). This assumed funding method is similar to the current funding method for PERS 1 and TRS 1 except we do not assume a minimum contribution rate for LEOFF 1.

Based upon historical LEOFF 1 headcounts as shown in the table, we expect approximately 7,300 members and beneficiaries will be eligible for the bonus as of the effective date of the proposal.

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

Otherwise, we developed these savings using the same assumptions as disclosed in the *June 30, 2015, Actuarial Valuation Report* (AVR) and as described on the Projections Disclosures webpage of the OSA 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 proposal 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 proposal.

We modeled the LEOFF 1 member bonus as a one-time benefit payment during 2018 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 2.65 percent through June 30, 2016, when estimating projected asset values.

ACTUARIAL RESULTS

How The Liabilities Changed

The proposal 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 7,300 (expected eligible members) amounts to an assumed total distribution of about $36.5 million, payable on January 3, 2018. Otherwise, this proposal 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 proposal 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 proposal 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	$42,703	$0	$42,703
LEOFF	$11,025	($11,025)	$0
TRS 1 / LEOFF 1 Merged*			**$42,703**

Note: Totals may not agree due to rounding.
**TRS 1 / LEOFF 1 merged plan contribution rates collected over TRS salaries only.*

How 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 UAAL 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	
2018	0.00%	7.19%	5.05%	(2.14%)
2019	0.00%	7.19%	5.05%	(2.14%)
2020	0.00%	6.94%	5.05%	(1.89%)
2021	0.00%	6.94%	5.05%	(1.89%)
2022	0.00%	5.75%	5.05%	(0.70%)
2023	0.00%	5.75%	5.05%	(0.70%)
2024	0.00%	5.75%	5.05%	(0.70%)
2025	0.00%	5.75%	5.05%	(0.70%)
2026	0.00%	5.75%	0.10%	(5.65%)
2027	0.00%	5.75%	0.00%	(5.75%)
2028	0.00%	3.16%	0.00%	(3.16%)
2029	0.00%	0.00%	0.00%	0.00%
2030	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 proposal in the table below. Please see the **How The Results Change When The Assumptions Change** section of this draft 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**
2017-2019			
General Fund	($171.1)	$0.0	($171.1)
Non-General Fund	$0.0	0.0	$0.0
Total State	**($171.1)**	**$0.0**	**($171.1)**
Local Government	($69.9)	0.0	($69.9)
Total Employer	**($241.0)**	**$0.0**	**($241.0)**
Total Employee	**$0.0**	**$0.0**	**$0.0**
2019-2021			
General Fund	($167.2)	$0.0	($167.2)
Non-General Fund	$0.0	0.0	$0.0
Total State	**($167.2)**	**$0.0**	**($167.2)**
Local Government	($68.3)	0.0	($68.3)
Total Employer	**($235.5)**	**$0.0**	**($235.5)**
Total Employee	**$0.0**	**$0.0**	**$0.0**
2017-2042			
General Fund	($1,371.9)	$0.0	($1,371.9)
Non-General Fund	$0.0	0.0	$0.0
Total State	**($1,371.9)**	**$0.0**	**($1,371.9)**
Local Government	($560.4)	0.0	($560.4)
Total Employer	**($1,932.2)**	**$0.0**	**($1,932.2)**
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 proposal 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 draft fiscal note to the extent that actual experience differs from the actuarial assumptions.

How the Risk Measures Changed

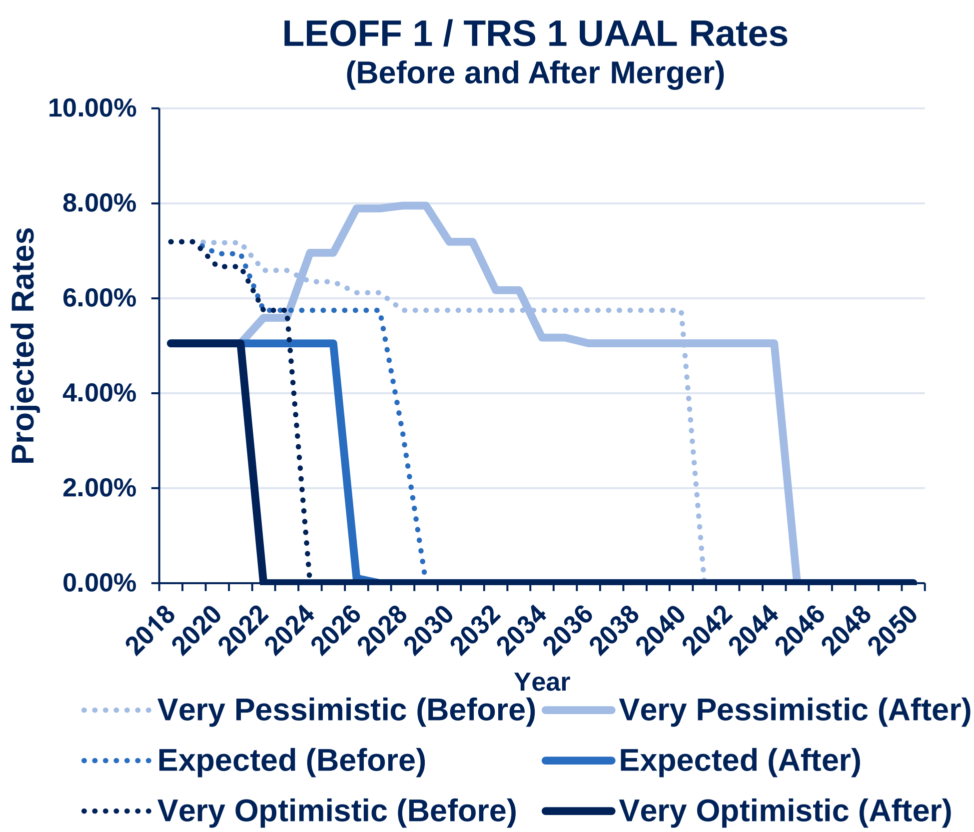
This proposal will affect the risk of the impacted systems. Because the proposal merges two plans and impacts two closed plans only, we needed to develop custom risk measures.

In terms of actuarial funding, we believe the largest risk with the proposed merger is reducing funding to the merged plan based on an expected surplus that may not remain if future experience, primarily inflation and investment returns, does not match expectations. Our risk model allows us to review the likelihood of these outcomes using data, assumptions, and methods specific to the risk assessment.

If the risks noted above were to surface under the proposed merger, you would see increases in future contribution rates and potentially increases in pay-go funding situations. The graphs below demonstrate under what scenarios this risk emerges, when, and for how long.

Projected TRS 1 UAAL Rates

Starting in 2024 and through 2034, we observed increased UAAL contribution rates after the merger under the Very Pessimistic scenario. Under this same scenario, we also observed an extension of UAAL rates from 2041 to 2045 after the merger. These very pessimistic or worse outcomes occur in 5 percent of the simulations in our model.

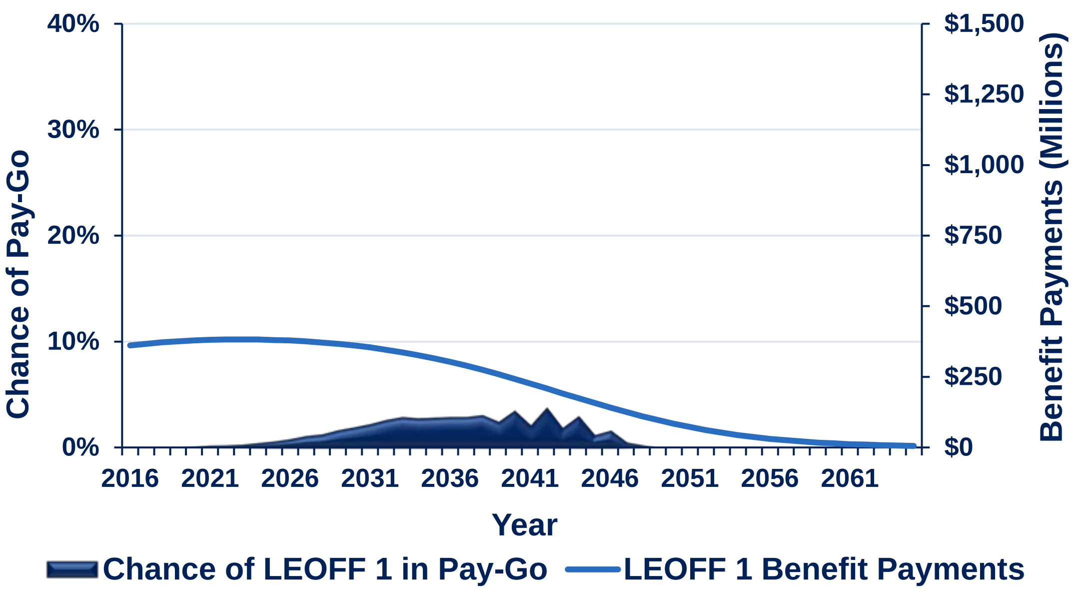


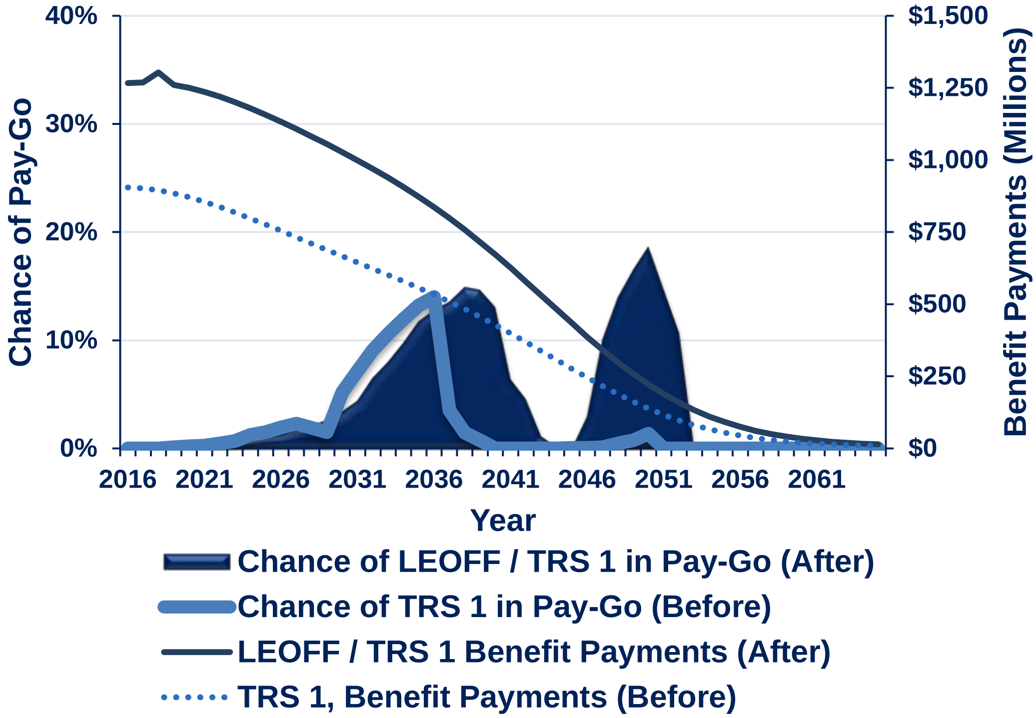
Increased UAAL contribution rates can occur after the merger because the merged plan has higher assets and obligations than TRS 1 before merger. With this larger base of assets and obligations, pessimistic outcomes become more pessimistic than before the merger. Optimistic outcomes become more optimistic after the merger for the same reasons.

Note that these contribution rate graphs are based upon "current law" scenario analysis, which match the tables shown in **Appendix A**.

Pay-Go Risk

When we assume on-going funding to LEOFF 1 after 2024 similar to the funding method for PERS 1 and TRS 1, we observe LEOFF 1 pay-go risk from about 2024 through 2047 with a maximum chance of about 4 percent in the year 2042. At that time, the annual benefit payments for LEOFF 1 are about $210 million under our risk model assuming past practices continue in the areas of funding and benefit enhancements.





After the merger, we observed a shift and increase in pay-go risk. The initial infusion of LEOFF 1 surplus assets insulates the merged plan from some very pessimistic outcomes earlier in the projection resulting in a shift of pay-go risk. When those very pessimistic outcomes continue, the merged plan can face increased pay-go situations near the end of the plan's life due to the higher combined benefit payments from the merger.

Who Would Be Impacted If These Risks Materialize

The risks identified above can surface under current law or under the proposed merger. If the risks materialize under the proposed merger, we anticipate the following impacts from a funding policy perspective:

- **LEOFF 1 Active Members** – These members don't contribute to LEOFF 1 under current law when the plan is fully funded and would not contribute to the merged plan under this proposal.
- **TRS 1 Active Members** – These members contribute 6 percent of pay under current law and under this proposed merger.
- **LEOFF 1 Employers** – Past LEOFF 1 employer funding has come from two sources: (1) local government and (2) the state's general fund. Under current law, however, given the relatively small number of LEOFF 1 active members remaining in the plan, the state's general fund would assume nearly all the responsibility if unfunded

LEOFF 1 costs re-emerge and past funding policy were reinstated. Under this proposed merger, local government would no longer be responsible for funding LEOFF 1 retirement benefits.

- **TRS Employers** – TRS employer funding comes from two sources: (1) local government and (2) state/federal. Under this proposed merger, TRS employers and these funding sources would assume all costs under the merger. As a result, any unfunded LEOFF 1 costs that re-emerge under the merger, if identifiable, could potentially be shared with local government in TRS (school districts).

Risk Management Considerations

If the Legislature decides to pursue this proposal, the following changes to the proposal could reduce some of the risks noted above:

- **Fixed UAAL Rates** – Eliminate or shorten the period of fixed rates under the proposal. This would allow for more responsive and adequate funding should the need arise.
- **Minimum UAAL Rates** – Increase the minimum UAAL rates under the proposal. The current minimum UAAL rate for TRS 1 is 5.75 percent. The proposed minimum UAAL rate for the merged plan is 5.05 percent. Because the merged plan has larger combined benefit payments than TRS 1, the merged plan may require higher minimum rates to accommodate the higher risk associated with the added benefit payments.

As part of this analysis, we changed our standard risk model to accommodate the risk analysis of a merged plan. Specifically, we made the following modifications:

- We applied a $50 million annual pay-go threshold (today's dollars) to the merged plan (we did not combine the threshold we would apply to each plan before the merger).
- We assumed the same Percent of Contributions Made and Benefit Improvements assumptions for the merged plan as we do for TRS 1 before the merger.
- In our standard risk modeling, we assume maximum contribution rates by system. For this analysis, we adjusted this maximum for the merged plan so the merged plan receives contributions from the state-general fund that are no less than what LEOFF 1 and TRS 1 would receive from the state-general fund on a combined basis before a merger.

Otherwise, we developed this risk analysis using the same assumptions, methods, and data as disclosed in the *2016 Risk Assessment Assumptions Study*.

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 proposal 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 draft fiscal note.

Budget Impacts - Varying Economic Scenarios					
(Dollars in Millions)	Very Optimistic	Optimistic	Expected	Pessimistic	Very Pessimistic
2017-2019					
General Fund	($171)	($171)	($171)	($171)	($171)
Non-General Fund	$0	$0	$0	$0	$0
Total State	**($171)**	**($171)**	**($171)**	**($171)**	**($171)**
Local Government	($70)	($70)	($70)	($70)	($70)
Total Employer	**($241)**	**($241)**	**($241)**	**($241)**	**($241)**
Total Employee	**$0**	**$0**	**$0**	**$0**	**$0**
2019-2021					
General Fund	($143)	($157)	($167)	($176)	($188)
Non-General Fund	$0	$0	$0	$0	$0
Total State	**($143)**	**($157)**	**($167)**	**($176)**	**($188)**
Local Government	($59)	($64)	($68)	($72)	($77)
Total Employer	**($202)**	**($222)**	**($235)**	**($248)**	**($264)**
Total Employee	**$0**	**$0**	**$0**	**$0**	**$0**
2017-2042					
General Fund	($878)	($1,275)	($1,372)	($36)	$805
Non-General Fund	$0	$0	$0	$0	$0
Total State	**($878)**	**($1,275)**	**($1,372)**	**($36)**	**$805**
Local Government	($358)	($521)	($560)	($15)	$457
Total Employer	**($1,236)**	**($1,796)**	**($1,932)**	**($50)**	**$1,261**
Total Employee	**$0**	**$0**	**$0**	**$0**	**$0**
2017-2044					
General Fund	($878)	($1,275)	($1,372)	($36)	$2,155
Non-General Fund	$0	$0	$0	$0	$0
Total State	**($878)**	**($1,275)**	**($1,372)**	**($36)**	**$2,155**
Local Government	($358)	($521)	($560)	($15)	$1,008
Total Employer	**($1,236)**	**($1,796)**	**($1,932)**	**($50)**	**$3,163**
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 2017-19 Biennium does not change under varying economic conditions because the contribution rates adopted under current law and this proposal are fixed during that period. The savings in the 2019-21 Biennium, however, increase as economic conditions worsen because current law contribution rates (before the merger) will increase while they remain fixed at 5.05 percent under this proposal (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 proposal, 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 draft fiscal note based on our understanding of the proposal as of the date shown in the footer. We prepared this draft actuarial fiscal note for the Select Committee on Pension Policy for inclusion in their report to the Legislature on the study of SB 6668. Please do not use this draft fiscal note for other purposes and please replace this draft actuarial fiscal note when an updated version becomes available.

We advise readers of this draft 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 draft fiscal note as a whole. Distribution of, or reliance on, only parts of this draft 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 draft 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. The risk analysis summarized in this draft fiscal note involves the interpretation of many factors and the application of professional judgment. We believe that the data, assumptions, and methods used in our risk assessment model 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 draft 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 draft 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 draft 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 UAAL Contribution Rates, Before Merger - LEOFF 1					
Fiscal Year	Very Optimistic	Optimistic	Expected	Pessimistic	Very Pessimistic
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%	0.00%
2023	0.00%	0.00%	0.00%	0.00%	0.00%
2024	0.00%	0.00%	0.00%	0.00%	12.42%
2025	0.00%	0.00%	0.00%	0.00%	0.00%

Employer UAAL Contribution Rates, Before Merger - TRS 1					
Fiscal Year	Very Optimistic	Optimistic	Expected	Pessimistic	Very Pessimistic
2018	7.19%	7.19%	7.19%	7.19%	7.19%
2019	7.19%	7.19%	7.19%	7.19%	7.19%
2020	6.67%	6.83%	6.94%	7.04%	7.17%
2021	6.67%	6.83%	6.94%	7.04%	7.17%
2022	5.75%	5.75%	5.75%	5.82%	6.59%
2023	5.75%	5.75%	5.75%	5.82%	6.59%
2024	0.00%	5.75%	5.75%	5.75%	6.35%
2025	0.00%	5.75%	5.75%	5.75%	6.35%
2026	0.00%	0.00%	5.75%	5.75%	6.12%
2027	0.00%	0.00%	5.75%	5.75%	6.12%
2028	0.00%	0.00%	3.16%	5.75%	5.75%
2029	0.00%	0.00%	0.00%	5.75%	5.75%
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%	5.75%	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%

Note: With the exception of the Expected case, we collect the minimum UAAL rate for a full year in any year a UAAL exists.

Employer UAAL Contribution Rates, After Merger - LEOFF 1 / TRS 1					
Fiscal Year	Very Optimistic	Optimistic	Expected	Pessimistic	Very Pessimistic
2018	5.05%	5.05%	5.05%	5.05%	5.05%
2019	5.05%	5.05%	5.05%	5.05%	5.05%
2020	5.05%	5.05%	5.05%	5.05%	5.05%
2021	5.05%	5.05%	5.05%	5.05%	5.05%
2022	0.00%	5.05%	5.05%	5.05%	5.59%
2023	0.00%	0.00%	5.05%	5.05%	5.59%
2024	0.00%	0.00%	5.05%	5.05%	6.96%
2025	0.00%	0.00%	5.05%	5.05%	6.96%
2026	0.00%	0.00%	0.10%	5.05%	7.89%
2027	0.00%	0.00%	0.00%	5.05%	7.89%
2028	0.00%	0.00%	0.00%	5.05%	7.95%
2029	0.00%	0.00%	0.00%	5.05%	7.95%
2030	0.00%	0.00%	0.00%	5.05%	7.19%
2031	0.00%	0.00%	0.00%	5.05%	7.19%
2032	0.00%	0.00%	0.00%	5.05%	6.17%
2033	0.00%	0.00%	0.00%	5.05%	6.17%
2034	0.00%	0.00%	0.00%	5.05%	5.17%
2035	0.00%	0.00%	0.00%	5.05%	5.17%
2036	0.00%	0.00%	0.00%	5.05%	5.05%
2037	0.00%	0.00%	0.00%	0.00%	5.05%
2038	0.00%	0.00%	0.00%	0.00%	5.05%
2039	0.00%	0.00%	0.00%	0.00%	5.05%
2040	0.00%	0.00%	0.00%	0.00%	5.05%
2041	0.00%	0.00%	0.00%	0.00%	5.05%
2042	0.00%	0.00%	0.00%	0.00%	5.05%
2043	0.00%	0.00%	0.00%	0.00%	5.05%
2044	0.00%	0.00%	0.00%	0.00%	5.05%
2045	0.00%	0.00%	0.00%	0.00%	0.00%
2046	0.00%	0.00%	0.00%	0.00%	0.00%

Note that under a Very Optimistic scenario, the fixed 5.05 percent contribution rate may not be required for all four years as provided under the proposal.

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 2018-21). 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 2024-32).

The contribution rates then gradually decline under the merger back down to the 5.05 percent rate floor, below the 5.75 percent rate floor under current law (years 2033-40). The merged plan UAAL rate floor must then be collected two years longer than our standard 25-year budget impact table (years 2043-44) due to the poor investment returns under this scenario.

Impact on TRS UAAL Rates					
Fiscal Year	**Very Optimistic**	**Optimistic**	**Expected**	**Pessimistic**	**Very Pessimistic**
2018	(2.14%)	(2.14%)	(2.14%)	(2.14%)	(2.14%)
2019	(2.14%)	(2.14%)	(2.14%)	(2.14%)	(2.14%)
2020	(1.62%)	(1.78%)	(1.89%)	(1.99%)	(2.12%)
2021	(1.62%)	(1.78%)	(1.89%)	(1.99%)	(2.12%)
2022	(5.75%)	(0.70%)	(0.70%)	(0.77%)	(1.00%)
2023	(5.75%)	(5.75%)	(0.70%)	(0.77%)	(1.00%)
2024	0.00%	(5.75%)	(0.70%)	(0.70%)	0.61%
2025	0.00%	(5.75%)	(0.70%)	(0.70%)	0.61%
2026	0.00%	0.00%	(5.65%)	(0.70%)	1.77%
2027	0.00%	0.00%	(5.75%)	(0.70%)	1.77%
2028	0.00%	0.00%	(3.16%)	(0.70%)	2.20%
2029	0.00%	0.00%	0.00%	(0.70%)	2.20%
2030	0.00%	0.00%	0.00%	(0.70%)	1.44%
2031	0.00%	0.00%	0.00%	(0.70%)	1.44%
2032	0.00%	0.00%	0.00%	(0.70%)	0.42%
2033	0.00%	0.00%	0.00%	(0.70%)	0.42%
2034	0.00%	0.00%	0.00%	(0.70%)	(0.58%)
2035	0.00%	0.00%	0.00%	5.05%	(0.58%)
2036	0.00%	0.00%	0.00%	5.05%	(0.70%)
2037	0.00%	0.00%	0.00%	0.00%	(0.70%)
2038	0.00%	0.00%	0.00%	0.00%	(0.70%)
2039	0.00%	0.00%	0.00%	0.00%	(0.70%)
2040	0.00%	0.00%	0.00%	0.00%	(0.70%)
2041	0.00%	0.00%	0.00%	0.00%	5.05%
2042	0.00%	0.00%	0.00%	0.00%	5.05%
2043	0.00%	0.00%	0.00%	0.00%	5.05%
2044	0.00%	0.00%	0.00%	0.00%	5.05%
2045	0.00%	0.00%	0.00%	0.00%	0.00%
2046	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. Under this method, all plan costs (for past and future service credit) are included under the normal cost. Therefore, the method does not produce an unfunded actuarial accrued liability outside the normal cost. It's most common for the normal cost to be determined for the entire group rather than on an individual basis for this method.

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 most commonly 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 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 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.

Unfunded EAN Liability: The excess, if any, of the Present Value of Benefits calculated under the EAN cost method over the Valuation Assets. This is the portion of all 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 75th 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 95th 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 25th 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 5th 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.

Select Committee on Pension Policy

Merger Study

Final Survey Results and LEOFF 1 Funding Information

Aaron Gutierrez, MPA, JD
Senior Policy Analyst

Matt Smith, FCA, EA, MAAA
State Actuary

September 20, 2016

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"Supporting financial security for generations."

Today's Presentation

- SCPP asked staff to bring back final survey results
  - Full list in your materials
  - About 40 new additions (depending on how they're counted)
  - Highlights in presentation
- Matt will address LEOFF 1 expected surplus
  - One of the most common questions we've received

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Survey Information

Select Committee on Pension Policy

- Survey was intended to focus on LEOFF 1/TRS 1 merger
  - Did not remove LEOFF 1/LEOFF 2 merger comments
- At stakeholders' request, all responses will be posted on the web
- Received over 1,400 web survey responses, plus email, letters, and phone calls
- Compiled list sent to AGO, DRS, and LEOFF 2 Board

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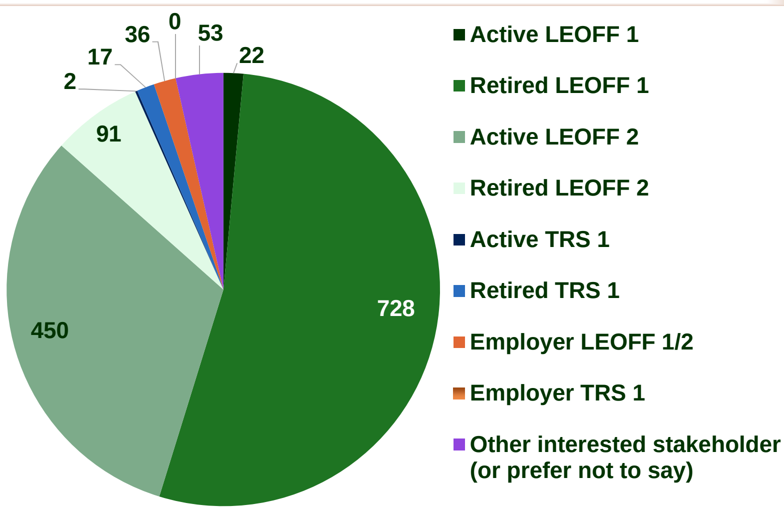
Question 1: Plan Membership and Status (as of August 31, 2016)

Select Committee on Pension Policy



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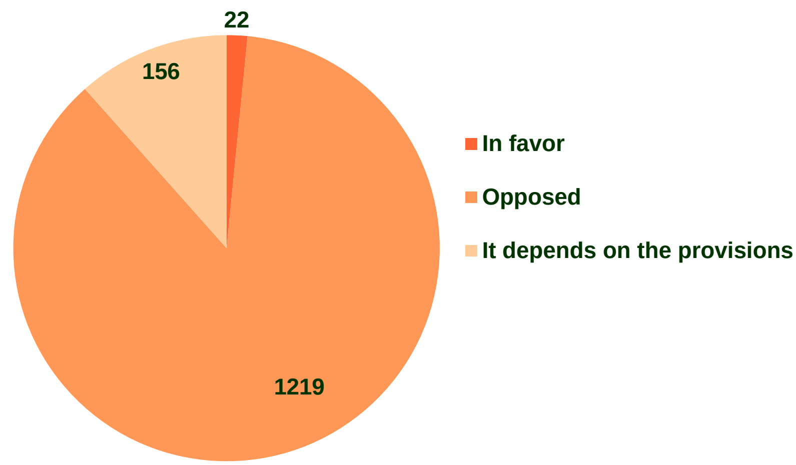
Question 2: For or Against a Merger? (as of August 31, 2016)



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New Questions/Concerns: Highlights

- Most questions/concerns expand on prior questions
- How would a merger impact accounting and reporting?
- Are there other options for addressing TRS 1 underfunding?
- How does McCleary impact the merger analysis?
  - How could a merger impact local levies if a future unfunded liability arises?
- Added section for "Questions for Bill Sponsors"
  - Questions that staff can't address, such as why the sponsor chose to include the $5,000 lump sum in SB 6668

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What Constitutes the LEOFF 1 Surplus?

- A comparison, at a single point in time, of the *Actuarial Value of Assets* to the *Present Value of Future Benefits*
- At June 30, 2015, the LEOFF 1 surplus was $1,090 million ($1.09 billion)
- Let's dig a little deeper

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What Constitutes the LEOFF 1 Surplus?

(Dollars in Millions)	
Actuarial Value of Assets (AVA)	**$5,404**
Present Value of Future Benefits (PVB)	**$4,313**
Surplus/(Deficit) [AVA-PVB]	**$1,090**

At June 30, 2015. Totals don't agree due to rounding.

Select Committee on Pension Policy

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What Constitutes the LEOFF 1 Surplus?

(Dollars in Millions)	
Actuarial Value of Assets (AVA) [a-b]	**$5,404**
Market Value of Assets [a]	$5,610
Deferred Investment Gains/(Losses) [b]	$207
Present Value of Future Benefits (PVB)	**$4,313**
Surplus/(Deficit) [AVA-PVB]	**$1,090**

At June 30, 2015. Totals don't agree due to rounding.

What Constitutes the LEOFF 1 Surplus?

(Dollars in Millions)	
Actuarial Value of Assets (AVA) [a-b]	**$5,404**
Market Value of Assets [a]	$5,610
Deferred Investment Gains/(Losses) [b]	$207
Present Value of Future Benefits (PVB) [c-d]	**$4,313**
PVB Assuming Zero Real Rate of Return [c]	$7,029
Additional Interest Discount for Assumed Real Rate of Return [d]	$2,716
Surplus/(Deficit) [AVA-PVB]	**$1,090**

At June 30, 2015. Totals don't agree due to rounding. 7.7% nominal rate of return equals 3% for assumed inflation plus 4.7% for the assumed real rate of return.

Select Committee on Pension Policy

What Constitutes the LEOFF 1 Surplus?

- At June 30, 2015, the LEOFF 1 surplus was $1,090 million
  - Meaning the actuarial value of assets exceeds the present value of future benefits by $1,090 million
- The entire LEOFF 1 surplus is comprised of assumed future investment income above inflation
- See *2015 Actuarial Valuation Report* for further details and supporting information

Next Steps

- October
  - Progress updates and/or drafts from AGO, DRS, OSA, LEOFF 2 Board
- November
  - SCPP receives draft report
- December
  - Final action on report
- Report due January 9, 2017

Appendix: Survey Questions

Select Committee on Pension Policy

- Plan membership and status (active, retired, employer)
- If the Legislature proposed a merger of LEOFF 1 and TRS 1, then you would be…
  - In favor, opposed, or it depends on the provisions of the merger
- If the Legislature proposed a plan merger
  - What QUESTIONS would you like answered?
  - What CONCERNS would you like to see addressed?
  - What GENERAL COMMENTS would you have?

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Merger Study – Actuarial Update

Matt Smith, FCA, EA, MAAA
State Actuary

Presentation to Select Committee on Pension Policy

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

October 18, 2016

Today's Update

- Share preliminary results we have thus far
- Response to SCPP member questions from September meeting
- Discuss next steps on actuarial analysis

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Preliminary Results

- Updated fiscal analysis on SB 6668
- Reflects most recent participant data and 2015 AVR
- Asset returns through June 30, 2016
- Assumes following key updates to SB 6668
  - Payment of $5,000 bonus one year later
  - 4.24 percent contribution rate (based on 2014 AVR) replaced with 5.05 percent (based on 2015 AVR)
  - Referred to as SB 6668 (2017) in this presentation
- All other data, assumptions, and methods consistent with actuarial fiscal note from last session (in materials)
- Please see actuarial fiscal note for supporting information and considerations on the use of the analysis

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Comparison Of Budget Impacts

- LEOFF 1 surplus decreased from June 30, 2014, to June 30, 2015, measurement
- Lower surplus leads to lower expected long-term savings from the merger

	Budget Impact	
(Dollars in Millions)	**SB 6668 (2017)**	**SB 6668 (2016)**
2017-2019		
General Fund-State	($171)	($244)
Local Government	($70)	($100)
Total Employer	($241)	($343)
2019-2021		
General Fund-State	($167)	($212)
Local Government	($68)	($86)
Total Employer	($235)	($298)
25-Year		
General Fund-State	($1,372)	($1,477)
Local Government	($560)	($603)
Total Employer	($1,932)	($2,080)

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.

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Response To SCPP Member Questions From September Meeting

- Historical LEOFF 1 funded status
- Impact of different assumed rates of return on LEOFF 1 surplus
- Budget impact of merger under different assumed funding policies
- Response to other questions included in forthcoming draft report or November presentation

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Historical LEOFF 1 Funded Status

Funded Status On An Actuarial Value Basis	
Year	**Funded Status**
2015	**125%**
2013	125%
2011	135%
2009	125%
2007	123%
2005	114%
2003	112%
2001	129%
1999	125%
1997	108%
1996	89%
1994	68%
1992	65%
1990	65%
1988	66%
1986	57%

Note: EAN Cost Method used starting in 2014 (PUC previously). Please see Appendix for full history.

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LEOFF 1 Surplus At Different Assumed Rates Of Return

Funded Status On An Actuarial Value Basis (Dollars in Millions)			
Assumed RoR*	**5.0%**	**7.5%**	**7.7%**
Accrued Liability	$5,585	$4,384	$4,307
Valuation Assets	$5,404	$5,404	$5,404
Unfunded Liability	$182	($1,020)	($1,097)
Funded Ratio			
June 30, 2015	**97%**	**123%**	**125%**

**RoR = Rate of Return.*
Note: Totals may not agree due to rounding.

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Budget Impact Of Merger Under Different Assumed Funding Policies

- Budget impact of any merger will depend on the assumed funding policy
- Funding policy determines who pays/saves, when, and how much
- Funding policy can range from a minimum to maximum use of the LEOFF 1 surplus
  - Minimum use would not reduce TRS 1 UAAL rates until UAAL is eliminated
  - Maximum use would eliminate near-term TRS 1 UAAL contributions until surplus was depleted

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Description Of Assumed Funding Policies

	Minimum Use	SB 6668 (2017)	Maximum Use
Employee Rates	6% TRS 1 0% LEOFF 1	6% TRS 1 0% LEOFF 1	6% TRS 1 0% LEOFF 1
Employer UAAL Rates	Same as current law until UAAL=0	5.05% FY 18-21 Variable FY 22+ 5.05% Min FY 22+	0% FY 18-20 Variable FY 21+ 5.75% Min FY 21+
UAAL Payoff Year	2023	2025	2028

- Employer rates under the merger apply to TRS employers only
- Expected UAAL payoff year if all assumptions are realized

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Budget Impact Of Merger Under Different Assumed Funding Policies

	Budget Impact		
(Dollars in Millions)	**Minimum Use**	**SB 6668 (2017)**	**Maximum Use**
2017-2019			
General Fund-State	$0	($171)	($575)
Local Government	$0	($70)	($235)
Total Employer	$0	($241)	($810)
2019-2021			
General Fund-State	$0	($167)	($353)
Local Government	$0	($68)	($144)
Total Employer	$0	($235)	($498)
25-Year			
General Fund-State	($1,536)	($1,372)	($940)
Local Government	($627)	($560)	($384)
Total Employer	($2,163)	($1,932)	($1,324)

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.

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How The Results Of The Merger Change Under Different Future Return Scenarios

25-Year Budget Impact By Return Scenario *(Dollars in Millions)* TRS - Total Employer			
Future Return Scenario	**Minimum Use**	**SB 6668 (2017)**	**Maximum Use**
5.0% RoR*	$359	$1,368	$2,104
6.0% RoR	($1,395)	($156)	$710
7.7% RoR	($2,163)	($1,932)	($1,324)

**RoR = Rate of Return. 7.7% expected.*

- Merger could have a cost when return scenario is lower than expected
- The cost of below expected returns increases
  - As the assumed funding policy approaches the maximum use policy
  - When there are fixed contribution rates under assumed policy

Next Steps On Actuarial Analysis

- Finalize preliminary analysis presented today
- Present further risk analysis in November
- Present actuarial analysis on LEOFF 1 risks requested by the LEOFF 2 Board
- Complete actuarial section of draft report

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Questions?

Appendix – Full History Of LEOFF 1 Funded Status

Historical Funded Status			
Year	Funded Status	Year	Funded Status
2015	**125%**	2000	136%
2014	127%	1999	125%
2013	125%	1998	117%
2012	135%	1997	108%
2011	135%	1996	89%
2010	127%	1995	80%
2009	125%	1994	68%
2008	128%	1993	68%
2007	123%	1992	65%
2006	117%	1991	66%
2005	114%	1990	65%
2004	109%	1989	65%
2003	112%	1988	66%
2002	119%	1987	69%
2001	129%	1986	57%

Note: EAN Cost Method used starting in 2014 (PUC previously).

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Appendix – Data, Assumptions, And Methods Used In Analysis

- Participant and financial data as of June 30, 2015
- In addition, we recognized investment returns of 2.65 percent through June 30, 2016, when estimating projected asset values
- We estimated that approximately 7,300 LEOFF 1 members would be eligible for the $5,000 bonus as of January 1, 2018
- Unless noted otherwise in this presentation, we used the same data, assumptions, and methods as disclosed in our actuarial fiscal note for SB 6668

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Appendix – Expected Contribution Rates

TRS 1 / LEOFF 1 Contribution Rates
(If All Assumptions Are Realized)

Fiscal Year	Current Law		TRS 1 / LEOFF 1 Merged*		
	LEOFF 1	TRS 1	Minimum Use	SB 6668 (2017)	Maximum Use
2017	0.00%	6.23%	6.23%	6.23%	6.23%
2018	0.00%	7.19%	7.19%	5.05%	0.00%
2019	0.00%	7.19%	7.19%	5.05%	0.00%
2020	0.00%	6.94%	6.94%	5.05%	0.00%
2021	0.00%	6.94%	6.94%	5.05%	5.75%
2022	0.00%	5.75%	5.75%	5.05%	5.75%
2023	0.00%	5.75%	5.42%	5.05%	5.75%
2024	0.00%	5.75%	0.00%	5.05%	5.75%
2025	0.00%	5.75%	0.00%	5.05%	5.75%
2026	0.00%	5.75%	0.00%	0.10%	5.75%
2027	0.00%	5.75%	0.00%	0.00%	5.75%
2028	0.00%	3.16%	0.00%	0.00%	2.98%
2029	0.00%	0.00%	0.00%	0.00%	0.00%

Collected over TRS salaries only.

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Appendix – Expected UAAL

Projected UAAL

(Dollars in Millions) (If All Assumptions Are Realized)

Fiscal Year	Current Law LEOFF 1	Current Law TRS 1	TRS 1 / LEOFF 1 Merged Minimum Use	TRS 1 / LEOFF 1 Merged SB 6668 (2017)	TRS 1 / LEOFF 1 Merged Maximum Use
2015	($1,090)	$3,187	$2,097	$2,097	$2,097
2016	N/A	$3,364	$1,922	$1,922	$1,922
2017	N/A	$3,210	$1,773	$1,773	$1,773
2018	N/A	$3,029	$1,629	$1,752	$2,041
2019	N/A	$2,803	$1,352	$1,612	$2,227
2020	N/A	$2,556	$1,046	$1,446	$2,426
2021	N/A	$2,270	$694	$1,250	$2,260
2022	N/A	$2,061	$364	$1,012	$2,050
2023	N/A	$1,798	N/A	$720	$1,786
2024	N/A	$1,492	N/A	$385	$1,480
2025	N/A	$1,139	N/A	N/A	$1,126
2026	N/A	$734	N/A	N/A	$720
2027	N/A	$273	N/A	N/A	$258
2028	N/A	N/A	N/A	N/A	N/A

Note: We show N/A upon paying off the unfunded liability.

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Merger Study – Actuarial Update

Matt Smith, FCA, EA, MAAA
State Actuary

Michael Harbour
Senior Actuarial Analyst

Presentation to Select Committee on Pension Policy

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November 15, 2016

Today's Update

- LEOFF 1 risk analysis requested by LEOFF 2 Board
- Risk analysis on SB 6668 (2017)
- Draft actuarial section of merger study included in materials

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Actuarial Section Of Merger Study

- Transmittal letter
- Draft actuarial fiscal note for SB 6668 (2017)
- OSA presentations to SCPP this interim
- Responses to actuarial questions from stakeholders

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Risk Analysis Requested By LEOFF 2 Board

- Board requested scenario-based risk analysis on LEOFF 1
- Provides an understanding of LEOFF 1 risks before merger
- LEOFF 1 risks assumed by TRS 1 (or LEOFF 2) and vice versa depending on merger

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Sample Of Scenarios Requested By LEOFF 2 Board

- Different investment return and inflation environments
- Varying investment return scenarios
- Impact of providing $5,000 bonus payment

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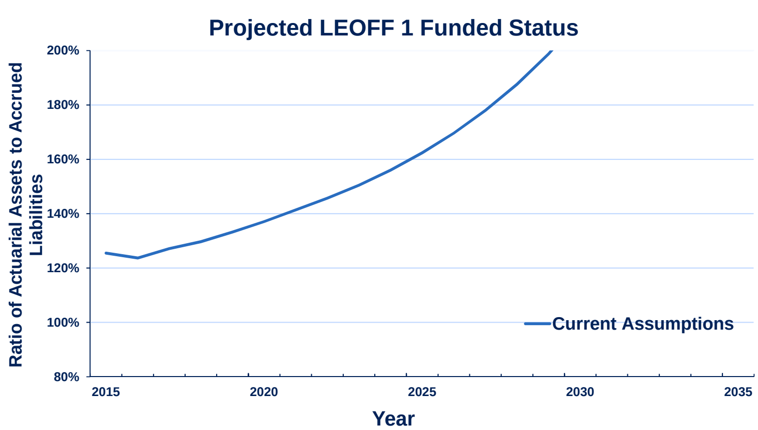
LEOFF 1 Funded Status Expected To Improve

- If fund earns 7.7 percent return each year



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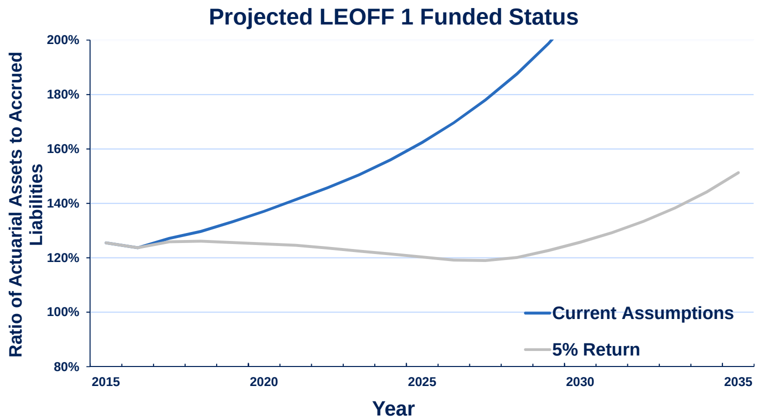
Funded Status Falls With Lower Than Expected Returns

- If fund earns 5.0 percent for next 10 years and 7.7 percent thereafter



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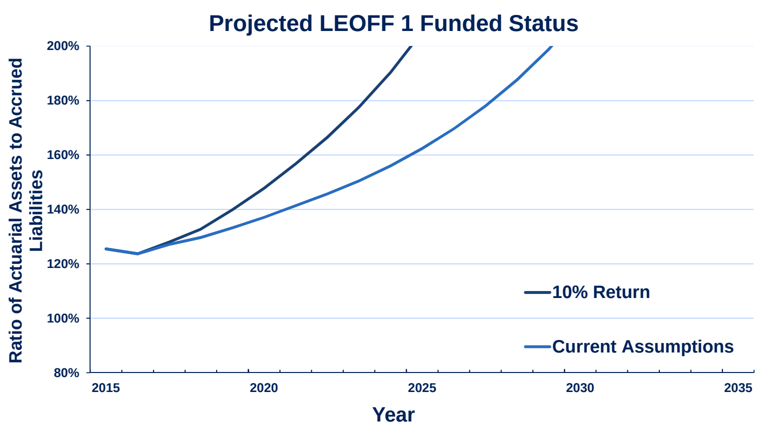
Funded Status Improves With Better Than Expected Returns

- If fund earns 10.0 percent for next 10 years and 7.7 percent thereafter



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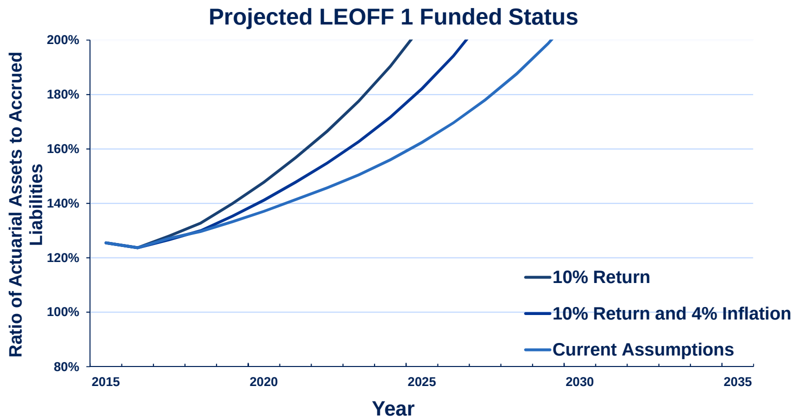
Higher Inflation Dampens Funded Status

- If plan experiences 10.0/4.0 percent return/inflation for next 10 years and 7.7/3.0 return/inflation percent thereafter



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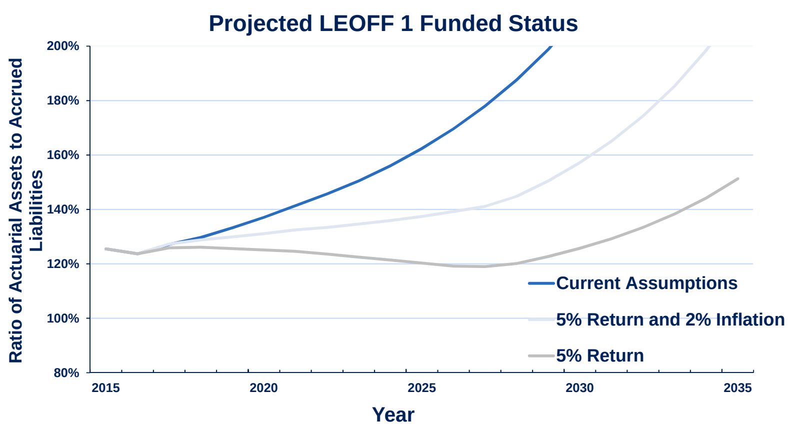
Lower Inflation Improves Funded Status

- If plan experiences 5.0/2.0 percent return/inflation for next 10 years and 7.7/3.0 return/inflation percent thereafter



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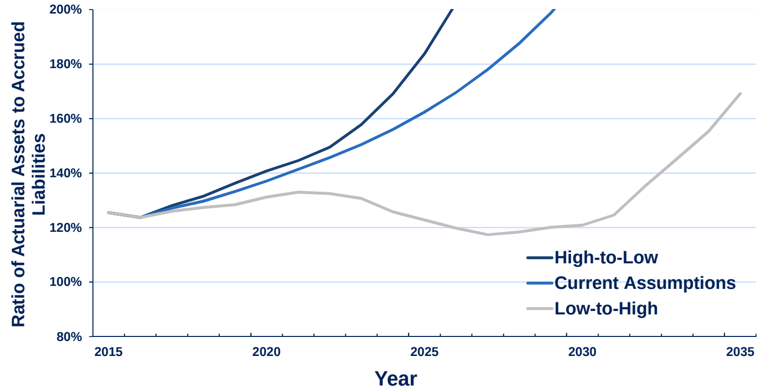
How We Arrive At Expected Return Impacts Funded Status

- Average annual investment return of 7.7 percent, but achieving those returns with different paths (high-to-low and low-to-high)

Projected LEOFF 1 Funded Status



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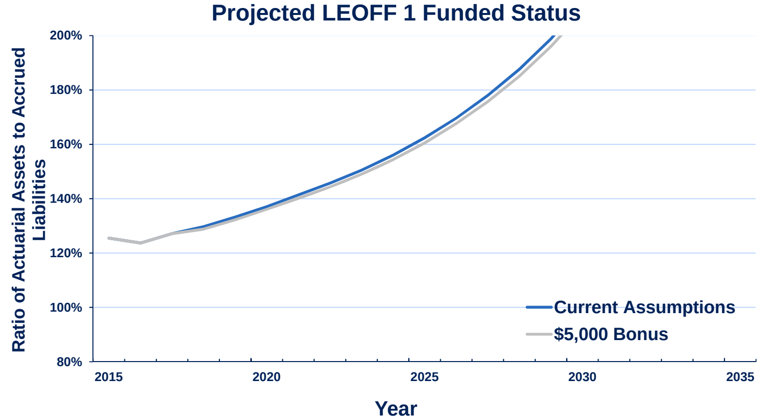
Bonus Payment Lowers Funded Status By About 1 Percent

- Providing $5,000 bonus payment to each LEOFF 1 member consistent with SB 6668 and all experience matches expectations

Projected LEOFF 1 Funded Status



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Comments On Risk Analysis Requested By LEOFF 2 Board

- LEOFF 1 remains fully funded under all scenarios requested by the Board
- There are other possible scenarios where LEOFF 1 would fall out of full funding
- Next section of presentation addresses those possible scenarios

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What Does Our Risk Analysis Represent?

- Outcomes from scenario-based analysis highly dependent on scenarios selected
- Instead of scenario analysis, we typically perform "stochastic" analysis when analyzing risk
- We simulate 2,000 equally likely future economic environments
- We then record the resulting impacts to retirements systems for the next 50 years
- This allows us to present a fuller range of outcomes and quantify the "likelihood" of a given risk
  - Likelihood equals the number of occurrences observed, for a given risk measurement, divided by total number of simulated outcomes
  - The true or actual likelihood is rarely known

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Risk Analysis On SB 6668 (2017)

- Reminder: SB 6668 (2017) represents SB 6668 from 2016 rolled forward one year and updated for 2015 actuarial valuation results
- Funding policy under SB 6668 would apply expected LEOFF 1 surplus to future contribution requirements of merged plan resulting in an expected long-term total employer savings
- If future experience does not match expectations, primarily inflation and investment returns, certain risks can emerge
  - For instance, you would see an increase in UAAL rates and more pay-go funding situations after the merger than before
- The following graphs demonstrate under what scenarios this risk emerges, when, and for how long
- Please see draft actuarial fiscal note for SB 6668 (2017) for more details and supporting information

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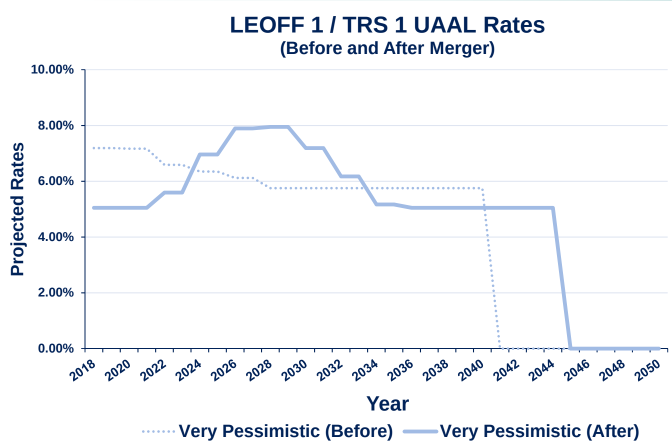
UAAL Rates Increase After Merger Under Very Pessimistic Scenarios



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Pay-Go Risk

- Pay-go risk is the risk a plan's trust fund will exhaust before all benefits have been paid
- If this occurs and significant benefit payments remain, it can represent a significant financial risk for affected employers
- Before a merger, LEOFF 1 has a maximum chance of pay-go of 4 percent in the year 2042 with about $210 million in annual benefit payments at that time
  - Assumes LEOFF 1 receives on-going funding after 2024, if necessary, similar to the funding method for PERS 1 and TRS 1
  - This is an assumption change we made from our prior risk analysis
- Because TRS 1 assumes the assets and liabilities of LEOFF 1 under SB 6668 (2017), the following graphs compare TRS 1 before merger to the merged plan

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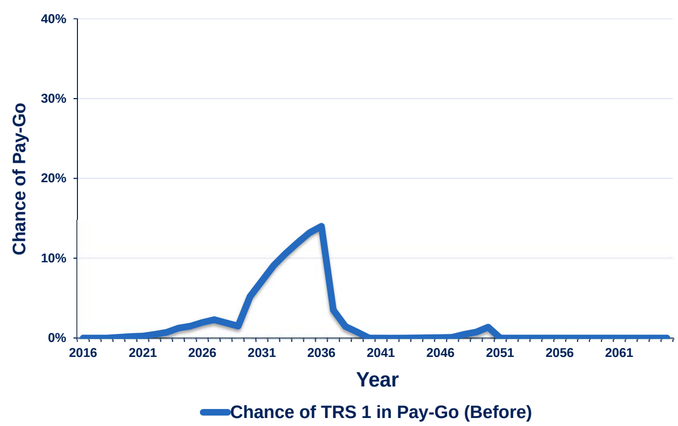
14 Percent Chance Of Pay-Go In TRS 1 Before Merger



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Pay-Go Risk Shifts And Increases After Merger

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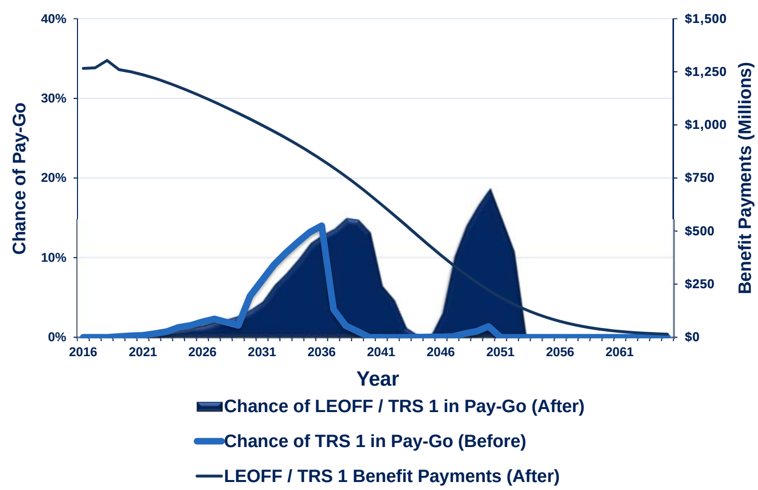
Largest Increase In Pay-Go Occurs Near End of Plan's Life



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Recap On Risk Analysis

- UAAL rates increase after the merger under very pessimistic scenarios
  - Merged plan has higher assets and obligations than before merger
  - With this larger base of assets and obligations, pessimistic/optimistic outcomes become more pessimistic/optimistic than before the merger
  - Very pessimistic or worse outcomes occur in 5 percent of the simulations in our model
- Pay-go risk shifts and increases after the merger
  - Initial infusion of LEOFF 1 surplus assets insulates the merged plan from some very pessimistic outcomes in earlier years of the projection
  - When those very pessimistic outcomes continue, the merged plan can face increased pay-go situations near the end of plan's life due to higher combined benefit payments from the merger
- Results based on the data, assumptions, and methods from our most recent risk measurements
  - Future results may vary from these measurements

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Who Would Be Impacted If These Risks Materialize

- Risks identified with SB 6668 (2017) can surface under current law or under proposed merger
- If these risks materialize under the merger, impacts would vary by affected group

Affected Group	Impact Under Funding Policy
LEOFF 1 Active Members	No contributions required under merger
TRS 1 Active Members	Contribution rate fixed at 6 percent before and after merger
LEOFF 1 Employers	Local government employers no longer responsible for funding LEOFF 1 retirement benefits
TRS Employers/GF-S	Assume all costs of the merged plan

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Risk Management Considerations

- If Legislature decides to pursue SB 6668 (2017), the following changes could reduce some of the risks noted in this presentation

Provision	Possible Change To Reduce Risk
Fixed UAAL Rates	Eliminate or shorten the period of fixed rates under the proposal. This would allow for more responsive and adequate funding should the need arise.
Minimum UAAL Rates	Increase the minimum UAAL rates under the proposal. The current minimum UAAL rate for TRS 1 is 5.75%. The minimum UAAL rate for the merged plan is 5.05%. Because the merged plan has larger combined benefit payments than TRS 1, the merged plan may require higher minimum rates to accommodate the higher risk associated with the added benefit payments.

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Questions?

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Appendix – Varying Investment Return Scenarios For LEOFF 1

Low-to-High and High-to-Low Returns		
FY	Low-to-High	High-to-Low
2017	6.88%	9.32%
2018	0.93%	7.41%
2019	7.35%	9.47%
2020	11.37%	5.58%
2021	(2.68%)	7.82%
2022	2.49%	11.60%
2023	0.65%	12.16%
2024	(1.51%)	10.34%
2025	19.62%	13.28%
2026	6.12%	20.71%
2027	9.45%	(3.47%)
2028	12.62%	11.81%
2029	4.71%	23.88%
2030	5.49%	1.49%
2031	17.59%	3.50%
2032	20.48%	(7.61%)
2033	4.92%	1.49%
2034	6.29%	7.70%
2035	10.68%	3.00%
2036	14.35%	8.99%
First 10 Years	4.93%	10.70%
Next 10 Years	10.53%	4.76%
All 20 Years	7.70%	7.69%