

**Public Employees' Retirement System  
of the  
State of Montana**

**GASB 67 Report  
as of  
June 30, 2014**

**Produced by [Cheiron](#)**

**November 2014**

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**MONTANA PUBLIC EMPLOYEES' RETIREMENT SYSTEM  
GASB 67 REPORTING FOR JUNE 30, 2014 MEASUREMENT DATE**

**BOARD SUMMARY**

The purpose of this report is to provide accounting and financial disclosure information under Government Accounting Standards Board Statement 67 for the Public Employees' Retirement System and the State of Montana. This information includes:

- Projection of the Total Pension Liability from the valuation date to the measurement date,
- Calculation of the Net Pension Liability at the discount rate as well as discount rates 1% higher and lower than the discount rate,
- Changes in the Net Pension Liability, and
- Schedule of Employer Contributions.

**Highlights**

This report is the first report under GASB 67. The reporting date for the State of Montana Public Employees' Retirement System (PERS) is June 30, 2014. Measurements as of the reporting date are based on the fair value of assets as of June 30, 2014 and the Total Pension Liability as of the valuation date of June 30, 2013, updated to June 30, 2014. There were no significant events between the valuation date and the measurement date, so the update procedures only included the addition of service cost and interest cost offset by actual benefit payments.

Beginning of year measurements are also based on the actuarial valuation as of June 30, 2013. Because the beginning and ending values are based on the same actuarial valuation and there were no significant events, no liability gains or losses due to experience are reported this year. In future years, liability gains and losses will be reported reflecting the liability gains and losses between actuarial valuation dates as well as any significant events during the update period.

Due to a court injunction, this report does not reflect changes to the Guaranteed Annual Benefit Adjustment (GABA) contained in House Bill No. 454 from the 2013 legislative session. Rather, the GABA reflected in this report is the GABA as it existed prior to enactment of House Bill No. 454.

The table below provides a summary of the key results during this reporting period.

	<b>Table 1</b>	
	<b>Summary of Results</b>	
	<b>Measurement Date</b>	
	<b>6/30/2014</b>	<b>6/30/2013</b>
Total Pension Liability	\$ 6,188,780,815	\$ 5,902,662,931
Plan Fiduciary Net Position	<u>4,942,769,917</u>	<u>4,299,238,343</u>
Net Pension Liability	<u>\$ 1,246,010,898</u>	<u>\$ 1,603,424,588</u>
Discount Rate	7.75%	7.75%

MONTANA PUBLIC EMPLOYEES' RETIREMENT SYSTEM  
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**CERTIFICATION**

The purpose of this report is to provide accounting and financial reporting information under GASB 67 for the State of Montana Public Employees' Retirement System (PERS). This report is for the use of PERS, the State of Montana and their auditors in preparing financial reports in accordance with applicable law and accounting requirements. This report is not appropriate for other purposes, including the measurement of funding requirements for PERS.

In preparing our report, we relied on information (some oral and some written) supplied by PERS. This information includes, but is not limited to, the plan provisions, employee data, and financial information. We performed an informal examination of the obvious characteristics of the data for reasonableness and consistency in accordance with Actuarial Standard of Practice No. 23.

The membership data, actuarial assumptions and plan provisions are the same as were described in the June 30, 2013 Actuarial Valuation Report for PERS, except that it has been assumed that the rate of investment return is net only of investment expenses, rather than net of both investment and administrative expenses. The administrative expense rate is assumed to be 0.27% of active member payroll.

Future actuarial measurements may differ significantly from the current measurements due to such factors as the following: Plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; and changes in plan provisions or applicable law.

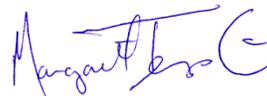
To the best of our knowledge, this report and its contents have been prepared in accordance with generally recognized and accepted actuarial principles and practices that are consistent with the Code of Professional Conduct and applicable Actuarial Standards of Practice set out by the Actuarial Standards Board. Furthermore, as credentialed actuaries, we meet the Qualification Standards of the American Academy of Actuaries to render the opinion contained in this report. This report does not address any contractual or legal issues. We are not attorneys and our firm does not provide any legal services or advice.

This report was prepared for PERS for the purposes described herein and for the use by the Plan auditor in completing an audit related to the matters herein. This report is not intended to benefit any third party, and Cheiron assumes no duty or liability to any such party.

Sincerely,  
Cheiron



Stephen T. McElhaney, FSA, FCA, EA, MAAA  
Principal Consulting Actuary



Margaret Tempkin, FSA, EA, MAAA  
Principal Consulting Actuary

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**DETERMINATION OF DISCOUNT RATE**

The discount rate as of June 30, 2014 is 7.75% which is the assumed long-term expected rate of return on System investments. Projections of the System's fiduciary net position have indicated that it is expected to be sufficient to make projected benefit payments for current Plan members following the procedures described in paragraphs 39 - 45 of GASB Statement 67. The results of these projections are included within this report at Appendix B.

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**PROJECTION OF TOTAL PENSION LIABILITY**

The Total Pension Liability (TPL) at the beginning of the measurement year is measured as a valuation date of June 30, 2013. The TPL at June 30, 2013 is the same as was reported for actuarial valuation purposes as of June 30, 2013. The TPL at the end of the measurement year, June 30, 2014, is measured as of a valuation date of June 30, 2013 and projected to June 30, 2014. In future years, both the beginning and end of year TPL will be measured as of a valuation date one year prior and projected to the appropriate date. There were no significant events during the projection period of which we are aware. The table below shows the projection of the TPL at discount rates equal to the rate used for disclosure and plus and minus one percent from the rate used for disclosure. TPL and Service Cost have been determined using the entry age actuarial cost method as described in paragraph 46 of GASB Statement 67.

<b>Table 2</b>			
<b>Projection of Total Pension Liability</b>			
<b>Discount Rate</b>	<b>6.75%</b>	<b>7.75%</b>	<b>8.75%</b>
<b>Total Pension Liability, 6/30/2013</b>			
Actives	\$ 2,908,949,484	\$ 2,510,664,664	\$ 2,179,414,561
Deferred Vested	208,445,088	181,411,921	159,651,583
Retirees	<u>3,499,723,556</u>	<u>3,210,586,346</u>	<u>2,961,705,454</u>
<b>Total</b>	<b>\$ 6,617,118,128</b>	<b>\$ 5,902,662,931</b>	<b>\$ 5,300,771,598</b>
<b>Service Cost, Beginning of Year</b>			
Service Cost Rate	14.44%	11.82%	9.82%
Expected Payroll During Year	\$ 1,162,882,414	\$ 1,162,882,414	\$ 1,162,882,414
Service Cost	\$ 167,896,050	\$ 137,452,701	\$ 114,159,212
<b>Benefit Payments</b>	<b>\$ 307,741,308</b>	<b>\$ 307,741,308</b>	<b>\$ 307,741,308</b>
<b>Interest</b>	<b>\$ 447,771,779</b>	<b>\$ 456,406,491</b>	<b>\$ 460,625,061</b>
<b>Change in Benefits</b>	<b>\$ 0</b>	<b>\$ 0</b>	<b>\$ 0</b>
<b>Change in Assumptions</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Other Significant Events</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Total Pension Liability, 6/30/2014</b>	<b>\$ 6,925,044,649</b>	<b>\$ 6,188,780,815</b>	<b>\$ 5,567,814,563</b>

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**NOTE DISCLOSURES**

The table below shows the changes in the Total Pension Liability, the Plan Fiduciary Net Position (i.e., fair value of System assets), and the Net Pension Liability during the Measurement Year.

<b>Table 3</b>			
<b>Change in Net Pension Liability</b>			
	<b>Increase (Decrease)</b>		
	<b>Total Pension Liability</b>	<b>Plan Fiduciary Net Position</b>	<b>Net Pension Liability</b>
	<b>(a)</b>	<b>(b)</b>	<b>(a) - (b)</b>
<b>Balances at 6/30/2013</b>	\$ 5,902,662,931	\$ 4,299,238,343	\$ 1,603,424,588
<b>Changes for the year:</b>			
Service cost	137,452,701		137,452,701
Interest	456,406,491		456,406,491
Changes of benefits	0		0
Changes of assumptions	0		0
Differences between expected and actual experience	0		0
Contributions - employer		95,820,397	(95,820,397)
Contributions - non-employer		34,561,721	(34,561,721)
Contributions - member		92,160,048	(92,160,048)
Net investment income		732,253,062	(732,253,062)
Benefit payments	(307,741,308)	(307,741,308)	0
Administrative expense		(3,522,346)	3,522,346
<b>Net changes</b>	<u>286,117,884</u>	<u>643,531,574</u>	<u>(357,413,690)</u>
<b>Balances at 6/30/2014</b>	<u>\$ 6,188,780,815</u>	<u>\$ 4,942,769,917</u>	<u>\$ 1,246,010,898</u>

There were no changes in benefits or changes in assumptions during the year. Because the beginning and end of year TPL are both based on the same actuarial valuation, there are no differences between expected and actual experience reported this year.

Total contributions and investment income exceeded the service cost, interest cost and administrative expenses, resulting in a decrease in the Net Pension Liability (NPL) of \$357,413,690. The NPL remaining as of June 30, 2014 is \$1,246,010,898.

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**NOTE DISCLOSURES**

Changes in the discount rate affect the measurement of the TPL. Lower discount rates produce a higher TPL and higher discount rates produce a lower TPL. Because the discount rate does not affect the measurement of assets, the percentage change in the NPL can be very significant for a relatively small change in the discount rate. The table below shows the sensitivity of the NPL to the discount rate.

<b>Table 4</b>			
<b>Sensitivity of Net Pension Liability to Changes in Discount Rate</b>			
<b>as of June 30, 2014</b>			
	<b>1% Decrease 6.75%</b>	<b>Discount Rate 7.75%</b>	<b>1% Increase 8.75%</b>
Total Pension Liability	\$ 6,925,044,649	\$ 6,188,780,815	\$ 5,567,814,563
Plan Fiduciary Net Position	<u>4,942,769,917</u>	<u>4,942,769,917</u>	<u>4,942,769,917</u>
Net Pension Liability	<u>\$ 1,982,274,732</u>	<u>\$ 1,246,010,898</u>	<u>\$ 625,044,646</u>
Plan Fiduciary Net Position as a Percentage of the Total Pension Liability	71.4%	79.9%	88.8%

A one percent decrease in the discount rate increases the TPL by approximately 11.9% and increases the NPL by approximately 59.1%. A one percent increase in the discount rate decreases the TPL by approximately 10.0% and decreases the NPL by approximately 49.8%.

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**REQUIRED SUPPLEMENTARY INFORMATION**

The schedules of Required Supplementary Information generally start with one year of information as of the implementation of GASB 67, but eventually will need to build up to 10 years of information. The schedule below shows the changes in NPL and related ratios required by GASB.

<b>Table 5</b>	
<b>Schedule of Changes in Net Pension Liability and Related Ratios</b>	
	<b>FYE 2014</b>
<b><u>Total Pension Liability</u></b>	
Service cost (BOY)	\$ 137,452,701
Interest (includes interest on service cost)	456,406,491
Changes of benefit terms	0
Differences between expected and actual experience	0
Changes of assumptions	0
Benefit payments, including refunds of member contributions	(307,741,308)
<b>Net change in total pension liability</b>	<b>\$ 286,117,884</b>
<b>Total pension liability - beginning</b>	<b>\$ 5,902,662,931</b>
<b>Total pension liability - ending</b>	<b>\$ 6,188,780,815</b>
<b><u>Plan fiduciary net position</u></b>	
Contributions - employer	\$ 95,820,397
Contributions - non-employer	34,561,721
Contributions - member	92,160,048
Net investment income	732,253,062
Benefit payments, including refunds of member contributions	(307,741,308)
Administrative expense	(3,522,346)
<b>Net change in plan fiduciary net position</b>	<b>\$ 643,531,574</b>
<b>Plan fiduciary net position - beginning</b>	<b>\$ 4,299,238,343</b>
<b>Plan fiduciary net position - ending</b>	<b>\$ 4,942,769,917</b>
<b>Net pension liability - ending</b>	<b>\$ 1,246,010,898</b>
Plan fiduciary net position as a percentage of the total pension liability	79.87%
Covered employee payroll	\$ 1,129,109,402
Net pension liability as a percentage of covered employee payroll	110.35%

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**REQUIRED SUPPLEMENTARY INFORMATION**

If an Actuarially Determined Contribution is calculated, the following schedule is required. An Actuarially Determined Contribution is a contribution amount determined in accordance with Actuarial Standards of Practice.

<b>Table 6</b>	
<b>Schedule of Employer Contributions</b>	
Last Fiscal Year	
Dollar Amounts in Thousands	
<b>2014</b>	
Actuarially Determined Contribution	\$ 138,768
Contributions in Relation to the Actuarially Determined Contribution	
Employer Contributions	\$ 95,820
Non-Employer Contributions	34,562
Total Contributions	<u>\$ 130,382</u>
<b>Contribution Deficiency/(Excess)</b>	<b><u>\$ 8,386</u></b>
Covered-Employee Payroll	\$ 1,129,109
Contributions as a Percentage of Covered-Employee Payroll	11.55%

**APPENDIX A  
GLOSSARY OF TERMS**

**1. Actuarially Determined Contribution**

A target or recommended contribution for the reporting period, determined in conformity with Actuarial Standards of Practice based on the most recent measurement available when the contribution for the reporting period was adopted.

**2. Actuarial Valuation Date**

The date as of which an actuarial valuation is performed. This date may be up to 24 months prior to the measurement date and up to 30 months prior to the employer's reporting date.

**3. Entry Age Actuarial Cost Method**

The actuarial cost method required for GASB 67 calculations. Under this method, the actuarial present value of the projected benefits of each individual, included in an actuarial valuation, is allocated on a level basis over the earnings of the individual between entry age and assumed exit ages. The portion of this actuarial present value allocated to a valuation year is called the Service Cost. The portion of this actuarial present value not provided for at a valuation date by the actuarial present value of future service costs is called the Total Pension Liability.

**4. Measurement Date**

The date as of which the Total Pension Liability and Plan Fiduciary Net Position are measured. The Total Pension Liability may be projected from the Actuarial Valuation Date to the Measurement Date. The Measurement Date must be the same as the Reporting Date for the plan.

**5. Net Pension Liability (NPL)**

The liability of employers and non-employer contributing entities to employees for benefits provided through a defined benefit pension plan. It is calculated as the Total Pension Liability less the Plan Fiduciary Net Position.

**6. Plan Fiduciary Net Position**

The fair or market value of assets.

**7. Reporting Date**

The last day of the Plan or employer's fiscal year.

**APPENDIX A**  
**GLOSSARY OF TERMS**

**8. Service Cost**

The portion of the actuarial present value of projected benefit payments that is attributed to the current period of employee service in conformity with the requirements of GASB 67 and 68. The Service Cost is the normal cost calculated under the entry age actuarial cost method.

**9. Total Pension Liability (TPL)**

The portion of the actuarial present value of projected benefit payments that is attributed to past periods of employee service in conformity with the requirements of GASB 67 and 68. The Total Pension Liability is the actuarial liability calculated under the entry age actuarial cost method.

**MONTANA PUBLIC EMPLOYEES' RETIREMENT SYSTEM  
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**APPENDIX B  
DEVELOPMENT OF DISCOUNT RATE**

**Table 1 - Projection of Contributions**

Amounts in Thousands, Projections Commence June 30, 2013, Actual Amounts Shown for Year 1 (except Payroll)

\* Total covered-employee payroll increases 4.00% per year

Year	Projected Covered Employee Payroll			Projected Contributions			
	Payroll for Current Employees (a)	Payroll for Future Employees (b)	Total Employee Payroll * (c) = (a) + (b)	Contributions for Current Employees (d) = (a) x EE Rate	Employer Contributions for Current Employees (e) = (a) x ER Rate	Contributions Related to Payroll of Future Employees (f) = (b) x AL Rate	Total Contributions (g) = (d) + (e) + (f)
1	\$ 1,162,882	\$ 0	\$ 1,162,882	\$ 92,042	\$ 130,479	\$ 0	\$ 222,520
2	1,079,851	129,547	1,209,398	85,308	122,668	12,086	220,063
3	1,020,676	237,098	1,257,774	80,633	116,323	22,208	219,164
4	970,119	337,965	1,308,085	76,639	110,845	31,755	219,239
5	923,266	437,142	1,360,408	72,938	105,657	41,152	219,747
6	877,015	537,809	1,414,824	69,284	102,211	44,044	215,539
7	831,804	639,613	1,471,417	57,394	80,794	44,807	182,995
8	786,615	743,659	1,530,274	54,276	75,726	51,454	181,457
9	741,821	849,664	1,591,485	51,186	70,795	58,080	180,061
10	697,561	957,583	1,655,144	48,132	66,009	64,686	178,826
11	654,824	1,066,526	1,721,350	45,183	61,455	71,213	177,851
12	614,189	1,176,015	1,790,204	42,379	57,178	77,638	177,195
13	575,400	1,286,412	1,861,812	39,703	53,148	83,988	176,839
14	538,868	1,397,417	1,936,285	37,182	49,393	90,251	176,826
15	504,701	1,509,035	2,013,736	34,824	45,918	96,430	177,172
16	473,159	1,621,126	2,094,286	32,648	42,736	102,524	177,908
17	443,753	1,734,304	2,178,057	30,619	39,797	108,575	178,991
18	415,638	1,849,541	2,265,179	28,679	37,019	114,648	180,345
19	388,416	1,967,370	2,355,786	26,801	34,362	120,776	181,939
20	362,267	2,087,751	2,450,018	24,996	31,839	126,960	183,796
21	337,011	2,211,007	2,548,019	23,254	29,431	133,219	185,904
22	313,041	2,336,899	2,649,939	21,600	27,168	139,539	188,307
23	289,685	2,466,252	2,755,937	19,988	24,990	145,970	190,948
24	267,136	2,599,038	2,866,174	18,432	22,909	152,511	193,853
25	244,927	2,735,894	2,980,821	16,900	20,884	159,199	196,983
26	222,681	2,877,373	3,100,054	15,365	18,881	166,064	200,310
27	200,850	3,023,206	3,224,056	13,859	16,938	173,089	203,885
28	180,129	3,172,890	3,353,019	12,429	15,110	180,245	207,784
29	159,750	3,327,390	3,487,139	11,023	13,332	187,585	211,940
30	139,915	3,486,710	3,626,625	9,654	11,618	195,110	216,382
31	120,441	3,651,249	3,771,690	8,310	9,952	202,839	221,101
32	102,215	3,820,342	3,922,558	7,053	8,406	210,734	226,193
33	85,637	3,993,823	4,079,460	5,909	7,010	218,786	231,705
34	71,004	4,171,634	4,242,638	4,899	5,786	226,991	237,677
35	57,952	4,354,392	4,412,344	3,999	4,702	235,382	244,083
36	46,949	4,541,888	4,588,837	3,240	3,793	243,948	250,980
37	37,452	4,734,939	4,772,391	2,584	3,013	252,731	258,328
38	29,622	4,933,665	4,963,287	2,044	2,374	261,736	266,154
39	23,044	5,138,774	5,161,818	1,590	1,839	271,000	274,429
40	17,553	5,350,738	5,368,291	1,211	1,396	280,546	283,153
41	13,096	5,569,926	5,583,022	904	1,037	290,391	292,332
42	9,657	5,796,686	5,806,343	666	762	300,551	301,979
43	6,875	6,031,722	6,038,597	474	541	311,060	312,075
44	4,824	6,275,317	6,280,141	333	378	321,930	322,641
45	3,219	6,528,128	6,531,347	222	251	333,192	333,666
46	2,119	6,790,482	6,792,600	146	165	344,860	345,171
47	1,332	7,062,972	7,064,304	92	103	356,960	357,156
48	772	7,346,105	7,346,877	53	60	369,516	369,629
49	444	7,640,308	7,640,752	31	34	382,545	382,610
50	237	7,946,145	7,946,382	16	18	396,072	396,106
51	112	8,264,125	8,264,237	8	9	410,119	410,135
52	56	8,594,751	8,594,807	4	4	424,707	424,715
53	20	8,938,579	8,938,599	1	2	439,861	439,864
54	13	9,296,130	9,296,143	1	1	455,601	455,603
55	8	9,667,981	9,667,988	1	1	471,954	471,955
56	4	10,054,704	10,054,708	0	0	488,942	488,942
57	0	10,456,896	10,456,896	0	0	506,590	506,590
58	0	10,875,172	10,875,172	0	0	524,926	524,926
59	0	11,310,179	11,310,179	0	0	543,976	543,976

**MONTANA PUBLIC EMPLOYEES' RETIREMENT SYSTEM  
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**APPENDIX B  
DEVELOPMENT OF DISCOUNT RATE**

**Table 1 - Projection of Contributions Continued**  
Amounts in Thousands, Projections Commence June 30, 2013, Actual Amounts Shown for Year 1 (except Payroll)  
\* Total covered-employee payroll increases 4.00% per year

Year	Projected Covered Employee Payroll			Projected Contributions			
	Payroll for Current Employees (a)	Payroll for Future Employees (b)	Total Employee Payroll * (c) = (a) + (b)	Contributions for Current Employees (d) = (a) x EE Rate	Employer Contributions for Current Employees (e) = (a) x ER Rate	Contributions Related to Payroll of Future Employees (f) = (b) x AL Rate	Total Contributions (g) = (d) + (e) + (f)
60	0	11,762,586	11,762,586	0	0	563,768	563,768
61	0	12,233,090	12,233,090	0	0	584,332	584,332
62	0	12,722,413	12,722,413	0	0	605,697	605,697
63	0	13,231,310	13,231,310	0	0	627,896	627,896
64	0	13,760,562	13,760,562	0	0	650,962	650,962
65	0	14,310,985	14,310,985	0	0	674,929	674,929
66	0	14,883,424	14,883,424	0	0	699,832	699,832
67	0	15,478,761	15,478,761	0	0	725,708	725,708
68	0	16,097,912	16,097,912	0	0	752,597	752,597
69	0	16,741,828	16,741,828	0	0	780,537	780,537
70	0	17,411,501	17,411,501	0	0	809,571	809,571
71	0	18,107,961	18,107,961	0	0	839,742	839,742
72	0	18,832,280	18,832,280	0	0	871,095	871,095
73	0	19,585,571	19,585,571	0	0	903,676	903,676
74	0	20,368,994	20,368,994	0	0	937,534	937,534
75	0	21,183,753	21,183,753	0	0	972,720	972,720
76	0	22,031,103	22,031,103	0	0	1,009,286	1,009,286
77	0	22,912,348	22,912,348	0	0	1,047,288	1,047,288
78	0	23,828,842	23,828,842	0	0	1,086,781	1,086,781
79	0	24,781,995	24,781,995	0	0	1,127,825	1,127,825
80	0	25,773,275	25,773,275	0	0	1,170,482	1,170,482
81	0	26,804,206	26,804,206	0	0	1,214,815	1,214,815
82	0	27,876,374	27,876,374	0	0	1,260,891	1,260,891
83	0	28,991,429	28,991,429	0	0	1,308,778	1,308,778
84	0	30,151,086	30,151,086	0	0	1,358,550	1,358,550
85	0	31,357,130	31,357,130	0	0	1,410,280	1,410,280
86	0	32,611,415	32,611,415	0	0	1,464,046	1,464,046
87	0	33,915,872	33,915,872	0	0	1,519,929	1,519,929
88	0	35,272,506	35,272,506	0	0	1,578,013	1,578,013
89	0	36,683,407	36,683,407	0	0	1,638,385	1,638,385
90	0	38,150,743	38,150,743	0	0	1,701,136	1,701,136
91	0	39,676,773	39,676,773	0	0	1,766,361	1,766,361
92	0	41,263,844	41,263,844	0	0	1,834,158	1,834,158
93	0	42,914,397	42,914,397	0	0	1,904,628	1,904,628
94	0	44,630,973	44,630,973	0	0	1,977,879	1,977,879
95	0	46,416,212	46,416,212	0	0	2,054,020	2,054,020
96	0	48,272,861	48,272,861	0	0	2,133,167	2,133,167
97	0	50,203,775	50,203,775	0	0	2,215,438	2,215,438
98	0	52,211,926	52,211,926	0	0	2,300,959	2,300,959
99	0	54,300,403	54,300,403	0	0	2,389,857	2,389,857
100	0	56,472,419	56,472,419	0	0	2,482,268	2,482,268
101	0	58,731,316	58,731,316	0	0	2,578,330	2,578,330
102	0	61,080,569	61,080,569	0	0	2,678,190	2,678,190
103	0	63,523,791	63,523,791	0	0	2,781,998	2,781,998
104	0	66,064,743	66,064,743	0	0	2,889,911	2,889,911
105	0	68,707,333	68,707,333	0	0	3,002,093	3,002,093
106	0	71,455,626	71,455,626	0	0	3,118,713	3,118,713
107	0	74,313,851	74,313,851	0	0	3,239,947	3,239,947
108	0	77,286,405	77,286,405	0	0	3,365,980	3,365,980
109	0	80,377,861	80,377,861	0	0	3,497,002	3,497,002

**MONTANA PUBLIC EMPLOYEES' RETIREMENT SYSTEM  
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**APPENDIX B  
DEVELOPMENT OF DISCOUNT RATE**

**Table 2 - Projection of the Pension Plan's Fiduciary Net Position**

Amounts in Thousands, Projections Commence June 30, 2013, Actual Amounts Shown for Year 1

\* From Table 1 - Projection of Contributions, column (g)

Year	Projected Beginning Fiduciary Net Position (a)	Projected Total Contributions* (b)	Projected Benefit Payments (c)	Projected Administrative Expense (d)	Projected Investment Earnings (e)	Projected Ending Fiduciary Net Position (f) = (a) + (b) - (c) - (d) + (e)
1	\$ 4,299,238	\$ 222,520	\$ 307,741	\$ 3,522	\$ 732,275	\$ 4,942,770
2	4,942,770	220,063	333,516	3,265	378,626	5,204,678
3	5,204,678	219,164	357,560	3,396	397,971	5,460,856
4	5,460,856	219,239	382,090	3,532	416,889	5,711,363
5	5,711,363	219,747	406,713	3,673	435,381	5,956,105
6	5,956,105	215,539	432,799	3,820	453,191	6,188,216
7	6,188,216	182,995	460,522	3,973	468,882	6,375,598
8	6,375,598	181,457	487,995	4,132	482,295	6,547,223
9	6,547,223	180,061	515,248	4,297	494,500	6,702,239
10	6,702,239	178,826	541,536	4,469	505,461	6,840,521
11	6,840,521	177,851	566,858	4,648	515,171	6,962,036
12	6,962,036	177,195	591,099	4,834	523,634	7,066,933
13	7,066,933	176,839	613,872	5,020	530,877	7,155,758
14	7,155,758	176,826	634,825	5,191	536,958	7,229,526
15	7,229,526	177,172	653,894	5,347	541,957	7,289,413
16	7,289,413	177,908	671,823	5,494	545,939	7,335,943
17	7,335,943	178,991	688,009	5,626	548,965	7,370,263
18	7,370,263	180,345	702,373	5,743	551,126	7,393,618
19	7,393,618	181,939	714,530	5,843	552,530	7,407,715
20	7,407,715	183,796	724,770	5,927	553,301	7,414,115
21	7,414,115	185,904	732,625	5,991	553,576	7,414,979
22	7,414,979	188,307	738,320	6,037	553,516	7,412,444
23	7,412,444	190,948	741,832	6,066	553,285	7,408,779
24	7,408,779	193,853	743,260	6,078	553,057	7,406,351
25	7,406,351	196,983	742,943	6,075	553,000	7,407,316
26	7,407,316	200,310	740,694	6,057	553,288	7,414,163
27	7,414,163	203,885	736,206	6,020	554,126	7,429,949
28	7,429,949	207,784	729,881	5,968	555,740	7,457,624
29	7,457,624	211,940	721,449	5,899	558,366	7,500,581
30	7,500,581	216,382	710,706	5,812	562,276	7,562,721
31	7,562,721	221,101	697,822	5,706	567,766	7,648,060
32	7,648,060	226,193	683,082	5,586	575,138	7,760,723
33	7,760,723	231,705	666,206	5,448	584,726	7,905,500
34	7,905,500	237,677	647,651	5,296	596,885	8,087,115
35	8,087,115	244,083	627,297	5,130	611,984	8,310,755
36	8,310,755	250,980	605,660	4,953	630,408	8,581,531
37	8,581,531	258,328	582,892	4,766	652,545	8,904,745
38	8,904,745	266,154	559,335	4,574	678,795	9,285,786
39	9,285,786	274,429	535,403	4,378	709,558	9,729,992
40	9,729,992	283,153	511,103	4,179	745,247	10,243,109
41	10,243,109	292,332	486,455	3,978	786,308	10,831,315
42	10,831,315	301,979	461,843	3,777	833,204	11,500,879
43	11,500,879	312,075	437,094	3,574	886,428	12,258,714
44	12,258,714	322,641	412,535	3,373	946,504	13,111,950
45	13,111,950	333,666	388,147	3,174	1,013,984	14,068,278
46	14,068,278	345,171	364,059	2,977	1,089,460	15,135,873
47	15,135,873	357,156	340,445	2,784	1,173,560	16,323,360
48	16,323,360	369,629	317,256	2,594	1,266,953	17,640,092
49	17,640,092	382,610	294,670	2,410	1,370,360	19,095,982
50	19,095,982	396,106	272,714	2,230	1,484,546	20,701,690
51	20,701,690	410,135	251,420	2,056	1,610,338	22,468,688
52	22,468,688	424,715	230,843	1,888	1,748,624	24,409,297
53	24,409,297	439,864	210,995	1,725	1,900,358	26,536,798
54	26,536,798	455,603	191,933	1,569	2,066,569	28,865,467
55	28,865,467	471,955	173,692	1,420	2,248,362	31,410,671
56	31,410,671	488,942	156,310	1,278	2,446,927	34,188,953
57	34,188,953	506,590	139,822	1,143	2,663,547	37,218,125
58	37,218,125	524,926	124,273	1,016	2,899,602	40,517,364
59	40,517,364	543,976	109,699	897	3,156,576	44,107,320

**MONTANA PUBLIC EMPLOYEES' RETIREMENT SYSTEM  
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**APPENDIX B  
DEVELOPMENT OF DISCOUNT RATE**

**Table 2 - Projection of the Pension Plan's Fiduciary Net Position Continued**

Amounts in Thousands, Projections Commence June 30, 2013, Actual Amounts Shown for Year 1

\* From Table 1 - Projection of Contributions, column (g)

<b>Year</b>	<b>Projected Beginning Fiduciary Net Position (a)</b>	<b>Projected Total Contributions* (b)</b>	<b>Projected Benefit Payments (c)</b>	<b>Projected Administrative Expense (d)</b>	<b>Projected Investment Earnings (e)</b>	<b>Projected Ending Fiduciary Net Position (f) = (a) + (b) - (c) - (d) + (e)</b>
60	44,107,320	563,768	96,131	786	3,436,070	48,010,241
61	48,010,241	584,332	83,593	684	3,739,809	52,250,105
62	52,250,105	605,697	72,101	590	4,069,652	56,852,763
63	56,852,763	627,896	61,661	504	4,427,602	61,846,096
64	61,846,096	650,962	52,267	427	4,815,823	67,260,187
65	67,260,187	674,929	43,898	359	5,236,647	73,127,505
66	73,127,505	699,832	36,518	299	5,692,594	79,483,115
67	79,483,115	725,708	30,083	246	6,186,385	86,364,879
68	86,364,879	752,597	24,539	201	6,720,956	93,813,693
69	93,813,693	780,537	19,817	162	7,299,483	101,873,735
70	101,873,735	809,571	15,843	130	7,925,393	110,592,727
71	110,592,727	839,742	12,538	103	8,602,388	120,022,216
72	120,022,216	871,095	9,824	80	9,334,470	130,217,876
73	130,217,876	903,676	7,621	62	10,125,957	141,239,826
74	141,239,826	937,534	5,853	48	10,981,514	153,152,973
75	153,152,973	972,720	4,451	36	11,906,174	166,027,381
76	166,027,381	1,009,286	3,352	27	12,905,374	179,938,662
77	179,938,662	1,047,288	2,499	20	13,984,976	194,968,406
78	194,968,406	1,086,781	1,844	15	15,151,308	211,204,635
79	211,204,635	1,127,825	1,347	11	16,411,195	228,742,297
80	228,742,297	1,170,482	974	8	17,772,001	247,683,797
81	247,683,797	1,214,815	697	6	19,241,663	268,139,573
82	268,139,573	1,260,891	493	4	20,828,746	290,228,713
83	290,228,713	1,308,778	344	3	22,542,481	314,079,626
84	314,079,626	1,358,550	238	2	24,392,823	339,830,759
85	339,830,759	1,410,280	162	1	26,390,506	367,631,381
86	367,631,381	1,464,046	110	1	28,547,101	397,642,418
87	397,642,418	1,519,929	73	1	30,875,083	430,037,356
88	430,037,356	1,578,013	48	0	33,387,900	465,003,220
89	465,003,220	1,638,385	31	0	36,100,051	502,741,625
90	502,741,625	1,701,136	20	0	39,027,164	543,469,905
91	543,469,905	1,766,361	13	0	42,186,087	587,422,340
92	587,422,340	1,834,158	8	0	45,594,978	634,851,468
93	634,851,468	1,904,628	5	0	49,273,416	686,029,507
94	686,029,507	1,977,879	3	0	53,242,499	741,249,883
95	741,249,883	2,054,020	2	0	57,524,974	800,828,875
96	800,828,875	2,133,167	1	0	62,145,356	865,107,397
97	865,107,397	2,215,438	1	0	67,130,070	934,452,904
98	934,452,904	2,300,959	0	0	72,507,599	1,009,261,461
99	1,009,261,461	2,389,857	0	0	78,308,642	1,089,959,960
100	1,089,959,960	2,482,268	0	0	84,566,290	1,177,008,518
101	1,177,008,518	2,578,330	0	0	91,316,206	1,270,903,055
102	1,270,903,055	2,678,190	0	0	98,596,830	1,372,178,075
103	1,372,178,075	2,781,998	0	0	106,449,592	1,481,409,665
104	1,481,409,665	2,889,911	0	0	114,919,144	1,599,218,720
105	1,599,218,720	3,002,093	0	0	124,053,611	1,726,274,425
106	1,726,274,425	3,118,713	0	0	133,904,863	1,863,298,001
107	1,863,298,001	3,239,947	0	0	144,528,800	2,011,066,748
108	2,011,066,748	3,365,980	0	0	155,985,671	2,170,418,399
109	2,170,418,399	3,497,002	0	0	168,340,406	2,342,255,806

**MONTANA PUBLIC EMPLOYEES' RETIREMENT SYSTEM  
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**APPENDIX B  
 DEVELOPMENT OF DISCOUNT RATE**

**Table 3 - Actuarial Present Values of Projected Benefit Payments**

Amounts in Thousands, Projections Commence June 30, 2013, Actual Amounts Shown for Year 1

\* From Table 2 - Projection of the Pension Plan's Fiduciary Net Position, column (a)

\*\* From Table 2 - Projection of the Pension Plan's Fiduciary Net Position, column (c)

Year (a)	Projected Beginning Fiduciary Net Position * (b)	Projected Benefit Payments for current plan participants ** (c)	"Funded" Portion of Benefit Payments (d) = (c) if (b) >= (c)	"Unfunded" Portion of Benefit Payments (e) = (c) - (d)	Present Value of "Funded" Benefit Payments (f) = (d) / (1+ 7.75%)^(a)	Present Value of "Unfunded" Benefit Payments (g) = (e) /(1+4.29%)^(a)	Present Value of Benefit Payments Using the Single Discount Rate (h) = (c) / (1+
1	\$ 4,299,238	\$ 307,741	\$ 307,741	\$ 0	\$ 285,607	\$ 0	\$ 285,607
2	4,942,770	333,516	333,516	0	287,265	0	287,265
3	5,204,678	357,560	357,560	0	285,823	0	285,823
4	5,460,856	382,090	382,090	0	283,463	0	283,463
5	5,711,363	406,713	406,713	0	280,028	0	280,028
6	5,956,105	432,799	432,799	0	276,556	0	276,556
7	6,188,216	460,522	460,522	0	273,105	0	273,105
8	6,375,598	487,995	487,995	0	268,582	0	268,582
9	6,547,223	515,248	515,248	0	263,185	0	263,185
10	6,702,239	541,536	541,536	0	256,717	0	256,717
11	6,840,521	566,858	566,858	0	249,393	0	249,393
12	6,962,036	591,099	591,099	0	241,353	0	241,353
13	7,066,933	613,872	613,872	0	232,623	0	232,623
14	7,155,758	634,825	634,825	0	223,260	0	223,260
15	7,229,526	653,894	653,894	0	213,426	0	213,426
16	7,289,413	671,823	671,823	0	203,507	0	203,507
17	7,335,943	688,009	688,009	0	193,420	0	193,420
18	7,370,263	702,373	702,373	0	183,255	0	183,255
19	7,393,618	714,530	714,530	0	173,018	0	173,018
20	7,407,715	724,770	724,770	0	162,875	0	162,875
21	7,414,115	732,625	732,625	0	152,798	0	152,798
22	7,414,979	738,320	738,320	0	142,911	0	142,911
23	7,412,444	741,832	741,832	0	133,263	0	133,263
24	7,408,779	743,260	743,260	0	123,916	0	123,916
25	7,406,351	742,943	742,943	0	114,954	0	114,954
26	7,407,316	740,694	740,694	0	106,363	0	106,363
27	7,414,163	736,206	736,206	0	98,114	0	98,114
28	7,429,949	729,881	729,881	0	90,275	0	90,275
29	7,457,624	721,449	721,449	0	82,814	0	82,814
30	7,500,581	710,706	710,706	0	75,713	0	75,713
31	7,562,721	697,822	697,822	0	68,994	0	68,994
32	7,648,060	683,082	683,082	0	62,679	0	62,679
33	7,760,723	666,206	666,206	0	56,733	0	56,733
34	7,905,500	647,651	647,651	0	51,186	0	51,186
35	8,087,115	627,297	627,297	0	46,012	0	46,012
36	8,310,755	605,660	605,660	0	41,229	0	41,229
37	8,581,531	582,892	582,892	0	36,826	0	36,826
38	8,904,745	559,335	559,335	0	32,796	0	32,796
39	9,285,786	535,403	535,403	0	29,134	0	29,134
40	9,729,992	511,103	511,103	0	25,812	0	25,812
41	10,243,109	486,455	486,455	0	22,800	0	22,800
42	10,831,315	461,843	461,843	0	20,089	0	20,089
43	11,500,879	437,094	437,094	0	17,645	0	17,645
44	12,258,714	412,535	412,535	0	15,456	0	15,456
45	13,111,950	388,147	388,147	0	13,496	0	13,496
46	14,068,278	364,059	364,059	0	11,748	0	11,748
47	15,135,873	340,445	340,445	0	10,196	0	10,196
48	16,323,360	317,256	317,256	0	8,818	0	8,818
49	17,640,092	294,670	294,670	0	7,601	0	7,601
50	19,095,982	272,714	272,714	0	6,529	0	6,529
51	20,701,690	251,420	251,420	0	5,586	0	5,586
52	22,468,688	230,843	230,843	0	4,760	0	4,760
53	24,409,297	210,995	210,995	0	4,038	0	4,038
54	26,536,798	191,933	191,933	0	3,409	0	3,409
55	28,865,467	173,692	173,692	0	2,863	0	2,863
56	31,410,671	156,310	156,310	0	2,391	0	2,391
57	34,188,953	139,822	139,822	0	1,985	0	1,985
58	37,218,125	124,273	124,273	0	1,637	0	1,637
59	40,517,364	109,699	109,699	0	1,341	0	1,341

**MONTANA PUBLIC EMPLOYEES' RETIREMENT SYSTEM  
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**APPENDIX B  
DEVELOPMENT OF DISCOUNT RATE**

**Table 3 - Actuarial Present Values of Projected Benefit Payments Continued**

Amounts in Thousands, Projections Commence June 30, 2013, Actual Amounts Shown for Year 1

\* From Table 2 - Projection of the Pension Plan's Fiduciary Net Position, column (a)

\*\* From Table 2 - Projection of the Pension Plan's Fiduciary Net Position, column (c)

Year (a)	Projected Beginning Fiduciary Net Position * (b)	Projected Benefit Payments for current plan participants** (c)	"Funded" Portion of Benefit Payments (d) = (c) if (b) >= (c)	"Unfunded" Portion of Benefit Payments (e) = (c) - (d)	Present Value of "Funded" Benefit Payments (f) = (d) / (1+ 7.75%)^(a)	Present Value of "Unfunded" Benefit Payments (g) = (e) /(1+4.29%)^(a)	Present Value of Benefit Payments Using the Single Discount Rate (h) = (c)/(1+		
60	44,107,320	96,131	96,131	0	1,091	0	1,091		
61	48,010,241	83,593	83,593	0	880	0	880		
62	52,250,105	72,101	72,101	0	705	0	705		
63	56,852,763	61,661	61,661	0	559	0	559		
64	61,846,096	52,267	52,267	0	440	0	440		
65	67,260,187	43,898	43,898	0	343	0	343		
66	73,127,505	36,518	36,518	0	265	0	265		
67	79,483,115	30,083	30,083	0	202	0	202		
68	86,364,879	24,539	24,539	0	153	0	153		
69	93,813,693	19,817	19,817	0	115	0	115		
70	101,873,735	15,843	15,843	0	85	0	85		
71	110,592,727	12,538	12,538	0	63	0	63		
72	120,022,216	9,824	9,824	0	46	0	46		
73	130,217,876	7,621	7,621	0	33	0	33		
74	141,239,826	5,853	5,853	0	23	0	23		
75	153,152,973	4,451	4,451	0	16	0	16		
76	166,027,381	3,352	3,352	0	12	0	12		
77	179,938,662	2,499	2,499	0	8	0	8		
78	194,968,406	1,844	1,844	0	5	0	5		
79	211,204,635	1,347	1,347	0	4	0	4		
80	228,742,297	974	974	0	2	0	2		
81	247,683,797	697	697	0	2	0	2		
82	268,139,573	493	493	0	1	0	1		
83	290,228,713	344	344	0	1	0	1		
84	314,079,626	238	238	0	0	0	0		
85	339,830,759	162	162	0	0	0	0		
86	367,631,381	110	110	0	0	0	0		
87	397,642,418	73	73	0	0	0	0		
88	430,037,356	48	48	0	0	0	0		
89	465,003,220	31	31	0	0	0	0		
90	502,741,625	20	20	0	0	0	0		
91	543,469,905	13	13	0	0	0	0		
92	587,422,340	8	8	0	0	0	0		
93	634,851,468	5	5	0	0	0	0		
94	686,029,507	3	3	0	0	0	0		
95	741,249,883	2	2	0	0	0	0		
96	800,828,875	1	1	0	0	0	0		
97	865,107,397	1	1	0	0	0	0		
98	934,452,904	0	0	0	0	0	0		
99	1,009,261,461	0	0	0	0	0	0		
100	1,089,959,960	0	0	0	0	0	0		
101	1,177,008,518	0	0	0	0	0	0		
102	1,270,903,055	0	0	0	0	0	0		
103	1,372,178,075	0	0	0	0	0	0		
104	1,481,409,665	0	0	0	0	0	0		
105	1,599,218,720	0	0	0	0	0	0		
106	1,726,274,425	0	0	0	0	0	0		
107	1,863,298,001	0	0	0	0	0	0		
108	2,011,066,748	0	0	0	0	0	0		
109	2,170,418,399	0	0	0	0	0	0		
					\$ 6,576,432	+	\$ 0	=	\$ 6,576,432