



Montana Legislative Services Division
Office of Research and Policy Analysis
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TO: Sen. Carolyn Squires, Presiding Officer, Sen. State Administration Committee
Members of the Senate State Administration Committee
FROM: Dave Bohyer
RE: Pension systems--unfunded actuarially accrued liabilities

Request

The Committee has requested information on two options -- increasing employer contributions and issuing general obligation (GO) bonds -- to reduce the amortization period of unfunded actuarially accrued liabilities (UAL) in the Public Employees' Retirement System (PERS) and the Teachers' Retirement System (TRS) to 30 years.

Information Sources

In preparing this response, I have obtained information from different sources, including:

- the staff of the Legislative Audit Division;
- the Teachers' Retirement System, State of Montana: Actuarial Valuation, 7/1/06;
- the fiscal note for HB 159;
- the Comprehensive Annual Financial Report, MPERB, June 30, 2006;
- the Comprehensive Annual Financial Reports, TRB, 6/30/2006, and 6/30/2005;
- the staff of the MPERA.

I have presumed that all of the information is accurate. Using different combinations of the information, I have reported or constructed five scenarios that assess the implications of increasing employer contributions and of issuing GO bonds. For convenience, I have labeled the scenarios as 0, 1, 2, 3, and 4.

Limitations

Some of the data obtained is traceable to primary sources and verifiable; other data is taken at face value. Some of the data was compiled or reported in 2005 or earlier, but most was compiled or reported in 2006. Both factors--source and timing--can affect

the findings and conclusions.

Therefore, the value of the information provided in this response depends on the timing and accuracy and, in some measure, the precision of the data and assumptions upon which the various calculations are based. Ultimately, current and accurate data can be obtained. However, assumptions established now that prove to be accurate over time are more difficult to come by and can be judged only in hindsight.

Response in brief

In scenarios 0 through 4, I have reported or generated five different comparisons that use different, yet reasonable data and assumptions as variables. Based on the data and assumptions, the probable overall cost of increasing employer contributions to reduce the amortization period of the UAL in the PERS and TRS to 30 years would likely be higher than the overall cost of issuing GO bonds for the same purpose.¹

How much higher the cost might be varies depending on different factors and assumptions.

For example, I obtained the earliest data and calculations from staff of the Legislative Audit Division, which I understand to have been generated in December 2005. Those data and calculations indicates that the state would save approximately \$840 million over the amortization life of 30-year bonds versus the employer contribution rates that were estimated to be necessary at the time.²

The \$840-million figure contrasts sharply with calculations I have made on more current figures that suggest savings to the state of between \$85 million and \$120 million over the amortization life of 30-year bonds versus the increased employer contribution rates over the same time period.³

For whatever it's worth, it appears that the amounts estimated to be potentially saved, i.e., \$840 million at the high end to \$83 million at the low end, are accurate based on the data and assumptions underlying the calculations used to derive the estimates.

¹ The information on the appended pages is offered in support of the conclusion.

² See Tables 0.1, 0.2, and 0.3, appended. The increases in employer contribution rates for PERS and TRS employers and the bond principal were each based upon data provided to the LAD staff by the staffs of MPERA and TRS. It also appears to be the case that the \$100 million appropriation to the TRS in Dec. 2005 occurred after the estimates were calculated. Clearly, changes in the value of PERS and TRS assets and liabilities at June 30, 2006, affecting the UAL, were not known at the time of the estimates and, therefore, aren't part of the calculations.

³ See Tables in series 1.1 through 4.3, appended.

Important Considerations

Accuracy and precision

At first glance of the information in the Composite Table (appended), a reader might be--should be--struck by the differences in the estimated savings of bonding over increasing contributions. Some \$85 - \$120 million in savings is probably enough to pique interest, but \$840 million could be the colloquial "no brainer".

However, as one drills deeper into the data, calculations, findings, and conclusions, it becomes questionable whether \$840 million savings is really to be had. With the magnitude of the numbers and amounts under scrutiny, small differences in data points and assumptions can have significant implications for the results of calculations. The following table illustrates the implications of small changes.

A Change of:	Change of Cost over 30-year Term of Bonds (\$ million)		
	Low	High	Difference
1 basis point in the employer PERS contribution rate ⁴	\$ 0.195	\$ 5.206	\$5.011
1 basis point in the employer TRS contribution rate	0.132	3.422	\$3.290
1 basis point in PERS bond interest %	0.594	0.616	\$0.022
1 basis point in TRS bond interest %	0.916	0.982	\$0.066
\$1 million in PERS bond principal	1.988	2.158	\$0.170
\$1 million in TRS bond principal	1.988	2.158	\$0.170
1 basis point in wage growth (PERS)	1.065	1.131	\$0.066

The timing of the payoff

Stipulating the reasonableness of the assumptions underlying each of the scenarios at the time each was prepared and simply assuming the accuracy of the calculations, it is notable that, although there are savings under each scenario, *when the savings occur varies considerably*.

⁴ A basis point equals 1/100 of 1%. Therefore, an increase of 1 basis point in, e.g., a 2% employer contribution rate would result in an employer contribution rate of 2.01%.

For example, under scenario 0, the annualized amount of increased employer contributions exceeds the annualized amount of bond payments early in the 5th year following the increase in employer contributions and issuing the bonds. By midway through the 9th year after implementation, the accumulated savings from bond payments over accumulated increased employer contributions turns positive and grows rapidly. The "net benefit" begins to accrue to taxpayers in just over 9 years.

In contrast, under scenarios 1 through 4, the annualized amount of increased employer contributions does not exceed the annualized amount of bond payments until the 13th year (at the earliest, under scenario 2) and the accumulated savings from bond payments over accumulated increased employer contributions doesn't turn positive until midway through the 24th year (at the earliest, under scenarios 2 and 4).

Allocating the cost

Another important consideration is allocating the cost to reduce the amortization period of the UAL in the PERS and TRS. As used here, "allocation" refers to the source of funds and to the level or unit of government.

The debt service for state-issued GO bonds is customarily paid by a statutory appropriation from the state general fund. The state general fund is composed of state-sourced general revenue and therefore, the bulk of money to pay the debt service comes primarily from Montanans paying taxes, fees, etc., to the state.

In contrast, employer contributions are paid from funds more generally available to covered employers -- state and local general funds, state special revenue, district and special district revenue, federal revenue, et al. -- that is used to pay for personal services in different programs and in different levels or units of government.

One might be tempted to ask, "What difference does that make? It all comes from the same taxpayers, doesn't it?"

Well, not quite. In the state budget, for example, approximately 40% of personal services costs (wages, salaries, and benefits) is paid for with state general fund. The remaining 60% of personal services costs are paid by non-general funds.⁵ Additionally, approximately one-half of the membership of PERS is employed by governmental entities that are not the state and nearly all of the TRS membership is employed by non-state governmental entities. Paying for state-issued GO bonds is typically the sole responsibility of the state general fund. Paying increased employer contributions is the responsibility of the employer from whatever funds are available to the employer.

⁵ Source: Legislative Fiscal Division staff. Similar comparisons or ratios for local governments, K-12 schools, and the university system are not readily available.

Therefore, the burden of paying the cost of increased employer contributions is spread far wider than the burden of paying the debt service on state-issued GO bonds.

Conclusion

In analyzing the cost of increased employer contributions and the cost of GO bonds, the variable data and assumptions on which calculations are based can have significant implications for the estimates generated. The general accuracy of the data is critical, but the precision of the data also has some bearing on the ultimate results that form the basis for consideration and, hence, public policy.

As a means to reduce the amortization periods of UAL in the PERS and TRS to 30 years, the total cost of issuing and repaying GO bonds is probably less than the total cost of increasing employer contributions. That said, the "savings" from issuing bonds versus increased contributions occurs relatively late in the 30-year term of the bonds.

Additionally, the "savings" from bonding does not accrue primarily to the state general fund. Rather, the savings from bonding accrue to employers and programs whose funding comes from sources other than the state general fund. These employers would include state agencies that depend largely on federal or other state non-general fund revenue (Department of Public Health and Human Services, Department of Labor, Department of Transportation, Department of Fish, Wildlife, and Parks, et al.), elementary and secondary schools, municipalities, counties, myriad special districts or special levies, and the university system, among others.

Composite Table
Comparison of 5 scenarios for estimates of contribution rate increases and pension bonds
PERS and TRS

Scenarios

Cost of	0			1			2			3			4		
	Employer		Net	Employer		Net	Employer		Net	Employer		Net	Employer		Net
	Contributions (\$ million)	Bonds (\$ million)	Savings (\$ million)	Contributions (\$ million)	Bonds (\$ million)	Savings (\$ million)	Contributions (\$ million)	Bonds (\$ million)	Net (\$ million)	Contributions (\$ million)	Bonds (\$ million)	Net (\$ million)	Contributions (\$ million)	Bonds (\$ million)	Net (\$ million)
PERS	\$42	\$18	\$24	\$623	\$574	\$49	\$660	\$574	\$86	\$621	\$574	\$47	\$660	\$574	\$86
TRS	\$72	\$29	\$42	\$889	\$854	\$35	\$889	\$854	\$35	\$889	\$854	\$35	\$889	\$854	\$35
Total	\$113	\$47	\$66	\$1,512	\$1,428	\$85	\$1,549	\$1,428	\$122	\$1,511	\$1,428	\$83	\$1,549	\$1,428	\$122
PERS Assumptions*				PERS Assumptions*				PERS Assumptions*				PERS Assumptions*			
Single rate increase 7/1/2006 @			0.00%	Supplemental rate 7/1/2007 @			0.56%	Supplemental rate 7/1/2007 @			0.56%	Supplemental rate 7/1/2007 @			0.56%
Taxable bonds @			0.00%	Supplemental rate 7/1/2009 @			1.13%	Supplemental rate 7/1/2009 @			1.13%	Supplemental rate 7/1/2009 @			1.13%
Bond principal (\$ million)			\$266.40	30-yr. taxable bonds @			6.00%	Payroll growth - annual			4.25%	Payroll growth - annual			4.25%
Monthly payment			\$1,471,071	Bond principal (\$ million)			\$266.00	30-yr. taxable bonds @			6.00%	30-yr. taxable bonds @			6.00%
Annual bond payment			\$17,652,852	Monthly payment			\$1,594,804	Bond principal (\$ million)			\$266.00	Bond principal (\$ million)			\$266.00
				Annual bond payment			\$19,137,653	Monthly payment			\$1,594,804	Monthly payment			\$1,594,804
								Annual bond payment			\$19,137,653	Annual bond payment			\$19,137,653
TRS Assumptions*				TRS Assumptions**				TRS Assumptions**				TRS Assumptions**			
Non-MUS rate increase 7/1/06 @			0.00%	Supplemental rate 7/1/2007 @			2.00%	Supplemental rate 7/1/2007 @			2.00%	Supplemental rate 7/1/2007 @			2.00%
MUS rate increase 7/1/06 @			0.00%	Supplemental rate 7/1/2009 @			2.38%	Supplemental rate 7/1/2009 @			2.38%	Supplemental rate 7/1/2009 @			2.38%
Taxable bonds @			0.00%	30-yr. taxable bonds @			6.00%	30-yr. taxable bonds @			6.00%	30-yr. taxable bonds @			6.00%
Bond principal (\$ million)			\$0.00	Bond principal (\$ millions)			\$395.50	Bond principal (\$ millions)			\$395.50	Bond principal (\$ millions)			\$395.50
Monthly bond payment			\$0	Monthly bond payment			\$2,371,222	Monthly bond payment			\$2,371,222	Monthly bond payment			\$2,371,222
Annual bond payment			\$0	Annual bond payment			\$28,454,668	Annual bond payment			\$28,454,668	Annual bond payment			\$28,454,668
Calculations by Jim Gillett, Legislative Audit Division, Dec. 2005				Calculations by Dave Bohyer, Legislative Services Division, Jan 2007				Calculations by Dave Bohyer, Legislative Services Division, Jan 2007				Calculations by Dave Bohyer, Legislative Services Division, Jan 2007			
* Source: Legislative Audit Division, Dec. 2005, nee MPERA and TRS				* Source: Legislative Audit Division, Dec. 2005				* Data from fiscal note for HB 159, assumption # 5. Payroll growth of 4.25% annually. "Local Gov" includes PERS covered employees (not TRS members).				* Based on Comprehensive Annual Financial Report, MPERB, June 30, 2006; June 30, 2006, payroll increase by 4.25% annual growth factor.			
See Tables 0.1, 0.2, and 0.3				** Teachers' Retirement System: State of Montana - ACTUARIAL VALUATION (As of July 1, 2006)				** Teachers' Retirement System: State of Montana - ACTUARIAL VALUATION (As of July 1, 2006)				** Comprehensive Annual Financial Reports: Teachers' Retirement System, Fiscal Years ended: June 30, 2006. Table 8, p. 60. and June 30, 2005. Table 10.			
			higher cost over 30 yrs in \$ million				higher cost over 30 yrs in \$ million				higher cost over 30 yrs in \$ million				higher cost over 30 yrs in \$ million
Change				Change				Change				Change			
1 basis point incr. in PERS ER	\$		5.206	1 basis point incr. in PERS ER	\$		0.208	1 basis point incr. in PERS ER	\$		0.208	1 basis point incr. in PERS ER	\$		0.195
1 basis point incr. in TRS ER	\$		3.422	1 basis point incr. in TRS ER	\$		0.132	1 basis point incr. in TRS ER	\$		0.132	1 basis point incr. in TRS ER	\$		0.132
1 basis point incr. in PERS bond %	\$		0.594	1 basis point incr. in PERS bond %	\$		0.616	1 basis point incr. in PERS bond %	\$		0.616	1 basis point incr. in PERS bond %	\$		0.616
1 basis point incr. in TRS bond %	\$		0.982	1 basis point incr. in TRS bond %	\$		0.916	1 basis point incr. in TRS bond %	\$		0.916	1 basis point incr. in TRS bond %	\$		0.916
\$1 million incr. in PERS bond prin.	\$		1.988	\$1 million incr. in PERS bond prin.	\$		2.158	\$1 million incr. in PERS bond prin.	\$		2.158	\$1 million incr. in PERS bond prin.	\$		2.158
\$1 million incr. in TRS bond prin.	\$		1.988	\$1 million incr. in TRS bond prin.	\$		2.158	\$1 million incr. in TRS bond prin.	\$		2.158	\$1 million incr. in TRS bond prin.	\$		2.158

Table 0.1
Estimates of contribution rate increases and pension bonds
PERS

Draft - Subject to change - Discussion purposes only

Assumptions: Single rate increase 7/1/2006 @ 1.63%		Taxable bonds @ 5.25%		actuary est	debt service	Difference	Total 30 year	Total 30 year	Taxpayer	
PERS	Bond principal	Monthly payment	All covered payroll subject to rate increase	Employer Contributions			Additional Employer Contributions	Debt Service @ 5.25%	Savings by Bonding	
FYE	Central Payroll	Univ	Local Gov't	Total				\$0.00		
30-Jun-2006	\$418,380,812	\$90,831,318	\$434,664,701	\$943,876,831	\$15,385,192.35	\$17,652,852.00	(\$2,267,659.65)			
30-Jun-2007	\$434,697,664	\$94,373,739	\$451,616,624	\$980,688,027	\$15,985,214.84	\$17,652,852.00	(\$1,667,637.16)	\$848,604,119	\$529,585,560	\$319,018,559
30-Jun-2008	\$451,650,873	\$98,054,315	\$469,229,672	\$1,018,934,860	\$16,608,638.22	\$17,652,852.00	(\$1,044,213.78)			
30-Jun-2009	\$469,265,257	\$101,878,433	\$487,529,630	\$1,058,673,320	\$17,256,375.12	\$17,652,852.00	(\$396,476.88)			
30-Jun-2010	\$487,566,602	\$105,851,692	\$506,543,285	\$1,099,961,579	\$17,929,373.74	\$17,652,852.00	\$276,521.74			
30-Jun-2011	\$506,581,699	\$109,979,908	\$526,298,473	\$1,142,860,080	\$18,628,619.30	\$17,652,852.00	\$975,767.30			
30-Jun-2012	\$526,338,385	\$114,269,124	\$546,824,114	\$1,187,431,623	\$19,355,135.45	\$17,652,852.00	\$1,702,283.45			
30-Jun-2013	\$546,865,582	\$118,725,620	\$568,150,254	\$1,233,741,456	\$20,109,985.73	\$17,652,852.00	\$2,457,133.73			
30-Jun-2014	\$568,193,340	\$123,355,920	\$590,308,114	\$1,281,857,374	\$20,894,275.20	\$17,652,852.00	\$3,241,423.20			
30-Jun-2015	\$590,352,880	\$128,166,800	\$613,330,130	\$1,331,849,810	\$21,709,151.90	\$17,652,852.00	\$4,056,299.90			
30-Jun-2016	\$613,376,643	\$133,165,306	\$637,250,006	\$1,383,791,955	\$22,555,808.87	\$17,652,852.00	\$4,902,956.87			
30-Jun-2017	\$637,298,332	\$138,358,753	\$662,102,756	\$1,437,759,841	\$23,435,485.41	\$17,652,852.00	\$5,782,633.41			
30-Jun-2018	\$662,152,967	\$143,754,744	\$687,924,763	\$1,493,832,474	\$24,349,469.33	\$17,652,852.00	\$6,696,617.33			
30-Jun-2019	\$687,976,932	\$149,361,179	\$714,753,829	\$1,552,091,940	\$25,299,098.62	\$17,652,852.00	\$7,646,246.62			
30-Jun-2020	\$714,808,033	\$155,186,265	\$742,629,228	\$1,612,623,526	\$26,285,763.47	\$17,652,852.00	\$8,632,911.47			
30-Jun-2021	\$742,685,546	\$161,238,529	\$771,591,768	\$1,675,515,843	\$27,310,908.24	\$17,652,852.00	\$9,658,056.24			
30-Jun-2022	\$771,650,282	\$167,526,832	\$801,683,847	\$1,740,860,961	\$28,376,033.66	\$17,652,852.00	\$10,723,181.66			
30-Jun-2023	\$801,744,643	\$174,060,378	\$832,949,517	\$1,808,754,538	\$29,482,698.97	\$17,652,852.00	\$11,829,846.97			
30-Jun-2024	\$833,012,684	\$180,848,733	\$865,434,548	\$1,879,295,965	\$30,632,524.23	\$17,652,852.00	\$12,979,672.23			
30-Jun-2025	\$865,500,179	\$187,901,834	\$899,186,496	\$1,952,588,509	\$31,827,192.70	\$17,652,852.00	\$14,174,340.70			
30-Jun-2026	\$899,254,686	\$195,230,005	\$934,254,769	\$2,028,739,460	\$33,068,453.20	\$17,652,852.00	\$15,415,601.20			
30-Jun-2027	\$934,325,619	\$202,843,975	\$970,690,705	\$2,107,860,299	\$34,358,122.87	\$17,652,852.00	\$16,705,270.87			
30-Jun-2028	\$970,764,318	\$210,754,890	\$1,008,547,643	\$2,190,066,851	\$35,698,089.67	\$17,652,852.00	\$18,045,237.67			
30-Jun-2029	\$1,008,624,126	\$218,974,331	\$1,047,881,001	\$2,275,479,458	\$37,090,315.17	\$17,652,852.00	\$19,437,463.17			
30-Jun-2030	\$1,047,960,467	\$227,514,330	\$1,088,748,360	\$2,364,223,157	\$38,536,837.46	\$17,652,852.00	\$20,883,985.46			
30-Jun-2031	\$1,088,830,925	\$236,387,389	\$1,131,209,546	\$2,456,427,860	\$40,039,774.12	\$17,652,852.00	\$22,386,922.12			
30-Jun-2032	\$1,131,295,332	\$245,606,497	\$1,175,326,718	\$2,552,228,547	\$41,601,325.32	\$17,652,852.00	\$23,948,473.32			
30-Jun-2033	\$1,175,415,849	\$255,185,150	\$1,221,164,460	\$2,651,765,459	\$43,223,776.98	\$17,652,852.00	\$25,570,924.98			
30-Jun-2034	\$1,221,257,068	\$265,137,371	\$1,268,789,874	\$2,755,184,313	\$44,909,504.30	\$17,652,852.00	\$27,256,652.30			
30-Jun-2035	\$1,268,886,093	\$275,477,729	\$1,318,272,679	\$2,862,636,501	\$46,660,974.97	\$17,652,852.00	\$29,008,122.97			
					\$848,604,119	\$529,585,560	\$319,018,559.40			

Source: Jim Gillett, Deputy Legislative Auditor, Legislative Audit Division, Dec. 2005.

Table 0.2
Estimates of contribution rate increases and pension bonds
TRS

Draft - Subject to change - Discussion purposes only

Assumptions:				4.06%	actuary est	debt service	Difference	Total 30 year	Total 30 year	Taxpayer
Single non-MUS rate increase 7/1/2006 @				1.47%	Additional			Additional	Debt	Savings by
Single MUS rate increase 7/1/2006 @				5.25%	Employer			Employer	Service	Bonding
Taxable bonds @					Contributions			Contributions	@ 5.25%	
TRS	Bond principal		\$440,300,000							
	Monthly payment		\$2,431,353							
MUS contributions end 6/30/2033										
All covered payroll subject to rate increase										
FYE	non-MUS	MUS	Total							
30-Jun-2006	\$560,955,198	\$41,350,437	\$602,305,635	23,382,632	29,176,236	(5,793,604)				
30-Jun-2007	\$586,198,182	\$38,743,885	\$624,942,067	24,369,181	29,176,236	(4,807,055)	\$1,395,015,131	\$875,287,080	\$519,728,051	
30-Jun-2008	\$612,577,100	\$35,890,074	\$648,467,174	25,398,214	29,176,236	(3,778,022)				
30-Jun-2009	\$640,143,070	\$33,158,646	\$673,301,716	26,477,241	29,176,236	(2,698,995)				
30-Jun-2010	\$668,949,508	\$30,361,724	\$699,311,232	27,605,667	29,176,236	(1,570,569)				
30-Jun-2011	\$699,052,236	\$27,479,238	\$726,531,474	28,785,466	29,176,236	(390,770)				
30-Jun-2012	\$730,509,586	\$24,851,205	\$755,360,791	30,024,002	29,176,236	847,766				
30-Jun-2013	\$763,382,518	\$22,127,790	\$785,510,308	31,318,609	29,176,236	2,142,373				
30-Jun-2014	\$797,734,731	\$19,623,170	\$817,357,901	32,676,491	29,176,236	3,500,255				
30-Jun-2015	\$833,632,794	\$17,257,801	\$850,890,595	34,099,181	29,176,236	4,922,945				
30-Jun-2016	\$871,146,270	\$15,072,626	\$886,218,896	35,590,106	29,176,236	6,413,870				
30-Jun-2017	\$910,347,852	\$13,028,623	\$923,376,475	37,151,644	29,176,236	7,975,408				
30-Jun-2018	\$951,313,505	\$11,012,210	\$962,325,715	38,785,208	29,176,236	9,608,972				
30-Jun-2019	\$994,122,613	\$9,282,627	\$1,003,405,240	40,497,833	29,176,236	11,321,597				
30-Jun-2020	\$1,038,858,130	\$7,744,407	\$1,046,602,537	42,291,483	29,176,236	13,115,247				
30-Jun-2021	\$1,085,606,746	\$6,460,927	\$1,092,067,673	44,170,610	29,176,236	14,994,374				
30-Jun-2022	\$1,134,459,050	\$5,414,886	\$1,139,873,936	46,138,636	29,176,236	16,962,400				
30-Jun-2023	\$1,185,509,707	\$4,448,153	\$1,189,957,860	48,197,082	29,176,236	19,020,846				
30-Jun-2024	\$1,238,857,644	\$3,654,129	\$1,242,511,773	50,351,336	29,176,236	21,175,100				
30-Jun-2025	\$1,294,606,238	\$3,001,404	\$1,297,607,642	52,605,134	29,176,236	23,428,898				
30-Jun-2026	\$1,352,863,519	\$2,384,225	\$1,355,247,744	54,961,307	29,176,236	25,785,071				
30-Jun-2027	\$1,413,742,377	\$1,931,294	\$1,415,673,671	57,426,331	29,176,236	28,250,095				
30-Jun-2028	\$1,477,360,784	\$1,498,867	\$1,478,859,651	60,002,881	29,176,236	30,826,645				
30-Jun-2029	\$1,543,842,019	\$1,221,484	\$1,545,063,503	62,697,942	29,176,236	33,521,706				
30-Jun-2030	\$1,613,314,910	\$979,400	\$1,614,294,310	65,514,983	29,176,236	36,338,747				
30-Jun-2031	\$1,685,914,081	\$748,285	\$1,686,662,366	68,459,111	29,176,236	39,282,875				
30-Jun-2032	\$1,761,780,215	\$603,262	\$1,762,383,477	71,537,145	29,176,236	42,360,909				
30-Jun-2033	\$1,841,060,324	\$486,237	\$1,841,546,561	74,754,197	29,176,236	45,577,961				
30-Jun-2034	\$1,923,908,039	\$360,973	\$1,924,269,012	78,115,973	29,176,236	48,939,737				
30-Jun-2035	\$2,010,483,901	\$262,682	\$2,010,746,583	81,629,508	29,176,236	52,453,272				
				<u>\$1,395,015,131</u>	<u>\$875,287,080</u>	<u>519,728,051</u>				

Source: Jim Gillett, Deputy Legislative Auditor, Legislative Audit Division, Dec. 2005.

Table 0.3
Estimates of contribution rate increases and pension bonds
PERS & TRS Combined

Draft - Subject to change - Discussion purposes only

Assumptions: Single rate increase 7/1/2006 @	1.62%	actuary est	debt service	Difference	Total 30 year	Total 30 year	
Taxable bonds @	5.25%	Additional			Additional	Debt	Taxpayer
PERS Bond principal	\$266,400,000	Employer			Employer	Service	Savings by
Monthly payment	\$1,471,071	Contributions			Contributions	@ 5.25%	Bonding
All covered payroll subject to rate increase							

FYE	Central Payroll	Univ	Local Gov't	Total				\$0.00		
30-Jun-2006	\$979,336,010	\$132,181,755	\$1,036,970,336	\$943,876,831	\$38,767,825	\$46,829,088	(\$8,061,263)			
30-Jun-2007	\$1,020,895,846	\$133,117,624	\$1,076,558,691	\$980,688,027	\$40,354,396	\$46,829,088	(\$6,474,692)	\$2,243,619,251	\$1,404,872,640	\$838,746,611
30-Jun-2008	\$1,064,227,973	\$133,944,389	\$1,117,696,846	\$1,018,934,860	\$42,006,853	\$46,829,088	(\$4,822,235)			
30-Jun-2009	\$1,109,408,327	\$135,037,079	\$1,160,831,346	\$1,058,673,320	\$43,733,616	\$46,829,088	(\$3,095,472)			
30-Jun-2010	\$1,156,516,110	\$136,213,416	\$1,205,854,517	\$1,099,961,579	\$45,535,041	\$46,829,088	(\$1,294,047)			
30-Jun-2011	\$1,205,633,935	\$137,459,146	\$1,252,829,947	\$1,142,860,080	\$47,414,085	\$46,829,088	\$584,997			
30-Jun-2012	\$1,256,847,971	\$139,120,329	\$1,302,184,905	\$1,187,431,623	\$49,379,137	\$46,829,088	\$2,550,049			
30-Jun-2013	\$1,310,248,100	\$140,853,410	\$1,353,660,562	\$1,233,741,456	\$51,428,594	\$46,829,088	\$4,599,506			
30-Jun-2014	\$1,365,928,071	\$142,979,090	\$1,407,666,015	\$1,281,857,374	\$53,570,766	\$46,829,088	\$6,741,678			
30-Jun-2015	\$1,423,985,674	\$145,424,601	\$1,464,220,725	\$1,331,849,810	\$55,808,333	\$46,829,088	\$8,979,245			
30-Jun-2016	\$1,484,522,913	\$148,237,932	\$1,523,468,902	\$1,383,791,955	\$58,145,915	\$46,829,088	\$11,316,827			
30-Jun-2017	\$1,547,646,184	\$151,387,376	\$1,585,479,231	\$1,437,759,841	\$60,587,129	\$46,829,088	\$13,758,041			
30-Jun-2018	\$1,613,466,472	\$154,766,954	\$1,650,250,478	\$1,493,832,474	\$63,134,677	\$46,829,088	\$16,305,589			
30-Jun-2019	\$1,682,099,545	\$158,643,806	\$1,718,159,069	\$1,552,091,940	\$65,796,931	\$46,829,088	\$18,967,843			
30-Jun-2020	\$1,753,666,163	\$162,930,672	\$1,789,231,765	\$1,612,623,526	\$68,577,246	\$46,829,088	\$21,748,158			
30-Jun-2021	\$1,828,292,292	\$167,699,456	\$1,863,659,441	\$1,675,515,843	\$71,481,518	\$46,829,088	\$24,652,430			
30-Jun-2022	\$1,906,109,332	\$172,941,718	\$1,941,557,783	\$1,740,860,961	\$74,514,670	\$46,829,088	\$27,685,582			
30-Jun-2023	\$1,987,254,350	\$178,508,531	\$2,022,907,377	\$1,808,754,538	\$77,679,781	\$46,829,088	\$30,850,693			
30-Jun-2024	\$2,071,870,328	\$184,502,862	\$2,107,946,321	\$1,879,295,965	\$80,983,860	\$46,829,088	\$34,154,772			
30-Jun-2025	\$2,160,106,417	\$190,903,238	\$2,196,794,138	\$1,952,588,509	\$84,432,327	\$46,829,088	\$37,603,239			
30-Jun-2026	\$2,252,118,205	\$197,614,230	\$2,289,502,513	\$2,028,739,460	\$88,029,760	\$46,829,088	\$41,200,672			
30-Jun-2027	\$2,348,067,996	\$204,775,269	\$2,386,364,376	\$2,107,860,299	\$91,784,453	\$46,829,088	\$44,955,365			
30-Jun-2028	\$2,448,125,102	\$212,253,757	\$2,487,407,294	\$2,190,066,851	\$95,700,971	\$46,829,088	\$48,871,883			
30-Jun-2029	\$2,552,466,145	\$220,195,815	\$2,592,944,504	\$2,275,479,458	\$99,788,257	\$46,829,088	\$52,959,169			
30-Jun-2030	\$2,661,275,377	\$228,493,730	\$2,703,042,670	\$2,364,223,157	\$104,051,820	\$46,829,088	\$57,222,732			
30-Jun-2031	\$2,774,745,006	\$237,135,674	\$2,817,871,912	\$2,456,427,860	\$108,498,886	\$46,829,088	\$61,669,798			
30-Jun-2032	\$2,893,075,547	\$246,209,759	\$2,937,710,195	\$2,552,228,547	\$113,138,470	\$46,829,088	\$66,309,382			
30-Jun-2033	\$3,016,476,173	\$255,671,387	\$3,062,711,021	\$2,651,765,459	\$117,977,974	\$46,829,088	\$71,148,886			
30-Jun-2034	\$3,145,165,107	\$265,498,344	\$3,193,058,886	\$2,755,184,313	\$123,025,477	\$46,829,088	\$76,196,389			
30-Jun-2035	\$3,279,369,994	\$275,740,411	\$3,329,019,262	\$2,862,636,501	\$128,290,483	\$46,829,088	\$81,461,395			
										<u>\$838,746,611</u>

Source: Jim Gillett, Deputy Legislative Auditor, Legislative Audit Division, Dec. 2005.

Table 1.1
Estimates of contribution rate increases and pension bonds
PERS

ASSUMPTIONS	
Supplemental rate 7/1/2007 @	0.56%
Supplemental rate 7/1/2009 @	1.13%
30-yr. taxable bonds @	6.00%
Bond principal	\$266,000,000
Monthly payment	\$1,594,804
Annual payment	\$19,137,653

Fiscal Year End	Covered Payroll			Estimated Additional Contributions					Bond Debt Service	Cumulative Bond Debt Service	Annual Difference	Cumulative Difference
	State*	MUS*	Local Gov't*	State	MUS	Local Gov't	Total	Cumulative				
29 06/30/08	\$451,650,873	\$98,054,315	\$469,229,672	\$ 2,529,245	\$ 549,104	\$ 2,627,686	\$ 5,706,035	\$ 5,706,035	\$ 19,137,653	\$ 19,137,653	\$ (13,431,618)	\$ (13,431,618)
28 06/30/09	\$469,265,257	\$101,878,433	\$487,529,630	\$ 2,627,885	\$ 570,519	\$ 2,730,166	\$ 5,928,571	\$ 11,634,606	\$ 19,137,653	\$ 38,275,306	\$ (13,209,082)	\$ (26,640,700)
27 06/30/10	\$487,566,602	\$105,851,692	\$506,543,285	\$ 5,509,503	\$ 1,196,124	\$ 5,723,939	\$ 12,429,566	\$ 24,064,172	\$ 19,137,653	\$ 57,412,958	\$ (6,708,087)	\$ (33,348,787)
26 06/30/11	\$506,581,699	\$109,979,908	\$526,298,473	\$ 5,724,373	\$ 1,242,773	\$ 5,947,173	\$ 12,914,319	\$ 36,978,491	\$ 19,137,653	\$ 76,550,611	\$ (6,223,334)	\$ (39,572,120)
25 06/30/12	\$526,338,385	\$114,269,124	\$546,824,114	\$ 5,947,624	\$ 1,291,241	\$ 6,179,112	\$ 13,417,977	\$ 50,396,468	\$ 19,137,653	\$ 95,688,264	\$ (5,719,675)	\$ (45,291,796)
24 06/30/13	\$546,865,582	\$118,725,620	\$568,150,254	\$ 6,179,581	\$ 1,341,600	\$ 6,420,098	\$ 13,941,278	\$ 64,337,746	\$ 19,137,653	\$ 114,825,917	\$ (5,196,374)	\$ (50,488,170)
23 06/30/14	\$568,193,340	\$123,355,920	\$590,308,114	\$ 6,420,585	\$ 1,393,922	\$ 6,670,482	\$ 14,484,988	\$ 78,822,735	\$ 19,137,653	\$ 133,963,569	\$ (4,652,664)	\$ (55,140,835)
22 06/30/15	\$590,352,880	\$128,166,800	\$613,330,130	\$ 6,670,988	\$ 1,448,285	\$ 6,930,630	\$ 15,049,903	\$ 93,872,638	\$ 19,137,653	\$ 153,101,222	\$ (4,087,750)	\$ (59,228,585)
21 06/30/16	\$613,376,643	\$133,165,306	\$637,250,006	\$ 6,931,156	\$ 1,504,768	\$ 7,200,925	\$ 15,636,849	\$ 109,509,487	\$ 19,137,653	\$ 172,238,875	\$ (3,500,804)	\$ (62,729,388)
20 06/30/17	\$637,298,332	\$138,358,753	\$662,102,756	\$ 7,201,471	\$ 1,563,454	\$ 7,481,761	\$ 16,246,686	\$ 125,756,173	\$ 19,137,653	\$ 191,376,528	\$ (2,890,967)	\$ (65,620,355)
19 06/30/18	\$662,152,967	\$143,754,744	\$687,924,763	\$ 7,482,329	\$ 1,624,429	\$ 7,773,550	\$ 16,880,307	\$ 142,636,480	\$ 19,137,653	\$ 210,514,180	\$ (2,257,346)	\$ (67,877,701)
18 06/30/19	\$687,976,932	\$149,361,179	\$714,753,829	\$ 7,774,139	\$ 1,687,781	\$ 8,076,718	\$ 17,538,639	\$ 160,175,119	\$ 19,137,653	\$ 229,651,833	\$ (1,599,014)	\$ (69,476,714)
17 06/30/20	\$714,808,033	\$155,186,265	\$742,629,228	\$ 8,077,331	\$ 1,753,605	\$ 8,391,710	\$ 18,222,646	\$ 178,397,765	\$ 19,137,653	\$ 248,789,486	\$ (915,007)	\$ (70,391,721)
16 06/30/21	\$742,685,546	\$161,238,529	\$771,591,768	\$ 8,392,347	\$ 1,821,995	\$ 8,718,987	\$ 18,933,329	\$ 197,331,094	\$ 19,137,653	\$ 267,927,139	\$ (204,324)	\$ (70,596,045)
15 06/30/22	\$771,650,282	\$167,526,832	\$801,683,847	\$ 8,719,648	\$ 1,893,053	\$ 9,059,027	\$ 19,671,729	\$ 217,002,822	\$ 19,137,653	\$ 287,064,791	\$ 534,076	\$ (70,061,969)
14 06/30/23	\$801,744,643	\$174,060,378	\$832,949,517	\$ 9,059,714	\$ 1,966,882	\$ 9,412,330	\$ 20,438,926	\$ 237,441,749	\$ 19,137,653	\$ 306,202,444	\$ 1,301,274	\$ (68,760,695)
13 06/30/24	\$833,012,684	\$180,848,733	\$865,434,548	\$ 9,413,043	\$ 2,043,591	\$ 9,779,410	\$ 21,236,044	\$ 258,677,793	\$ 19,137,653	\$ 325,340,097	\$ 2,098,392	\$ (66,662,304)
12 06/30/25	\$865,500,179	\$187,901,834	\$899,186,496	\$ 9,780,152	\$ 2,123,291	\$ 10,160,807	\$ 22,064,250	\$ 280,742,043	\$ 19,137,653	\$ 344,477,750	\$ 2,926,597	\$ (63,735,706)
11 06/30/26	\$899,254,686	\$195,230,005	\$934,254,769	\$10,161,578	\$ 2,206,099	\$ 10,557,079	\$ 22,924,756	\$ 303,666,799	\$ 19,137,653	\$ 363,615,402	\$ 3,787,103	\$ (59,948,603)
10 06/30/27	\$934,325,619	\$202,843,975	\$970,690,705	\$10,557,879	\$ 2,292,137	\$ 10,968,805	\$ 23,818,821	\$ 327,485,621	\$ 19,137,653	\$ 382,753,055	\$ 4,681,169	\$ (55,267,435)
9 06/30/28	\$970,764,318	\$210,754,890	\$1,008,547,643	\$10,969,637	\$ 2,381,530	\$ 11,396,588	\$ 24,747,755	\$ 352,233,376	\$ 19,137,653	\$ 401,890,708	\$ 5,610,103	\$ (49,657,332)
8 06/30/29	\$1,008,624,126	\$218,974,331	\$1,047,881,001	\$11,397,453	\$ 2,474,410	\$ 11,841,055	\$ 25,712,918	\$ 377,946,294	\$ 19,137,653	\$ 421,028,361	\$ 6,575,265	\$ (43,082,067)
7 06/30/30	\$1,047,960,467	\$227,514,330	\$1,088,748,360	\$11,841,953	\$ 2,570,912	\$ 12,302,856	\$ 26,715,722	\$ 404,662,016	\$ 19,137,653	\$ 440,166,014	\$ 7,578,069	\$ (35,503,998)
6 06/30/31	\$1,088,830,925	\$236,387,389	\$1,131,209,546	\$12,303,789	\$ 2,671,177	\$ 12,782,668	\$ 27,757,635	\$ 432,419,650	\$ 19,137,653	\$ 459,303,666	\$ 8,619,982	\$ (26,884,016)
5 06/30/32	\$1,131,295,332	\$245,606,497	\$1,175,326,718	\$12,783,637	\$ 2,775,353	\$ 13,281,192	\$ 28,840,183	\$ 461,259,833	\$ 19,137,653	\$ 478,441,319	\$ 9,702,530	\$ (17,181,486)
4 06/30/33	\$1,175,415,849	\$255,185,150	\$1,221,164,460	\$13,282,199	\$ 2,883,592	\$ 13,799,158	\$ 29,964,950	\$ 491,224,783	\$ 19,137,653	\$ 497,578,972	\$ 10,827,297	\$ (6,354,189)
3 06/30/34	\$1,221,257,068	\$265,137,371	\$1,268,789,874	\$13,800,205	\$ 2,996,052	\$ 14,337,326	\$ 31,133,583	\$ 522,358,365	\$ 19,137,653	\$ 516,716,625	\$ 11,995,930	\$ 5,641,741
2 06/30/35	\$1,268,886,093	\$275,477,729	\$1,318,272,679	\$14,338,413	\$ 3,112,898	\$ 14,896,481	\$ 32,347,792	\$ 554,706,158	\$ 19,137,653	\$ 535,854,277	\$ 13,210,140	\$ 18,851,880
1 06/30/36	\$1,318,372,649	\$286,221,360	\$1,369,685,313	\$14,897,611	\$ 3,234,301	\$ 15,477,444	\$ 33,609,356	\$ 588,315,514	\$ 19,137,653	\$ 554,991,930	\$ 14,471,704	\$ 33,323,584
0 06/30/37	\$1,369,789,182	\$297,383,994	\$1,423,103,040	\$15,478,618	\$ 3,360,439	\$ 16,081,064	\$ 34,920,121	\$ 623,235,635	\$ 19,137,653	\$ 574,129,583	\$ 15,782,468	\$ 49,106,052
				\$ 623,235,635					\$ 574,129,583		\$ 49,106,052	

* Data from Legislative Audit Division staff (Dec. 2005)

Table 1.2
Estimates of contribution rate increases and pension bonds
TRS

ASSUMPTIONS	
Supplemental rate 7/1/2007 @	2.00%
Supplemental rate 7/1/2009 @	2.38%
30-yr. taxable bonds @	6.00%
Bond principal	\$395,500,000
Monthly payment	\$2,371,222
Annual payment	\$28,454,668

	Fiscal Year End	Covered Payroll		Estimated Additional Contributions			Bond Debt Service	Annual Difference	Cumulative Difference
		State*	MUS*	State	MUS	Total			
29	June 30, 2008	\$610,866,521	\$35,890,074	\$ 12,217,330	\$ 717,801	\$ 12,935,132	\$ 28,454,668	\$(15,519,536)	\$(15,519,536)
28	June 30, 2009	\$638,355,514	\$33,158,646	\$ 12,767,110	\$ 663,173	\$ 13,430,283	\$ 28,454,668	\$(15,024,385)	\$(30,543,921)
27	June 30, 2010	\$667,081,513	\$30,361,724	\$ 15,876,540	\$ 722,609	\$ 16,599,149	\$ 28,454,668	\$(11,855,519)	\$(42,399,440)
26	June 30, 2011	\$697,100,181	\$27,479,238	\$ 16,590,984	\$ 654,006	\$ 17,244,990	\$ 28,454,668	\$(11,209,678)	\$(53,609,117)
25	June 30, 2012	\$728,469,689	\$24,851,205	\$ 17,337,579	\$ 591,459	\$ 17,929,037	\$ 28,454,668	\$(10,525,631)	\$(64,134,748)
24	June 30, 2013	\$761,250,825	\$22,127,790	\$ 18,117,770	\$ 526,641	\$ 18,644,411	\$ 28,454,668	\$(9,810,257)	\$(73,945,005)
23	June 30, 2014	\$795,507,112	\$19,623,170	\$ 18,933,069	\$ 467,031	\$ 19,400,101	\$ 28,454,668	\$(9,054,567)	\$(82,999,572)
22	June 30, 2015	\$831,304,932	\$17,257,801	\$ 19,785,057	\$ 410,736	\$ 20,195,793	\$ 28,454,668	\$(8,258,875)	\$(91,258,447)
21	June 30, 2016	\$868,713,654	\$15,072,626	\$ 20,675,385	\$ 358,728	\$ 21,034,113	\$ 28,454,668	\$(7,420,554)	\$(98,679,001)
20	June 30, 2017	\$907,805,768	\$13,028,623	\$ 21,605,777	\$ 310,081	\$ 21,915,859	\$ 28,454,668	\$(6,538,809)	\$(105,217,811)
19	June 30, 2018	\$948,657,028	\$11,012,210	\$ 22,578,037	\$ 262,091	\$ 22,840,128	\$ 28,454,668	\$(5,614,540)	\$(110,832,351)
18	June 30, 2019	\$991,346,594	\$9,282,627	\$ 23,594,049	\$ 220,927	\$ 23,814,975	\$ 28,454,668	\$(4,639,692)	\$(115,472,043)
17	June 30, 2020	\$1,035,957,191	\$7,744,407	\$ 24,655,781	\$ 184,317	\$ 24,840,098	\$ 28,454,668	\$(3,614,570)	\$(119,086,613)
16	June 30, 2021	\$1,082,575,264	\$6,460,927	\$ 25,765,291	\$ 153,770	\$ 25,919,061	\$ 28,454,668	\$(2,535,607)	\$(121,622,220)
15	June 30, 2022	\$1,131,291,151	\$5,414,886	\$ 26,924,729	\$ 128,874	\$ 27,053,604	\$ 28,454,668	\$(1,401,064)	\$(123,023,284)
14	June 30, 2023	\$1,182,199,253	\$4,448,153	\$ 28,136,342	\$ 105,866	\$ 28,242,208	\$ 28,454,668	\$(212,460)	\$(123,235,744)
13	June 30, 2024	\$1,235,398,219	\$3,654,129	\$ 29,402,478	\$ 86,968	\$ 29,489,446	\$ 28,454,668	\$ 1,034,778	\$(122,200,966)
12	June 30, 2025	\$1,290,991,139	\$3,001,404	\$ 30,725,589	\$ 71,433	\$ 30,797,023	\$ 28,454,668	\$ 2,342,355	\$(119,858,611)
11	June 30, 2026	\$1,349,085,741	\$2,384,225	\$ 32,108,241	\$ 56,745	\$ 32,164,985	\$ 28,454,668	\$ 3,710,317	\$(116,148,294)
10	June 30, 2027	\$1,409,794,599	\$1,931,294	\$ 33,553,111	\$ 45,965	\$ 33,599,076	\$ 28,454,668	\$ 5,144,408	\$(111,003,886)
9	June 30, 2028	\$1,473,235,356	\$1,498,867	\$ 35,063,001	\$ 35,673	\$ 35,098,675	\$ 28,454,668	\$ 6,644,007	\$(104,359,879)
8	June 30, 2029	\$1,539,530,947	\$1,221,484	\$ 36,640,837	\$ 29,071	\$ 36,669,908	\$ 28,454,668	\$ 8,215,240	\$(96,144,639)
7	June 30, 2030	\$1,608,809,839	\$979,400	\$ 38,289,674	\$ 23,310	\$ 38,312,984	\$ 28,454,668	\$ 9,858,316	\$(86,286,323)
6	June 30, 2031	\$1,681,206,282	\$748,285	\$ 40,012,710	\$ 17,809	\$ 40,030,519	\$ 28,454,668	\$ 11,575,851	\$(74,710,472)
5	June 30, 2032	\$1,756,860,565	\$603,262	\$ 41,813,281	\$ 14,358	\$ 41,827,639	\$ 28,454,668	\$ 13,372,971	\$(61,337,501)
4	June 30, 2033	\$1,835,919,290	\$486,237	\$ 43,694,879	\$ 11,572	\$ 43,706,452	\$ 28,454,668	\$ 15,251,784	\$(46,085,718)
3	June 30, 2034	\$1,918,535,658	\$360,973	\$ 45,661,149	\$ 8,591	\$ 45,669,740	\$ 28,454,668	\$ 17,215,072	\$(28,870,646)
2	June 30, 2035	\$2,004,869,763	\$262,682	\$ 47,715,900	\$ 6,252	\$ 47,722,152	\$ 28,454,668	\$ 19,267,484	\$(9,603,161)
1	June 30, 2036	\$2,095,088,902	\$191,155	\$ 49,863,116	\$ 4,549	\$ 49,867,665	\$ 28,454,668	\$ 21,412,997	\$ 11,809,836
0	June 30, 2037	\$2,189,367,902	\$139,104	\$ 52,106,956	\$ 3,311	\$ 52,110,267	\$ 28,454,668	\$ 23,655,599	\$ 35,465,435
						\$ 889,105,473	\$ 853,640,038	\$ 35,465,435	

* Teachers' Retirement System: State of Montana - ACTUARIAL VALUATION (As of July 1, 2006)

Table 1.3
Estimates of contribution rate increases and pension bonds
PERS & TRS COMBINED

PERS ASSUMPTIONS	
Supplemental rate 7/1/2007 @	0.56%
Supplemental rate 7/1/2009 @	1.13%
30-yr. taxable bonds @	6.00%
Bond principal	\$266,000,000
Monthly payment	\$1,594,804
Annual payment	\$19,137,653

TRS ASSUMPTIONS	
Supplemental rate 7/1/2007 @	2.00%
Supplemental rate 7/1/2009 @	2.38%
30-yr. taxable bonds @	6.00%
Bond principal	\$395,500,000
Monthly payment	\$2,371,222
Annual payment	\$28,454,668

Fiscal Year End	PERS and TRS Combined Covered Payroll			PERS and TRS Combined Estimated Additional Contributions				Bond Debt Service	Annual Difference	Cumulative Difference
	State*	MUS*	Local Gov't**	State	MUS	Local Gov't	Total			
29 June 30, 2008	\$1,062,517,394	\$133,944,389	\$469,229,672	\$14,746,575	\$1,266,906	\$2,627,686	\$ 18,641,167	\$ 47,592,321	\$ (28,951,154)	\$ (28,951,154)
28 June 30, 2009	\$1,107,620,771	\$135,037,079	\$487,529,630	\$15,394,996	\$1,233,692	\$2,730,166	\$ 19,358,854	\$ 47,592,321	\$ (28,233,467)	\$ (57,184,620)
27 June 30, 2010	\$1,154,648,115	\$136,213,416	\$506,543,285	\$21,386,043	\$1,918,733	\$5,723,939	\$ 29,028,715	\$ 47,592,321	\$ (18,563,606)	\$ (75,748,226)
26 June 30, 2011	\$1,203,681,880	\$137,459,146	\$526,298,473	\$22,315,358	\$1,896,779	\$5,947,173	\$ 30,159,309	\$ 47,592,321	\$ (17,433,012)	\$ (93,181,238)
25 June 30, 2012	\$1,254,808,074	\$139,120,329	\$546,824,114	\$23,285,202	\$1,882,700	\$6,179,112	\$ 31,347,015	\$ 47,592,321	\$ (16,245,306)	\$ (109,426,544)
24 June 30, 2013	\$1,308,116,407	\$140,853,410	\$568,150,254	\$24,297,351	\$1,868,241	\$6,420,098	\$ 32,585,689	\$ 47,592,321	\$ (15,006,631)	\$ (124,433,175)
23 June 30, 2014	\$1,363,700,452	\$142,979,090	\$590,308,114	\$25,353,654	\$1,860,953	\$6,670,482	\$ 33,885,089	\$ 47,592,321	\$ (13,707,232)	\$ (138,140,407)
22 June 30, 2015	\$1,421,657,812	\$145,424,601	\$613,330,130	\$26,456,045	\$1,859,021	\$6,930,630	\$ 35,245,696	\$ 47,592,321	\$ (12,346,625)	\$ (150,487,032)
21 June 30, 2016	\$1,482,090,297	\$148,237,932	\$637,250,006	\$27,606,541	\$1,863,496	\$7,200,925	\$ 36,670,963	\$ 47,592,321	\$ (10,921,358)	\$ (161,408,390)
20 June 30, 2017	\$1,545,104,100	\$151,387,376	\$662,102,756	\$28,807,248	\$1,873,535	\$7,481,761	\$ 38,162,545	\$ 47,592,321	\$ (9,429,776)	\$ (170,838,166)
19 June 30, 2018	\$1,610,809,995	\$154,766,954	\$687,924,763	\$30,060,366	\$1,886,519	\$7,773,550	\$ 39,720,435	\$ 47,592,321	\$ (7,871,886)	\$ (178,710,052)
18 June 30, 2019	\$1,679,323,526	\$158,643,806	\$714,753,829	\$31,368,188	\$1,908,708	\$8,076,718	\$ 41,353,614	\$ 47,592,321	\$ (6,238,706)	\$ (184,948,758)
17 June 30, 2020	\$1,750,765,224	\$162,930,672	\$742,629,228	\$32,733,112	\$1,937,922	\$8,391,710	\$ 43,062,744	\$ 47,592,321	\$ (4,529,577)	\$ (189,478,335)
16 June 30, 2021	\$1,825,260,810	\$167,699,456	\$771,591,768	\$34,157,638	\$1,975,765	\$8,718,987	\$ 44,852,390	\$ 47,592,321	\$ (2,739,930)	\$ (192,218,265)
15 June 30, 2022	\$1,902,941,433	\$172,941,718	\$801,683,847	\$35,644,378	\$2,021,927	\$9,059,027	\$ 46,725,333	\$ 47,592,321	\$ (866,988)	\$ (193,085,253)
14 June 30, 2023	\$1,983,943,896	\$178,508,531	\$832,949,517	\$37,196,057	\$2,072,748	\$9,412,330	\$ 48,681,135	\$ 47,592,321	\$ 1,088,814	\$ (191,996,439)
13 June 30, 2024	\$2,068,410,903	\$184,502,862	\$865,434,548	\$38,815,521	\$2,130,559	\$9,779,410	\$ 50,725,490	\$ 47,592,321	\$ 3,133,170	\$ (188,863,270)
12 June 30, 2025	\$2,156,491,318	\$190,903,238	\$899,186,496	\$40,505,741	\$2,194,724	\$10,160,807	\$ 52,861,273	\$ 47,592,321	\$ 5,268,952	\$ (183,594,318)
11 June 30, 2026	\$2,248,340,427	\$197,614,230	\$934,254,769	\$42,269,819	\$2,262,844	\$10,557,079	\$ 55,089,741	\$ 47,592,321	\$ 7,497,420	\$ (176,096,897)
10 June 30, 2027	\$2,344,120,218	\$204,775,269	\$970,690,705	\$44,110,991	\$2,338,102	\$10,968,805	\$ 57,417,898	\$ 47,592,321	\$ 9,825,577	\$ (166,271,320)
9 June 30, 2028	\$2,443,999,674	\$212,253,757	\$1,008,547,643	\$46,032,638	\$2,417,203	\$11,396,588	\$ 59,846,430	\$ 47,592,321	\$ 12,254,109	\$ (154,017,211)
8 June 30, 2029	\$2,548,155,073	\$220,195,815	\$1,047,881,001	\$48,038,289	\$2,503,481	\$11,841,055	\$ 62,382,826	\$ 47,592,321	\$ 14,790,505	\$ (139,226,706)
7 June 30, 2030	\$2,656,770,306	\$228,493,730	\$1,088,748,360	\$50,131,627	\$2,594,222	\$12,302,856	\$ 65,028,706	\$ 47,592,321	\$ 17,436,385	\$ (121,790,321)
6 June 30, 2031	\$2,770,037,207	\$237,135,674	\$1,131,209,546	\$52,316,499	\$2,688,987	\$12,782,668	\$ 67,788,154	\$ 47,592,321	\$ 20,195,833	\$ (101,594,488)
5 June 30, 2032	\$2,888,155,897	\$246,209,759	\$1,175,326,718	\$54,596,919	\$2,789,711	\$13,281,192	\$ 70,667,822	\$ 47,592,321	\$ 23,075,501	\$ (78,518,987)
4 June 30, 2033	\$3,011,335,139	\$255,671,387	\$1,221,164,460	\$56,977,078	\$2,895,165	\$13,799,158	\$ 73,671,401	\$ 47,592,321	\$ 26,079,081	\$ (52,439,907)
3 June 30, 2034	\$3,139,792,726	\$265,498,344	\$1,268,789,874	\$59,461,354	\$3,004,643	\$14,337,326	\$ 76,803,323	\$ 47,592,321	\$ 29,211,002	\$ (23,228,905)
2 June 30, 2035	\$3,273,755,856	\$275,740,411	\$1,318,272,679	\$62,054,313	\$3,119,150	\$14,896,481	\$ 80,069,945	\$ 47,592,321	\$ 32,477,624	\$ 9,248,719
1 June 30, 2036	\$3,413,461,551	\$286,412,515	\$1,369,685,313	\$64,760,727	\$3,238,851	\$15,477,444	\$ 83,477,022	\$ 47,592,321	\$ 35,884,701	\$ 45,133,420
0 June 30, 2037	\$3,559,157,084	\$297,523,098	\$1,423,103,040	\$67,585,574	\$3,363,750	\$16,081,064	\$ 87,030,388	\$ 47,592,321	\$ 39,438,067	\$ 84,571,487
							\$ 1,512,341,108	\$ 1,427,769,621	\$ 84,571,487	

* Data from Legislative Audit Division staff (Dec. 2005) and Teachers' Retirement System: State of Montana - ACTUARIAL VALUATION (As of July 1, 2006)

** Data from Legislative Audit Division staff (Dec. 2005)

Table 2.1
Estimates of contribution rate increases and pension bonds
PERS

ASSUMPTIONS	
Supplemental rate 7/1/2007 @	0.56%
Supplemental rate 7/1/2009 @	1.13%
30-yr. taxable bonds @	6.00%
Payroll growth - annual	4.25%
Bond principal	\$266,000,000
Monthly payment	\$1,594,804
Annual payment	\$ 19,137,653

	Fiscal Year End	Covered Payroll			Estimated Additional Contributions				POB Debt Service	Annual Difference	Cumulative Difference
		State*	MUS*	Local Gov't*	State	MUS	Local Gov't	Total			
29	06/30/08	\$436,874,682	\$99,453,090	\$480,679,310	\$ 2,446,498	\$ 556,937	\$ 2,691,804	\$ 5,695,240	\$ 19,137,653	\$ (13,442,413)	\$ (13,442,413)
28	06/30/09	\$455,441,856	\$103,679,846	\$501,108,181	\$ 2,550,474	\$ 580,607	\$ 2,806,206	\$ 5,937,287	\$ 19,137,653	\$ (13,200,365)	\$ (26,642,779)
27	06/30/10	\$474,798,135	\$108,086,240	\$522,405,278	\$ 5,365,219	\$ 1,221,375	\$ 5,903,180	\$ 12,489,773	\$ 19,137,653	\$ (6,647,880)	\$ (33,290,658)
26	06/30/11	\$494,977,055	\$112,679,905	\$544,607,503	\$ 5,593,241	\$ 1,273,283	\$ 6,154,065	\$ 13,020,588	\$ 19,137,653	\$ (6,117,064)	\$ (39,407,723)
25	06/30/12	\$516,013,580	\$117,468,801	\$567,753,322	\$ 5,830,953	\$ 1,327,397	\$ 6,415,613	\$ 13,573,963	\$ 19,137,653	\$ (5,563,689)	\$ (44,971,412)
24	06/30/13	\$537,944,157	\$122,461,225	\$591,882,838	\$ 6,078,769	\$ 1,383,812	\$ 6,688,276	\$ 14,150,857	\$ 19,137,653	\$ (4,986,796)	\$ (49,958,208)
23	06/30/14	\$560,806,784	\$127,665,827	\$617,037,858	\$ 6,337,117	\$ 1,442,624	\$ 6,972,528	\$ 14,752,268	\$ 19,137,653	\$ (4,385,384)	\$ (54,343,592)
22	06/30/15	\$584,641,072	\$133,091,625	\$643,261,967	\$ 6,606,444	\$ 1,503,935	\$ 7,268,860	\$ 15,379,240	\$ 19,137,653	\$ (3,758,413)	\$ (58,102,005)
21	06/30/16	\$609,488,318	\$138,748,019	\$670,600,601	\$ 6,887,218	\$ 1,567,853	\$ 7,577,787	\$ 16,032,857	\$ 19,137,653	\$ (3,104,795)	\$ (61,206,801)
20	06/30/17	\$635,391,571	\$144,644,810	\$699,101,126	\$ 7,179,925	\$ 1,634,486	\$ 7,899,843	\$ 16,714,254	\$ 19,137,653	\$ (2,423,399)	\$ (63,630,200)
19	06/30/18	\$662,395,713	\$150,792,214	\$728,812,924	\$ 7,485,072	\$ 1,703,952	\$ 8,235,586	\$ 17,424,610	\$ 19,137,653	\$ (1,713,043)	\$ (65,343,243)
18	06/30/19	\$690,547,531	\$157,200,883	\$759,787,474	\$ 7,803,187	\$ 1,776,370	\$ 8,585,598	\$ 18,165,156	\$ 19,137,653	\$ (972,497)	\$ (66,315,740)
17	06/30/20	\$719,895,801	\$163,881,921	\$792,078,441	\$ 8,134,823	\$ 1,851,866	\$ 8,950,486	\$ 18,937,175	\$ 19,137,653	\$ (200,478)	\$ (66,516,218)
16	06/30/21	\$750,491,373	\$170,846,902	\$825,741,775	\$ 8,480,553	\$ 1,930,570	\$ 9,330,882	\$ 19,742,005	\$ 19,137,653	\$ 604,352	\$ (65,911,866)
15	06/30/22	\$782,387,256	\$178,107,896	\$860,835,800	\$ 8,840,976	\$ 2,012,619	\$ 9,727,445	\$ 20,581,040	\$ 19,137,653	\$ 1,443,387	\$ (64,468,479)
14	06/30/23	\$815,638,714	\$185,677,481	\$897,421,322	\$ 9,216,717	\$ 2,098,156	\$ 10,140,861	\$ 21,455,734	\$ 19,137,653	\$ 2,318,081	\$ (62,150,398)
13	06/30/24	\$850,303,360	\$193,568,774	\$935,561,728	\$ 9,608,428	\$ 2,187,327	\$ 10,571,848	\$ 22,367,603	\$ 19,137,653	\$ 3,229,950	\$ (58,920,448)
12	06/30/25	\$886,441,253	\$201,795,447	\$975,323,102	\$10,016,786	\$ 2,280,289	\$ 11,021,151	\$ 23,318,226	\$ 19,137,653	\$ 4,180,573	\$ (54,739,875)
11	06/30/26	\$924,115,006	\$210,371,753	\$1,016,774,333	\$10,442,500	\$ 2,377,201	\$ 11,489,550	\$ 24,309,250	\$ 19,137,653	\$ 5,171,598	\$ (49,568,278)
10	06/30/27	\$963,389,893	\$219,312,553	\$1,059,987,243	\$10,886,306	\$ 2,478,232	\$ 11,977,856	\$ 25,342,393	\$ 19,137,653	\$ 6,204,741	\$ (43,363,537)
9	06/30/28	\$1,004,333,964	\$228,633,336	\$1,105,036,700	\$11,348,974	\$ 2,583,557	\$ 12,486,915	\$ 26,419,445	\$ 19,137,653	\$ 7,281,792	\$ (36,081,744)
8	06/30/29	\$1,047,018,157	\$238,350,253	\$1,152,000,760	\$11,831,305	\$ 2,693,358	\$ 13,017,609	\$ 27,542,272	\$ 19,137,653	\$ 8,404,619	\$ (27,677,126)
7	06/30/30	\$1,091,516,429	\$248,480,139	\$1,200,960,792	\$12,334,136	\$ 2,807,826	\$ 13,570,857	\$ 28,712,818	\$ 19,137,653	\$ 9,575,165	\$ (18,101,960)
6	06/30/31	\$1,137,905,877	\$259,040,545	\$1,252,001,626	\$12,858,336	\$ 2,927,158	\$ 14,147,618	\$ 29,933,113	\$ 19,137,653	\$ 10,795,460	\$ (7,306,500)
5	06/30/32	\$1,186,266,877	\$270,049,768	\$1,305,211,695	\$13,404,816	\$ 3,051,562	\$ 14,748,892	\$ 31,205,270	\$ 19,137,653	\$ 12,067,617	\$ 4,761,117
4	06/30/33	\$1,236,683,219	\$281,526,883	\$1,360,683,192	\$13,974,520	\$ 3,181,254	\$ 15,375,720	\$ 32,531,494	\$ 19,137,653	\$ 13,393,841	\$ 18,154,959
3	06/30/34	\$1,289,242,256	\$293,491,776	\$1,418,512,228	\$14,568,437	\$ 3,316,457	\$ 16,029,188	\$ 33,914,083	\$ 19,137,653	\$ 14,776,430	\$ 32,931,389
2	06/30/35	\$1,344,035,052	\$305,965,176	\$1,478,798,998	\$15,187,596	\$ 3,457,406	\$ 16,710,429	\$ 35,355,431	\$ 19,137,653	\$ 16,217,778	\$ 49,149,167
1	06/30/36	\$1,401,156,542	\$318,968,696	\$1,541,647,955	\$15,833,069	\$ 3,604,346	\$ 17,420,622	\$ 36,858,037	\$ 19,137,653	\$ 17,720,384	\$ 66,869,552
0	06/30/37	\$1,460,705,695	\$332,524,866	\$1,607,167,993	\$16,505,974	\$ 3,757,531	\$ 18,160,998	\$ 38,424,504	\$ 19,137,653	\$ 19,286,851	\$ 86,156,403
								\$ 660,285,986	\$ 574,129,583	\$ 86,156,403	

* Data from fiscal note for HB 159, assumption # 5. Payroll growth of 4.25% annually. "Local Gov't" includes PERS covered employees (not TRS members).

Table 2.2
Estimates of contribution rate increases and pension bonds
TRS

ASSUMPTIONS	
Supplemental rate 7/1/2007 @	2.00%
Supplemental rate 7/1/2009 @	2.38%
30-yr. taxable bonds @	6.00%
Bond principal	\$395,500,000
Monthly payment	\$2,371,222
Annual payment	\$ 28,454,668

	Fiscal Year End	Covered Payroll		Estimated Additional Contributions			POB Debt Service	Annual Difference	Cumulative Difference
		State*	MUS*	State	MUS	Total			
29	June 30, 2008	\$610,866,521	\$35,890,074	\$ 12,217,330	\$ 717,801	\$ 12,935,132	\$ 28,454,668	\$ (15,519,536)	\$ (15,519,536)
28	June 30, 2009	\$638,355,514	\$33,158,646	\$ 12,767,110	\$ 663,173	\$ 13,430,283	\$ 28,454,668	\$ (15,024,385)	\$ (30,543,921)
27	June 30, 2010	\$667,081,513	\$30,361,724	\$ 15,876,540	\$ 722,609	\$ 16,599,149	\$ 28,454,668	\$ (11,855,519)	\$ (42,399,440)
26	June 30, 2011	\$697,100,181	\$27,479,238	\$ 16,590,984	\$ 654,006	\$ 17,244,990	\$ 28,454,668	\$ (11,209,678)	\$ (53,609,117)
25	June 30, 2012	\$728,469,689	\$24,851,205	\$ 17,337,579	\$ 591,459	\$ 17,929,037	\$ 28,454,668	\$ (10,525,631)	\$ (64,134,748)
24	June 30, 2013	\$761,250,825	\$22,127,790	\$ 18,117,770	\$ 526,641	\$ 18,644,411	\$ 28,454,668	\$ (9,810,257)	\$ (73,945,005)
23	June 30, 2014	\$795,507,112	\$19,623,170	\$ 18,933,069	\$ 467,031	\$ 19,400,101	\$ 28,454,668	\$ (9,054,567)	\$ (82,999,572)
22	June 30, 2015	\$831,304,932	\$17,257,801	\$ 19,785,057	\$ 410,736	\$ 20,195,793	\$ 28,454,668	\$ (8,258,875)	\$ (91,258,447)
21	June 30, 2016	\$868,713,654	\$15,072,626	\$ 20,675,385	\$ 358,728	\$ 21,034,113	\$ 28,454,668	\$ (7,420,554)	\$ (98,679,001)
20	June 30, 2017	\$907,805,768	\$13,028,623	\$ 21,605,777	\$ 310,081	\$ 21,915,859	\$ 28,454,668	\$ (6,538,809)	\$ (105,217,811)
19	June 30, 2018	\$948,657,028	\$11,012,210	\$ 22,578,037	\$ 262,091	\$ 22,840,128	\$ 28,454,668	\$ (5,614,540)	\$ (110,832,351)
18	June 30, 2019	\$991,346,594	\$9,282,627	\$ 23,594,049	\$ 220,927	\$ 23,814,975	\$ 28,454,668	\$ (4,639,692)	\$ (115,472,043)
17	June 30, 2020	\$1,035,957,191	\$7,744,407	\$ 24,655,781	\$ 184,317	\$ 24,840,098	\$ 28,454,668	\$ (3,614,570)	\$ (119,086,613)
16	June 30, 2021	\$1,082,575,264	\$6,460,927	\$ 25,765,291	\$ 153,770	\$ 25,919,061	\$ 28,454,668	\$ (2,535,607)	\$ (121,622,220)
15	June 30, 2022	\$1,131,291,151	\$5,414,886	\$ 26,924,729	\$ 128,874	\$ 27,053,604	\$ 28,454,668	\$ (1,401,064)	\$ (123,023,284)
14	June 30, 2023	\$1,182,199,253	\$4,448,153	\$ 28,136,342	\$ 105,866	\$ 28,242,208	\$ 28,454,668	\$ (212,460)	\$ (123,235,744)
13	June 30, 2024	\$1,235,398,219	\$3,654,129	\$ 29,402,478	\$ 86,968	\$ 29,489,446	\$ 28,454,668	\$ 1,034,778	\$ (122,200,966)
12	June 30, 2025	\$1,290,991,139	\$3,001,404	\$ 30,725,589	\$ 71,433	\$ 30,797,023	\$ 28,454,668	\$ 2,342,355	\$ (119,858,611)
11	June 30, 2026	\$1,349,085,741	\$2,384,225	\$ 32,108,241	\$ 56,745	\$ 32,164,985	\$ 28,454,668	\$ 3,710,317	\$ (116,148,294)
10	June 30, 2027	\$1,409,794,599	\$1,931,294	\$ 33,553,111	\$ 45,965	\$ 33,599,076	\$ 28,454,668	\$ 5,144,408	\$ (111,003,886)
9	June 30, 2028	\$1,473,235,356	\$1,498,867	\$ 35,063,001	\$ 35,673	\$ 35,098,675	\$ 28,454,668	\$ 6,644,007	\$ (104,359,879)
8	June 30, 2029	\$1,539,530,947	\$1,221,484	\$ 36,640,837	\$ 29,071	\$ 36,669,908	\$ 28,454,668	\$ 8,215,240	\$ (96,144,639)
7	June 30, 2030	\$1,608,809,839	\$979,400	\$ 38,289,674	\$ 23,310	\$ 38,312,984	\$ 28,454,668	\$ 9,858,316	\$ (86,286,323)
6	June 30, 2031	\$1,681,206,282	\$748,285	\$ 40,012,710	\$ 17,809	\$ 40,030,519	\$ 28,454,668	\$ 11,575,851	\$ (74,710,472)
5	June 30, 2032	\$1,756,860,565	\$603,262	\$ 41,813,281	\$ 14,358	\$ 41,827,639	\$ 28,454,668	\$ 13,372,971	\$ (61,337,501)
4	June 30, 2033	\$1,835,919,290	\$486,237	\$ 43,694,879	\$ 11,572	\$ 43,706,452	\$ 28,454,668	\$ 15,251,784	\$ (46,085,718)
3	June 30, 2034	\$1,918,535,658	\$360,973	\$ 45,661,149	\$ 8,591	\$ 45,669,740	\$ 28,454,668	\$ 17,215,072	\$ (28,870,646)
2	June 30, 2035	\$2,004,869,763	\$262,682	\$ 47,715,900	\$ 6,252	\$ 47,722,152	\$ 28,454,668	\$ 19,267,484	\$ (9,603,161)
1	June 30, 2036	\$2,095,088,902	\$191,155	\$ 49,863,116	\$ 4,549	\$ 49,867,665	\$ 28,454,668	\$ 21,412,997	\$ 11,809,836
0	June 30, 2037	\$2,189,367,902	\$139,104	\$ 52,106,956	\$ 3,311	\$ 52,110,267	\$ 28,454,668	\$ 23,655,599	\$ 35,465,435
						\$ 889,105,473	\$ 853,640,038	\$ 35,465,435	

* Teachers' Retirement System: State of Montana - ACTUARIAL VALUATION (As of July 1, 2006)

Table 2.3
Estimates of contribution rate increases and pension bonds
PERS & TRS COMBINED

PERS ASSUMPTIONS	
Supplemental rate 7/1/2007 @	0.56%
Supplemental rate 7/1/2009 @	1.13%
30-yr. taxable bonds @	6.00%
Bond principal	\$266,000,000
Monthly payment	\$1,594,804
Annual payment	\$ 19,137,653

TRS ASSUMPTIONS	
Supplemental rate 7/1/2007 @	2.00%
Supplemental rate 7/1/2009 @	2.38%
30-yr. taxable bonds @	6.00%
Bond principal	\$395,500,000
Monthly payment	\$2,371,222
Annual payment	\$ 28,454,668

	Fiscal Year End	PERS and TRS Combined Covered Payroll			PERS and TRS Combined Estimated Additional Contributions				POB Debt Service	Annual Difference	Cumulative Difference
		State*	MUS*	Local Gov't**	State	MUS	Local Gov't	Total			
29	June 30, 2008	\$1,047,741,203	\$135,343,164	\$480,679,310	\$14,663,829	\$1,274,739	\$2,691,804	\$ 18,630,372	\$ 47,592,321	\$ (28,961,949)	\$ (28,961,949)
28	June 30, 2009	\$1,093,797,370	\$136,838,492	\$501,108,181	\$15,317,585	\$1,243,780	\$2,806,206	\$ 19,367,571	\$ 47,592,321	\$ (28,224,750)	\$ (57,186,699)
27	June 30, 2010	\$1,141,879,648	\$138,447,964	\$522,405,278	\$21,241,759	\$1,943,984	\$5,903,180	\$ 29,088,922	\$ 47,592,321	\$ (18,503,399)	\$ (75,690,098)
26	June 30, 2011	\$1,192,077,236	\$140,159,143	\$544,607,503	\$22,184,225	\$1,927,289	\$6,154,065	\$ 30,265,579	\$ 47,592,321	\$ (17,326,742)	\$ (93,016,840)
25	June 30, 2012	\$1,244,483,269	\$142,320,006	\$567,753,322	\$23,168,532	\$1,918,856	\$6,415,613	\$ 31,503,001	\$ 47,592,321	\$ (16,089,320)	\$ (109,106,160)
24	June 30, 2013	\$1,299,194,982	\$144,589,015	\$591,882,838	\$24,196,539	\$1,910,453	\$6,688,276	\$ 32,795,268	\$ 47,592,321	\$ (14,797,053)	\$ (123,903,213)
23	June 30, 2014	\$1,356,313,896	\$147,288,997	\$617,037,858	\$25,270,186	\$1,909,655	\$6,972,528	\$ 34,152,369	\$ 47,592,321	\$ (13,439,952)	\$ (137,343,164)
22	June 30, 2015	\$1,415,946,004	\$150,349,426	\$643,261,967	\$26,391,501	\$1,914,671	\$7,268,860	\$ 35,575,033	\$ 47,592,321	\$ (12,017,288)	\$ (149,360,452)
21	June 30, 2016	\$1,478,201,972	\$153,820,645	\$670,600,601	\$27,562,603	\$1,926,581	\$7,577,787	\$ 37,066,971	\$ 47,592,321	\$ (10,525,350)	\$ (159,885,802)
20	June 30, 2017	\$1,543,197,339	\$157,673,433	\$699,101,126	\$28,785,702	\$1,944,568	\$7,899,843	\$ 38,630,112	\$ 47,592,321	\$ (8,962,208)	\$ (168,848,010)
19	June 30, 2018	\$1,611,052,741	\$161,804,424	\$728,812,924	\$30,063,109	\$1,966,043	\$8,235,586	\$ 40,264,737	\$ 47,592,321	\$ (7,327,583)	\$ (176,175,594)
18	June 30, 2019	\$1,681,894,125	\$166,483,510	\$759,787,474	\$31,397,236	\$1,997,297	\$8,585,598	\$ 41,980,131	\$ 47,592,321	\$ (5,612,190)	\$ (181,787,783)
17	June 30, 2020	\$1,755,852,992	\$171,626,328	\$792,078,441	\$32,790,604	\$2,036,183	\$8,950,486	\$ 43,777,273	\$ 47,592,321	\$ (3,815,048)	\$ (185,602,831)
16	June 30, 2021	\$1,833,066,637	\$177,307,829	\$825,741,775	\$34,245,844	\$2,084,340	\$9,330,882	\$ 45,661,066	\$ 47,592,321	\$ (1,931,255)	\$ (187,534,086)
15	June 30, 2022	\$1,913,678,407	\$183,522,782	\$860,835,800	\$35,765,705	\$2,141,494	\$9,727,445	\$ 47,634,643	\$ 47,592,321	\$ 42,323	\$ (187,491,763)
14	June 30, 2023	\$1,997,837,967	\$190,125,634	\$897,421,322	\$37,353,060	\$2,204,022	\$10,140,861	\$ 49,697,942	\$ 47,592,321	\$ 2,105,622	\$ (185,386,142)
13	June 30, 2024	\$2,085,701,579	\$197,222,903	\$935,561,728	\$39,010,906	\$2,274,295	\$10,571,848	\$ 51,857,049	\$ 47,592,321	\$ 4,264,728	\$ (181,121,414)
12	June 30, 2025	\$2,177,432,392	\$204,796,851	\$975,323,102	\$40,742,375	\$2,351,722	\$11,021,151	\$ 54,115,248	\$ 47,592,321	\$ 6,522,928	\$ (174,598,486)
11	June 30, 2026	\$2,273,200,747	\$212,755,978	\$1,016,774,333	\$42,550,740	\$2,433,945	\$11,489,550	\$ 56,474,236	\$ 47,592,321	\$ 8,881,915	\$ (165,716,572)
10	June 30, 2027	\$2,373,184,492	\$221,243,847	\$1,059,987,243	\$44,439,417	\$2,524,197	\$11,977,856	\$ 58,941,470	\$ 47,592,321	\$ 11,349,149	\$ (154,367,423)
9	June 30, 2028	\$2,477,569,320	\$230,132,203	\$1,105,036,700	\$46,411,975	\$2,619,230	\$12,486,915	\$ 61,518,120	\$ 47,592,321	\$ 13,925,799	\$ (140,441,623)
8	June 30, 2029	\$2,586,549,104	\$239,571,737	\$1,152,000,760	\$48,472,142	\$2,722,429	\$13,017,609	\$ 64,212,179	\$ 47,592,321	\$ 16,619,859	\$ (123,821,765)
7	June 30, 2030	\$2,700,326,268	\$249,459,539	\$1,200,960,792	\$50,623,810	\$2,831,135	\$13,570,857	\$ 67,025,802	\$ 47,592,321	\$ 19,433,481	\$ (104,388,283)
6	June 30, 2031	\$2,819,112,159	\$259,788,830	\$1,252,001,626	\$52,871,046	\$2,944,967	\$14,147,618	\$ 69,963,632	\$ 47,592,321	\$ 22,371,311	\$ (82,016,972)
5	June 30, 2032	\$2,943,127,442	\$270,653,030	\$1,305,211,695	\$55,218,097	\$3,065,920	\$14,748,892	\$ 73,032,909	\$ 47,592,321	\$ 25,440,589	\$ (56,576,384)
4	June 30, 2033	\$3,072,602,509	\$282,013,120	\$1,360,683,192	\$57,669,399	\$3,192,826	\$15,375,720	\$ 76,237,946	\$ 47,592,321	\$ 28,645,625	\$ (27,930,759)
3	June 30, 2034	\$3,207,777,914	\$293,852,749	\$1,418,512,228	\$60,229,586	\$3,325,048	\$16,029,188	\$ 79,583,823	\$ 47,592,321	\$ 31,991,502	\$ 4,060,743
2	June 30, 2035	\$3,348,904,815	\$306,227,858	\$1,478,798,998	\$62,903,496	\$3,463,658	\$16,710,429	\$ 83,077,583	\$ 47,592,321	\$ 35,485,263	\$ 39,546,006
1	June 30, 2036	\$3,496,245,444	\$319,159,851	\$1,541,647,955	\$65,696,185	\$3,608,896	\$17,420,622	\$ 86,725,702	\$ 47,592,321	\$ 39,133,382	\$ 78,679,388
0	June 30, 2037	\$3,650,073,597	\$332,663,970	\$1,607,167,993	\$68,612,930	\$3,760,842	\$18,160,998	\$ 90,534,770	\$ 47,592,321	\$ 42,942,450	\$ 121,621,837
								\$ 1,549,391,458	\$ 1,427,769,621	\$ 121,621,837	

* Data from fiscal note for HB 159, assumption # 5

** Data from fiscal note for HB 159, assumption # 5 and Teachers' Retirement System: State of Montana - ACTUARIAL VALUATION (As of July 1, 2006)

Table 3.1
Estimates of contribution rate increases and pension bonds
PERS

ASSUMPTIONS						
Supplemental rate 7/1/2007 @		0.56%				
Supplemental rate 7/1/2009 @		1.13%				
Growth rate - wages		4.25%				
30-yr. taxable bonds @		6.00%				
Bond principal		\$266,000,000				
Monthly payment		\$1,594,804				
Annual payment		\$ 19,137,653				

	Fiscal Year End	Covered Payroll	Estimated	Cumulative		Annual Difference	Cumulative Difference
			Additional Contributions	Bond Debt Service	Bond Debt Service		
29	06/30/08	\$957,158,541	\$ 5,360,088	\$ 19,137,653	\$ 19,137,653	\$ (13,777,565)	\$ (13,777,565)
28	06/30/09	\$997,837,779	\$ 5,587,892	\$ 19,137,653	\$ 38,275,306	\$ (13,549,761)	\$ (27,327,326)
27	06/30/10	\$1,040,245,885	\$ 11,754,778	\$ 19,137,653	\$ 57,412,958	\$ (7,382,874)	\$ (34,710,200)
26	06/30/11	\$1,084,456,335	\$ 12,254,357	\$ 19,137,653	\$ 76,550,611	\$ (6,883,296)	\$ (41,593,497)
25	06/30/12	\$1,130,545,729	\$ 12,775,167	\$ 19,137,653	\$ 95,688,264	\$ (6,362,486)	\$ (47,955,983)
24	06/30/13	\$1,178,593,922	\$ 13,318,111	\$ 19,137,653	\$ 114,825,917	\$ (5,819,541)	\$ (53,775,524)
23	06/30/14	\$1,228,684,164	\$ 13,884,131	\$ 19,137,653	\$ 133,963,569	\$ (5,253,522)	\$ (59,029,046)
22	06/30/15	\$1,280,903,241	\$ 14,474,207	\$ 19,137,653	\$ 153,101,222	\$ (4,663,446)	\$ (63,692,492)
21	06/30/16	\$1,335,341,629	\$ 15,089,360	\$ 19,137,653	\$ 172,238,875	\$ (4,048,292)	\$ (67,740,784)
20	06/30/17	\$1,392,093,648	\$ 15,730,658	\$ 19,137,653	\$ 191,376,528	\$ (3,406,995)	\$ (71,147,779)
19	06/30/18	\$1,451,257,628	\$ 16,399,211	\$ 19,137,653	\$ 210,514,180	\$ (2,738,442)	\$ (73,886,220)
18	06/30/19	\$1,512,936,077	\$ 17,096,178	\$ 19,137,653	\$ 229,651,833	\$ (2,041,475)	\$ (75,927,695)
17	06/30/20	\$1,577,235,861	\$ 17,822,765	\$ 19,137,653	\$ 248,789,486	\$ (1,314,888)	\$ (77,242,583)
16	06/30/21	\$1,644,268,385	\$ 18,580,233	\$ 19,137,653	\$ 267,927,139	\$ (557,420)	\$ (77,800,003)
15	06/30/22	\$1,714,149,791	\$ 19,369,893	\$ 19,137,653	\$ 287,064,791	\$ 232,240	\$ (77,567,763)
14	06/30/23	\$1,787,001,157	\$ 20,193,113	\$ 19,137,653	\$ 306,202,444	\$ 1,055,460	\$ (76,512,303)
13	06/30/24	\$1,862,948,706	\$ 21,051,320	\$ 19,137,653	\$ 325,340,097	\$ 1,913,668	\$ (74,598,635)
12	06/30/25	\$1,942,124,026	\$ 21,946,001	\$ 19,137,653	\$ 344,477,750	\$ 2,808,349	\$ (71,790,286)
11	06/30/26	\$2,024,664,297	\$ 22,878,707	\$ 19,137,653	\$ 363,615,402	\$ 3,741,054	\$ (68,049,233)
10	06/30/27	\$2,110,712,530	\$ 23,851,052	\$ 19,137,653	\$ 382,753,055	\$ 4,713,399	\$ (63,335,834)
9	06/30/28	\$2,200,417,813	\$ 24,864,721	\$ 19,137,653	\$ 401,890,708	\$ 5,727,069	\$ (57,608,765)
8	06/30/29	\$2,293,935,570	\$ 25,921,472	\$ 19,137,653	\$ 421,028,361	\$ 6,783,819	\$ (50,824,946)
7	06/30/30	\$2,391,427,831	\$ 27,023,134	\$ 19,137,653	\$ 440,166,014	\$ 7,885,482	\$ (42,939,464)
6	06/30/31	\$2,493,063,514	\$ 28,171,618	\$ 19,137,653	\$ 459,303,666	\$ 9,033,965	\$ (33,905,499)
5	06/30/32	\$2,599,018,714	\$ 29,368,911	\$ 19,137,653	\$ 478,441,319	\$ 10,231,259	\$ (23,674,241)
4	06/30/33	\$2,709,477,009	\$ 30,617,090	\$ 19,137,653	\$ 497,578,972	\$ 11,479,437	\$ (12,194,803)
3	06/30/34	\$2,824,629,782	\$ 31,918,317	\$ 19,137,653	\$ 516,716,625	\$ 12,780,664	\$ 585,860
2	06/30/35	\$2,944,676,547	\$ 33,274,845	\$ 19,137,653	\$ 535,854,277	\$ 14,137,192	\$ 14,723,053
1	06/30/36	\$3,069,825,301	\$ 34,689,026	\$ 19,137,653	\$ 554,991,930	\$ 15,551,373	\$ 30,274,426
0	06/30/37	\$3,200,292,876	\$ 36,163,309	\$ 19,137,653	\$ 574,129,583	\$ 17,025,657	\$ 47,300,083
			\$621,429,665	\$ 574,129,583		\$ 47,300,083	

* Based on Comprehensive Annual Financial Report, MPERB, June 30, 2006; June 30, 2006, payroll increase by 4.25% annual growth factor.

Table 3.2
Estimates of contribution rate increases and pension bonds
TRS

ASSUMPTIONS	
Supplemental rate 7/1/2007 @	2.00%
Supplemental rate 7/1/2009 @	2.38%
30-yr. taxable bonds @	6.00%
Bond principal	\$395,500,000
Monthly payment	\$2,371,222
Annual payment	\$ 28,454,668

	Fiscal Year End	Covered Payroll		Estimated Additional Contributions			Bond Debt Service	Annual Difference	Cumulative Difference
		State*	MUS**	State	MUS	Total			
29	June 30, 2008	\$610,866,521	\$35,890,074	\$ 12,217,330	\$ 717,801	\$ 12,935,132	\$ 28,454,668	\$ (15,519,536)	\$ (15,519,536)
28	June 30, 2009	\$638,355,514	\$33,158,646	\$ 12,767,110	\$ 663,173	\$ 13,430,283	\$ 28,454,668	\$ (15,024,385)	\$ (30,543,921)
27	June 30, 2010	\$667,081,513	\$30,361,724	\$ 15,876,540	\$ 722,609	\$ 16,599,149	\$ 28,454,668	\$ (11,855,519)	\$ (42,399,440)
26	June 30, 2011	\$697,100,181	\$27,479,238	\$ 16,590,984	\$ 654,006	\$ 17,244,990	\$ 28,454,668	\$ (11,209,678)	\$ (53,609,117)
25	June 30, 2012	\$728,469,689	\$24,851,205	\$ 17,337,579	\$ 591,459	\$ 17,929,037	\$ 28,454,668	\$ (10,525,631)	\$ (64,134,748)
24	June 30, 2013	\$761,250,825	\$22,127,790	\$ 18,117,770	\$ 526,641	\$ 18,644,411	\$ 28,454,668	\$ (9,810,257)	\$ (73,945,005)
23	June 30, 2014	\$795,507,112	\$19,623,170	\$ 18,933,069	\$ 467,031	\$ 19,400,101	\$ 28,454,668	\$ (9,054,567)	\$ (82,999,572)
22	June 30, 2015	\$831,304,932	\$17,257,801	\$ 19,785,057	\$ 410,736	\$ 20,195,793	\$ 28,454,668	\$ (8,258,875)	\$ (91,258,447)
21	June 30, 2016	\$868,713,654	\$15,072,626	\$ 20,675,385	\$ 358,728	\$ 21,034,113	\$ 28,454,668	\$ (7,420,554)	\$ (98,679,001)
20	June 30, 2017	\$907,805,768	\$13,028,623	\$ 21,605,777	\$ 310,081	\$ 21,915,859	\$ 28,454,668	\$ (6,538,809)	\$ (105,217,811)
19	June 30, 2018	\$948,657,028	\$11,012,210	\$ 22,578,037	\$ 262,091	\$ 22,840,128	\$ 28,454,668	\$ (5,614,540)	\$ (110,832,351)
18	June 30, 2019	\$991,346,594	\$9,282,627	\$ 23,594,049	\$ 220,927	\$ 23,814,975	\$ 28,454,668	\$ (4,639,692)	\$ (115,472,043)
17	June 30, 2020	\$1,035,957,191	\$7,744,407	\$ 24,655,781	\$ 184,317	\$ 24,840,098	\$ 28,454,668	\$ (3,614,570)	\$ (119,086,613)
16	June 30, 2021	\$1,082,575,264	\$6,460,927	\$ 25,765,291	\$ 153,770	\$ 25,919,061	\$ 28,454,668	\$ (2,535,607)	\$ (121,622,220)
15	June 30, 2022	\$1,131,291,151	\$5,414,886	\$ 26,924,729	\$ 128,874	\$ 27,053,604	\$ 28,454,668	\$ (1,401,064)	\$ (123,023,284)
14	June 30, 2023	\$1,182,199,253	\$4,448,153	\$ 28,136,342	\$ 105,866	\$ 28,242,208	\$ 28,454,668	\$ (212,460)	\$ (123,235,744)
13	June 30, 2024	\$1,235,398,219	\$3,654,129	\$ 29,402,478	\$ 86,968	\$ 29,489,446	\$ 28,454,668	\$ 1,034,778	\$ (122,200,966)
12	June 30, 2025	\$1,290,991,139	\$3,001,404	\$ 30,725,589	\$ 71,433	\$ 30,797,023	\$ 28,454,668	\$ 2,342,355	\$ (119,858,611)
11	June 30, 2026	\$1,349,085,741	\$2,384,225	\$ 32,108,241	\$ 56,745	\$ 32,164,985	\$ 28,454,668	\$ 3,710,317	\$ (116,148,294)
10	June 30, 2027	\$1,409,794,599	\$1,931,294	\$ 33,553,111	\$ 45,965	\$ 33,599,076	\$ 28,454,668	\$ 5,144,408	\$ (111,003,886)
9	June 30, 2028	\$1,473,235,356	\$1,498,867	\$ 35,063,001	\$ 35,673	\$ 35,098,675	\$ 28,454,668	\$ 6,644,007	\$ (104,359,879)
8	June 30, 2029	\$1,539,530,947	\$1,221,484	\$ 36,640,837	\$ 29,071	\$ 36,669,908	\$ 28,454,668	\$ 8,215,240	\$ (96,144,639)
7	June 30, 2030	\$1,608,809,839	\$979,400	\$ 38,289,674	\$ 23,310	\$ 38,312,984	\$ 28,454,668	\$ 9,858,316	\$ (86,286,323)
6	June 30, 2031	\$1,681,206,282	\$748,285	\$ 40,012,710	\$ 17,809	\$ 40,030,519	\$ 28,454,668	\$ 11,575,851	\$ (74,710,472)
5	June 30, 2032	\$1,756,860,565	\$603,262	\$ 41,813,281	\$ 14,358	\$ 41,827,639	\$ 28,454,668	\$ 13,372,971	\$ (61,337,501)
4	June 30, 2033	\$1,835,919,290	\$486,237	\$ 43,694,879	\$ 11,572	\$ 43,706,452	\$ 28,454,668	\$ 15,251,784	\$ (46,085,718)
3	June 30, 2034	\$1,918,535,658	\$360,973	\$ 45,661,149	\$ 8,591	\$ 45,669,740	\$ 28,454,668	\$ 17,215,072	\$ (28,870,646)
2	June 30, 2035	\$2,004,869,763	\$262,682	\$ 47,715,900	\$ 6,252	\$ 47,722,152	\$ 28,454,668	\$ 19,267,484	\$ (9,603,161)
1	June 30, 2036	\$2,095,088,902	\$191,155	\$ 49,863,116	\$ 4,549	\$ 49,867,665	\$ 28,454,668	\$ 21,412,997	\$ 11,809,836
0	June 30, 2037	\$2,189,367,902	\$139,104	\$ 52,106,956	\$ 3,311	\$ 52,110,267	\$ 28,454,668	\$ 23,655,599	\$ 35,465,435
						\$ 889,105,473	\$ 853,640,038	\$ 35,465,435	

* Comprehensive Annual Financial Report: Teachers' Retirement System, Fiscal Year ended June 30, 2006. Table 8, p. 60.

** Comprehensive Annual Financial Report: Teachers' Retirement System, Fiscal Year ended June 30, 2005. Table 10.

Table 3.3
Estimates of contribution rate increases and pension bonds
PERS & TRS COMBINED

PERS ASSUMPTIONS	
Supplemental rate 7/1/2007 @	0.56%
Supplemental rate 7/1/2009 @	1.13%
30-yr. taxable bonds @	6.00%
Bond principal	\$266,000,000
Monthly payment	\$1,594,804
Annual payment	\$ 19,137,653

TRS ASSUMPTIONS	
Supplemental rate 7/1/2007 @	2.00%
Supplemental rate 7/1/2009 @	2.38%
30-yr. taxable bonds @	6.00%
Bond principal	\$395,500,000
Monthly payment	\$2,371,222
Annual payment	\$ 28,454,668

	Fiscal Year End	PERS and TRS Combined		PERS and TRS Combined Estimated Additional Contributions			Bond Debt Service	Annual Difference	Cumulative Difference
		Covered Payroll	MUS*	State	MUS	Total			
29	June 30, 2008	\$1,568,025,062	\$35,890,074	\$17,577,418	\$717,801	\$ 18,295,220	\$ 47,592,321	\$ (29,297,101)	\$ (29,297,101)
28	June 30, 2009	\$1,636,193,293	\$33,158,646	\$18,355,002	\$663,173	\$ 19,018,175	\$ 47,592,321	\$ (28,574,146)	\$ (57,871,247)
27	June 30, 2010	\$1,707,327,398	\$30,361,724	\$27,631,319	\$722,609	\$ 28,353,928	\$ 47,592,321	\$ (19,238,393)	\$ (77,109,640)
26	June 30, 2011	\$1,781,556,516	\$27,479,238	\$28,845,341	\$654,006	\$ 29,499,347	\$ 47,592,321	\$ (18,092,974)	\$ (95,202,614)
25	June 30, 2012	\$1,859,015,418	\$24,851,205	\$30,112,745	\$591,459	\$ 30,704,204	\$ 47,592,321	\$ (16,888,117)	\$ (112,090,731)
24	June 30, 2013	\$1,939,844,747	\$22,127,790	\$31,435,881	\$526,641	\$ 31,962,522	\$ 47,592,321	\$ (15,629,798)	\$ (127,720,529)
23	June 30, 2014	\$2,024,191,276	\$19,623,170	\$32,817,200	\$467,031	\$ 33,284,232	\$ 47,592,321	\$ (14,308,089)	\$ (142,028,618)
22	June 30, 2015	\$2,112,208,173	\$17,257,801	\$34,259,264	\$410,736	\$ 34,670,000	\$ 47,592,321	\$ (12,922,321)	\$ (154,950,939)
21	June 30, 2016	\$2,204,055,283	\$15,072,626	\$35,764,745	\$358,728	\$ 36,123,474	\$ 47,592,321	\$ (11,468,847)	\$ (166,419,786)
20	June 30, 2017	\$2,299,899,416	\$13,028,623	\$37,336,436	\$310,081	\$ 37,646,517	\$ 47,592,321	\$ (9,945,804)	\$ (176,365,590)
19	June 30, 2018	\$2,399,914,656	\$11,012,210	\$38,977,248	\$262,091	\$ 39,239,339	\$ 47,592,321	\$ (8,352,982)	\$ (184,718,571)
18	June 30, 2019	\$2,504,282,671	\$9,282,627	\$40,690,227	\$220,927	\$ 40,911,153	\$ 47,592,321	\$ (6,681,168)	\$ (191,399,739)
17	June 30, 2020	\$2,613,193,052	\$7,744,407	\$42,478,546	\$184,317	\$ 42,662,863	\$ 47,592,321	\$ (4,929,457)	\$ (196,329,196)
16	June 30, 2021	\$2,726,843,649	\$6,460,927	\$44,345,524	\$153,770	\$ 44,499,294	\$ 47,592,321	\$ (3,093,027)	\$ (199,422,223)
15	June 30, 2022	\$2,845,440,942	\$5,414,886	\$46,294,622	\$128,874	\$ 46,423,496	\$ 47,592,321	\$ (1,168,824)	\$ (200,591,047)
14	June 30, 2023	\$2,969,200,410	\$4,448,153	\$48,329,455	\$105,866	\$ 48,435,321	\$ 47,592,321	\$ 843,001	\$ (199,748,047)
13	June 30, 2024	\$3,098,346,925	\$3,654,129	\$50,453,798	\$86,968	\$ 50,540,766	\$ 47,592,321	\$ 2,948,446	\$ (196,799,601)
12	June 30, 2025	\$3,233,115,165	\$3,001,404	\$52,671,591	\$71,433	\$ 52,743,024	\$ 47,592,321	\$ 5,150,703	\$ (191,648,898)
11	June 30, 2026	\$3,373,750,038	\$2,384,225	\$54,986,947	\$56,745	\$ 55,043,692	\$ 47,592,321	\$ 7,451,371	\$ (184,197,527)
10	June 30, 2027	\$3,520,507,129	\$1,931,294	\$57,404,163	\$45,965	\$ 57,450,128	\$ 47,592,321	\$ 9,857,807	\$ (174,339,719)
9	June 30, 2028	\$3,673,653,169	\$1,498,867	\$59,927,723	\$35,673	\$ 59,963,396	\$ 47,592,321	\$ 12,371,075	\$ (161,968,644)
8	June 30, 2029	\$3,833,466,517	\$1,221,484	\$62,562,308	\$29,071	\$ 62,591,380	\$ 47,592,321	\$ 14,999,059	\$ (146,969,585)
7	June 30, 2030	\$4,000,237,670	\$979,400	\$65,312,809	\$23,310	\$ 65,336,118	\$ 47,592,321	\$ 17,743,798	\$ (129,225,788)
6	June 30, 2031	\$4,174,269,796	\$748,285	\$68,184,327	\$17,809	\$ 68,202,136	\$ 47,592,321	\$ 20,609,816	\$ (108,615,972)
5	June 30, 2032	\$4,355,879,279	\$603,262	\$71,182,193	\$14,358	\$ 71,196,551	\$ 47,592,321	\$ 23,604,230	\$ (85,011,742)
4	June 30, 2033	\$4,545,396,299	\$486,237	\$74,311,969	\$11,572	\$ 74,323,542	\$ 47,592,321	\$ 26,731,221	\$ (58,280,521)
3	June 30, 2034	\$4,743,165,440	\$360,973	\$77,579,465	\$8,591	\$ 77,588,056	\$ 47,592,321	\$ 29,995,736	\$ (28,284,785)
2	June 30, 2035	\$4,949,546,310	\$262,682	\$80,990,745	\$6,252	\$ 80,996,997	\$ 47,592,321	\$ 33,404,676	\$ 5,119,891
1	June 30, 2036	\$5,164,914,203	\$191,155	\$84,552,142	\$4,549	\$ 84,556,691	\$ 47,592,321	\$ 36,964,371	\$ 42,084,262
0	June 30, 2037	\$5,389,660,778	\$139,104	\$88,270,266	\$3,311	\$ 88,273,576	\$ 47,592,321	\$ 40,681,256	\$ 82,765,517
						\$ 1,510,535,138	\$ 1,427,769,621	\$ 82,765,517	

* Based on Comprehensive Annual Financial Report, MPERB, June 30, 2006; June 30, 2006, payroll increase by 4.25% annual growth factor; Comprehensive Annual Financial Report: Teachers' Retirement System, Fiscal Year ended June 30, 2006.

** Comprehensive Annual Financial Report: Teachers' Retirement System, Fiscal Year ended June 30, 2005. Table 10.

Table 4.1
Estimates of contribution rate increases and pension bonds
PERS

ASSUMPTIONS	
Supplemental rate 7/1/2007 @	0.56%
Supplemental rate 7/1/2009 @	1.13%
Growth rate - wages	4.25%
30-yr. taxable bonds @	6.00%
Bond principal	\$266,000,000
Monthly payment	\$1,594,804
Annual payment	\$ 19,137,653

	Fiscal		Estimated	Bond	Cumulative	Annual	Cumulative
	Year End	Covered Payroll*	Additional	Debt Service	Debt Service	Difference	Difference
			Contributions				
29	06/30/08	\$1,017,007,082	\$ 5,695,240	\$ 19,137,653	\$ 19,137,653	\$ (13,442,413)	\$ (13,442,413)
28	06/30/09	\$1,060,229,883	\$ 5,937,287	\$ 19,137,653	\$ 38,275,306	\$ (13,200,365)	\$ (26,642,779)
27	06/30/10	\$1,105,289,653	\$ 12,489,773	\$ 19,137,653	\$ 57,412,958	\$ (6,647,880)	\$ (33,290,658)
26	06/30/11	\$1,152,264,463	\$ 13,020,588	\$ 19,137,653	\$ 76,550,611	\$ (6,117,064)	\$ (39,407,723)
25	06/30/12	\$1,201,235,703	\$ 13,573,963	\$ 19,137,653	\$ 95,688,264	\$ (5,563,689)	\$ (44,971,412)
24	06/30/13	\$1,252,288,220	\$ 14,150,857	\$ 19,137,653	\$ 114,825,917	\$ (4,986,796)	\$ (49,958,208)
23	06/30/14	\$1,305,510,470	\$ 14,752,268	\$ 19,137,653	\$ 133,963,569	\$ (4,385,384)	\$ (54,343,592)
22	06/30/15	\$1,360,994,665	\$ 15,379,240	\$ 19,137,653	\$ 153,101,222	\$ (3,758,413)	\$ (58,102,005)
21	06/30/16	\$1,418,836,938	\$ 16,032,857	\$ 19,137,653	\$ 172,238,875	\$ (3,104,795)	\$ (61,206,801)
20	06/30/17	\$1,479,137,508	\$ 16,714,254	\$ 19,137,653	\$ 191,376,528	\$ (2,423,399)	\$ (63,630,200)
19	06/30/18	\$1,542,000,852	\$ 17,424,610	\$ 19,137,653	\$ 210,514,180	\$ (1,713,043)	\$ (65,343,243)
18	06/30/19	\$1,607,535,888	\$ 18,165,156	\$ 19,137,653	\$ 229,651,833	\$ (972,497)	\$ (66,315,740)
17	06/30/20	\$1,675,856,163	\$ 18,937,175	\$ 19,137,653	\$ 248,789,486	\$ (200,478)	\$ (66,516,218)
16	06/30/21	\$1,747,080,050	\$ 19,742,005	\$ 19,137,653	\$ 267,927,139	\$ 604,352	\$ (65,911,866)
15	06/30/22	\$1,821,330,953	\$ 20,581,040	\$ 19,137,653	\$ 287,064,791	\$ 1,443,387	\$ (64,468,479)
14	06/30/23	\$1,898,737,518	\$ 21,455,734	\$ 19,137,653	\$ 306,202,444	\$ 2,318,081	\$ (62,150,398)
13	06/30/24	\$1,979,433,863	\$ 22,367,603	\$ 19,137,653	\$ 325,340,097	\$ 3,229,950	\$ (58,920,448)
12	06/30/25	\$2,063,559,802	\$ 23,318,226	\$ 19,137,653	\$ 344,477,750	\$ 4,180,573	\$ (54,739,875)
11	06/30/26	\$2,151,261,093	\$ 24,309,250	\$ 19,137,653	\$ 363,615,402	\$ 5,171,598	\$ (49,568,278)
10	06/30/27	\$2,242,689,690	\$ 25,342,393	\$ 19,137,653	\$ 382,753,055	\$ 6,204,741	\$ (43,363,537)
9	06/30/28	\$2,338,004,002	\$ 26,419,445	\$ 19,137,653	\$ 401,890,708	\$ 7,281,792	\$ (36,081,744)
8	06/30/29	\$2,437,369,172	\$ 27,542,272	\$ 19,137,653	\$ 421,028,361	\$ 8,404,619	\$ (27,677,125)
7	06/30/30	\$2,540,957,361	\$ 28,712,818	\$ 19,137,653	\$ 440,166,014	\$ 9,575,165	\$ (18,101,960)
6	06/30/31	\$2,648,948,049	\$ 29,933,113	\$ 19,137,653	\$ 459,303,666	\$ 10,795,460	\$ (7,306,500)
5	06/30/32	\$2,761,528,341	\$ 31,205,270	\$ 19,137,653	\$ 478,441,319	\$ 12,067,617	\$ 4,761,118
4	06/30/33	\$2,878,893,296	\$ 32,531,494	\$ 19,137,653	\$ 497,578,972	\$ 13,393,841	\$ 18,154,959
3	06/30/34	\$3,001,246,261	\$ 33,914,083	\$ 19,137,653	\$ 516,716,625	\$ 14,776,430	\$ 32,931,389
2	06/30/35	\$3,128,799,227	\$ 35,355,431	\$ 19,137,653	\$ 535,854,277	\$ 16,217,779	\$ 49,149,168
1	06/30/36	\$3,261,773,194	\$ 36,858,037	\$ 19,137,653	\$ 554,991,930	\$ 17,720,384	\$ 66,869,552
0	06/30/37	\$3,400,398,555	\$ 38,424,504	\$ 19,137,653	\$ 574,129,583	\$ 19,286,851	\$ 86,156,403
			\$660,285,986	\$ 574,129,583		\$ 86,156,403	

* Based on data provided by PERB staff, 1/17/07.

Table 4.2
Estimates of contribution rate increases and pension bonds
TRS

ASSUMPTIONS	
Supplemental rate 7/1/2007 @	2.00%
Supplemental rate 7/1/2009 @	2.38%
30-yr. taxable bonds @	6.00%
Bond principal	\$395,500,000
Monthly payment	\$2,371,222
Annual payment	\$ 28,454,668

	Fiscal Year End	Covered Payroll		Estimated Additional Contributions			Bond Debt Service	Annual Difference	Cumulative Difference
		State*	MUS**	State	MUS	Total			
29	June 30, 2008	\$610,866,521	\$35,890,074	\$ 12,217,330	\$ 717,801	\$ 12,935,132	\$ 28,454,668	\$ (15,519,536)	\$ (15,519,536)
28	June 30, 2009	\$638,355,514	\$33,158,646	\$ 12,767,110	\$ 663,173	\$ 13,430,283	\$ 28,454,668	\$ (15,024,385)	\$ (30,543,921)
27	June 30, 2010	\$667,081,513	\$30,361,724	\$ 15,876,540	\$ 722,609	\$ 16,599,149	\$ 28,454,668	\$ (11,855,519)	\$ (42,399,440)
26	June 30, 2011	\$697,100,181	\$27,479,238	\$ 16,590,984	\$ 654,006	\$ 17,244,990	\$ 28,454,668	\$ (11,209,678)	\$ (53,609,117)
25	June 30, 2012	\$728,469,689	\$24,851,205	\$ 17,337,579	\$ 591,459	\$ 17,929,037	\$ 28,454,668	\$ (10,525,631)	\$ (64,134,748)
24	June 30, 2013	\$761,250,825	\$22,127,790	\$ 18,117,770	\$ 526,641	\$ 18,644,411	\$ 28,454,668	\$ (9,810,257)	\$ (73,945,005)
23	June 30, 2014	\$795,507,112	\$19,623,170	\$ 18,933,069	\$ 467,031	\$ 19,400,101	\$ 28,454,668	\$ (9,054,567)	\$ (82,999,572)
22	June 30, 2015	\$831,304,932	\$17,257,801	\$ 19,785,057	\$ 410,736	\$ 20,195,793	\$ 28,454,668	\$ (8,258,875)	\$ (91,258,447)
21	June 30, 2016	\$868,713,654	\$15,072,626	\$ 20,675,385	\$ 358,728	\$ 21,034,113	\$ 28,454,668	\$ (7,420,554)	\$ (98,679,001)
20	June 30, 2017	\$907,805,768	\$13,028,623	\$ 21,605,777	\$ 310,081	\$ 21,915,859	\$ 28,454,668	\$ (6,538,809)	\$ (105,217,811)
19	June 30, 2018	\$948,657,028	\$11,012,210	\$ 22,578,037	\$ 262,091	\$ 22,840,128	\$ 28,454,668	\$ (5,614,540)	\$ (110,832,351)
18	June 30, 2019	\$991,346,594	\$9,282,627	\$ 23,594,049	\$ 220,927	\$ 23,814,975	\$ 28,454,668	\$ (4,639,692)	\$ (115,472,043)
17	June 30, 2020	\$1,035,957,191	\$7,744,407	\$ 24,655,781	\$ 184,317	\$ 24,840,098	\$ 28,454,668	\$ (3,614,570)	\$ (119,086,613)
16	June 30, 2021	\$1,082,575,264	\$6,460,927	\$ 25,765,291	\$ 153,770	\$ 25,919,061	\$ 28,454,668	\$ (2,535,607)	\$ (121,622,220)
15	June 30, 2022	\$1,131,291,151	\$5,414,886	\$ 26,924,729	\$ 128,874	\$ 27,053,604	\$ 28,454,668	\$ (1,401,064)	\$ (123,023,284)
14	June 30, 2023	\$1,182,199,253	\$4,448,153	\$ 28,136,342	\$ 105,866	\$ 28,242,208	\$ 28,454,668	\$ (212,460)	\$ (123,235,744)
13	June 30, 2024	\$1,235,398,219	\$3,654,129	\$ 29,402,478	\$ 86,968	\$ 29,489,446	\$ 28,454,668	\$ 1,034,778	\$ (122,200,966)
12	June 30, 2025	\$1,290,991,139	\$3,001,404	\$ 30,725,589	\$ 71,433	\$ 30,797,023	\$ 28,454,668	\$ 2,342,355	\$ (119,858,611)
11	June 30, 2026	\$1,349,085,741	\$2,384,225	\$ 32,108,241	\$ 56,745	\$ 32,164,985	\$ 28,454,668	\$ 3,710,317	\$ (116,148,294)
10	June 30, 2027	\$1,409,794,599	\$1,931,294	\$ 33,553,111	\$ 45,965	\$ 33,599,076	\$ 28,454,668	\$ 5,144,408	\$ (111,003,886)
9	June 30, 2028	\$1,473,235,356	\$1,498,867	\$ 35,063,001	\$ 35,673	\$ 35,098,675	\$ 28,454,668	\$ 6,644,007	\$ (104,359,879)
8	June 30, 2029	\$1,539,530,947	\$1,221,484	\$ 36,640,837	\$ 29,071	\$ 36,669,908	\$ 28,454,668	\$ 8,215,240	\$ (96,144,639)
7	June 30, 2030	\$1,608,809,839	\$979,400	\$ 38,289,674	\$ 23,310	\$ 38,312,984	\$ 28,454,668	\$ 9,858,316	\$ (86,286,323)
6	June 30, 2031	\$1,681,206,282	\$748,285	\$ 40,012,710	\$ 17,809	\$ 40,030,519	\$ 28,454,668	\$ 11,575,851	\$ (74,710,472)
5	June 30, 2032	\$1,756,860,565	\$603,262	\$ 41,813,281	\$ 14,358	\$ 41,827,639	\$ 28,454,668	\$ 13,372,971	\$ (61,337,501)
4	June 30, 2033	\$1,835,919,290	\$486,237	\$ 43,694,879	\$ 11,572	\$ 43,706,452	\$ 28,454,668	\$ 15,251,784	\$ (46,085,718)
3	June 30, 2034	\$1,918,535,658	\$360,973	\$ 45,661,149	\$ 8,591	\$ 45,669,740	\$ 28,454,668	\$ 17,215,072	\$ (28,870,646)
2	June 30, 2035	\$2,004,869,763	\$262,682	\$ 47,715,900	\$ 6,252	\$ 47,722,152	\$ 28,454,668	\$ 19,267,484	\$ (9,603,161)
1	June 30, 2036	\$2,095,088,902	\$191,155	\$ 49,863,116	\$ 4,549	\$ 49,867,665	\$ 28,454,668	\$ 21,412,997	\$ 11,809,836
0	June 30, 2037	\$2,189,367,902	\$139,104	\$ 52,106,956	\$ 3,311	\$ 52,110,267	\$ 28,454,668	\$ 23,655,599	\$ 35,465,435
						\$ 889,105,473	\$ 853,640,038	\$ 35,465,435	

* Comprehensive Annual Financial Report: Teachers' Retirement System, Fiscal Year ended June 30, 2006. Table 8, p. 60.

** Comprehensive Annual Financial Report: Teachers' Retirement System, Fiscal Year ended June 30, 2005. Table 10.

Table 4.3
Estimates of contribution rate increases and pension bonds
PERS & TRS COMBINED

PERS ASSUMPTIONS	
Supplemental rate 7/1/2007 @	0.56%
Supplemental rate 7/1/2009 @	1.13%
30-yr. taxable bonds @	6.00%
Bond principal	\$266,000,000
Monthly payment	\$1,594,804
Annual payment	\$ 19,137,653

TRS ASSUMPTIONS	
Supplemental rate 7/1/2007 @	2.00%
Supplemental rate 7/1/2009 @	2.38%
30-yr. taxable bonds @	6.00%
Bond principal	\$395,500,000
Monthly payment	\$2,371,222
Annual payment	\$ 28,454,668

	Fiscal Year End	PERS and TRS Combined		PERS and TRS Combined Estimated Additional Contributions			Bond Debt Service	Annual Difference	Cumulative Difference
		Covered Payroll*	MUS**	State	MUS	Total			
29	June 30, 2008	\$1,627,873,603	\$35,890,074	\$17,912,570	\$717,801	\$ 18,630,372	\$ 47,592,321	\$ (28,961,949)	\$ (28,961,949)
28	June 30, 2009	\$1,698,585,397	\$33,158,646	\$18,704,398	\$663,173	\$ 19,367,571	\$ 47,592,321	\$ (28,224,750)	\$ (57,186,699)
27	June 30, 2010	\$1,772,371,166	\$30,361,724	\$28,366,313	\$722,609	\$ 29,088,922	\$ 47,592,321	\$ (18,503,399)	\$ (75,690,098)
26	June 30, 2011	\$1,849,364,644	\$27,479,238	\$29,611,573	\$654,006	\$ 30,265,579	\$ 47,592,321	\$ (17,326,742)	\$ (93,016,840)
25	June 30, 2012	\$1,929,705,392	\$24,851,205	\$30,911,542	\$591,459	\$ 31,503,001	\$ 47,592,321	\$ (16,089,320)	\$ (109,106,160)
24	June 30, 2013	\$2,013,539,045	\$22,127,790	\$32,268,627	\$526,641	\$ 32,795,268	\$ 47,592,321	\$ (14,797,053)	\$ (123,903,213)
23	June 30, 2014	\$2,101,017,582	\$19,623,170	\$33,685,338	\$467,031	\$ 34,152,369	\$ 47,592,321	\$ (13,439,952)	\$ (137,343,164)
22	June 30, 2015	\$2,192,299,597	\$17,257,801	\$35,164,297	\$410,736	\$ 35,575,033	\$ 47,592,321	\$ (12,017,288)	\$ (149,360,452)
21	June 30, 2016	\$2,287,550,592	\$15,072,626	\$36,708,242	\$358,728	\$ 37,066,971	\$ 47,592,321	\$ (10,525,350)	\$ (159,885,802)
20	June 30, 2017	\$2,386,943,276	\$13,028,623	\$38,320,031	\$310,081	\$ 38,630,112	\$ 47,592,321	\$ (8,962,208)	\$ (168,848,010)
19	June 30, 2018	\$2,490,657,880	\$11,012,210	\$40,002,647	\$262,091	\$ 40,264,737	\$ 47,592,321	\$ (7,327,583)	\$ (176,175,594)
18	June 30, 2019	\$2,598,882,482	\$9,282,627	\$41,759,204	\$220,927	\$ 41,980,131	\$ 47,592,321	\$ (5,612,190)	\$ (181,787,783)
17	June 30, 2020	\$2,711,813,354	\$7,744,407	\$43,592,956	\$184,317	\$ 43,777,273	\$ 47,592,321	\$ (3,815,048)	\$ (185,602,831)
16	June 30, 2021	\$2,829,655,314	\$6,460,927	\$45,507,296	\$153,770	\$ 45,661,066	\$ 47,592,321	\$ (1,931,255)	\$ (187,534,086)
15	June 30, 2022	\$2,952,622,104	\$5,414,886	\$47,505,769	\$128,874	\$ 47,634,643	\$ 47,592,321	\$ 42,323	\$ (187,491,763)
14	June 30, 2023	\$3,080,936,771	\$4,448,153	\$49,592,076	\$105,866	\$ 49,697,942	\$ 47,592,321	\$ 2,105,622	\$ (185,386,142)
13	June 30, 2024	\$3,214,832,082	\$3,654,129	\$51,770,080	\$86,968	\$ 51,857,049	\$ 47,592,321	\$ 4,264,728	\$ (181,121,414)
12	June 30, 2025	\$3,354,550,941	\$3,001,404	\$54,043,815	\$71,433	\$ 54,115,248	\$ 47,592,321	\$ 6,522,928	\$ (174,598,486)
11	June 30, 2026	\$3,500,346,834	\$2,384,225	\$56,417,491	\$56,745	\$ 56,474,236	\$ 47,592,321	\$ 8,881,915	\$ (165,716,571)
10	June 30, 2027	\$3,652,484,289	\$1,931,294	\$58,895,505	\$45,965	\$ 58,941,470	\$ 47,592,321	\$ 11,349,149	\$ (154,367,422)
9	June 30, 2028	\$3,811,239,358	\$1,498,867	\$61,482,447	\$35,673	\$ 61,518,120	\$ 47,592,321	\$ 13,925,799	\$ (140,441,623)
8	June 30, 2029	\$3,976,900,119	\$1,221,484	\$64,183,108	\$29,071	\$ 64,212,179	\$ 47,592,321	\$ 16,619,859	\$ (123,821,765)
7	June 30, 2030	\$4,149,767,200	\$979,400	\$67,002,492	\$23,310	\$ 67,025,802	\$ 47,592,321	\$ 19,433,481	\$ (104,388,283)
6	June 30, 2031	\$4,330,154,331	\$748,285	\$69,945,822	\$17,809	\$ 69,963,632	\$ 47,592,321	\$ 22,371,311	\$ (82,016,972)
5	June 30, 2032	\$4,518,388,906	\$603,262	\$73,018,552	\$14,358	\$ 73,032,909	\$ 47,592,321	\$ 25,440,589	\$ (56,576,384)
4	June 30, 2033	\$4,714,812,586	\$486,237	\$76,226,373	\$11,572	\$ 76,237,946	\$ 47,592,321	\$ 28,645,625	\$ (27,930,758)
3	June 30, 2034	\$4,919,781,919	\$360,973	\$79,575,231	\$8,591	\$ 79,583,823	\$ 47,592,321	\$ 31,991,502	\$ 4,060,743
2	June 30, 2035	\$5,133,668,990	\$262,682	\$83,071,332	\$6,252	\$ 83,077,583	\$ 47,592,321	\$ 35,485,263	\$ 39,546,006
1	June 30, 2036	\$5,356,862,096	\$191,155	\$86,721,153	\$4,549	\$ 86,725,702	\$ 47,592,321	\$ 39,133,382	\$ 78,679,388
0	June 30, 2037	\$5,589,766,457	\$139,104	\$90,531,460	\$3,311	\$ 90,534,770	\$ 47,592,321	\$ 42,942,450	\$ 121,621,838
						\$ 1,549,391,458	\$ 1,427,769,621	\$ 121,621,838	

* Based on data provided by PERB staff, 1/17/07; Comprehensive Annual Financial Report: Teachers' Retirement System, Fiscal Year ended June 30, 2006.

** Comprehensive Annual Financial Report: Teachers' Retirement System, Fiscal Year ended June 30, 2005. Table 10.