

# DRAFT ACTUARY'S FISCAL NOTE

RESPONDING AGENCY:	CODE:	DATE:	PROPOSAL:
Office of the State Actuary	035	11/08/2010	TRS 1 Survivor Partial Lump Sum Option

## 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 above. We intend this draft fiscal note to be used by the Select Committee on Pension Policy during the 2010 Interim only. If a legislator introduces this proposal as a bill during the next Legislative Session, we will prepare a final fiscal note based on that bill language. The actuarial results shown in this draft fiscal note may change when we prepare our final version for the Legislature.

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.

## SUMMARY OF RESULTS

This bill provides a partial lump sum benefit payment option for certain survivors of active members of the Teachers’ Retirement System (TRS) Plan 1.

Impact on Pension Liability			
<i>(Dollars in Millions)</i>	Current	Increase	Total
<b>Today's Value of All Future Pensions</b>	\$74,789	\$0.2	\$74,789
<b>Earned Pensions Not Covered by Today's Assets</b>	\$5,773	\$0.2	\$5,773

Impact on Contribution Rates: (Effective 9/1/2011)	
2011-2013 State Budget	TRS
<b>Employee (Plan 2)</b>	0.00%
<b>Employer</b>	
Current Annual Cost	0.00%
Plan 1 Past Cost	<u>0.00%</u>
<b>Total</b>	0.00%

Budget Impacts			
<i>(Dollars in Millions)</i>	2011-2013	2013-2015	25-Year
<b>General Fund-State</b>	\$0.0	\$0.0	\$0.2
<b>Total Employer</b>	\$0.0	\$0.1	\$0.3

Please see the Actuarial Results section of this draft fiscal note for additional detail.

## **WHAT IS THE PROPOSED CHANGE?**

### **Summary Of Benefit Improvement**

This bill impacts TRS Plan 1. This bill allows survivors of members who die prior to retirement the same partial lump sum benefit payment option that is provided to members. In order to qualify for the option, the member must have been eligible to retire at the time of death, and the survivor must be eligible to receive a survivor pension from the plan.

Effective Date: 90 days after session.

### **What Is The Current Situation?**

TRS 1 members may withdraw any portion of their contributions at retirement and receive an actuarially reduced pension on the remaining balance. The actuarial reduction is designed to offset the amount of the pension that would otherwise have been funded by the withdrawn contributions. This is referred to as a Partial Lump Sum Option, or PLOP.

Currently, survivors of member who die prior to retirement may select either a return of the member's contributions or a monthly lifetime benefit, but not both. If the survivor selects a return of the member's contributions, they forfeit an on-going survivor annuity.

### **Who Is Impacted And How?**

As of June 30, 2009, TRS 1 has 5,204 active members. We estimate this proposal would affect no more than ten TRS 1 survivors per year. Furthermore, we assume there will be approximately six TRS 1 survivors per year who will be eligible for the improved benefits. The number of members affected by this proposal will decrease each year since this plan is closed to new members and is maturing into an all- retiree population.

We estimate this proposal will increase the survivor annuities we expect the plan to pay for certain eligible survivors. See the following section for an explanation. This proposal may also have a different expected cost when we apply different assumptions. Please see the section "How The Results Change With Different Assumptions" for further details.

## **WHY THIS PROPOSAL HAS A COST AND WHO PAY FOR IT**

### **Why This Proposal Has A Cost**

This proposal has a cost because it will increase the survivor annuities we expect the plan to pay for certain eligible survivors. Some eligible survivors elect a return of contributions instead of an annuity under current plan provisions. These survivors forfeit the on-going annuity when they make that election. With this proposal, eligible survivors who elect a return of contributions will also receive a reduced monthly pension. The monthly pension they receive will be actuarially reduced to offset the amount of the lump sum withdrawn; however, it is still a larger benefit than a return of contributions with no

monthly pension. Therefore, we expect the plan to pay out more survivor annuities under this proposal than under current law.

There is no expected cost under this proposal for eligible survivors who would elect a monthly pension under current plan provisions. Under this proposal, the eligible survivor can elect a lump sum withdrawal of the member's contributions but their monthly pension will be actuarially reduced to offset the expected value of the withdrawal. However, as the experience of the system emerges, if the lump sum benefit received is more or less than the actual value of the reduced monthly pension, then there will be a cost or savings to the plan. Please see the section "How The Results Change When The Assumptions Change" for additional detail on how costs or savings could emerge.

### **Who Will Pay For These Costs?**

Employers of all TRS members will pay for the cost of this benefit improvement through increases in the TRS 1 Unfunded Actuarial Accrued Liability (UAAL) contribution rate. TRS 1 members pay a prescribed six percent contribution rate and their contribution rates will not increase under this proposal.

The expected cost of the additional lump sum benefit is paid by the eligible survivor through an actuarially reduced monthly pension. However, as the experience of the system emerges, if the lump sum benefit received is more or less than the actual value of the reduced monthly pension, then the TRS UAAL contribution rates will decrease or increase accordingly.

## **HOW WE VALUED THESE COSTS**

### **Assumptions We Made**

For the eligible survivors that we expect will elect a return of contributions and forfeit an on-going survivor annuity under current provisions, we assume they will receive an additional reduced monthly pension under this proposal. In other words, we changed our assumption in the valuation model to assume every eligible survivor elects a monthly pension. For more detail on how we developed this assumption please see Appendix A.

For the eligible survivors that we expect will elect a monthly pension, we assume that the reduction in the survivor's monthly pension will be actuarially equivalent to the additional lump sum benefit. Please see the section "How The Results Change When The Assumptions Change" for additional detail.

### **How We Applied These Assumptions**

Our valuation model uses an age-based probability table to estimate the number of eligible survivors who elect a monthly pension when a member dies prior to retirement. We increased the values in this table, as outlined in Appendix A, to reflect additional eligible survivors that we assume will elect to receive monthly pensions.

Otherwise, we developed these costs using the same methods as disclosed in the June 30, 2009, Actuarial Valuation Report (AVR).

### Special Data Needed

We developed these costs using the same assets and data as disclosed in the AVR.

## ACTUARIAL RESULTS

### How The Liabilities Changed

This proposal will impact the actuarial funding of TRS 1 by increasing the present value of future benefits payable under the plan as shown below.

<b>Impact on Pension Liability</b>			
<i>(Dollars in Millions)</i>	<b>Current</b>	<b>Increase</b>	<b>Total</b>
<b>Actuarial Present Value of Projected Benefits</b>			
<i>(The Value of the Total Commitment to all Current Members)</i>			
TRS 1	\$10,956	\$0.2	\$10,956
TRS 2/3	8,661	0.0	8,661
<b>TRS Total</b>	<b>\$19,617</b>	<b>\$0.2</b>	<b>\$19,617</b>
<b>Unfunded Actuarial Accrued Liability</b>			
<i>(The Portion of the Plan 1 Liability that is Amortized According to Funding Policy)*</i>			
<b>TRS 1</b>	<b>\$2,676</b>	<b>\$0.2</b>	<b>\$2,676</b>
<b>Unfunded PUC Liability</b>			
<i>(The Value of the Total Commitment to all Current Members Attributable to Past Service that is Not Covered by Current Assets)</i>			
TRS 1	\$2,692	\$0.2	\$2,692
TRS 2/3	(947)	0.0	(947)
<b>TRS Total</b>	<b>\$1,745</b>	<b>\$0.2</b>	<b>\$1,745</b>

Note: Totals may not agree due to rounding.

\* TRS 1 is amortized over a ten-year period.

### How The Present Value of Future Salaries Changed

This proposal does not change the Present Value of Future Salaries (PVFS) of the members of TRS 1 so there is no impact on the actuarial funding of TRS 1 due to the PVFS.

### How Contribution Rates Changed

The increase in the required actuarial contribution rate does not round up to the minimum supplemental contribution rate of 0.01 percent, therefore the proposal will not affect contribution rates in the current biennium. However, we will use the un-rounded rate increase below to measure the budget changes in future biennia.

<b>Impact on Contribution Rates: (Effective 9/1/2011)</b>	
<b>System/Plan</b>	<b>TRS</b>
<b>Current Members</b>	
<b>Employee (Plan 2)</b>	0.000%
<b>Employer</b>	
Normal Cost	0.000%
Plan 1 UAAL	<u>0.001%</u>
<b>Total</b>	0.001%
<b>New Entrants*</b>	
<b>Employee (Plan 2)</b>	0.000%
<b>Employer</b>	
Normal Cost	0.000%
Plan 1 UAAL	<u>0.001%</u>
<b>Total</b>	0.001%

\* Rate change applied to future new entrant payroll and used to determine budget impacts only. Current members and new entrants pay the same contribution rate.

### How This Impacts Budgets And Employees

<b>Budget Impacts</b>	
<i>(Dollars in Millions)</i>	<b>TRS</b>
<b>2011-2013</b>	
General Fund	\$0.0
Non-General Fund	<u>0.0</u>
<b>Total State</b>	<b>\$0.0</b>
Local Government	<u>0.0</u>
<b>Total Employer</b>	<b>\$0.0</b>
<b>Total Employee</b>	<b>\$0.0</b>
<b>2013-2015</b>	
General Fund	\$0.0
Non-General Fund	<u>0.0</u>
<b>Total State</b>	<b>\$0.0</b>
Local Government	<u>0.0</u>
<b>Total Employer</b>	<b>\$0.1</b>
<b>Total Employee</b>	<b>\$0.0</b>
<b>2011-2036</b>	
General Fund	\$0.2
Non-General Fund	<u>0.0</u>
<b>Total State</b>	<b>\$0.2</b>
Local Government	<u>0.1</u>
<b>Total Employer</b>	<b>\$0.3</b>
<b>Total Employee</b>	<b>\$0.0</b>

Note: Totals may not agree due to rounding.

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

As with the costs developed in the actuarial valuation, the emerging costs of the system 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 RESULTS CHANGE WHEN THE ASSUMPTIONS CHANGE**

To determine the actuarial reduction in the monthly pension we make several assumptions including:

- ❖ Expected rate of investment return.
- ❖ Expected rate of mortality for the annuitant.

As with any actuarial calculation that involves estimating future events, actual experience may differ from the underlying assumptions made. When actual experience differs from what we assumed would occur, the system experiences an actuarial gain or loss. An actuarial gain would decrease plan liabilities (or increase assets); whereas, an actuarial loss would increase plan liabilities (or decrease assets). Therefore, we cannot say with certainty that the actuarial equivalent aspect of this proposal will not impact plan liabilities in the future.

If the survivors who elect lump sum payments, on average, live longer/shorter than assumed, the system will experience actuarial gains/losses in the future. In the case of survivors living longer than expected, the survivors forgo (through the reduction for the optional lump sum withdrawal) more in annuity payments than expected, resulting in a gain to the plan. In other words, if a survivor lives longer than expected, the plan gains from applying a reduction to the annuity longer than expected. If the actual rate of investment return is more/less than the assumed rate, the system will experience actuarial gains/losses from this assumption as well. In the case of actual investment returns below the prescribed 8 percent assumption, the actual value of the reductions in annuities will exceed their expected value, resulting in a gain to the plan. In other words, if actual investment return is less than assumed, the plan gains from exchanging reduced annuity payments of a higher value/cost to the plan with a lump sum withdrawal of a lower value. For these two assumptions, we will not know whether a gain or loss has occurred until the Department of Retirement Systems (DRS) has made all payments under the annuity contract.

To determine the sensitivity of the actuarial results to the best-estimate assumptions selected for the actuarial equivalent part of this pricing we varied the following assumptions:

- ❖ **Mortality rate** – We determined the cost to the plan if the monthly pension reduction was calculated based on lower expected mortality rates than currently assumed in the administrative factors (people live longer than assumed). For

this sensitivity we applied 50 percent of the Society of Actuaries' scale AA mortality improvement table to the mortality rates used in the current administrative factors.

- ❖ **Investment returns** – We determined the cost to the plan if the monthly pension reduction was calculated based on a lower expected investment return than the assumed rate in statute (investments pay less than assumed). For this sensitivity we used a 7.5 percent investment return rather than the current prescribed assumption of 8 percent.
- ❖ **All of the above** – We determined the cost to the plan if both of these assumptions are incorrect, as described above, at the same time.

The table below shows the expected results compared to the three sensitivity runs outlined above. The example outlines the impact for an average retirement-eligible active TRS 1 member whose survivor, age 61, elects a lump sum benefit withdrawal of \$152,611 on the member's death. We provide this analysis to give the reader a sense of how the expected costs of this proposal may change under different assumptions. Readers should not use this table for individual retirement planning or construe the information provided as advice or guidance in the selection of optional payment forms.

<b>Sensitivity Example - 61 Year Old Survivor Elects \$152,611 Lump Sum Withdrawal</b>			
<b>Scenario</b>	<b>Lump Sum Payment to Survivor</b>	<b>Present Value of Pension Reduction</b>	<b>Gain to the System</b>
1) Expected	\$152,611	\$152,611	\$0
2) Lower Mortality Than Expected	152,611	153,773	1,162
3) Lower Asset Returns Than Expected	152,611	158,544	5,933
4) Scenarios 2 and 3	\$152,611	\$159,809	\$7,198

When lower expected mortality rates and lower expected asset returns occur at the same time, the gain (savings) to the plan is greater than the sum of each gain because of the interaction of these assumptions.

Although we expect mortality to improve and investment returns to be less than the prescribed eight percent, if the opposite actually happens, then we would see costs to the plan instead of the savings listed above.

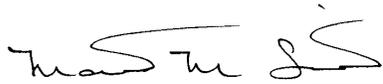
The expected cost of this proposal may also change if more or less future survivors select a return of contributions benefit under current law than we anticipate under our current assumptions. However, we don't believe the cost differences in this area are significant when evaluated in relation to total plan costs. Therefore, we have not included sensitivity analysis for this area of the pricing.

## 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 and assumptions may also be reasonable, and might produce different results.
5. We prepared this draft fiscal note for the Select Committee on Pension Policy.
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 on page one of this draft fiscal note.

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

## APPENDIX A – ASSUMPTIONS WE MADE

We assume that some qualified survivors will elect a monthly pension when the active member dies and was eligible to retire. We also assume that some survivors will elect a return of contributions and forfeit the monthly pension. We set these valuation assumptions based on data we receive that includes the number of survivors that elect a monthly pension. In other words, our assumption includes both the probability that a member leaves a survivor and the probability that a survivor elects a monthly pension. In our valuation model, we refer to this as “Percent Married” (PM).

In order to price this proposal, we need to determine, under current plan provisions, the probability that a member leaves a survivor and that survivor elects a return of contributions. We do not have specific data on this probability so we had to make an assumption.

We studied our age-based PM table and determined the highest percent married as our estimated probability that a member leaves a survivor, regardless of what benefit choice that survivor makes. We ran this new probability table through our valuation model to estimate the change in liabilities if all eligible survivors elect a monthly pension on the member’s death. The difference between this valuation and our base valuation (which uses PM) is the expected increase in liabilities for this proposal.

The following table details the current valuation assumption (PM) and the assumed probability that a member has an eligible survivor (PS).

Age	PM		PS	
	Male	Female	Male	Female
40-44	0.598	0.408	0.729	0.491
45-49	0.647	0.458	0.729	0.491
50-61	0.696	0.458	0.729	0.491
62-69	0.729	0.491	0.729	0.491
70-80	0.729	0.441	0.729	0.441

Otherwise, we developed these costs using the same assumptions as disclosed in the AVR.

## 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 liability. The normal cost is determined for the entire 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 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 Actuarial Present Value of future benefits attributable to service credit that has been earned to date (past service).

**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.