

**Montana Municipal Police Officers'  
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 MUNICIPAL POLICE OFFICERS' 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 Montana Municipal Police Officers' 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 Municipal Police Officers' Retirement System (MPORS) 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 a 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.

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>6/30/14</b>	<b>6/30/2013</b>
Total Pension Liability	\$ 476,322,263	\$ 450,043,289
Plan Fiduciary Net Position	<u>319,186,360</u>	<u>271,009,167</u>
Net Pension Liability	<u>\$ 157,135,903</u>	<u>\$ 179,034,122</u>
Discount Rate	7.75%	7.75%

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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 Municipal Police Officers' Retirement System (MPORS). This report is for the use of MPORS, 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 MPORS.

In preparing our report, we relied on information (some oral and some written) supplied by MPORS. 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 MPORS, 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 0.20% 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.

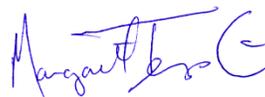
To the best of our knowledge, this report and its contents have been prepared in accordance with generally recognized and accepted actuarial principles and practices that are consistent with the Code of Professional Conduct and applicable Actuarial Standards of Practice set out by the Actuarial Standards 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 MPORS 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 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 of 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>				
<b>Actives</b>	\$ 208,108,029	\$ 174,563,874	\$ 148,086,146	
<b>Deferred Vested</b>	9,502,656	7,939,399	6,732,302	
<b>Retirees</b>	<u>297,820,164</u>	<u>267,540,016</u>	<u>242,328,126</u>	
<b>Total</b>	\$ 515,430,849	\$ 450,043,289	\$ 397,146,574	
<b>Service Cost, Beginning of Year</b>				
<b>Service Cost Rate</b>	34.94%	26.29%	21.97%	
<b>Expected Payroll During Year</b>	44,864,945	44,864,945	44,864,945	
<b>Service Cost</b>	\$ 15,675,812	\$ 11,794,994	\$ 9,856,828	
<b>Benefit Payments</b>	\$ 20,527,874	\$ 20,527,874	\$ 20,527,874	
<b>Interest</b>	\$ 35,168,196	\$ 35,011,854	\$ 34,733,534	
<b>Change in Benefits</b>	0	0	0	
<b>Change in Assumptions</b>	0	0	0	
<b>Other Significant Events</b>	0	0	0	
<b>Total Pension Liability, 6/30/2014</b>	\$ 545,746,983	\$ 476,322,263	\$ 421,209,062	

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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 (a)</b>	<b>Plan Fiduciary Net Position (b)</b>	<b>Net Pension Liability (a) - (b)</b>
<b>Balances at 6/30/2013</b>	\$ 450,043,289	\$ 271,009,167	\$ 179,034,122
<b>Changes for the year:</b>			
Service cost	11,794,994		11,794,994
Interest	35,011,854		35,011,854
Changes of benefits	0		0
Changes of assumptions	0		0
Differences between expected and actual experience	(0)		(0)
Contributions - employer		6,459,488	(6,459,488)
Contributions - non-employer		13,048,938	(13,048,938)
Contributions - member		4,133,021	(4,133,021)
Net investment income		45,230,427	(45,230,427)
Benefit payments	(20,527,874)	(20,527,874)	0
Administrative expense		(166,807)	166,807
<b>Net changes</b>	<u>26,278,974</u>	<u>48,177,193</u>	<u>(21,898,219)</u>
<b>Balances at 6/30/2014</b>	<u>\$ 476,322,263</u>	<u>\$ 319,186,360</u>	<u>\$ 157,135,903</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 \$21,898,219. The NPL remaining as of June 30, 2014, is \$157,135,903.

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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>1% Decrease 6.75%</b>	<b>Discount Rate 7.75%</b>	<b>1% Increase 8.75%</b>
Total Pension Liability	\$ 545,746,983	\$ 476,322,263	\$ 421,209,062
Plan Fiduciary Net Position	<u>319,186,360</u>	<u>319,186,360</u>	<u>319,186,360</u>
Net Pension Liability	<u>\$ 226,560,623</u>	<u>\$ 157,135,903</u>	<u>\$ 102,022,702</u>
Plan Fiduciary Net Position as a Percentage of the Total Pension Liability	58.5%	67.0%	75.8%

A one percent decrease in the discount rate increases the TPL by approximately 14.6% and increases the NPL by approximately 44.2%. A one percent increase in the discount rate decreases the TPL by approximately 11.6% and decreases the NPL by approximately 35.1%.

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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)	\$ 11,794,994
Interest (includes interest on service cost)	35,011,854
Changes of benefit terms	0
Differences between expected and actual experience	(0)
Changes of assumptions	0
Benefit payments, including refunds of member contributions	(20,527,874)
<b>Net change in total pension liability</b>	<b><u>26,278,974</u></b>
<b>Total pension liability - beginning</b>	<b><u>450,043,289</u></b>
<b>Total pension liability - ending</b>	<b><u>\$ 476,322,263</u></b>
<b><u>Plan fiduciary net position</u></b>	
Contributions - employer	\$ 6,459,488
Contributions - non-employer	13,048,938
Contributions - member	4,133,021
Net investment income	45,230,427
Benefit payments, including refunds of member contributions	(20,527,874)
Administrative expense	(166,807)
<b>Net change in plan fiduciary net position</b>	<b><u>\$ 48,177,193</u></b>
<b>Plan fiduciary net position - beginning</b>	<b><u>271,009,167</u></b>
<b>Plan fiduciary net position - ending</b>	<b><u>\$ 319,186,360</u></b>
<b>Net pension liability - ending</b>	<b><u>\$ 157,135,903</u></b>
Plan fiduciary net position as a percentage of the total pension liability	67.01%
Covered employee payroll	\$ 44,426,617
Net pension liability as a percentage of covered employee payroll	353.70%

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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	\$ 17,922
Contributions in Relation to the Actuarially Determined Contribution	
Employer Contributions	\$ 6,459
Non-Employer Contributions	<u>13,049</u>
Total Contributions	<u>\$ 19,508</u>
<b>Contribution Deficiency/(Excess)</b>	<b><u>\$ (1,586)</u></b>
Covered-Employee Payroll	\$ 44,427
Contributions as a Percentage of Covered-Employee Payroll	43.91%

**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**

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**

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.

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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	\$ 44,865	\$ 0	\$ 44,865	\$ 4,125	\$ 19,517	\$ 0	\$ 23,641
2	42,593	4,067	46,660	3,833	18,647	1,077	23,558
3	41,108	7,418	48,526	3,700	17,997	1,965	23,662
4	39,240	11,227	50,467	3,532	17,179	2,974	23,685
5	37,611	14,875	52,486	3,385	16,466	3,940	23,791
6	36,028	18,557	54,585	3,243	15,773	4,916	23,931
7	34,288	22,480	56,768	3,086	15,011	5,955	24,052
8	32,981	26,058	59,039	2,968	14,439	6,903	24,310
9	31,806	29,594	61,401	2,863	13,925	7,840	24,627
10	30,512	33,345	63,857	2,746	13,358	8,833	24,937
11	29,078	37,333	66,411	2,617	12,730	9,890	25,237
12	27,650	41,417	69,068	2,489	12,105	10,971	25,565
13	26,388	45,442	71,830	2,375	11,553	12,038	25,965
14	25,194	49,510	74,703	2,267	11,030	13,115	26,412
15	23,585	54,106	77,692	2,123	10,326	14,333	26,781
16	21,513	59,286	80,799	1,936	9,419	15,705	27,060
17	19,286	64,746	84,031	1,736	8,443	17,151	27,330
18	16,555	70,838	87,392	1,490	7,248	18,765	27,503
19	13,613	77,275	90,888	1,225	5,960	20,470	27,655
20	11,165	83,358	94,524	1,005	4,888	22,082	27,975
21	8,644	89,661	98,305	778	3,784	23,751	28,313
22	6,238	95,999	102,237	561	2,731	25,430	28,723
23	4,647	101,679	106,326	418	2,034	26,935	29,387
24	3,490	107,090	110,579	314	1,528	28,368	30,210
25	2,632	112,370	115,003	237	1,152	29,767	31,156
26	2,080	117,523	119,603	187	910	31,132	32,229
27	1,664	122,722	124,387	150	729	32,509	33,388
28	1,362	128,000	129,362	123	596	33,907	34,626
29	1,090	133,446	134,537	98	477	35,350	35,925
30	864	139,054	139,918	78	378	36,835	37,291
31	677	144,838	145,515	61	296	38,368	38,725
32	513	150,823	151,335	46	224	39,953	40,224
33	376	157,012	157,389	34	165	41,593	41,791
34	253	163,431	163,684	23	111	43,293	43,426
35	178	170,054	170,232	16	78	45,047	45,141
36	111	176,930	177,041	10	49	46,869	46,927
37	69	184,054	184,123	6	30	48,756	48,792
38	39	191,449	191,488	3	17	50,715	50,735
39	15	199,132	199,147	1	7	52,750	52,758
40	4	207,109	207,113	0	2	54,863	54,865
41	1	215,397	215,398	0	0	57,059	57,059
42	0	224,013	224,013	0	0	59,341	59,341
43	0	232,974	232,974	0	0	61,715	61,715
44	0	242,293	242,293	0	0	64,183	64,183
45	0	251,985	251,985	0	0	66,751	66,751
46	0	262,064	262,064	0	0	69,421	69,421
47	0	272,547	272,547	0	0	72,198	72,198
48	0	283,448	283,448	0	0	75,085	75,085
49	0	294,786	294,786	0	0	78,089	78,089
50	0	306,578	306,578	0	0	81,212	81,212
51	0	318,841	318,841	0	0	84,461	84,461
52	0	331,595	331,595	0	0	87,839	87,839
53	0	344,858	344,858	0	0	91,353	91,353
54	0	358,653	358,653	0	0	95,007	95,007
55	0	372,999	372,999	0	0	98,807	98,807
56	0	387,919	387,919	0	0	102,760	102,760
57	0	403,436	403,436	0	0	106,870	106,870
58	0	419,573	419,573	0	0	111,145	111,145
59	0	436,356	436,356	0	0	115,591	115,591

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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	453,810	453,810	0	0	120,214	120,214
61	0	471,963	471,963	0	0	125,023	125,023
62	0	490,841	490,841	0	0	130,024	130,024
63	0	510,475	510,475	0	0	135,225	135,225
64	0	530,894	530,894	0	0	140,634	140,634
65	0	552,129	552,129	0	0	146,259	146,259
66	0	574,215	574,215	0	0	152,109	152,109
67	0	597,183	597,183	0	0	158,194	158,194
68	0	621,070	621,070	0	0	164,522	164,522
69	0	645,913	645,913	0	0	171,102	171,102
70	0	671,750	671,750	0	0	177,947	177,947
71	0	698,620	698,620	0	0	185,064	185,064
72	0	726,565	726,565	0	0	192,467	192,467
73	0	755,627	755,627	0	0	200,166	200,166
74	0	785,852	785,852	0	0	208,172	208,172
75	0	817,286	817,286	0	0	216,499	216,499
76	0	849,978	849,978	0	0	225,159	225,159
77	0	883,977	883,977	0	0	234,165	234,165
78	0	919,336	919,336	0	0	243,532	243,532
79	0	956,109	956,109	0	0	253,273	253,273
80	0	994,354	994,354	0	0	263,404	263,404
81	0	1,034,128	1,034,128	0	0	273,940	273,940
82	0	1,075,493	1,075,493	0	0	284,898	284,898
83	0	1,118,513	1,118,513	0	0	296,294	296,294
84	0	1,163,253	1,163,253	0	0	308,146	308,146
85	0	1,209,783	1,209,783	0	0	320,472	320,472
86	0	1,258,175	1,258,175	0	0	333,291	333,291
87	0	1,308,502	1,308,502	0	0	346,622	346,622
88	0	1,360,842	1,360,842	0	0	360,487	360,487
89	0	1,415,276	1,415,276	0	0	374,906	374,906
90	0	1,471,887	1,471,887	0	0	389,903	389,903
91	0	1,530,762	1,530,762	0	0	405,499	405,499
92	0	1,591,992	1,591,992	0	0	421,719	421,719
93	0	1,655,672	1,655,672	0	0	438,588	438,588
94	0	1,721,899	1,721,899	0	0	456,131	456,131
95	0	1,790,775	1,790,775	0	0	474,376	474,376
96	0	1,862,406	1,862,406	0	0	493,351	493,351
97	0	1,936,902	1,936,902	0	0	513,085	513,085
98	0	2,014,378	2,014,378	0	0	533,609	533,609
99	0	2,094,954	2,094,954	0	0	554,953	554,953
100	0	2,178,752	2,178,752	0	0	577,151	577,151
101	0	2,265,902	2,265,902	0	0	600,237	600,237
102	0	2,356,538	2,356,538	0	0	624,247	624,247
103	0	2,450,799	2,450,799	0	0	649,217	649,217
104	0	2,548,831	2,548,831	0	0	675,185	675,185
105	0	2,650,785	2,650,785	0	0	702,193	702,193
106	0	2,756,816	2,756,816	0	0	730,281	730,281
107	0	2,867,089	2,867,089	0	0	759,492	759,492
108	0	2,981,772	2,981,772	0	0	789,871	789,871
109	0	3,101,043	3,101,043	0	0	821,466	821,466

**MONTANA MUNICIPAL POLICE OFFICERS' RETIREMENT SYSTEM  
GASB 67 REPORTING FOR JUNE 30, 2014 MEASUREMENT DATE**

**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	\$ 271,009	\$ 23,641	\$ 20,528	\$ 167	\$ 45,230	\$ 319,186
2	319,186	23,558	21,971	93	24,794	345,474
3	345,474	23,662	23,047	97	26,794	372,786
4	372,786	23,685	24,144	101	28,870	401,096
5	401,096	23,791	25,210	105	31,027	430,599
6	430,599	23,931	26,801	109	33,182	458,802
7	458,802	24,052	30,986	114	35,289	487,044
8	487,044	24,310	32,374	118	37,435	516,297
9	516,297	24,627	34,142	123	39,647	546,306
10	546,306	24,937	35,823	128	41,920	577,212
11	577,212	25,237	38,064	133	44,241	608,494
12	608,494	25,565	40,187	138	46,597	640,331
13	640,331	25,965	41,878	144	49,015	673,290
14	673,290	26,412	44,193	149	51,498	706,858
15	706,858	26,781	46,274	155	54,034	741,244
16	741,244	27,060	48,490	162	56,625	776,277
17	776,277	27,330	50,784	168	59,263	811,919
18	811,919	27,503	52,800	175	61,955	848,401
19	848,401	27,655	55,610	182	64,681	884,946
20	884,946	27,975	58,778	189	67,405	921,359
21	921,359	28,313	62,070	197	70,114	957,520
22	957,520	28,723	64,821	204	72,827	994,044
23	994,044	29,387	67,129	212	75,595	1,031,687
24	1,031,687	30,210	68,688	217	78,484	1,071,476
25	1,071,476	31,156	70,552	222	81,533	1,113,390
26	1,113,390	32,229	71,662	226	84,780	1,158,511
27	1,158,511	33,388	71,643	226	88,321	1,208,351
28	1,208,351	34,626	71,717	226	92,228	1,263,261
29	1,263,261	35,925	71,851	227	96,528	1,323,637
30	1,323,637	37,291	72,152	228	101,248	1,389,797
31	1,389,797	38,725	72,265	228	106,425	1,462,454
32	1,462,454	40,224	72,495	229	112,104	1,542,058
33	1,542,058	41,791	72,813	230	118,321	1,629,128
34	1,629,128	43,426	73,015	230	125,124	1,724,433
35	1,724,433	45,141	73,131	231	132,570	1,828,783
36	1,828,783	46,927	73,139	231	140,725	1,943,065
37	1,943,065	48,792	73,039	230	149,657	2,068,245
38	2,068,245	50,735	72,825	230	159,440	2,205,366
39	2,205,366	52,758	72,478	229	170,157	2,355,575
40	2,355,575	54,865	71,991	227	181,897	2,520,120
41	2,520,120	57,059	71,356	225	194,757	2,700,355
42	2,700,355	59,341	70,566	223	208,842	2,897,750
43	2,897,750	61,715	69,610	220	224,267	3,113,903
44	3,113,903	64,183	68,481	216	241,156	3,350,545
45	3,350,545	66,751	67,172	212	259,643	3,609,555
46	3,609,555	69,421	65,682	207	279,875	3,892,961
47	3,892,961	72,198	64,014	202	302,008	4,202,951
48	4,202,951	75,085	62,172	196	326,212	4,541,881
49	4,541,881	78,089	60,164	190	352,670	4,912,286
50	4,912,286	81,212	58,006	183	381,578	5,316,887
51	5,316,887	84,461	55,710	176	413,145	5,758,608
52	5,758,608	87,839	53,296	168	447,599	6,240,583
53	6,240,583	91,353	50,779	160	485,182	6,766,179
54	6,766,179	95,007	48,177	152	526,154	7,339,011
55	7,339,011	98,807	45,506	144	570,795	7,962,964
56	7,962,964	102,760	42,780	135	619,405	8,642,214
57	8,642,214	106,870	40,014	126	672,309	9,381,254
58	9,381,254	111,145	37,219	117	729,854	10,184,916
59	10,184,916	115,591	34,409	109	792,414	11,058,403



**MONTANA MUNICIPAL POLICE OFFICERS' 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	11,058,403	120,214	31,597	100	860,392	12,007,313
61	12,007,313	125,023	28,802	91	934,222	13,037,665
62	13,037,665	130,024	26,043	82	1,014,370	14,155,933
63	14,155,933	135,225	23,343	74	1,101,337	15,369,078
64	15,369,078	140,634	20,727	65	1,195,661	16,684,581
65	16,684,581	146,259	18,222	57	1,297,922	18,110,482
66	18,110,482	152,109	15,852	50	1,408,742	19,655,431
67	19,655,431	158,194	13,643	43	1,528,791	21,328,730
68	21,328,730	164,522	11,612	37	1,658,790	23,140,393
69	23,140,393	171,102	9,775	31	1,799,514	25,101,204
70	25,101,204	177,947	8,137	26	1,951,800	27,222,787
71	27,222,787	185,064	6,700	21	2,116,548	29,517,678
72	29,517,678	192,467	5,458	17	2,294,731	31,999,401
73	31,999,401	200,166	4,399	14	2,487,397	34,682,550
74	34,682,550	208,172	3,510	11	2,695,680	37,582,881
75	37,582,881	216,499	2,773	9	2,920,800	40,717,398
76	40,717,398	225,159	2,167	7	3,164,078	44,104,461
77	44,104,461	234,165	1,677	5	3,426,936	47,763,881
78	47,763,881	243,532	1,284	4	3,710,913	51,717,037
79	51,717,037	253,273	973	3	4,017,664	55,986,999
80	55,986,999	263,404	729	2	4,348,981	60,598,653
81	60,598,653	273,940	539	2	4,706,792	65,578,845
82	65,578,845	284,898	394	1	5,093,179	70,956,527
83	70,956,527	296,294	284	1	5,510,387	76,762,924
84	76,762,924	308,146	202	1	5,960,837	83,031,704
85	83,031,704	320,472	141	0	6,447,138	89,799,173
86	89,799,173	333,291	97	0	6,972,106	97,104,472
87	97,104,472	346,622	66	0	7,538,775	104,989,802
88	104,989,802	360,487	44	0	8,150,416	113,500,661
89	113,500,661	374,906	29	0	8,810,557	122,686,095
90	122,686,095	389,903	19	0	9,522,998	132,598,977
91	132,598,977	405,499	12	0	10,291,840	143,296,303
92	143,296,303	421,719	8	0	11,121,500	154,839,514
93	154,839,514	438,588	5	0	12,016,740	167,294,837
94	167,294,837	456,131	3	0	12,982,695	180,733,660
95	180,733,660	474,376	2	0	14,024,898	195,232,933
96	195,232,933	493,351	1	0	15,149,313	210,875,596
97	210,875,596	513,085	1	0	16,362,370	227,751,050
98	227,751,050	533,609	0	0	17,670,998	245,955,657
99	245,955,657	554,953	0	0	19,082,667	265,593,276
100	265,593,276	577,151	0	0	20,605,426	286,775,854
101	286,775,854	600,237	0	0	22,247,954	309,624,045
102	309,624,045	624,247	0	0	24,019,602	334,267,894
103	334,267,894	649,217	0	0	25,930,450	360,847,560
104	360,847,560	675,185	0	0	27,991,361	389,514,106
105	389,514,106	702,193	0	0	30,214,046	420,430,345
106	420,430,345	730,281	0	0	32,611,122	453,771,747
107	453,771,747	759,492	0	0	35,196,192	489,727,431
108	489,727,431	789,871	0	0	37,983,912	528,501,214
109	528,501,214	821,466	0	0	40,990,082	570,312,763

**MONTANA MUNICIPAL POLICE OFFICERS' 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	\$ 271,009	\$ 20,528	\$ 20,528	\$ 0	\$ 19,051	\$ 0	\$ 19,051
2	319,186	21,971	21,971	0	18,924	0	18,924
3	345,474	23,047	23,047	0	18,423	0	18,423
4	372,786	24,144	24,144	0	17,912	0	17,912
5	401,096	25,210	25,210	0	17,358	0	17,358
6	430,599	28,801	28,801	0	18,404	0	18,404
7	458,802	30,986	30,986	0	18,376	0	18,376
8	487,044	32,374	32,374	0	17,818	0	17,818
9	516,297	34,142	34,142	0	17,440	0	17,440
10	546,306	35,823	35,823	0	16,982	0	16,982
11	577,212	38,064	38,064	0	16,746	0	16,746
12	608,494	40,187	40,187	0	16,409	0	16,409
13	640,331	41,878	41,878	0	15,869	0	15,869
14	673,290	44,193	44,193	0	15,542	0	15,542
15	706,858	46,274	46,274	0	15,104	0	15,104
16	741,244	48,490	48,490	0	14,688	0	14,688
17	776,277	50,784	50,784	0	14,277	0	14,277
18	811,919	52,800	52,800	0	13,776	0	13,776
19	848,401	55,610	55,610	0	13,466	0	13,466
20	884,946	58,778	58,778	0	13,209	0	13,209
21	921,359	62,070	62,070	0	12,945	0	12,945
22	957,520	64,821	64,821	0	12,547	0	12,547
23	994,044	67,129	67,129	0	12,059	0	12,059
24	1,031,687	68,688	68,688	0	11,452	0	11,452
25	1,071,476	70,552	70,552	0	10,916	0	10,916
26	1,113,390	71,662	71,662	0	10,291	0	10,291
27	1,158,511	71,643	71,643	0	9,548	0	9,548
28	1,208,351	71,717	71,717	0	8,870	0	8,870
29	1,263,261	71,851	71,851	0	8,248	0	8,248
30	1,323,637	72,152	72,152	0	7,686	0	7,686
31	1,389,797	72,265	72,265	0	7,145	0	7,145
32	1,462,454	72,495	72,495	0	6,652	0	6,652
33	1,542,058	72,813	72,813	0	6,201	0	6,201
34	1,629,128	73,015	73,015	0	5,771	0	5,771
35	1,724,433	73,131	73,131	0	5,364	0	5,364
36	1,828,783	73,139	73,139	0	4,979	0	4,979
37	1,943,065	73,039	73,039	0	4,614	0	4,614
38	2,068,245	72,825	72,825	0	4,270	0	4,270
39	2,205,366	72,478	72,478	0	3,944	0	3,944
40	2,355,575	71,991	71,991	0	3,636	0	3,636
41	2,520,120	71,356	71,356	0	3,344	0	3,344
42	2,700,355	70,566	70,566	0	3,070	0	3,070
43	2,897,750	69,610	69,610	0	2,810	0	2,810
44	3,113,903	68,481	68,481	0	2,566	0	2,566
45	3,350,545	67,172	67,172	0	2,336	0	2,336
46	3,609,555	65,682	65,682	0	2,120	0	2,120
47	3,892,961	64,014	64,014	0	1,917	0	1,917
48	4,202,951	62,172	62,172	0	1,728	0	1,728
49	4,541,881	60,164	60,164	0	1,552	0	1,552
50	4,912,286	58,006	58,006	0	1,389	0	1,389
51	5,316,887	55,710	55,710	0	1,238	0	1,238
52	5,758,608	53,296	53,296	0	1,099	0	1,099
53	6,240,583	50,779	50,779	0	972	0	972
54	6,766,179	48,177	48,177	0	856	0	856
55	7,339,011	45,506	45,506	0	750	0	750
56	7,962,964	42,780	42,780	0	654	0	654
57	8,642,214	40,014	40,014	0	568	0	568
58	9,381,254	37,219	37,219	0	490	0	490
59	10,184,916	34,409	34,409	0	421	0	421

**MONTANA MUNICIPAL POLICE OFFICERS' 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	11,058,403	31,597	31,597	0	359	0	359
61	12,007,313	28,802	28,802	0	303	0	303
62	13,037,665	26,043	26,043	0	255	0	255
63	14,155,933	23,343	23,343	0	212	0	212
64	15,369,078	20,727	20,727	0	175	0	175
65	16,684,581	18,222	18,222	0	142	0	142
66	18,110,482	15,852	15,852	0	115	0	115
67	19,655,431	13,643	13,643	0	92	0	92
68	21,328,730	11,612	11,612	0	73	0	73
69	23,140,393	9,775	9,775	0	57	0	57
70	25,101,204	8,137	8,137	0	44	0	44
71	27,222,787	6,700	6,700	0	33	0	33
72	29,517,678	5,458	5,458	0	25	0	25
73	31,999,401	4,399	4,399	0	19	0	19
74	34,682,550	3,510	3,510	0	14	0	14
75	37,582,881	2,773	2,773	0	10	0	10
76	40,717,398	2,167	2,167	0	7	0	7
77	44,104,461	1,677	1,677	0	5	0	5
78	47,763,881	1,284	1,284	0	4	0	4
79	51,717,037	973	973	0	3	0	3
80	55,986,999	729	729	0	2	0	2
81	60,598,653	539	539	0	1	0	1
82	65,578,845	394	394	0	1	0	1
83	70,956,527	284	284	0	1	0	1
84	76,762,924	202	202	0	0	0	0
85	83,031,704	141	141	0	0	0	0
86	89,799,173	97	97	0	0	0	0
87	97,104,472	66	66	0	0	0	0
88	104,989,802	44	44	0	0	0	0
89	113,500,661	29	29	0	0	0	0
90	122,686,095	19	19	0	0	0	0
91	132,598,977	12	12	0	0	0	0
92	143,296,303	8	8	0	0	0	0
93	154,839,514	5	5	0	0	0	0
94	167,294,837	3	3	0	0	0	0
95	180,733,660	2	2	0	0	0	0
96	195,232,933	1	1	0	0	0	0
97	210,875,596	1	1	0	0	0	0
98	227,751,050	0	0	0	0	0	0
99	245,955,657	0	0	0	0	0	0
100	265,593,276	0	0	0	0	0	0
101	286,775,854	0	0	0	0	0	0
102	309,624,045	0	0	0	0	0	0
103	334,267,894	0	0	0	0	0	0
104	360,847,560	0	0	0	0	0	0
105	389,514,106	0	0	0	0	0	0
106	420,430,345	0	0	0	0	0	0
107	453,771,747	0	0	0	0	0	0
108	489,727,431	0	0	0	0	0	0
109	528,501,214	0	0	0	0	0	0
					\$ 518,741	+ \$ 0	= \$ 518,741

**MONTANA MUNICIPAL POLICE OFFICERS' 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	Projected Beginning Fiduciary Net Position *	Projected Benefit Payments for current plan participants **	"Funded" Portion of Benefit Payments (d) = (c) if (c) >= (a)	"Unfunded" Portion of Benefit Payments (e) = (c) - (d)	Present Value of "Funded" Benefit Payments (f) = (d) / (1 + 7.75%) <sup>(a)</sup>	Present Value of "Unfunded" Benefit Payments (g) = (e) / (1 + 4.29%) <sup>(a)</sup>	Present Value of Benefit Payments Using the Single Discount Rate (h) = (c) / (1 + 7.75%) <sup>(a)</sup>
(a)	(b)	(c)	(d) = (c) if (c) >= (a)	(e) = (c) - (d)	(f) = (d) / (1 + 7.75%) <sup>(a)</sup>	(g) = (e) / (1 + 4.29%) <sup>(a)</sup>	(h) = (c) / (1 + 7.75%) <sup>(a)</sup>
60	11,058,403	31,597	31,597	0	359	0	359
61	12,007,313	28,802	28,802	0	303	0	303
62	13,037,665	26,043	26,043	0	255	0	255
63	14,155,933	23,343	23,343	0	212	0	212
64	15,369,078	20,727	20,727	0	175	0	175
65	16,684,581	18,222	18,222	0	142	0	142
66	18,110,482	15,852	15,852	0	115	0	115
67	19,655,431	13,643	13,643	0	92	0	92
68	21,328,730	11,612	11,612	0	73	0	73
69	23,140,393	9,775	9,775	0	57	0	57
70	25,101,204	8,137	8,137	0	44	0	44
71	27,222,787	6,700	6,700	0	33	0	33
72	29,517,678	5,458	5,458	0	25	0	25
73	31,999,401	4,399	4,399	0	19	0	19
74	34,682,550	3,510	3,510	0	14	0	14
75	37,582,881	2,773	2,773	0	10	0	10
76	40,717,398	2,167	2,167	0	7	0	7
77	44,104,461	1,677	1,677	0	5	0	5
78	47,763,881	1,284	1,284	0	4	0	4
79	51,717,037	973	973	0	3	0	3
80	55,986,999	729	729	0	2	0	2
81	60,598,653	539	539	0	1	0	1
82	65,578,845	394	394	0	1	0	1
83	70,956,527	284	284	0	1	0	1
84	76,762,924	202	202	0	0	0	0
85	83,031,704	141	141	0	0	0	0
86	89,799,173	97	97	0	0	0	0
87	97,104,472	66	66	0	0	0	0
88	104,989,802	44	44	0	0	0	0
89	113,500,661	29	29	0	0	0	0
90	122,686,095	19	19	0	0	0	0
91	132,598,977	12	12	0	0	0	0
92	143,296,303	8	8	0	0	0	0
93	154,839,514	5	5	0	0	0	0
94	167,294,837	3	3	0	0	0	0
95	180,733,660	2	2	0	0	0	0
96	195,232,933	1	1	0	0	0	0
97	210,875,596	1	1	0	0	0	0
98	227,751,050	0	0	0	0	0	0
99	245,955,657	0	0	0	0	0	0
100	265,593,276	0	0	0	0	0	0
101	286,775,854	0	0	0	0	0	0
102	309,624,045	0	0	0	0	0	0
103	334,267,894	0	0	0	0	0	0
104	360,847,560	0	0	0	0	0	0
105	389,514,106	0	0	0	0	0	0
106	420,430,345	0	0	0	0	0	0
107	453,771,747	0	0	0	0	0	0
108	489,727,431	0	0	0	0	0	0
109	528,501,214	0	0	0	0	0	0
					\$ 518,741	+ \$ 0	= \$ 518,741