

Select Committee on Pension Policy

P.O. Box 40914
Olympia, WA 98504-0914
actuary.state@leg.wa.gov

Regular Subgroup Meeting

Plan 1 Funding Method Subgroup

September 18, 2006

2:00 PM - 4:00 PM
House Hearing Room C
Olympia

AGENDA

- 2:00 PM **(1) Approval of Minutes**
- 2:10 PM **(2) Follow-up Reports** - Matthew M. Smith, State Actuary
- 3:30 PM **(3) Stochastic Forecasts** - Martin McCaulay, Senior Pension Actuary
- 3:45 PM **(4) Spending Limits/Caps** - Robert Wm. Baker, Senior Research Analyst
- 4:00 PM **(5) Adjourn**

***Elaine M. Banks**
TRS Retirees

Representative Barbara Bailey

Lois Clement
PERS Retirees

Representative Steve Conway

Representative Larry Crouse

Senator Karen Fraser

***Representative Bill Fromhold,**
Vice-Chair

Vacant
TRS and SERS Employers

Robert Keller
PERS Actives

***Sandra J. Matheson,** Director
Department of Retirement Systems

Corky Mattingly
PERS Employers

Doug Miller
PERS Employers

Victor Moore, Director
Office of Financial Management

Senator Joyce Mulliken

***Glenn Olson**
PERS Employers

***Senator Craig Pridemore,**
Chair

Diane Rae
TRS Actives

***J. Pat Thompson**
PERS Actives

Senator Mark Schoesler

David Westberg
SERS Actives

*** Executive Committee**

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REGULAR SUBGROUP MEETING PLAN 1 FUNDING METHOD SUBGROUP DRAFT MINUTES

August 21, 2006

The Select Committee on Pension Policy, Plan 1 Funding Method Subgroup, met in House Hearing Room C, Olympia, Washington on August 21, 2006.

Committee members attending:

Senator Pridemore, Chair
Elaine Banks
Representative Bailey
Representative Conway, conference call
Representative Crouse
Representative Fromhold
Sandra Matheson
Victor Moore

Senator Pridemore, Chair, called the meeting to order at 2:05 p.m.

(1) Review of Questions

Matt Smith, State Actuary, reported on the Plan 1 Funding Method, "Review of Questions" and "Preliminary Analysis and Options." Discussion followed.

Bob Baker, Senior Research Analyst and Laura Harper, Senior Research Analyst, Legal reported on "Identify Additional Funding Sources." Philip Martin McCaulay, Senior Pension Actuary, reported on "Asset and Liability Management." Discussion followed.

(2) Next Steps - September 18, 2006 Meeting

After considerable discussion, follow-up reports, stochastic forecasts, and spending limits/caps, along with follow-up reports on 10-year risk experience study, minimum interest payments, and rate of return to eliminate UAAL, will be reported on at the September 18th meeting.

The meeting adjourned at 3:50 p.m.

***Elaine M. Banks**
TRS Retirees

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Lois Clement
PERS Retirees

Representative Steve Conway

Representative Larry Crouse

Senator Karen Fraser

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WASHINGTON STATE LEGISLATURE

Office of the State Actuary

September 14, 2006

Sent via e-mail and distributed as meeting materials

Select Committee on Pension Policy, Plan 1 Funding Method Subgroup Members

Senator Craig Pridemore
Representative Bill Fromhold
Representative Barbara Bailey
Representative Larry Crouse
Representative Steve Conway
Victor Moore, Director, OFM
Sandra Matheson, Director, DRS
Elaine Banks, TRS Retirees

RE: TEN-YEAR EXPERIENCE STUDY

Dear SCPP Plan 1 Funding Method Subgroup Members:

At the August 21 meeting of the Plan 1 Funding Method Subgroup, staff was asked to provide members with a comparison of the assumption to actual experience for the following actuarial assumptions: rate of investment return on the pension trust funds, rate of membership growth, and rate of payroll growth. The Office of the State Actuary (OSA) has collected experience data on these items for the most recent ten years for the Public Employees' Retirement System (PERS), the School Employees' Retirement System (SERS), and the Teachers' Retirement System (TRS).

Under current funding policy, the Plan 1 Unfunded Actuarial Accrued Liability (UAAL) will be amortized by June 30, 2024, as a level percentage of projected system payroll. System payroll is assumed to grow by 4.5 percent annual salary growth and by 1.25 percent (0.90 percent in TRS) annual growth in membership. The projected salary amount is discounted to the present, for purposes of the UAAL rate calculation, at the assumed rate of investment return (8 percent).

The information provided herein is intended to help members identify the "fit" of these assumptions to actual past experience. Past experience is not necessarily indicative of expected future trends and should not be used in isolation of other risk analysis measures.

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The results of the ten-year experience study (1996-2005) done by the OSA for the rate of return on the trust fund, growth in membership, and salary growth are summarized in the table below.

	Ten-Year Experience Study			
	PERS & SERS		TRS	
	Assumption	10-Year Average	Assumption	10-Year Average
Rate of Return	8.00%	9.63%	8.00%	9.63%
Membership Growth	1.25%	1.42%	0.90%	1.3%
Payroll Growth*	5.81%	4.15%	5.44%	3.99%

**Represents growth in total system salaries – includes membership growth and general salary growth.*

Detailed results on an annual basis are found in Appendix A. It should be noted that it is not possible to accurately predict future investment returns based on past performance — especially over a relatively short time-frame such as the ten years used in this study.

To complete this project we gathered data on the total rate of return for the Commingled Trust Fund (CTF) and the number and total system salaries of active PERS, SERS, and TRS members for the years 1996-2005. Since we do not have a ten-year history of SERS membership (the system was first created in 2000), we combined SERS and PERS membership data for the purpose of determining the membership and payroll growth rate. We calculated the average rate of increase for each assumption over a five-year and ten-year period based on the actual data. We believe the methods chosen are reasonable for the purpose of the actuarial calculations presented in this letter. Use of another set of methods may also be reasonable and might produce different results. More details on the actuarial methods are found in Appendix B.

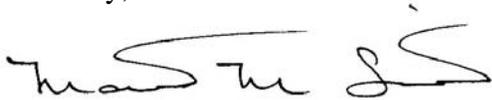
We relied upon investment return data provided by the Washington State Investment Board (WSIB) and retirement system membership data provided by the Department of Retirement Systems (DRS). An audit of the retirement system data was not performed; however, we believe the data to be reasonable for the purpose of the actuarial calculations presented in this letter. Use of different data may also be reasonable and may produce different results. More details on the data are found in Appendix C.

This letter has been prepared exclusively for the use or benefit of the Plan 1 Funding Method Subgroup for a specific and limited purpose during the 2006 Interim. This communication should be used in full and should not be released to others without the written consent of the Office of the State Actuary. Please see the attached appendices for more information regarding the preparation of these results.

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

We appreciate the opportunity to provide this information and would be happy to answer any questions you may have.

Sincerely,



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



Philip Martin McCaulay, FSA, MAAA, EA
Senior Pension Actuary

Attachments:

- Appendix A – Actuarial Determinations
- Appendix B – Actuarial Methods
- Appendix C – Data

Appendix A

Actuarial Determinations

The following tables show the rate of return, growth in active membership, and payroll growth for active members since 1996. The tables include the five-year and ten-year averages.

PERS & SERS					
	Rate of Return**	Members	Growth Rate	System Payroll	Growth Rate
2005	17.53%	205,928	-0.09%	\$ 8,431,894,732	2.19%
2004	13.75%	206,110	1.15%	\$ 8,251,386,214	3.06%
2003	15.07%	203,764	-0.10%	\$ 8,006,776,832	3.05%
2002	-6.18%	203,976	1.34%	\$ 7,769,549,088	5.89%
2001	-12.26%	201,283	0.65%	\$ 7,337,627,466	3.22%
2000	15.33%	199,986	1.84%	\$ 7,108,482,412	5.62%
1999	16.63%	196,382	2.36%	\$ 6,730,408,684	5.75%
1998	4.18%	191,850	2.90%	\$ 6,364,569,143	4.71%
1997	23.62%	186,440	2.10%	\$ 6,078,153,763	4.48%
1996	14.30%	182,603	2.11%	\$ 5,817,349,997	5.29%

PERS & SERS					
	Rate of Return***	Members	Growth Rate	System Payroll	Growth Rate
5 Year Average	4.84%	204,212	0.59%	\$ 7,959,446,866	3.47%
10 Year Average	9.63%	197,832	1.42%	\$ 7,189,619,833	4.17%

** Total return from the CTF. The actual return from each plan differs from this return.

***Future investment returns cannot be predicted by past returns.

TRS					
	Rate of Return**	Members	Growth Rate	System Payroll	Growth Rate
2005	17.53%	67,270	0.95%	\$ 3,604,265,625	3.16%
2004	13.75%	66,634	0.85%	\$ 3,493,992,256	2.30%
2003	15.07%	66,075	0.02%	\$ 3,415,412,939	4.64%
2002	-6.18%	66,063	-0.24%	\$ 3,263,909,145	3.54%
2001	-12.26%	66,220	3.70%	\$ 3,152,203,993	5.05%
2000	15.33%	63,858	1.87%	\$ 3,000,553,335	7.05%
1999	16.63%	62,684	1.38%	\$ 2,803,036,294	1.76%
1998	4.18%	61,828	1.67%	\$ 2,754,452,811	4.64%
1997	23.62%	60,815	2.34%	\$ 2,632,238,663	2.74%
1996	14.30%	59,425	0.54%	\$ 2,561,961,042	5.12%

TRS					
	Rate of Return***	Members	Growth Rate	System Payroll	Growth Rate
5 Year Average	4.84%	66,452	1.05%	3,385,956,792	3.73%
10 Year Average	9.63%	64,087	1.30%	3,068,202,610	3.99%

**Total return from commingled trust fund. The actual return from each plan differs from this return.

***Future investment returns cannot be predicted by past returns

Appendix B

Actuarial Methods

To complete this project we gathered data on the total rate of return for the CTF and the number and total system salaries of active members for the years 1996-2005. Since we do not have a ten-year history of SERS membership (the system was first created in 2000), we combined SERS and PERS membership data for the purpose of determining the membership and salary growth rate. We then calculated the annual growth rate in active membership and total system salary for active members. Finally, we calculated five- and ten-year averages for the rate of return, membership growth rate, and salary growth rate using geometric averaging.

Statement of Intended Use and Limitations

1. The methods chosen are reasonable for the purpose of the actuarial calculations presented in this letter. Use of another set of methods may also be reasonable and might produce different results.

Appendix C

Data

We relied upon investment return data provided by the WSIB and retirement system membership data provided by DRS. The investment return data was based on the total return for the CTF. The membership data was aggregated by OSA from DRS annual reporting for the years 1996-2005.

Statement of Intended Use and Limitations

1. We used total return for the CTF rather than plan-specific, because the individual plan returns are closely tied to the total CTF return and use of the total return simplifies the calculations.
2. We relied upon the accuracy and completeness of the data as provided. An audit of the retirement system data was not performed.
3. We believe the data to be reasonable for the purpose of the actuarial calculations presented in this letter; however, use of another set of data may be reasonable and may produce different results.



WASHINGTON STATE LEGISLATURE
Office of the State Actuary

September 15, 2006

Sent via e-mail and distributed as meeting materials

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Elaine Banks, TRS Retirees

RE: MINIMUM INTEREST PAYMENTS

Dear SCPP Plan 1 Funding Method Subgroup Members:

Follow-up reports were requested by the Plan 1 Funding Method Subgroup at the August meeting. Among these follow-up reports was a request to calculate the cost of paying at least the interest on the Unfunded Actuarial Accrued Liability (UAAL) in the Public Employees' Retirement System plan 1 (PERS 1) and the Teachers' Retirement System plan 1 (TRS 1).

The Plan 1 UAAL contribution rates were suspended for the past two biennia. These rates are usually applied to all employer contribution rates in the School Employees' Retirement System (SERS), PERS, and TRS regardless of plan; employers under the new Public Safety Employees' Retirement Plan (PSERS) will also be making UAAL contributions in the future. The resumption of Plan 1 UAAL contribution rates is being phased-in over the next three years, with full rates to resume beginning fiscal year 2009.

During the period when the UAAL rates were suspended, employers made no contributions to either the unfunded liability or the interest on that liability. Were employers to begin making contributions in fiscal year 2007 to cover at least the interest on the Plan 1 UAAL, the proposed schedule of rates would increase. How much of an increase would depend on whether the current (2005) or projected (2007) UAAL numbers were used, and whether the rates did or did not follow the phase-in schedule. Under the latter scenario, the scheduled reduction in 2007-09 rates due to the "advanced" payment from 2006 is removed.

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Based on the above variables, the contribution rates could be upwards of 1.26 percentage points higher for PERS employers and up to 2.26 percentage points higher for TRS employers. The difference between the current phase-in rates and the interest-only rates would narrow in 2008.

PERS 1 UAAL Employer Contribution Rates: Current Phase-in Rates and Minimum Rates to Pay Interest on UAAL				
	UAAL	Phase-in	2007	2008
Current	2005	yes	1.71%	2.59%
Option 1	2005	yes	1.91%	2.79%
Option 2	2007	yes	2.09%	2.97%
Option 3	2005	no	2.79%	2.79%
Option 4	2007	no	2.97%	2.97%

TRS 1 UAAL Employer Contribution Rates: Current Phase-in Rates and Minimum Rates to Pay Interest on UAAL				
	UAAL	Phase-in	2007	2008
Current	2005	yes	2.27%	3.35%
Option 1	2005	yes	2.38%	3.66%
Option 2	2007	yes	3.23%	4.51%
Option 3	2005	no	3.68%	3.68%
Option 4	2007	no	4.53%	4.53%

In general, larger up-front payments tend to mitigate long-term costs. As a result, there would be a greater fiscal impact in the near-term and a decrease in the fiscal impact in the long-term. In the 2007-2009 biennium, under the most costly assumptions, the state cost (general fund and non-general fund) would be \$163.5 million; the local government cost would be \$143.6 million, for a total cost of \$307.1 million. As a result of the higher required contribution rates, the increase in funding expenditures is projected to be:

Minimum UAAL Interest Contributions, All Systems: 2007-2009				
Costs (in Millions)	Option 1	Option 2	Option 3	Option 4
Biennial Cost				
State:				
General Fund	\$20.4	\$77.5	\$73.6	\$130.6
Non-General Fund	<u>\$8.2</u>	<u>\$15.5</u>	<u>\$25.5</u>	<u>\$32.9</u>
Total State	\$28.6	\$93.0	\$99.1	\$163.5
Local Government	\$29.9	\$75.5	\$97.9	\$143.6
Total Employer	\$58.5	\$168.5	\$197.0	\$307.1
Total Employee	\$0.0	\$0.0	\$0.0	\$0.0

Minimum UAAL Interest Contributions, All Systems: 2007-2032				
Costs (in Millions)				
Biennial Cost	Option 1	Option 2	Option 3	Option 4
State:				
General Fund	(\$24.1)	(\$90.1)	(\$86.5)	(\$152.8)
Non-General Fund	(\$7.0)	(\$15.1)	(\$25.3)	(\$33.0)
Total State	(\$31.1)	(\$105.2)	(\$111.8)	(\$185.8)
Local Government	(\$29.6)	(\$81.0)	(\$106.1)	(\$157.6)
Total Employer	(\$60.7)	(\$186.2)	(\$217.9)	(\$343.4)
Total Employee	\$0.0	\$0.0	\$0.0	\$0.0

Under the scenario with the greatest up-front cost, long-term savings would result in future UAAL contribution rates being 0.13 percentage points lower in PERS, SERS, and PSERS; and 0.30 percentage points lower in TRS.

Long-Term Savings From Minimum UAAL Interest Contributions by System: 2009-2024				
System	Option 1	Option 2	Option 3	Option 4
PERS	0.03%	0.06%	0.10%	0.13%
TRS	0.04%	0.19%	0.15%	0.30%

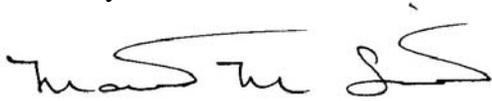
The actuarial assumptions and methods chosen are reasonable for the purpose of the actuarial calculations presented in this letter. Use of another set of assumptions and methods may also be reasonable and might produce different results.

This letter has been prepared exclusively for the use of the Select Committee on Pension Policy in their deliberations related to Plan 1 funding during the 2006 Interim. This communication should be used in full and should not be released to others without the written consent of the Office of the State Actuary. Please see the attached appendices for more information regarding the preparation of these results.

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

We appreciate the opportunity to provide this information and would be happy to answer any questions you may have.

Sincerely,



Matthew M. Smith, FCA, MAAA, EA
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Attachments:

- Appendix A – Actuarial Determinations
- Appendix B – Actuarial Methods
- Appendix C – Actuarial Assumptions
- Appendix D – Data
- Appendix E – Other Disclosures/Glossary

Appendix A

Actuarial Determinations

The proposal will impact the actuarial funding of the system by decreasing the Plan 1 UAAL and increasing/decreasing the required actuarial contribution rates as shown below:

Increase From Current UAAL Contribution Rates (Option 1): (Effective 7/1/2007)				
System	PERS 2007	PERS 2008	TRS 2007	TRS 2008
Rate Increase	0.20%	0.20%	0.11%	0.31%

Decrease From Current UAAL Contribution Rates (Option 1): (Effective 7/1/2009)		
System	PERS	TRS
Rate Decrease	0.03%	0.04%

Increase From Current UAAL Contribution Rates (Option 2): (Effective 7/1/2007)				
System	PERS 2007	PERS 2008	TRS 2007	TRS 2008
Rate Increase	0.38%	0.38%	0.96%	1.16%

Decrease From Current UAAL Contribution Rates (Option 2): (Effective 7/1/2009)		
System	PERS	TRS
Rate Decrease	0.06%	0.19%

Appendix A

Increase From Current UAAL Contribution Rates (Option 3): (Effective 7/1/2007)				
System	PERS 2007	PERS 2008	TRS 2007	TRS 2008
Rate Increase	1.08%	0.20%	1.41%	0.33%

Decrease From Current UAAL Contribution Rates (Option 3): (Effective 7/1/2009)				
System	PERS		TRS	
Rate Decrease	0.10%		0.15%	

Increase From Current UAAL Contribution Rates (Option 4): (Effective 7/1/2007)				
System	PERS 2007	PERS 2008	TRS 2007	TRS 2008
Rate Increase	1.26%	0.38%	2.26%	1.18%

Decrease From Current UAAL Contribution Rates (Option 4): (Effective 7/1/2009)				
System	PERS		TRS	
Rate Decrease	0.13%		0.30%	

As a result of the higher required contribution rates, the increase in funding expenditures is projected to be:

Minimum UAAL Interest Contributions, All Systems: 2007-2009				
Costs (in Millions)	Option 1	Option 2	Option 3	Option 4
Biennial Cost				
State:				
General Fund	\$20.4	\$77.5	\$73.2	\$130.6
Non-General Fund	<u>\$8.2</u>	<u>\$15.5</u>	<u>\$25.5</u>	<u>\$32.9</u>
Total State	\$28.6	\$93.0	\$99.1	\$163.5
Local Government	\$29.9	\$75.5	\$97.9	\$143.6
Total Employer	\$58.5	\$168.5	\$197.0	\$307.1

Appendix A

Total Employee	\$0.0	\$0.0	\$0.0	\$0.0
Minimum UAAL Interest Contributions, All Systems: 2007-2032				
Costs (in Millions)				
Biennial Cost	Option 1	Option 2	Option 3	Option 4
State:				
General Fund	(\$24.1)	(\$90.1)	(\$86.5)	(\$152.8)
Non-General Fund	(\$7.0)	(\$15.1)	(\$25.3)	(\$33.0)
Total State	(\$31.1)	(\$105.2)	(\$111.8)	(\$185.8)
Local Government	(\$29.6)	(\$81.0)	(\$106.1)	(\$157.6)
Total Employer	(\$60.7)	(\$186.2)	(\$217.9)	(\$343.4)
Total Employee	\$0.0	\$0.0	\$0.0	\$0.0

Appendix B

Actuarial Methods

Using our projections we determined the rate that is needed to cover the interest on a given year's unfunded liability. This calculation is 8 percent of the unfunded actuarial accrued liability (UAAL) divided by the payroll in that same year. We then compared this contribution rate to the current funding policy's projected rate in the same year for odd years. We then used the larger of the two compared contribution rates in this same year as the employer contribution rate over the following two years.

The long-term savings from the proposed funding policy was calculated as the present value of the additional contributions above current funding policy divided by the present value of salary in 2007.

The method for options three and four (not using the current phase-in schedule) consisted of increasing the proposed 2007 contribution rates (options one and two) by 0.88 percent for PERS for 2007, 1.3 percent for TRS for 2007, and .02 percent for TRS for 2008. These are the scheduled decreases in the 2007-09 contribution rates due to the phase-in under the current funding policy.

Appendix C

Actuarial Assumptions

All assumptions were the same as those disclosed in the preliminary 2005 actuarial valuation report.

Appendix D

Data

The data is the same as used in the preliminary 2005 actuarial valuation.

All employers of PERS, PSERS, TRS, and SERS members will be affected by this proposal. They all contribute to the PERS 1 and TRS 1 UAAL.

Appendix E

Other Disclosures/Glossary

STATEMENT OF DATA AND ASSUMPTIONS USED IN PREPARING THE FISCAL COSTS FOR THIS LETTER:

The costs presented in this letter are based on our understanding of the request/proposed legislation as well as generally accepted actuarial standards of practice including the following:

1. Costs were developed using the same membership data, methods, assets and assumptions as those used in preparing the September 30, 2005, preliminary actuarial valuation report.
2. As with the costs developed in the actuarial valuation, the emerging costs will vary from those presented in the valuation report or this letter to the extent that actual experience differs from that projected by the actuarial assumptions.
3. The analysis of this request 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.
4. These fiscal costs are intended for use only during the 2006 Interim.
5. The funding method used for Plan 1 utilizes the Plan 2/3 employer/state rate as the Normal Cost and amortizes the remaining liability (UAAL) by the year 2024. Benefit increases to Plan 2/3 will change the UAAL in Plan 1. The cost of benefit increases to Plan 1 increases the UAAL.
6. Plan 2/3 utilizes the Aggregate Funding Method. The cost of Plan 2/3 is spread over the average working lifetime of the current active Plan 2/3 members.

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.)

Appendix E

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 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; plus
- 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.

Pension Benefit Obligation (PBO): 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 which 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 Liability (Unfunded PBO): The excess, if any, of the Pension Benefit Obligation 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.



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RE: RATE OF RETURN REQUIRED TO ELIMINATE PLAN 1 UAAL

Dear SCPP Plan 1 Funding Method Subgroup Members:

At your last meeting, you asked staff to determine the rate of investment return that would be required to retire the Unfunded Actuarial Accrued Liability in the Plans 1 (Plan 1 UAAL) by 2024. As you may recall, June 30, 2024, is the Plan 1 UAAL payoff date that has been set by the Legislature in RCW 41.45.010 (2).

The annual required rates of return for retiring the Plan 1 UAAL without further state or local employer contributions has been determined separately for PERS and TRS. The rates of return were also determined both with and without gain-sharing. The results are summarized in the following table:

Rates of Return Required to Pay Off the Plan 1 UAAL by 2024*		
	PERS	TRS
Without Gain-Sharing	12.08%	11.17%
With Gain-Sharing	14.17%	12.72%

**Annual rates of return required to pay off the Plan 1 UAAL by June 30, 2024, without further state or employer contribution beyond current biennium.*

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You may also recall that the annual investment rate of return assumption is 8 percent, as set forth in RCW 41.45.035(1)(c). Using the first number in the table, this means that the PERS account within the combined trust fund would be required to earn an additional 4.08 percent annually to pay off the PERS 1 UAAL by June 30, 2024 (without gain-sharing).

What are the chances that the combined trust fund would earn these returns between now and 2024? Staff considered the probabilities, and the results are summarized below:

Probability of Earning Rates of Return for 18 Years		
	PERS	TRS
Without Gain-Sharing	7.84%	12.57%
With Gain-Sharing	2.15%	5.45%

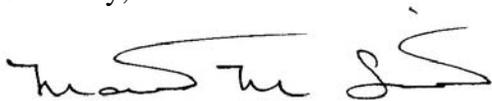
Using the first number in the table, there is a 7.84 percent chance that the combined trust fund will earn 12.08 percent per year over the next eighteen years.

These estimates are based on preliminary figures from the 2005 valuation. The actuarial audit for this valuation has not yet been finalized. The estimates are provided simply to give you an alternative way of thinking about the cost of amortizing the Plan 1 UAAL.

These estimates assume no Plan 1 benefit increases (other than future gain-sharing benefits generated for returns above 10 percent). This letter has been prepared exclusively for the use or benefit of the Plan 1 Funding Method Subgroup for a specific and limited purpose during the 2006 Interim. This communication should be used in full and should not be released to others without the written consent of the Office of the State Actuary. Please see the attached appendices for more information regarding the preparation of these results.

We appreciate the opportunity to provide this information and would be happy to answer any questions you may have.

Sincerely,



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



Philip Martin McCaulay, FSA, MAAA, EA
Senior Pension Actuary

Attachments:

- Appendix A – Actuarial Methods
- Appendix B – Actuarial Assumptions
- Appendix C – Data
- Appendix D – Disclosure / Glossary

Appendix A

Actuarial Methods

We started with our projections and changed the Unfunded Actuarial Accrued Liability (UAAL) contribution percentage to 0 percent. We used the current asset smoothing method to correctly smooth the investment gains over the correct number of years. We then solved for the constant rate of return from 2005 to 2024 that would pay off the PERS and TRS UAAL by 2024.

Next, for rate of return under “with gain-sharing” scenarios, we added the present value of future gain-sharing benefits to the 2005 UAAL and accrued it at 8 percent interest to 2023. Additionally, we increased projected annual benefit payments by the percentage increase in the UAAL due to future gain-sharing benefits. We then repeated the above process to determine the rate necessary to pay of the UAAL by 2024 with existing gain-sharing under current investment policy.

After obtaining the rate with the gain-sharing liability included in the Present Value of Future Benefits (PVFB) it was necessary to account for additional gain-sharing being paid out every other year due to the rates being over 10 percent every year. We took the obtained rate and subtracted 10 percent to get the excess over 10 percent, the amount that is eligible for gain-sharing. We then divided the excess by .75 since half of the gain-sharing disbursement goes to the members and half goes into the pension system; and gain-sharing is only paid out every other year, thus only half is paid annually. Adding the 10 percent back into this number resulted in the total rate required to fund existing and additional gain-sharing.

$$[((\text{Rate of return} - 10\%) / .75) + 10\%]$$

The probability that the Commingled Trust Fund (CTF) would actually return these rates was based on the Washington State Investment Board’s (WSIB) 2006 capital market assumptions. Their spreadsheet had the percentile distribution of predicted rates of return for one, two, three, four, five, ten, twenty, and fifty years. We linearly interpolated between the ten- and twenty-year percentile distribution to obtain an 18-year percentile distribution. We then compared the rates of return we calculated above to the percentiles in the 18-year distribution and linearly interpolated to calculate a more precise probability. The percentile returned by our last interpolations was the probability a rate of return less than or equal to the one we calculated would be realized over the 18-year time period. One minus that probability is the probability the CTF will earn at least the rate of return we calculated over the 18-year period.

Appendix B

Actuarial Assumptions

We assumed 75 percent of the excess rate of return over 10 percent would go to gain sharing. We assumed assets would be smoothed based on the total rate of return realized by the CTF, but the assets would only grow by the rate of return realized after gain-sharing was paid out. We assumed there would not be any further contributions from the state or local employers to the UAAL. We assumed a flat rate would be earned each year for 18 years. We assumed gain-sharing liability would grow at 8 percent interest per year.

Appendix C

Data

We used the preliminary results of the 2005 valuation to develop our projection spreadsheets.

We relied upon the WSIB percentile distribution of simulated rates of future investment returns under their 2006 capital market assumptions to calculate the probability the CTF would earn at least the rates of return we calculated would be necessary to pay off the UAAL by 2024.

Percentile	1 Year	2 Year	3 Year	4 Year	5 Year	10 Year	20 Year	50 Year
95th Percentile	31.9	24.2	20.9	19.0	17.7	14.6	12.4	10.5
85th Percentile	22.2	17.7	15.7	14.6	13.8	11.9	10.5	9.4
75th Percentile	16.8	14.0	12.7	12.0	11.5	10.3	9.4	8.7
65th Percentile	12.7	11.1	10.4	10.0	9.7	9.0	8.5	8.1
55th Percentile	9.1	8.6	8.4	8.2	8.1	7.9	7.8	7.6
Expected Value	8.2	7.8	7.7	7.6	7.5	7.5	7.4	7.4
45th Percentile	5.7	6.2	6.4	6.5	6.6	6.8	7.0	7.1
35th Percentile	2.3	3.8	4.4	4.8	5.1	5.8	6.2	6.6
25th Percentile	-1.3	1.2	2.3	2.9	3.4	4.6	5.4	6.1
15th Percentile	-5.7	-2.0	-0.4	0.6	1.3	3.1	4.3	5.4
5th Percentile	-12.6	-7.1	-4.6	-3.1	-2.0	0.6	2.6	4.3

Appendix D

Other Disclosures/Glossary

STATEMENT OF DATA AND ASSUMPTIONS USED IN PREPARING THE FISCAL COSTS FOR THIS LETTER:

The costs presented in this letter are based on our understanding of the request/proposed legislation as well as generally accepted actuarial standards of practice including the following:

1. Costs were developed using the same membership data, methods, assets and assumptions as those used in preparing the preliminary September 30, 2005, actuarial valuation report.
2. As with the costs developed in the actuarial valuation, the emerging costs will vary from those presented in the valuation report or this letter to the extent that actual experience differs from that projected by the actuarial assumptions.
3. The analysis of this request/proposed legislation 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.
4. These fiscal costs are intended for use only during the 2006 Legislative Interim.
5. The funding method used for Plan 1 utilizes the Plan 2/3 employer/state rate as the Normal Cost and amortizes the remaining liability (UAAL) by the year 2024. Benefit increases to Plan 2/3 will change the UAAL in Plan 1. The cost of benefit increases to Plan 1 increases the UAAL.

GLOSSARY OF ACTUARIAL TERMS:

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.



WASHINGTON STATE LEGISLATURE
Office of the State Actuary

September 15, 2006

Sent via e-mail and distributed as meeting materials

Select Committee on Pension Policy, Plan 1 Funding Method Subgroup Members

- Senator Craig Pridemore
- Representative Bill Fromhold
- Representative Barbara Bailey
- Representative Larry Crouse
- Representative Steve Conway
- Victor Moore, Director, OFM
- Sandra Matheson, Director, DRS
- Elaine Banks, TRS Retirees

RE: STOCHASTIC FORECASTING

Dear SPCP Plan 1 Funding Method Subgroup Members:

Deterministic forecasting – the simulation over time of a single economic scenario – helps in understanding the expected trend of contribution rates over time. Stochastic forecasting helps one understand the potential variability of those expected rates. Results are shown by performing about 10,000 valuations each year of the projection period and sorting the results.

Deterministic Forecast – Single set of results based on one scenario.

Stochastic Forecast – Range of results based on thousands of scenarios.

The results of a stochastic forecast can be expressed using percentiles. The median is the 50th percentile. The range from the 25th to 75th percentile, with the median as the midpoint, is known as the inter-quartile range. More likely than not, the results will fall in the inter-quartile range.

Plan 1 UAAL Contribution Rates		
Biennium	2009-11	2021-23
PERS1 - Deterministic	3.06%	3.48%
PERS1 - Stochastic	2.37% to 3.75%	0.00% to 5.82%
TRS1 - Deterministic	4.84%	5.96%
TRS1 - Stochastic	3.65% to 6.02%	0.00% to 14.78%

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For example, a deterministic forecast indicates that PERS 1 Unfunded Actuarial Accrued Liability (UAAL) rates are expected to be 3.06 percent for 2009-11, while stochastic forecasting shows that there is a 25 percent chance rates will be below 2.37 percent and a 25 percent chance rates will be above 3.75 percent. More likely than not, the PERS 1 UAAL rates for 2009-11 will be between 2.37 percent and 3.75 percent.

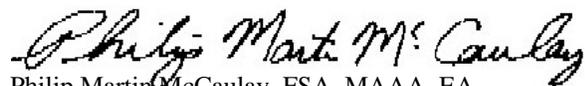
A deterministic forecast indicates that TRS 1 UAAL rates are expected to be 4.84 percent for 2009-11, while stochastic forecasting shows that there is a 25 percent chance rates will be below 3.65 percent and a 25 percent chance rates will be above 6.02 percent. More likely than not, the TRS 1 UAAL rates for 2009-11 will be between 3.65 percent and 4.84 percent.

The variability increases with the time horizon. A deterministic forecast indicates that PERS 1 UAAL rates are expected to be 3.48 percent for 2021-23, while stochastic forecasting shows that there is a 25 percent chance rates will be 0.00 percent and a 25 percent chance rates will be above 5.82 percent. More likely than not, the PERS 1 UAAL rates for 2021-23 will be between 0.00 percent and 5.82 percent.

A deterministic forecast indicates that TRS 1 UAAL rates are expected to be 5.96 percent for 2021-23, while stochastic forecasting shows that there is a 35 percent chance rates will be 0.00 percent (the 25th and 30th percentiles are also 0.00 percent) and a 25 percent chance rates will be above 14.78 percent. More likely than not, the TRS 1 UAAL rates for 2021-23 will be between 0.00 percent and 14.78 percent.

I appreciate the opportunity to provide this information and would be happy to answer any questions you may have.

Sincerely,

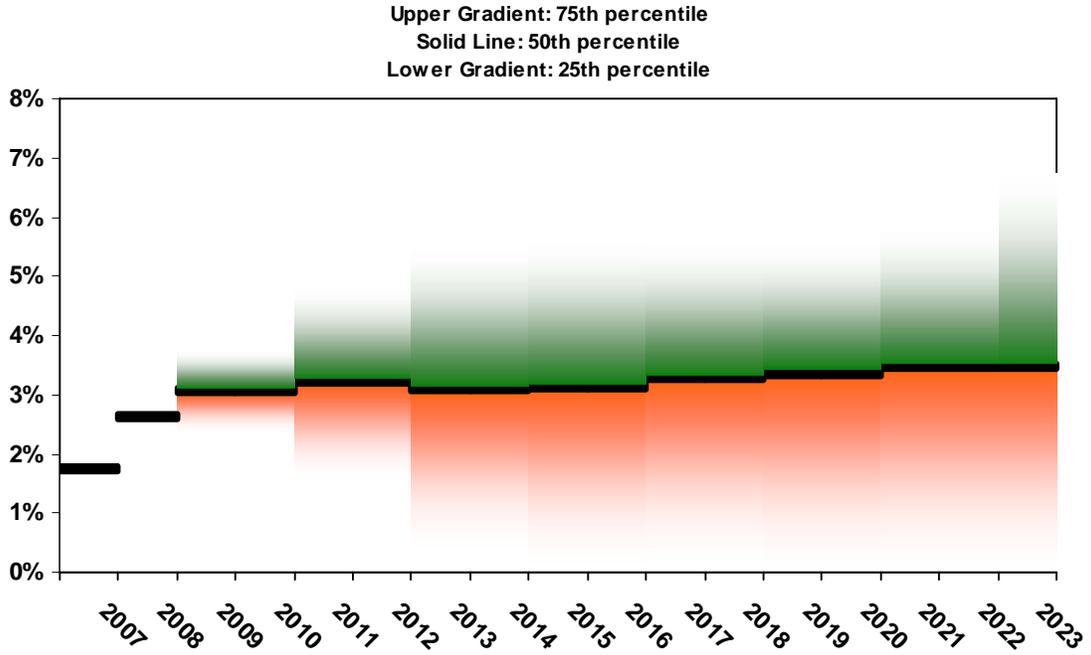


Philip Martin McCaulay, FSA, MAAA, EA
Senior Pension Actuary

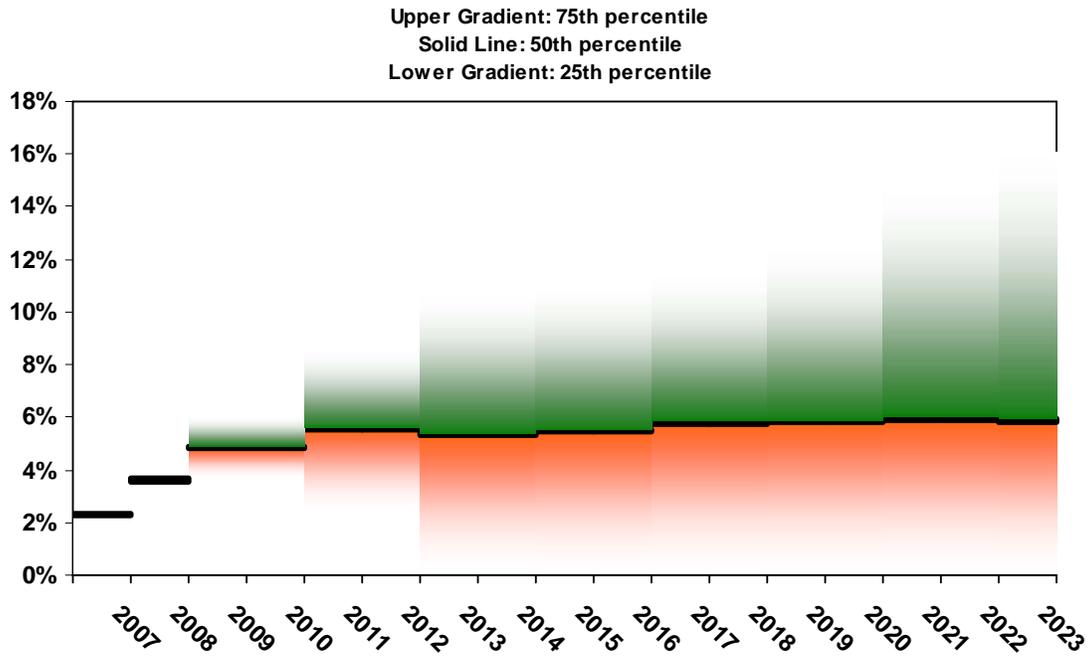
Attachment
Plan 1 Stochastic Graphs

Plan 1 Stochastic Graphs

PERS1 UAAL Stochastic Contribution Rate Projections



TRS1 UAAL Stochastic Contribution Rate Projections



SIX YEAR OUTLOOK--Dollars in Millions

June 2006	2006	2007	2008	2009	2010	2011
Beginning Balance (General Fund-State)	870	637	746	745	647	318
Revenues						
BASELINE (June 2006 Economic & Revenue Forecast Council revenue forecast, 5% annual growth after 2009)	13,259	13,708	14,345	15,118	15,874	16,668
Money Transfers	129	78				
<i>Subtotal</i>	<i>13,388</i>	<i>13,786</i>	<i>14,345</i>	<i>15,118</i>	<i>15,874</i>	<i>16,668</i>
<i>Pension Funding Stabilization Account set-aside</i>	-		147	154		
TOTAL REVENUE	13,388	13,786	14,492	15,272	15,874	16,668
<i>Biennial Total</i>		<i>27,174</i>		<i>29,764</i>		<i>32,541</i>
Expenditures						
Baseline Expenditures (see notes on next page)	13,621	13,677	13,884	14,105	14,332	14,568
Pension Costs including unfunded liability payments			127	239	322	351
Pension Costs--Fund Gainsharing			90	96	101	107
<i>K-12 Teacher/staff and Community and Technical Colleges COLA - Initiative 732 (3.2%, 2.0%, 2.1%, 1.7%)</i>			143	201	302	399
<i>State employee/Higher Education salary adjustment (1.6%, 1.6%, 2%, 2%)* Implicit Price Deflator</i>			42	85	139	194
<i>Employee health insurance (state government, K-12, higher education) (9%, 9%, 9%, 9% growth) **</i>			97	200	314	438
<i>Medical Assistance (7% annual growth after FY 2007)</i>			109	225	349	482
<i>Health Services Account Backfill</i>			-	165	246	315
<i>Other Near GF-S Backfill (PSEA/VRDE)</i>			-	4	13	18
<i>Continuation of Education Legacy Programs (Learning Assistance Program/Higher Education)</i>				51	85	104
<i>Subtotal</i>	<i>13,621</i>	<i>13,677</i>	<i>14,492</i>	<i>15,371</i>	<i>16,203</i>	<i>16,976</i>
Potential 2007 Supplemental budget ***	-	-	-	-	-	-
TOTAL EXPENDITURES	13,621	13,677	14,492	15,371	16,203	16,976
<i>Biennial Total</i>		<i>27,298</i>		<i>29,863</i>		<i>33,178</i>
General Fund-State ENDING BALANCE	637	746	745	647	318	10
NON-GENERAL FUND RESERVES (including Pension Stabilization, Health Services, & Student Achievement Accounts)		740				
TOTAL POTENTIAL SURPLUS/DEFICIT	637	1,486	745	647	318	10

BASELINE EXPENDITURE ASSUMPTIONS

- >Assumes enacted 2005-07 budget plus Final Enacted 2006 Supplemental Budget.
- >Assumes vendor rate increase based on Implicit Price Deflator (IPD) plus one-half associated caseload or population cohort growth.
- >Assumes "all other objects" (excluding salaries, benefits, pensions) grow by IPD plus one-half associated caseload or population growth.
- >Assumes 2.0% inflation above general inflation for non-Medical Assistance DSHS health care related vendor payments (Developmental Disabilities, Long Term Care, Alcohol and Substance Abuse, Mental Health).
- >Assumes current participation rate carried forward for higher education enrollment.
- >Assumes average debt service growth of 6.5% per year over forecast period.

FOOTNOTES

- * Does **NOT** include the one-time Fiscal Year 2007 1.6% salary increase in the base for future calculations per negotiated contracts and budget bill language.
- ** Does not assume use of Public Employee Benefits Board (PEBB) fund surplus.
- *** Assumes a net zero 2007 Supplemental Budget--caseload savings are offset by increases in other costs.



WASHINGTON STATE LEGISLATURE
Office of the State Actuary

September 14, 2006

TO: Plan 1 Funding Method Subgroup

FROM: Philip Martin McCaulay, FSA, EA, MAAA *PMM*
Office of the State Actuary

**RE: GENERAL FUND STATE SHARE OF UNFUNDED LIABILITY FOR
PERS 1 AND TRS 1**

The employer contributions for the Public Employees' Retirement System Plan 1 (PERS 1) and Teachers' Retirement System Plan 1 (TRS 1) Unfunded Actuarial Accrued Liability (UAAL) are split between General Fund – State, Non-General Fund State, and Local Governments / School Districts as follows:

Split of 2007-09 Plan 1 UAAL Contributions		
	PERS1	TRS1
General Fund - State	20.7%	62.0%
Non-GF State	19.9%	0.0%
Total State	40.6%	62.0%
Local/ School District	59.4%	38.0%
Total Employer	100.0%	100.0%

A change in the rate for the PERS1 UAAL has about three times the impact on local governments as it has on the General Fund – State. A change in the rate for the TRS1 UAAL has more of an impact on the General Fund – State than it has on school districts.

The splits for PERS1 are based on the blended splits for PERS, SERS, and PSERS employers. The 2007-09 splits are based on the weighted average of the splits for 2007-08 and 2008-09.

The splits were calculated by the Office of the State Actuary (OSA) using information provided by the Office of Financial Management (OFM) and the Department of Retirement Systems (DRS). OFM provided a spreadsheet with information on the General Fund - State fiscal impact for 2007-09 of a 1 percent of pay contribution. DRS provided the actual dollar amount of contributions by system split by state and local government.

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Details on the splits developed by the OSA are shown below:

	Splits				
	(GFS)	(NON - GFS)	Total State	Local Gov't. / School Districts	Total
PERS	15.0%	24.5%	39.5%	60.5%	100.0%
TRS 2007-08	56.1%	0.0%	56.1%	43.9%	100.0%
TRS 2008-09	67.5%	0.0%	67.5%	32.5%	100.0%
SERS 2007-08	39.0%	0.0%	39.0%	61.0%	100.0%
SERS 2008-09	40.6%	0.0%	40.6%	59.4%	100.0%
PSERS	60.4%	3.2%	63.6%	36.4%	100.0%
LEOFF	100.0%	0.0%	100.0%	0.0%	100.0%
WSP	9.7%	90.3%	100.0%	0.0%	100.0%
PERS1 Payroll 2007-08	20.6%	19.9%	40.5%	59.5%	100.0%
PERS1 Payroll 2008-09	20.8%	19.9%	40.7%	59.3%	100.0%
Weighted Average	20.7%	19.9%	40.6%	59.4%	100.0%
TRS1 Payroll 2007-08	56.1%	0.0%	56.1%	43.9%	100.0%
TRS1 Payroll 2008-09	67.5%	0.0%	67.5%	32.5%	100.0%
Weighted Average	62.0%	0.0%	62.0%	38.0%	100.0%

The Select Committee on Pension Policy



Plan 1 Funding Method

Matt Smith, FCA, MAAA, EA
State Actuary
August 21, 2006



Outline

- Review of policy questions
- Analysis
- Options
- Next steps



Review of Policy Questions

- Is the Plan 1 funding method serving its intended purpose?
- Will it produce a reasonable and manageable schedule of contributions?
- Is the current method too backloaded?
- Should Plan 1 benefit improvements have a separate funding policy?
- How do you balance the need to fund unfunded prior costs with the need for benefit improvements?



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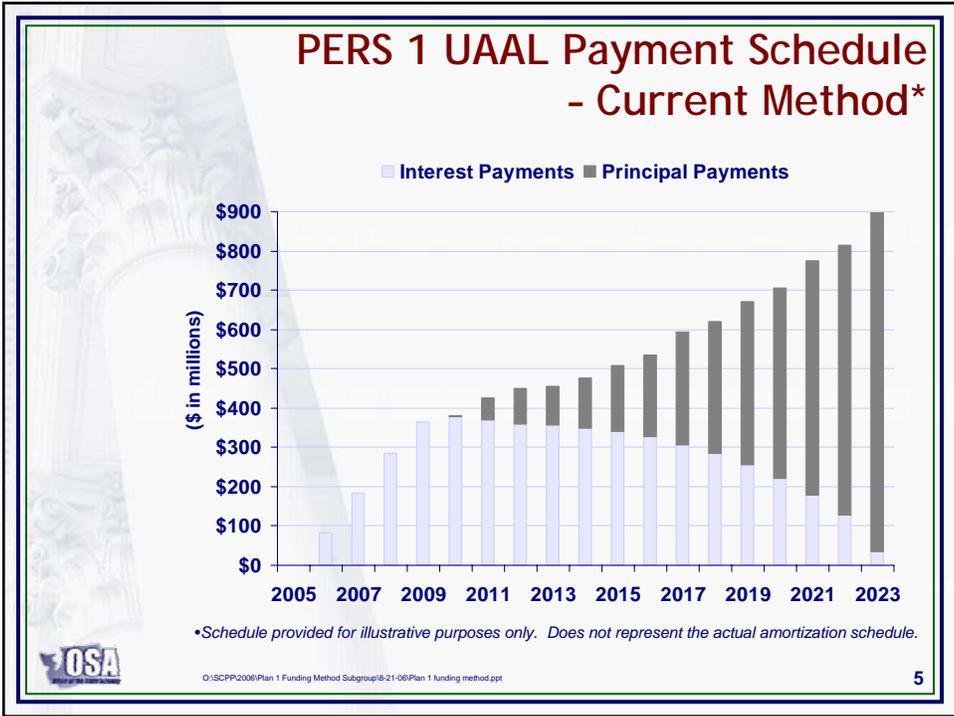
Analysis

- Current method spreads unfunded liability over projected system payroll assumed to grow by:
 - 4.5% annual pay increases; and
 - 1.25% (0.90% in TRS) annual growth in system membership
- Produces a “level percentage of system payroll” payment schedule
- Produces a “back-loaded dollar” payment schedule



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- ### Analysis
- Risk factors
 - payroll and membership may grow less than assumed
 - trust fund may return less than 8% assumed rate
 - state and local tax revenues may grow less than assumed payroll and membership growth
 - Benefit improvements for past service increase the impact of these risks
- OSA**
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- 6**

Analysis

- If these risks become reality
 - current method may produce an unreasonable schedule of contributions
 - contributions may be deferred or skipped
 - unfunded prior service costs will remain
 - plan costs will increase



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Options

- Method change
- Assumption change
- Identify additional funding sources
- Asset and liability management
- Separate funding policy for benefit improvements
- Combination of options



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Method Change

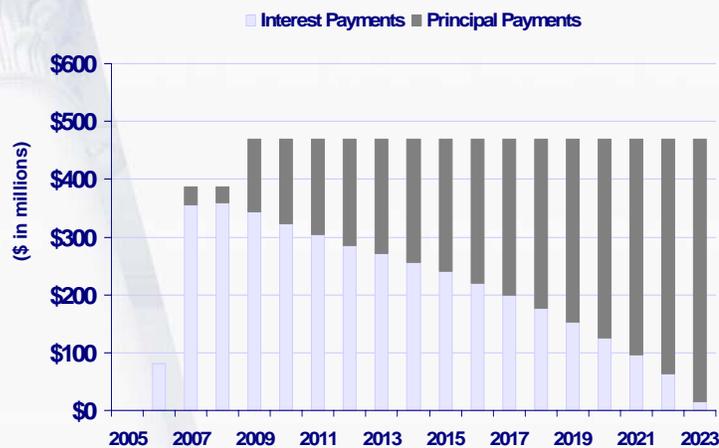
- Switch to level dollar
 - retain current amortization date or extend
- Reduces backloading under current method
- Reduces risk that payments outpace tax revenues



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PERS 1 UAAL Payment Schedule - Level Dollar to 2024*



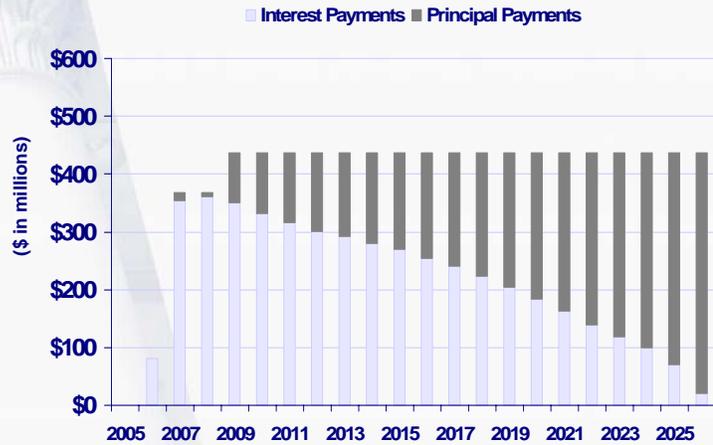
* 17 level payments at 8% annual interest; starting in 2007. Schedule provided for illustrative purposes only.



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PERS 1 UAAL Payment Schedule - Level Dollar to 2027*



* 20 level payments at 8% annual interest; starting in 2007. Schedule provided for illustrative purposes only.



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Method Changes

Projected Fiscal Impacts Fiscal Cost Summary

Cost (\$ in Millions)	Level Dollar		Level Dollar to 2027	
	PERS 1	TRS 1	PERS 1	TRS 1
2007-09				
Employer Total	\$304.6	\$168.4	\$265.8	\$144.8
General Fund State	63.4	113.7	55.3	97.7
25-year				
Employer Total	(1,733.6)	(1,202.7)	(563.3)	(310.5)
General Fund State	(360.6)	(811.9)	(117.2)	(209.6)



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Assumption Change

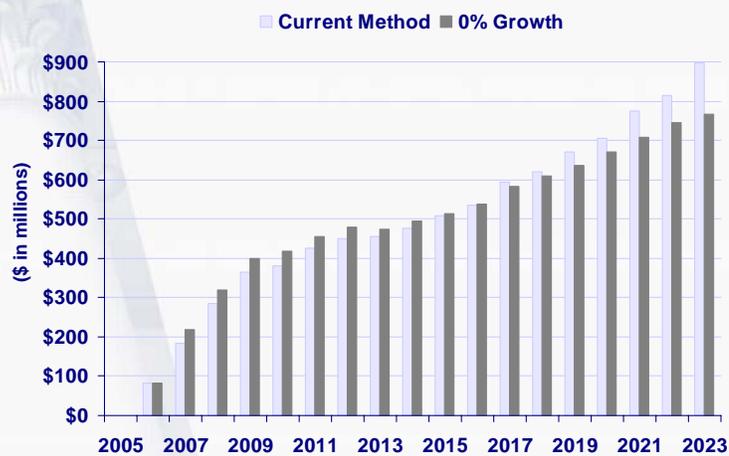
- Retain current method
- Remove membership growth assumption
- Lower salary growth assumption to 3.5%
- Shorten the amortization period to 2019



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PERS 1 UAAL Payment Schedule - 0% Membership Growth*

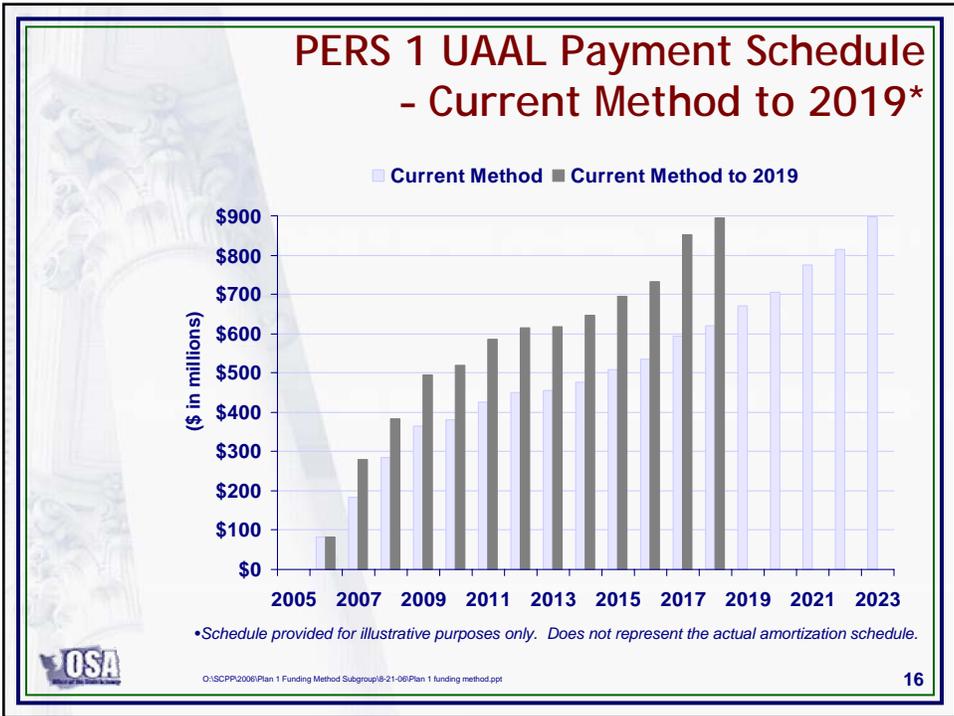
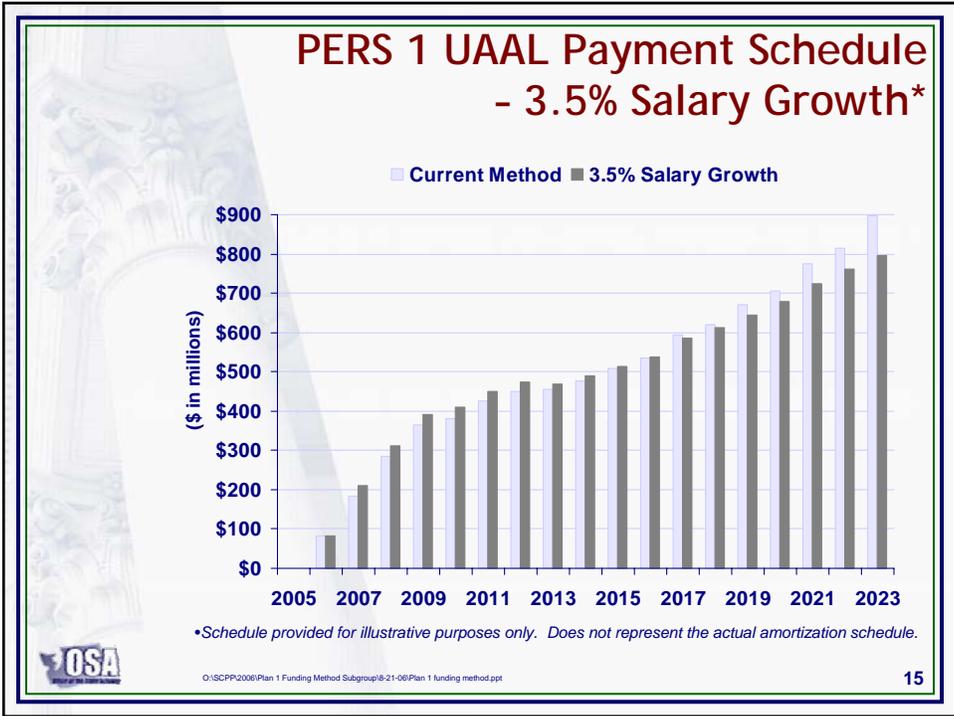


*Schedule provided for illustrative purposes only. Does not represent the actual amortization schedule.



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Assumption Changes

Projected Fiscal Impacts Fiscal Cost Summary						
Cost (\$ in Millions)	0% Growth		3.5% Salary		Current to 2019	
	PERS 1	TRS 1	PERS 1	TRS 1	PERS 1	TRS 1
2007-09						
Employer Total	\$68.1	\$29.5	\$52.0	\$32.1	\$194.2	\$119.6
General Fund State	14.2	19.9	10.8	21.7	40.4	80.8
25-year						
Employer Total	(120.3)	(44.6)	(89.0)	(43.0)	(1,748.4)	(1,243.2)
General Fund State	(25.0)	(30.1)	(18.5)	(29.0)	(363.7)	(839.2)



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Identify Additional Funding Sources

- Examples of non-payroll related contributions:
 - new tax
 - Insurance premium tax (Oklahoma Police Pension Retirement Plans)
 - new fee
 - Accident report fee (West Virginia Deputy Sherriff's)
 - general fund appropriations (New York, Montana, West Virginia)
 - periodic appropriations for UAAL (Connecticut, Montana, Illinois, Rhode Island)



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Identify Additional Funding Sources

- Other considerations:
 - 601 expenditure-cap issues?
 - Constitutional issues?



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Asset and Liability Management

- Study separately for PERS 1 and TRS 1
- Set risk tolerance for upward volatility in Plan 1 UAAL contributions
- Select asset allocation policy that achieves
 - lowest upward volatility at the lowest expected cost
- Separate PERS 1 and TRS 1 from the commingled trust fund?



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Separate Funding Policy for Benefit Improvements

- Separately amortize future benefit increases over
 - 10 years of projected system payroll; or
 - average expected future lifetime of Plan 1 members
 - whichever is less



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Next Steps?

- Next scheduled subgroup meeting
 - September 18, 2006
- Direction to staff



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