



**Montana Municipal Police Officers'
Retirement System
of the
State of Montana**

**Actuarial Valuation
as of June 30, 2010**

Produced by **Cheiron**

October 2010

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October 5, 2010

Public Employees' Retirement Board
100 North Park, Suite 200
Helena, Montana 59620

Dear Members of the Board:

At your request, we have conducted the annual actuarial valuation of the Montana Municipal Police Officers' Retirement System as of June 30, 2010. The results of the valuation are contained in this report. The purpose of the valuation is discussed in the Foreword.

This report contains information on System assets, as well as analyses which combine asset and liability performance and projections. The report also discloses employer contribution levels, and required disclosures under the Governmental Accounting Standards Board Statement No. 25.

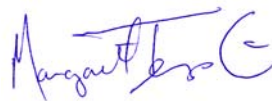
Your attention is called to the Foreword in which we refer to the general approach employed in the preparation of this report. We also comment on the sources and reliability of both the data and the actuarial assumptions on which our findings are based. Those comments are the basis for our certification that this report is complete and accurate to the best of our knowledge and belief. The results of this report are only applicable for Fiscal Year ending 2010 and rely on future System experience conforming to the underlying assumptions. To the extent that actual System experience deviates from the underlying assumptions, the results would vary accordingly.

We hereby certify that, to the best of our knowledge, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices which are consistent with the Code of Professional Conduct and applicable Actuarial Standards of Practice set out by the Actuarial Standards Board, and that as Members of the American Academy of Actuaries, we meet the Qualification Standards to render the opinions contained herein.

Sincerely,
Cheiron



Stephen T. McElhaney, FSA
Consulting Actuary



Margaret Tempkin, FSA
Consulting Actuary



MONTANA MUNICIPAL POLICE OFFICERS' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2010

FOREWORD

Cheiron has performed the actuarial valuation of the Montana Municipal Police Officers' Retirement System as of June 30, 2010. The purpose of this report is to:

- 1) **Measure and disclose**, as of the valuation date, the financial condition of the System;
- 2) **Indicate trends** in the financial progress of the System;
- 3) **Determine the sufficiency of the statutory contribution rate** paid by the employers for Fiscal Year 2010; and
- 4) **Provide specific information** and documentation required by the Governmental Accounting Standards Board (GASB).

An actuarial valuation establishes and analyzes System assets and liabilities on a consistent basis, and traces the progress of both from one year to the next. It includes measurement of the System's investment performance as well as an analysis of actuarial liability gains and losses.

Section I presents a summary containing our findings and disclosing important trends experienced by the System in recent years.

Section II contains details on various asset measures, together with pertinent performance measurements.

Section III shows similar information on System liabilities, measured for actuarial, accounting, and government reporting purposes.

Section IV develops the employer contribution rate determined using actuarial techniques.

Section V includes the required disclosures under GASB Statement number 25.

The appendices to this report contain a summary of the System's membership at the valuation date, a summary of the major provisions of the System, and the actuarial methods and assumptions used in the valuations.

In preparing our report, we relied without audit, on information (some oral and some written) supplied by the staff of the Public Employee Retirement Administration. This information includes, but is not limited to, plan provisions, employee data, and financial information.

The actuarial assumptions reflect our understanding of the likely future experience of the System and the assumptions as a whole represent our best estimate for the future experience of the System. The results of this report are dependent upon future experience conforming to these assumptions. To the extent that future experience deviates from the actuarial assumptions, the true cost of the System could vary from our results.

Finally, in preparing this report, we have conformed to generally accepted actuarial principles and practices which are consistent with the Code of Professional Conduct, and applicable Actuarial Standards of Practice set out by the Actuarial Standards Board.

**MONTANA MUNICIPAL POLICE OFFICERS' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2010**

**SECTION I
BOARD SUMMARY**

General Comments

This is the second valuation of the Montana Municipal Police Officers' Retirement System performed by Cheiron. All results shown for valuations prior to June 30, 2009 were derived from reports prepared by the prior actuary.

The period to amortize unfunded actuarial accrued liability increased from 22.1 years at the June 30, 2009 valuation to 23.0 years as of June 30, 2010. During the year ended June 30, 2010, the System's assets gained 12.02% on a market value basis. However, due to the System's asset-smoothing technique which recognizes only a portion of the gains and losses, the return on the actuarial asset value was a negative 0.96%. This return was below the assumed rate of return of 8.00% and resulted in an actuarial loss on investments of \$19.4 million.

The System also experienced an actuarial loss on System liabilities resulting from salary increases different than assumed and members retiring, terminating, becoming disabled and dying at rates different from the actuarial assumptions. The loss related to experience added \$4.6 million to the actuarial liability. This type of activity is normal in the course of System experience. The System will experience actuarial gains and losses over time because we cannot predict exactly how people will behave. When a plan experiences alternating gains and losses that are small compared to the total actuarial liability, then the plan's actuarial assumptions are reasonable. In addition to the experience loss there was also a loss on System liabilities of \$10.5 million related to the assumption updates that were a result of the 2009 experience study. As a result, the combined loss on System liabilities is \$15.1 million.

As of the June 30, 2010 actuarial valuation, the System's unfunded actuarial liability was \$163 million. This is an increase from last year's unfunded actuarial liability of \$131 million. The funded ratio decreased from 62% at the prior valuation to 57% at June 30, 2010.

Montana Code Annotated (MCA) 19-2-407 requires an analysis of how market performance is affecting the actuarial funding of the Retirement System. The market value at June 30, 2010 was \$30.4 million less than actuarial value. If market value were used rather than actuarial value, the funded ratio on the valuation date would be 49%, and the amortization period for the unfunded actuarial liability would be 30.5 years.

Since the previous valuation an experience study was performed and several of the actuarial assumptions were changed. A description of the changes in assumptions appears within Appendix B of this report. The following table compares the results at June 30, 2010 using the previous and the revised assumptions.

**MONTANA MUNICIPAL POLICE OFFICERS' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2010**

**SECTION I
BOARD SUMMARY**

Table I-1 Montana Municipal Police Officers' Retirement System Summary of Assumption Changes		
	Previous Assumptions June 30, 2010	New Assumptions June 30, 2010
Valuation as of:		
Actuarial Accrued Liability (AL)	\$ 369,866,856	\$ 380,393,184
Actuarial Value of Assets (AVA)	<u>217,545,472</u>	<u>217,545,472</u>
Unfunded AL	\$ 152,321,384	\$ 162,847,712
Funded ratio	58.82%	57.19%
Amortization period for statutory funding rate	24.7 years	23.0 years
30-year Level Funding Rate	49.93%	48.84%
Shortfall (surplus) from statutory rate	(2.85%)	(3.94%)

**MONTANA MUNICIPAL POLICE OFFICERS' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2010**

**SECTION I
BOARD SUMMARY**

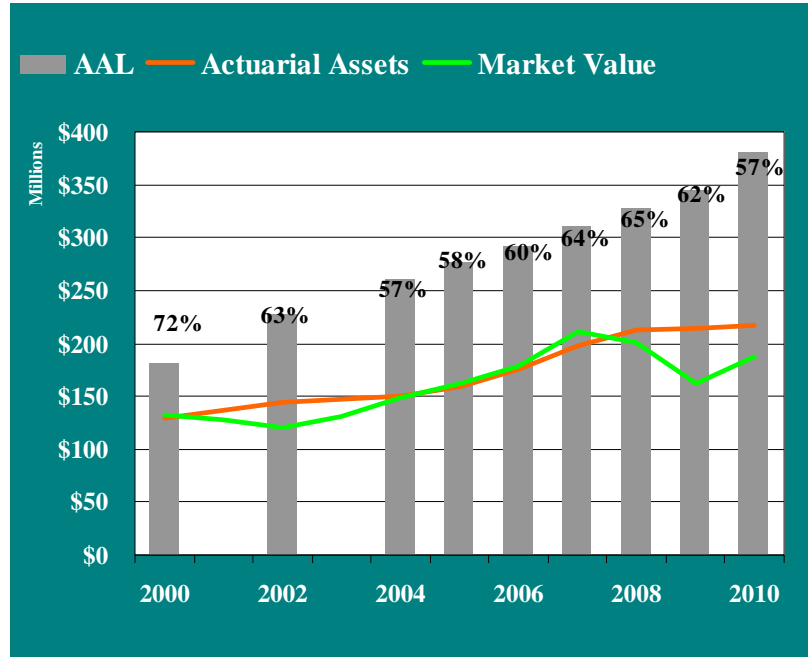
Trends

Assets and Liabilities

The market value of assets (MVA) increased over last year, gaining 12.02% from the value at the prior valuation. The determination of the System's actuarial value of assets reflects only a portion of the amount by which the return was below the assumed rate of 8%.

Over the period July 1, 2005 to June 30, 2010 the System's assets returned approximately 5.3% per year measured at actuarial value, compared to a valuation assumption of 8% per year.

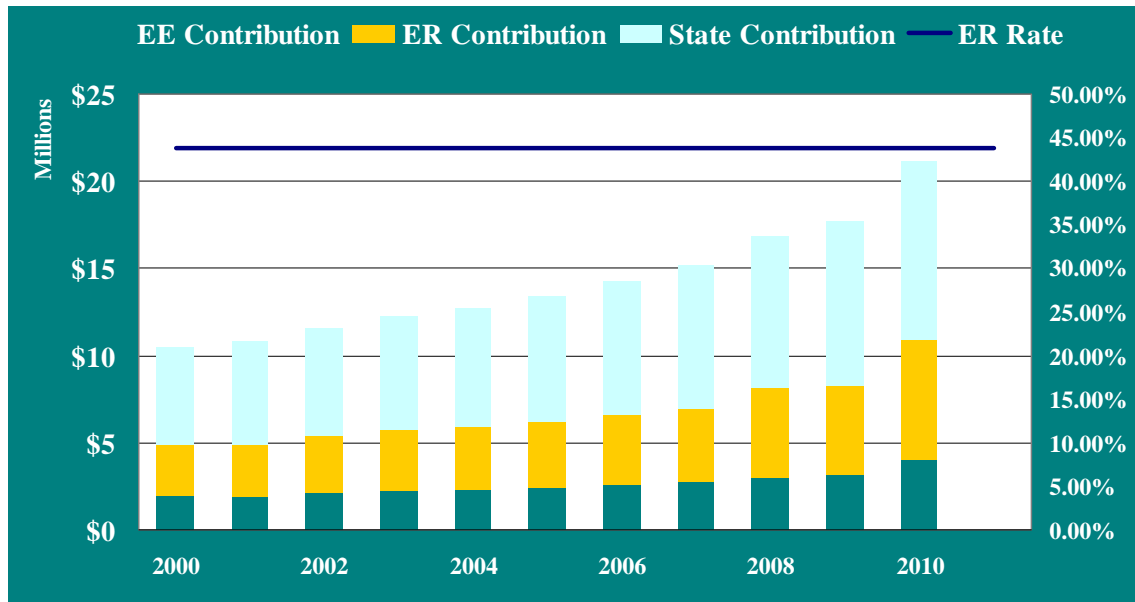
For funding purposes, the target amount is represented by the top of the gray bar. We compare the actuarial value of assets to this measure of liability in developing the funded percent. These are the percentages shown in the graph labels.



**MONTANA MUNICIPAL POLICE OFFICERS' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2010**

**SECTION I
BOARD SUMMARY**

Contribution Rates



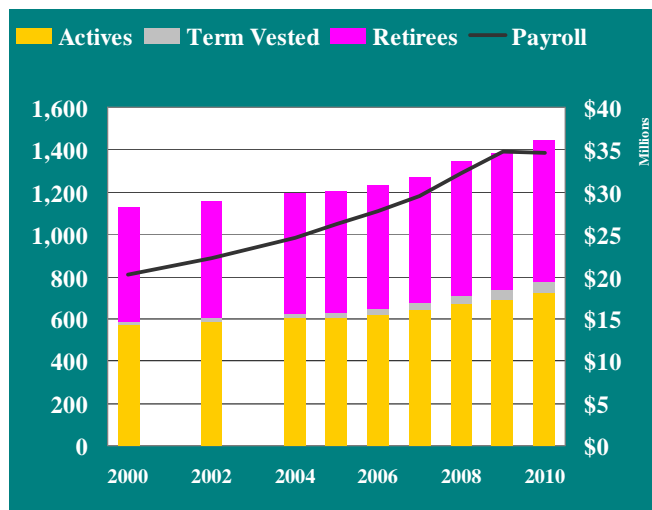
The stacked bars in this graph show the contributions made by members, employers and the State (left hand scale). The black line shows the employer contribution rate as a percent of payroll (right hand scale).

The employer and member contribution rates are set by State law. The actuarial valuation determines the extent to which the statutory contributions will meet the requirements of funding the System.

Participant Trends

The bars show the number of participants in each category and should be read using the left-hand scale. The active-to-inactive ratio has remained at approximately 1.0 actives for each inactive from 2000 through today. This indicates a stable and mature system.

The black line shows the covered payroll in the System and is read using the right-hand scale.



MONTANA MUNICIPAL POLICE OFFICERS' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2010

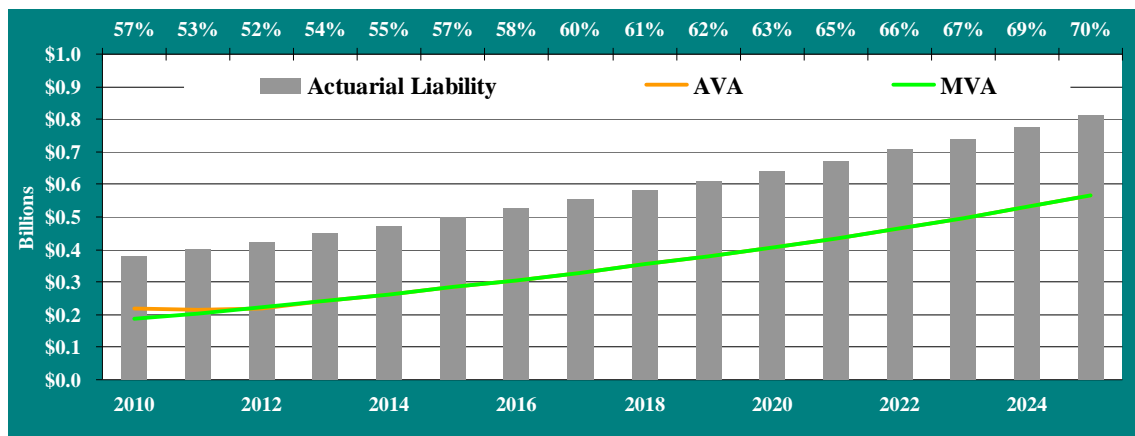
SECTION I
BOARD SUMMARY

Future Outlook

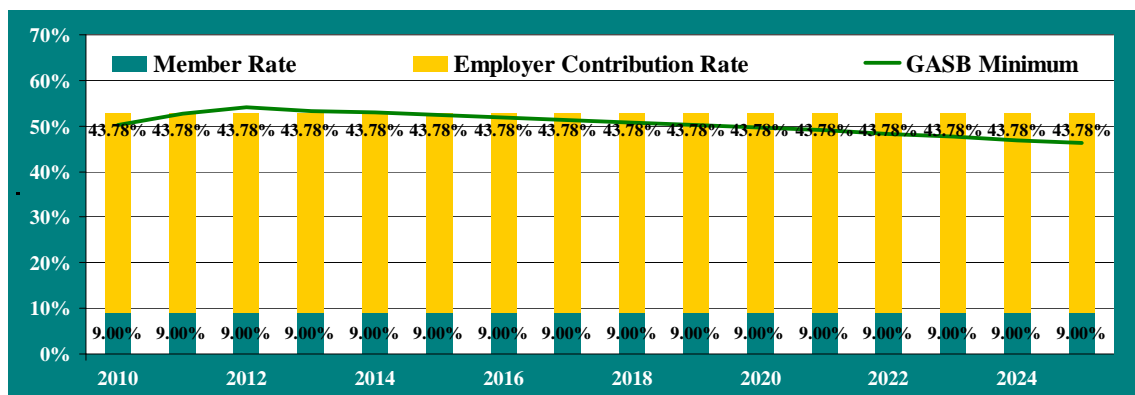
Base Line Projections

These graphs show the expected progress of the System over the next twenty years assuming the System's assets earn 7.75% on their *market value*, and that contributions continue to be made at the current statutory rates.

The chart below shows the funded status of the plan is expected to decrease substantially over the next two years as excluded investment losses are recognized by the smoothing method. The funded status is then expected to begin to increase gradually over the remainder of the fifteen years.



The chart below shows that the statutory contribution is expected to be slightly less than the total contribution computed on a GASB Minimum basis for a few years before again exceeding the GASB minimum for the remainder of the fifteen year period.

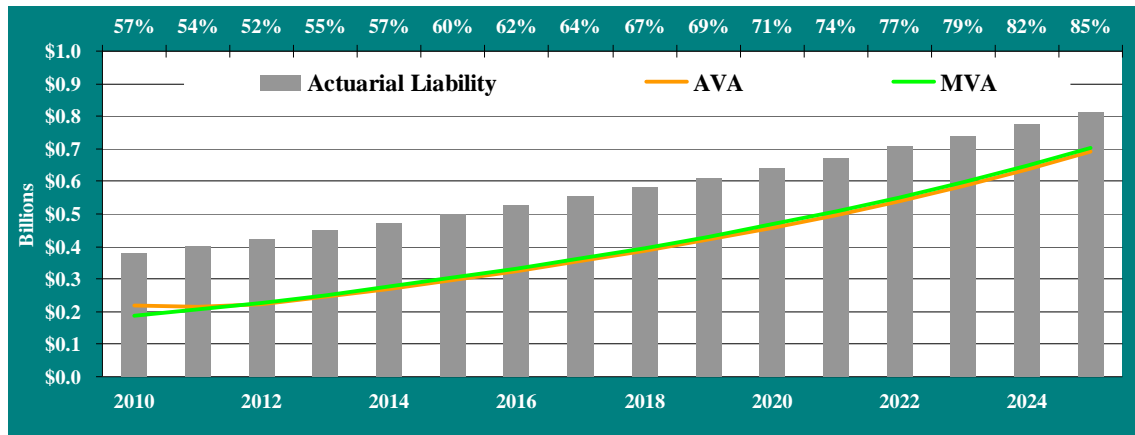


MONTANA MUNICIPAL POLICE OFFICERS' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2010

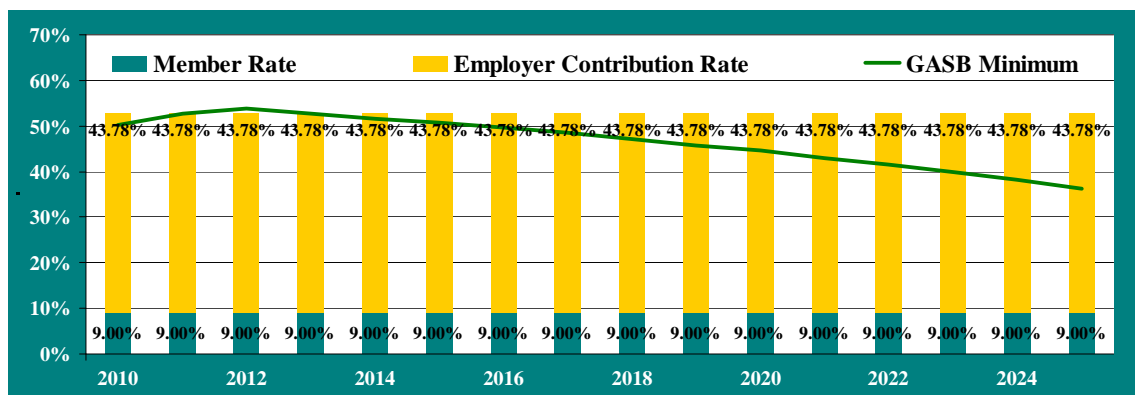
SECTION I
BOARD SUMMARY

Projections With Asset Returns of 9.25%

The future funding status of this System will be largely driven by the investment earnings. Due to the size of assets, as compared to liabilities, the System is in a highly leveraged position. This means that relatively minor changes in market returns can have significant effects on the System's status. These two charts below show what the next fifteen years would look like with a 9.25% annual return in each year (i.e. 1.5% greater than the assumed rate of return).



Compared to the baseline projections, the funded status is expected to improve to a significantly greater extent after a decrease over the next few years. The GASB Minimum contribution drops below 40% by the end of the fifteen year period.

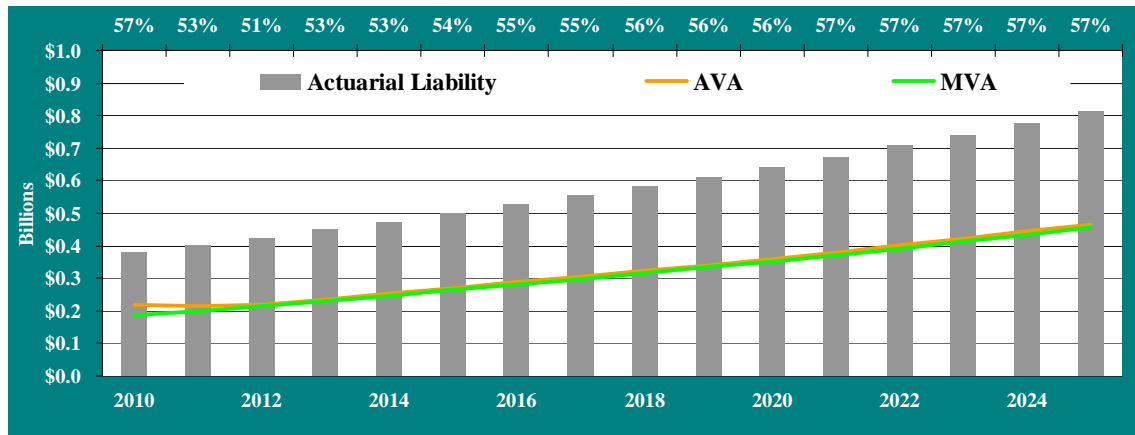


**MONTANA MUNICIPAL POLICE OFFICERS' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2010**

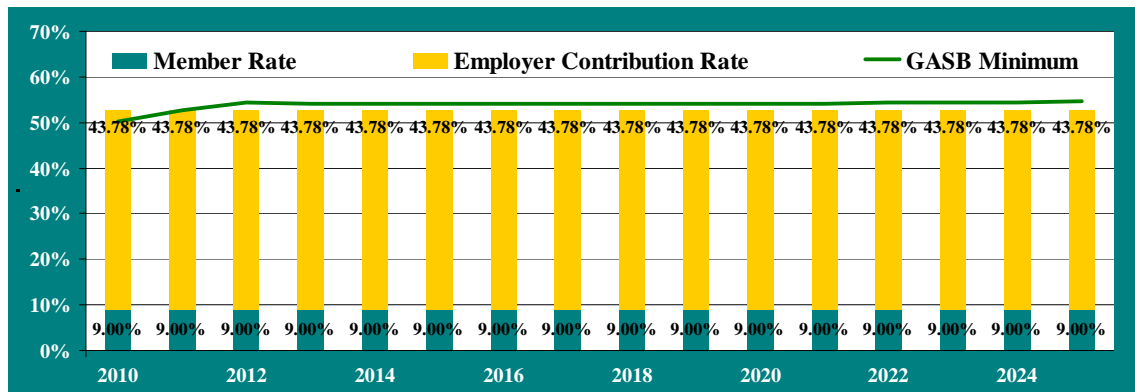
**SECTION I
BOARD SUMMARY**

Projections With Asset Returns of 6.25%

To further demonstrate how the future funding of this System will be driven by investment earnings, we show the anticipated System funding projections if the invested assets earn 6.25% per year over the entire fifteen-year period (i.e., 1.5% less than the assumed rate of return).



Under this scenario the funded status remains relatively constant and the GASB Minimum contribution is slightly above the statutory contribution rate.



MONTANA MUNICIPAL POLICE OFFICERS' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2010

SECTION I
BOARD SUMMARY

<p style="text-align: center;">Table I-2 Montana Municipal Police Officers' Retirement System Summary of Principal System Results</p>			
Valuation as of:	June 30, 2009	June 30, 2010	% Change
<u>Participant Counts</u>			
Active Members**	692	727	5.1%
Disabled Members*	17	23	35.3%
Retirees and Beneficiaries*	629	647	2.9%
Terminated Vested Members	48	47	(2.1%)
Terminated Non-Vested Members	<u>59</u>	<u>65</u>	10.2%
Total***	1,445	1,509	4.4%
Annual Salaries of Active Members*	\$ 34,575,305	\$ 35,270,442	2.0%
Average Annual Salary	\$ 49,964	\$ 48,515	(2.9%)
Annual Retirement Allowances for Retired Members and Beneficiaries	\$ 15,244,389	\$ 16,123,587	5.8%
<u>Assets and Liabilities</u>			
Actuarial Accrued Liability (AAL)	\$ 345,261,260	\$ 380,393,184	10.2%
Actuarial Value of Assets (AVA)	<u>214,344,558</u>	<u>217,545,472</u>	1.5%
Unfunded AAL	\$ 130,916,702	\$ 162,847,712	24.4%
Funded Ratio (AVA/AAL)	62.08%	57.19%	
Present Value of Accrued Benefits (PVAB)	\$ 312,789,866	\$ 323,363,179	3.4%
Market Value of Assets	<u>162,053,923</u>	<u>187,141,042</u>	15.5%
Unfunded PVAB	\$ 150,735,943	\$ 136,222,137	(9.6%)
Accrued Benefit Funding Ratio	51.81%	57.87%	
Ratio of Actuarial Value to Market Value	132.27%	116.25%	
<u>Contributions as a Percentage of Payroll</u>			
Statutory Funding Rate	52.780%	52.780%	
Normal Cost Rate	26.820%	26.320%	
Available for Amortization of UAL	25.960%	26.460%	
Period to Amortize	22.1 years	23.0 years	
Projected 30-year Level Funding Rate	48.330%	48.840%	
Projected Shortfall (Surplus)	(4.450%)	(3.940%)	

* Based on PERA categorization for the annual report. For actuarial valuation purposes, 91 members in 2009 and 93 members in 2010 were valued as disabled members with offsetting reductions to the number of retired members.

** Includes DROP members.

*** The total number of members processed in the 2010 valuation was 1,507 compared to 1,509 above being used for the annual report. A reconciliation of this difference appears at the beginning of Appendix A.

MONTANA MUNICIPAL POLICE OFFICERS' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2010

SECTION II
ASSETS

Pension Plan assets play a key role in the financial operation of the System and in the decisions the Trustees may make with respect to future deployment of those assets. The level of assets, the allocation of assets among asset classes, and the methodology used to measure assets will likely impact upon benefit levels, State contributions, and the ultimate security of participants' benefits.

In this section, we present detailed information on System assets including:

- **Disclosure** of System assets at June 30, 2009 and June 30, 2010;
- Statement of the **changes** in market values during the year;
- Development of the **Actuarial Value of Assets**;
- An assessment of **investment performance**; and
- A projection of the System's expected **cashflows** for the next ten years.

Disclosure

The market value of assets represents a "snap-shot" or "cash-out" values which provide the principal basis for measuring financial performance from one year to the next. Market values, however, can fluctuate widely with corresponding swings in the marketplace.

The actuarial values are market values which have been smoothed and are used for evaluating the System's ongoing liability to meet its obligations.

The actuarial value of assets is the current market value, adjusted by a four-year smoothing of gains and losses on a market value basis. Each year's gain or loss is determined difference between the actual market return and the expected market return using the assumed rate of investment return.

MONTANA MUNICIPAL POLICE OFFICERS' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2010

SECTION II
ASSETS

Table II-1 Changes in Market Values		
Value of Assets – June 30, 2009		\$ 162,053,923
<u>Additions</u>		
Member Contributions	\$ 4,045,639	
Employer Contributions	6,860,331	
State Contributions	10,931,612	
Investment Return	19,875,659	
Other	94,935	
Total Additions	\$ 41,808,176	
<u>Deductions</u>		
Benefit Payments	\$ 16,640,960	
Administrative Expenses	80,097	
Total Deductions	\$ 16,721,057	
Value of Assets – June 30, 2010		\$ 187,141,042

**MONTANA MUNICIPAL POLICE OFFICERS' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2010**

**SECTION II
ASSETS**

Actuarial Value of Assets

The actuarial value of assets represents a “smoothed” value developed by the actuary to reduce, or eliminate, erratic results which could develop from short-term fluctuations in the market value of assets. For this System, the actuarial value has been calculated by taking the market value of assets less 75% of the investment gain (loss) during the preceding year, less 50% of the investment gain (loss) during the second preceding year, and less 25% of the investment gain (loss) during the third preceding year. The tables below illustrate the calculation of actuarial value of assets for the June 30, 2010 valuation.

Table II-2 Market Value Gain/(Loss)	
Value of Assets – June 30, 2009	\$ 162,053,923
Employer Contributions	21,932,517
Benefit Payments	(16,640,960)
Expected Return at 8.0%	<u>13,171,904</u>
Expected Value at June 30, 2010	\$ 180,517,384
Actual Value at June 30, 2010	\$ 187,141,042
Investment Gain/(Loss)	\$ 6,623,658

Table II-3 Develop Excluded Gain/(Loss)		
	Total Gain/(Loss)	Excluded Portion
Exclude 75% of 2010 Gain/(Loss)	\$ 6,623,658	\$ 4,967,743
Exclude 50% of 2009 Gain/(Loss)	\$ (57,132,847)	\$ (28,566,423)
Exclude 25% of 2008 Gain/(Loss)	\$ (27,223,000)	\$ (6,805,750)
Total Excluded Gain/(Loss) for AVA Calculation		\$ (30,404,430)

**MONTANA MUNICIPAL POLICE OFFICERS' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2010**

**SECTION II
ASSETS**

Table II-4 Actuarial Value of Assets	
Market Value of Assets – June 30, 2010	\$ 187,141,042
Total Gain/(Loss) excluded	<u>(30,404,430)</u>
Actuarial Value of Assets – June 30, 2010	\$ 217,545,472

Investment Performance

The market value of assets (MVA) returned 12.02% during 2010, which is greater than the assumed 8% return. A return of (0.96%) on the actuarial value of assets (AVA) is primarily the result of the asset smoothing method being utilized for the calculation of the actuarial value of assets. Since only 25% of the gain or loss from the performance of the System is recognized in a given year, in periods of very good performance, the AVA can lag significantly behind the MVA. In a period of negative returns, the AVA does not decline as rapidly as the MVA.

Table II-5 Annual Rates of Return		
Year Ending June 30,	Market Value	Actuarial Value
2005	7.84%	5.46%
2006	8.65%	9.00%
2007	17.36%	11.41%
2008	(4.86%)	7.32%
2009	(20.32%)	(0.25%)
2010	12.02%	(0.96%)

**MONTANA MUNICIPAL POLICE OFFICERS' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2010**

**SECTION II
ASSETS**

Table II-6		
Projection of System's Benefit Payments and Contributions		
Year Beginning July 1,	Expected Benefit Payments	Expected Contributions*
2010	\$ 17,422,767	\$ 21,065,641
2011	17,863,176	21,908,266
2012	18,609,246	22,784,597
2013	19,341,812	23,695,981
2014	20,182,738	24,643,820
2015	22,720,330	25,629,573
2016	24,342,112	26,654,756
2017	25,698,021	27,720,946
2018	27,286,710	28,829,784
2019	29,328,282	29,982,975

* Expected contributions include Employer Contributions, State Contributions and Member Contributions. For illustration purposes, we have assumed that all contribution rates will remain level and that payroll will increase at the actuarially assumed rate of 4.00% per year.

Expected benefit payments are projected for the closed group valued at June 30, 2010. Projecting any farther than ten years using a closed-group would not yield reliable predictions due to the omission of new hires.

MONTANA MUNICIPAL POLICE OFFICERS' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2010

**SECTION III
LIABILITIES**

In this section, we present detailed information on System liabilities including:

- **Disclosure** of System liabilities at June 30, 2009 and June 30, 2010; and
- Statement of **changes** in these liabilities during the year; and
- Details on the source of actuarial gains and losses between this valuation and the last; and
- Development of actuarial unfunded liability on a market value basis as required under MCA 12-2-407.

Disclosure

Several types of liabilities are calculated and presented in this report. Each type is distinguished by the people ultimately using the figures and the purpose for which they are using them.

- **Present Value of Benefits:** Used for analyzing the financial outlook of the System, this represents the amount of money needed today to fully pay off all future benefits and expenses of the System, assuming participants continue to accrue benefits.
- **Actuarial Accrued Liability:** Used for funding calculations and GASB disclosures, this liability is calculated taking the Present Value of Benefits and subtracting the present value of future Member Contributions and future Employer Normal Costs under an acceptable actuarial funding method. This method is referred to as the **Entry Age Normal** (EAN) funding method.
- **Present Value of Accrued Liabilities:** Used for communicating the current level of liabilities, this liability represents the total amount of money needed today to fully pay off the current accrued obligations of the System, assuming no future accruals of benefits. These liabilities are also required for accounting purposes (FASB ASC Topic No. 960) and used to assess whether the System can meet its current benefit commitments.

The following table discloses each of these liabilities for the current and prior valuations. With respect to each disclosure, a subtraction of the appropriate value of System assets yields, for each respective type, a **net surplus** or an **unfunded liability**.

MONTANA MUNICIPAL POLICE OFFICERS' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2010

**SECTION III
LIABILITIES**

Table III-1		
Liabilities/Net (Surplus)/Unfunded		
	June 30, 2009	June 30, 2010
<u>Present Value of Benefits</u>		
Active Participant Benefits	\$ 211,416,444	\$ 225,876,995
Retiree and Inactive Benefits	218,301,966	235,236,679
Present Value of Benefits (PVB)	\$ 429,718,410	\$ 461,113,674
Market Value of Assets (MVA)	\$ 162,053,923	\$ 187,141,042
Future Member Contributions	27,471,372	26,974,390
Future Employer Contributions	133,632,963	131,215,422
Funding Shortfall/(Surplus)	106,560,152	115,782,820
Total Resources	\$ 429,718,410	\$ 461,113,674
<u>Actuarial Accrued Liability</u>		
Present Value of Benefits (PVB)	\$ 429,718,410	\$ 461,113,674
Present Value of Future Normal Costs (PVFNC)	84,457,000	80,720,490
Actuarial Accrued Liability (AAL=PVB-PVFNC)	345,261,410	380,393,184
Actuarial Value of Assets (AVA)	214,344,558	217,545,472
Net (Surplus)/Unfunded (AAL – AVA)	\$ 130,916,852	\$ 162,847,712
<u>Present Value of Accrued Liability</u>		
Present Value of Benefits (PVB)	\$ 429,718,410	\$ 461,113,674
Present Value of Future Benefit Accruals (PVFBA)	116,928,544	137,750,495
Present Value of Accrued Liability (PVAB=PVB-PVFBA)	312,789,866	323,363,179
Market Value of Assets (MVA)	162,053,923	187,141,042
Net Unfunded (PVAB – MVA)	\$ 150,735,943	\$ 136,222,137

**MONTANA MUNICIPAL POLICE OFFICERS' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2010**

**SECTION III
LIABILITIES**

Changes in Liabilities

Each of the Liabilities disclosed in the prior table are expected to change at each valuation. The components of that change, depending upon which liability is analyzed, can include:

- New hires since the last valuation
- Benefits accrued since the last valuation
- System amendments increasing benefits
- Passage of time which adds interest to the prior liability
- Benefits paid to retirees since the last valuation
- Participants retiring, terminating, or dying at rates different than expected
- A change in actuarial or investment assumptions
- A change in the actuarial funding method

Unfunded liabilities will change because of all of the above, and also due to changes in System assets resulting from:

- Employer contributions different than expected
- Investment earnings different than expected
- A change in the method used to measure System assets

In each valuation, we report on those elements of change which are of particular significance, potentially affecting the long-term financial outlook of the System. Below we present key changes in liabilities since the last valuation.

Table III-2			
(In Thousands)	Present Value of Benefits	Actuarial Accrued Liability	Present Value of Accrued Liability
Liabilities June 30, 2009	\$ 429,718,410	\$ 345,261,260	\$ 312,789,866
Liabilities June 30, 2010	461,113,674	380,393,184	323,363,179
Liability			
Increase (Decrease)	31,395,264	35,131,924	10,573,313
Change Due to:			
Actuarial (Gain)/Loss	NC*	4,558,356	NC*
Assumption Changes	3,122,649	10,526,328	7,308,947
Benefits Accumulated and Other Sources	28,272,615	20,047,240	3,264,366

* NC = not calculated.

**MONTANA MUNICIPAL POLICE OFFICERS' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2010**

**SECTION III
LIABILITIES**

**Table III-3
Summary of Actuarial Gains and Losses as of June 30, 2010**

Actuarial Liabilities as of July 1, 2009	\$ 345,261,260
Normal Cost	9,011,955
Actual Benefit Payments	(16,640,960)
Expected Earnings	<u>27,676,245</u>
Expected Actuarial Liability as of July 1, 2010	\$ 365,308,500
 Actual Liability as of July 1, 2010 (before assumption changes)	 \$ 369,866,856
 Liability (Gain)/Loss	 \$ 4,558,356
 Sources of Liability (Gain)/Loss	
Salary (Gain)/Loss	\$ 1,158,375
New Participant (Gain)/Loss	5,614,811
Active Retirements (Gain)/Loss	(5,146,109)
Active Terminations (Gain)/Loss	(2,467,250)
Active Deaths (Gain)/Loss	40,751
Active Disability (Gain)/Loss	1,617,759
Inactive Decrements (Gain)/Loss	3,740,019
 Actual Liability as of July 1, 2010 (after assumption changes)	 \$ 380,393,184
 Liability (Gain)/Loss due to assumption changes	 \$ 10,526,328
 Actuarial Value of Assets as of July 1, 2009	 \$ 214,344,558
Net Cash Flow	5,291,557
Expected Earnings	<u>17,355,155</u>
Expected Actuarial Value of Assets as of July 1, 2010	\$ 236,991,270
 Actual Actuarial Value of Assets as of July 1, 2010	 \$ 217,545,472
 Investment (Gain)/Loss	 \$ 19,445,798
Total Liability (Gain)/Loss	<u>15,084,684</u>
Total Actuarial (Gain)/Loss	\$ 34,530,482

**MONTANA MUNICIPAL POLICE OFFICERS' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2010**

**SECTION III
LIABILITIES**

Table III-4 shows the actuarial liabilities as of the prior and current valuation dates. The unfunded actuarial liability is the difference between the actuarial liability and the actuarial value of assets. The funded ratio is the ratio of the actuarial value of assets to the actuarial liability.

Table III-4		
Actuarial Liabilities for Funding		
	June 30, 2009	June 30, 2010
1. Actuarial Liabilities		
Retiree and Inactive Benefits	\$ 218,301,966	\$ 235,236,679
Active Member Benefits	<u>126,959,294</u>	<u>145,156,505</u>
Total Actuarial Liability	\$ 345,261,260	\$ 380,393,184
2. Actuarial Value of Assets	\$ 214,344,558	\$ 217,545,472
3. Unfunded Actuarial Liability	\$ 130,916,702	\$ 162,847,712
4. Funded Ratio	62.08%	57.19%

Montana Code Annotated (MCA) 19-2-407 requires an analysis of how market performance is affecting the actuarial funding of the System. Table III-5 presented below shows the same information as in Table III-4 above, but using market value of assets rather than actuarial value of assets.

Table III-5		
Actuarial Liabilities on Market Value Basis (MCA 19-2-407)		
	June 30, 2009	June 30, 2010
1. Actuarial Liabilities		
Retiree and Inactive Benefits	\$ 218,301,966	\$ 235,236,679
Active Member Benefits	<u>126,959,294</u>	<u>145,156,505</u>
Total Actuarial Liability	\$ 345,261,260	\$ 380,393,184
2. Market Value of Assets	\$ 162,053,923	\$ 187,141,042
3. Unfunded Actuarial Liability	\$ 183,207,337	\$ 193,252,142
4. Funded Ratio	46.94%	49.20%

MONTANA MUNICIPAL POLICE OFFICERS' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2010

**SECTION IV
CONTRIBUTIONS**

In the process of evaluating the financial condition of any pension plan, the actuary analyzes the assets and liabilities to determine what level (if any) of contributions is needed to properly maintain the funding status of the Plan. Typically, the actuarial process will use a funding technique that will result in a pattern of contributions that are both stable and predictable.

For this System, the funding method employed is the **Entry Age Actuarial Cost Method**. Under this method, there are two components to the total contribution: the **normal cost rate** and the **unfunded actuarial liability rate** (UAL rate). The normal cost rate is determined by taking the value, as of entry age into the plan, of each member's projected future benefits. This value is then divided by the value, also at entry age, of each member's expected future salary. The normal cost rate is multiplied by current salary to determine each member's normal cost rate. Finally, the total normal cost rate is reduced by the member contribution to produce the employer normal cost rate. The difference between the EAN actuarial liability and the actuarial value of assets is the unfunded actuarial liability.

For purposes of determining the adequacy of the statutory funding rate, the UAL rate is calculated by subtracting the normal cost rate from the statutory rate. A calculation is then made to determine the period over which the UAL rate will amortize the unfunded actuarial liability. A second UAL rate is calculated based upon a 30-year amortization of the UAL, which is the maximum amortization period permitted under GASB Statement No. 25, but which should not necessarily be construed as a recommended contribution level. All UAL payments are determined as a level percentage of pay, assuming that total pay increases by the annual inflation rate of 4.00%.

**MONTANA MUNICIPAL POLICE OFFICERS' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2010**

**SECTION IV
CONTRIBUTIONS**

The tables below present and compare the contribution rates for the System for this valuation and the prior one.

Table IV-1		
Statutory Basis		
	June 30, 2009	June 30, 2010
Statutory Funding Rates		
Members	9.000%	9.000%
Employers	14.410%	14.410%
State	29.370%	29.370%
Total	52.780%	52.780%
Normal Cost Rate	26.820%	26.320%
Funding Rate Available for Amortization	25.960%	26.460%
Unfunded Actuarial Liability (Surplus)	130,916,702	162,847,712
Years to Amortize*	22.1 years	23.0 years

* On a market value basis, the Years to Amortize the Unfunded Actuarial Liability was 40.2 years at June 30, 2009 and 30.5 years at June 30, 2010.

**MONTANA MUNICIPAL POLICE OFFICERS' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2010**

**SECTION IV
CONTRIBUTIONS**

Table IV-2		
Calculated Contribution Basis		
	June 30, 2009	June 30, 2010
Normal Cost Rate	26.820%	26.320%
Educational Fund	0.000%	0.000%
Amortization Payment (30-years)	<u>21.510%</u>	<u>22.520%</u>
Total Calculated Contribution Rate	48.330%	48.840%
Less Statutory Rate	<u>52.780%</u>	<u>52.780%</u>
Shortfall (Surplus) in Statutory Rate	(4.450%)	(3.940%)

Table IV-3		
Calculated Contribution on Market Value (MCA 19-2-407)		
	June 30, 2009	June 30, 2010
Normal Cost Rate	26.820%	26.320%
Educational Fund	0.000%	0.000%
Amortization Payment (30-years)	<u>30.110%</u>	<u>26.730%</u>
Total Calculated Contribution Rate	56.930%	53.050%
Less Statutory Rate	<u>52.780%</u>	<u>52.780%</u>
Shortfall (Surplus) in Statutory Rate	4.150%	0.270%

As the remaining unrecognized losses are picked and amortized in future valuations, we project the following results for the next 5 valuations (assuming all assumptions are met, including 7.75% return):

Table IV-4	
Projected Calculated Contribution Rates	
Valuation Year	Rate
2011	52.71%
2012	54.03%
2013	53.34%
2014	52.86%
2015	52.36%

MONTANA MUNICIPAL POLICE OFFICERS' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2010

SECTION V
ACCOUNTING STATEMENT INFORMATION

Accounting Standard Codification Topic No. 960 of the Financial Accounting Standards Board requires the System to disclose certain information regarding its funded status. Statement No. 25 of the Governmental Accounting Standards Board (GASB) establishes standards for disclosure of pension information by public employee retirement systems (PERS) and governmental employers in notes to financial statements and supplementary information.

The FASB ASC Topic No. 960 disclosures provide a quasi “snap shot” view of how the System’s assets compare to its liabilities if contributions stopped and accrued benefit claims had to be satisfied. However, due to potential legal requirements and the possibility that alternative interest rates would have to be used to determine the liabilities, these values may not be a good indication of the amount of money it would take to buy the benefits for all members if the System were to terminate.

The GASB-25 actuarial accrued liability is the same as the actuarial liability amount calculated for funding purposes.

Both the present value of accrued benefits (FASB ASC Topic No. 960) and the actuarial accrued liability (GASB-25) are determined assuming that the System is on-going and participants continue to terminate employment, retire, etc., in accordance with the actuarial assumptions. Liabilities are discounted at the assumed valuation interest rate of 7.75% per annum.

FASB ASC Topic No. 960 specifies that a comparison of the present value of accrued (accumulated) benefits with the market value of the assets as of the valuation date must be provided. GASB Statement No. 25 requires the actuarial accrued liability be compared with the actuarial value of assets for funding purposes. The relevant amounts as of June 30, 2010 are exhibited in Table V-1.

Tables V-2 through V-5 are exhibits to be used with the State CAFR report. Table V-2 is the Note to Required Supplementary Information, Table V-3 is a history of gains and losses in Accrued Liability, Table V-4 is the Schedule of Funding Progress, and V-5 is the Solvency Test which shows the portion of Accrued Liability covered by Assets.

**MONTANA MUNICIPAL POLICE OFFICERS' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2010**

**SECTION V
ACCOUNTING STATEMENT INFORMATION**

Table V-1		
Accounting Statement Information		
	June 30, 2009	June 30, 2010
A. FASB ASC Topic No. 960 Basis		
1. Present Value of Benefits Accrued and Vested to Date		
a. Members Currently Receiving Payments	\$ 212,169,355	\$ 229,056,882
b. Former Vested Members	6,132,611	6,179,797
c. Active Members	<u>94,487,900</u>	<u>88,126,500</u>
2. Total Present Value of Accrued Benefits (1 (a) + 1(b) + 1(c))	\$ 312,789,866	\$ 323,363,179
3. Assets at Market Value	<u>162,053,923</u>	<u>187,141,042</u>
4. Unfunded Present Value of Accrued Benefits (2 – 3)	\$ 150,735,943	\$ 136,222,137
5. Ratio of Assets to Present Value of Accrued Benefits (3 / 2)	51.81%	57.87%
B. GASB No. 25 Basis		
1. Actuarial Accrued Liabilities for retirees and beneficiaries currently receiving benefits and terminated employees not yet receiving benefits	\$ 218,301,966	\$ 235,236,679
2. Actuarial Accrued Liabilities for current employees	<u>126,959,294</u>	<u>145,156,505</u>
3. Total Actuarial Accrued Liability (1 + 2)	\$ 345,261,260	\$ 380,393,184
4. Net Actuarial Assets available for benefits	<u>214,344,558</u>	<u>217,545,472</u>
5. Unfunded Actuarial Accrued Liability (3 – 4)	\$ 130,916,702	\$ 162,847,712

**MONTANA MUNICIPAL POLICE OFFICERS' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2010**

**SECTION V
ACCOUNTING STATEMENT INFORMATION**

**Table V-2
NOTE TO REQUIRED SUPPLEMENTARY INFORMATION**

The information presented in the required supplementary schedules was determined as part of the actuarial valuation at the date indicated. Additional information as of the latest actuarial valuation follows.

Valuation date	June 30, 2010
Actuarial cost method	Entry age
Amortization method	Open
Remaining amortization period for Annual Required Contribution	23.0 years
Asset valuation method	4-Year smoothed market
Actuarial assumptions:	
Investment rate of return*	7.75%
General wage growth*	4.00%
Merit salary increases	0.0% - 7.3%
*Includes inflation at	3.00%

The actuarial assumptions used have been recommended based on the most recent review of the System's experience (completed in 2010) and adopted by the Retirement Board.

The rate of employer contributions to the System is composed of the normal cost and amortization of the unfunded actuarial accrued liability. The normal cost is a level percent of payroll cost which will pay for projected benefits at retirement for each participant. The actuarial accrued liability is that portion of the present value of projected benefits that will not be paid by future normal costs. The difference between this liability and the funds accumulated as of the same date is the unfunded actuarial accrued liability.

MONTANA MUNICIPAL POLICE OFFICERS' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2010

SECTION V
ACCOUNTING STATEMENT INFORMATION

**Table V-3
ANALYSIS OF FINANCIAL EXPERIENCE***

**Gain and Loss in Accrued Liability During Years Ended June 30
Resulting from Differences Between Assumed Experience and Actual Experience**

*Gain (or Loss) for Year ending June 30,
(expressed in thousands)*

Type of Activity	2005	2006	2007	2008	2009	2010
Investment Income on Actuarial Assets	\$ (3,883)	\$ 1,528	\$ 5,966	\$ (1,427)	\$ (17,616)	\$ (19,446)
Combined Liability Experience	<u>(1,398)</u>	<u>1,401</u>	<u>(2,547)</u>	<u>(2,999)</u>	<u>1,397</u>	<u>(4,558)</u>
(Loss)/Gain During Year from Financial Experience	\$ (5,281)	\$ 2,929	\$ 3,419	\$ (4,426)	\$ (16,219)	\$ (24,004)
Non-Recurring Items	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>(10,526)</u>
Composite Gain (or Loss) During Year	\$ (5,281)	\$ 2,929	\$ 3,419	\$ (4,426)	\$ (16,219)	\$ (34,530)

**Table V-4
SCHEDULE OF FUNDING PROGRESS***
(expressed in thousands)

Valuation Date June 30,	Actuarial Value of Assets	Actuarial Accrued Liability (AAL)	Funded Ratio	Unfunded AAL (UAAL)	Covered Payroll	UAAL as a Percentage of Covered Payroll
2010	\$ 217,545	380,393	57	\$ 162,848	37,220	438
2009	214,344	345,261	62	130,917	34,687	377
2008	212,312	327,556	65	115,244	32,181	358
2007	198,310	310,423	64	112,113	29,547	379
2006	175,919	291,099	60	115,180	27,644	417
2005	159,417	276,379	58	116,962	26,198	446

* Years prior to 2009 were taken from reports prepared by prior actuary.

**MONTANA MUNICIPAL POLICE OFFICERS' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2010**

**SECTION V
ACCOUNTING STATEMENT INFORMATION**

Table V-5 SOLVENCY TEST* Aggregate Accrued Liabilities for (expressed in thousands)							
Valuation Date June 30,	Active Member Contributions	Retirants & Beneficiaries	Active Member Employer Financed Contributions	Actuarial Value of Reported Assets	Portion of Accrued Liabilities Covered by Reported Assets		
	(1)	(2)	(3)		(1)	(2)	(3)
2010	\$ 30,986	229,057	\$ 120,350	\$ 217,545	100	81	0
2009	28,693	212,169	104,399	214,344	100	88	0
2008	27,165	207,233	93,158	212,312	100	89	0
2007	27,256	185,707	97,460	198,310	100	92	0
2006	25,802	175,035	90,261	175,919	100	86	0
2005	24,368	166,978	85,033	159,417	100	81	0

* Years prior to 2009 were taken from reports prepared by prior actuary.

**MONTANA MUNICIPAL POLICE OFFICERS' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2010**

**APPENDIX A
MEMBERSHIP INFORMATION**

Reconciliation of Participant Counts						
	Active	Disabled	Retirees and Beneficiaries	Terminated Vested Members	Terminated Non-Vested Members	Total
Participant counts used for valuation	727	93	575	47	65	1,507
Disabled members having attained normal retirement age		(70)	70			0
Beneficiaries of Disabled Members						0
Beneficiaries with less than one year of certain payments remaining			2			2
Other Adjustments						0
Participant counts shown in Annual Financial Report	727	23	647	47	65	1,509

This chart is presented for informational purposes only. The counts shown in the valuation line were used for preparation of the liabilities disclosed within this report. The counts disclosed for the Annual Financial Report and the Board Summary (page 8) match the CAFR reports at the request of the Board. The differences between the counts have no material effect upon the liability calculation.

The salaries used in the tables and charts which follow are different than the salaries used for the Board Summary on page 7. For this Appendix A, the valuation projected salaries to be paid for the following fiscal year, whereas for the Board Summary, salaries are as of the valuation date.

The benefits for retirees and beneficiaries used for the tables and charts which follow are different than the benefits used for the Board Summary on page 7. For this Appendix A, the valuation projected benefits to be paid for the following fiscal year (including GABA where applicable), whereas for the Board Summary, annual benefits are as of the valuation date.

**MONTANA MUNICIPAL POLICE OFFICERS' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2010**

**APPENDIX A
MEMBERSHIP INFORMATION**

**Montana Municipal Police Officers' Retirement System Distribution of Active Members
by Age and Service as of June 30, 2010**

COUNTS BY AGE/SERVICE*

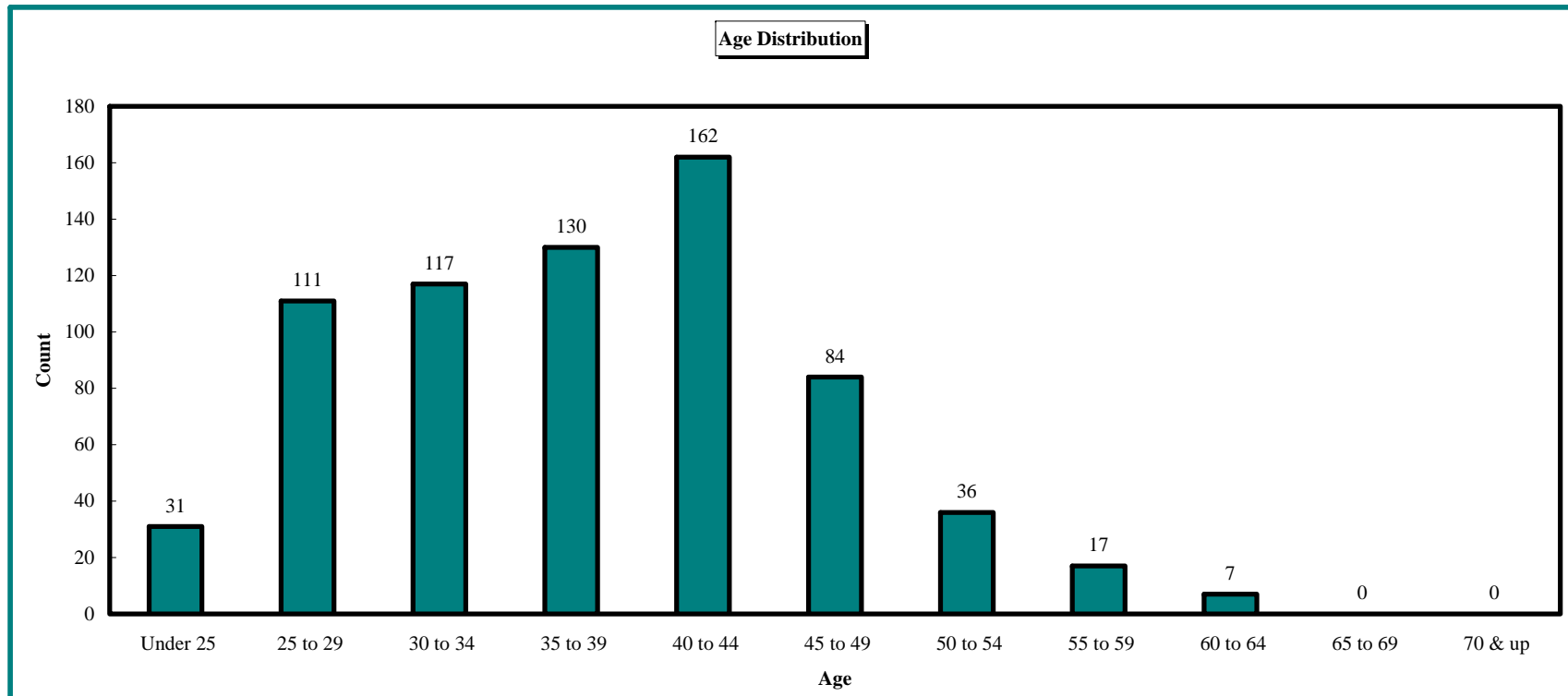
Age	Service										Total
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up	
Under 25	16	15	0	0	0	0	0	0	0	0	31
25 to 29	23	81	7	0	0	0	0	0	0	0	111
30 to 34	18	54	41	4	0	0	0	0	0	0	117
35 to 39	16	35	39	34	6	0	0	0	0	0	130
40 to 44	3	20	28	50	54	7	0	0	0	0	162
45 to 49	5	12	12	14	27	11	3	0	0	0	84
50 to 54	0	6	3	4	11	11	1	0	0	0	36
55 to 59	2	3	3	3	3	1	1	1	0	0	17
60 to 64	0	0	2	0	0	3	1	1	0	0	7
65 to 69	0	0	0	0	0	0	0	0	0	0	0
70 & up	0	0	0	0	0	0	0	0	0	0	0
Total	83	226	135	109	101	33	6	2	0	0	695

*Counts do not include DROP members

MONTANA MUNICIPAL POLICE OFFICERS' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2010

APPENDIX A
MEMBERSHIP INFORMATION

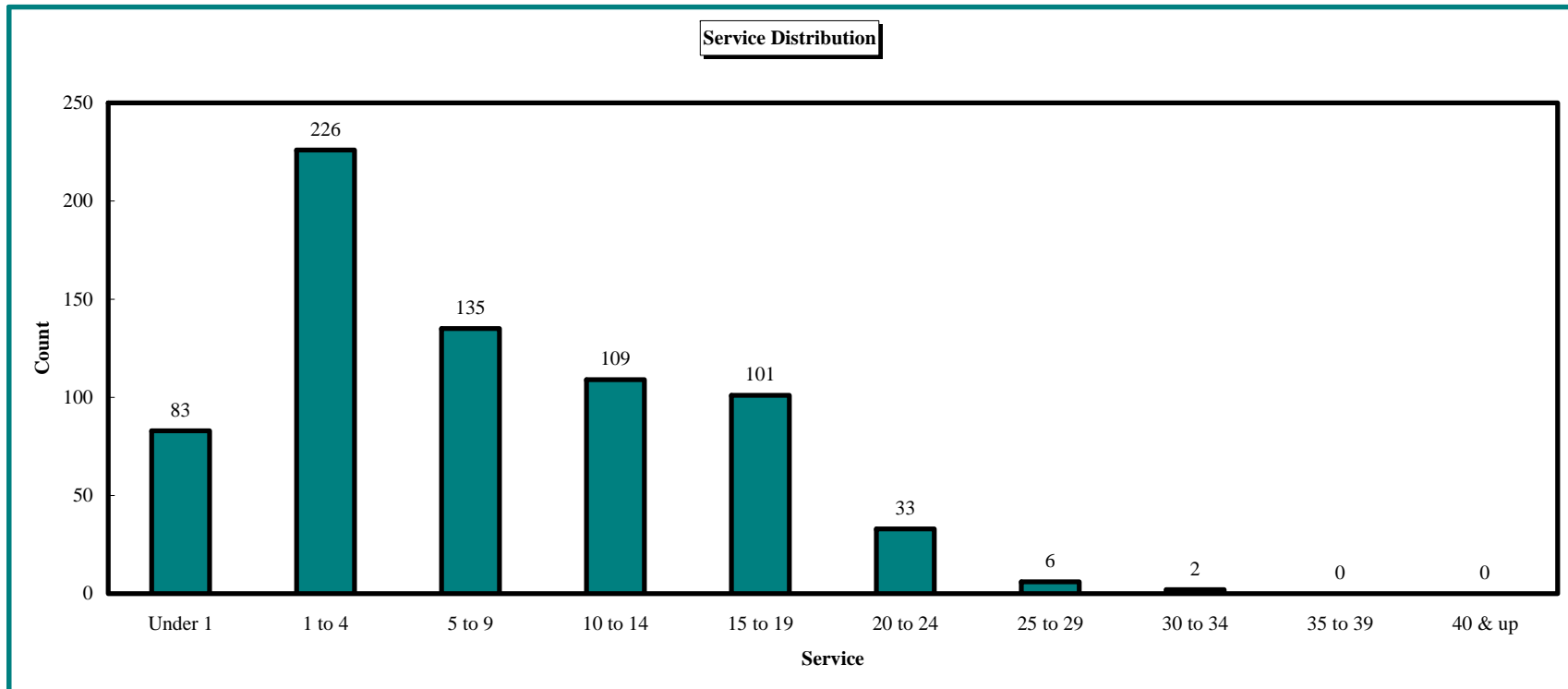
**Montana Municipal Police Officers' Retirement System Distribution of Active Members
by Age as of June 30, 2010**



MONTANA MUNICIPAL POLICE OFFICERS' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2010

APPENDIX A
MEMBERSHIP INFORMATION

**Montana Municipal Police Officers' Retirement System Distribution of Active Members
by Service as of June 30, 2010**



**MONTANA MUNICIPAL POLICE OFFICERS' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2010**

**APPENDIX A
MEMBERSHIP INFORMATION**

**Montana Municipal Police Officers' Retirement System Distribution of Active Members
by Age and Service as of June 30, 2010**

AVERAGE SALARY BY AGE/SERVICE

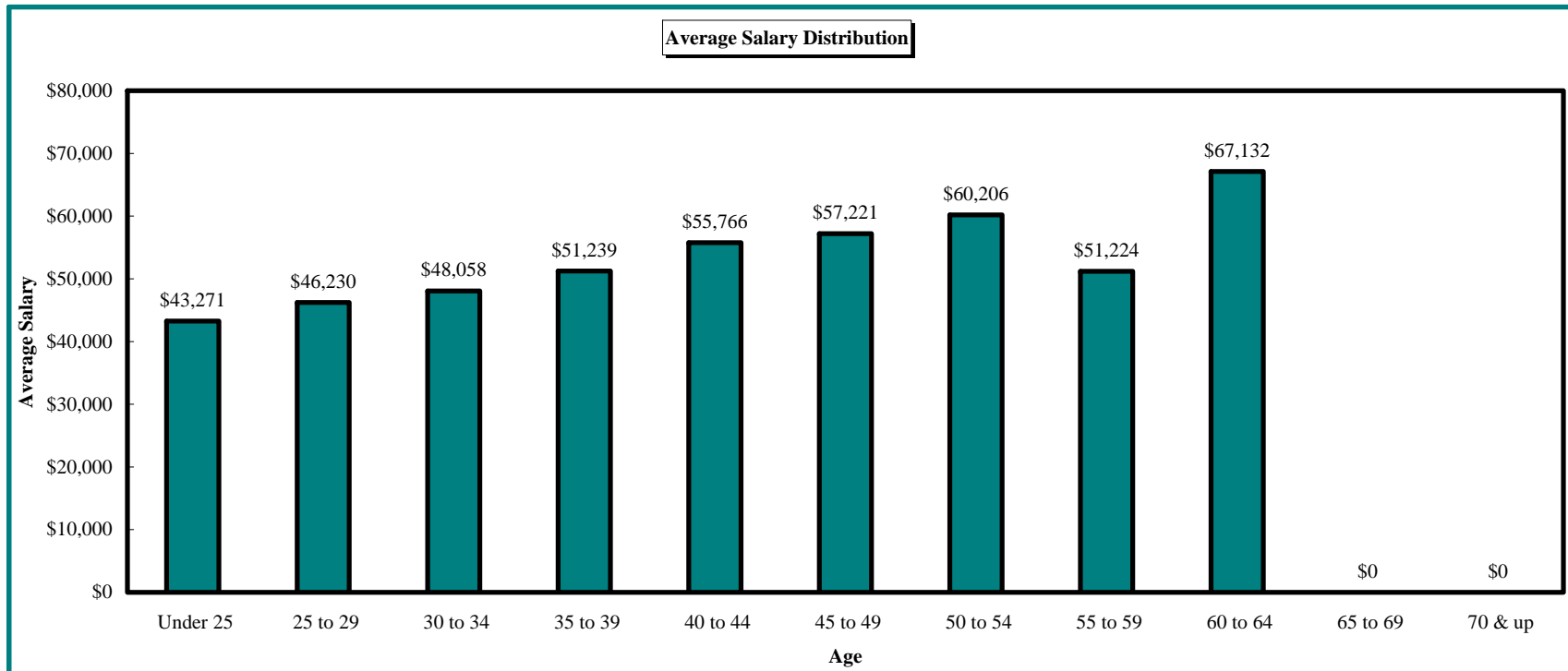
Age	Service										Total
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up	
Under 25	\$43,693	\$42,821	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$43,271
25 to 29	\$45,779	\$45,829	\$52,348	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$46,230
30 to 34	\$42,778	\$48,153	\$50,117	\$49,440	\$0	\$0	\$0	\$0	\$0	\$0	\$48,058
35 to 39	\$42,103	\$46,784	\$51,047	\$58,052	\$64,237	\$0	\$0	\$0	\$0	\$0	\$51,239
40 to 44	\$45,899	\$46,799	\$50,080	\$54,398	\$63,025	\$62,138	\$0	\$0	\$0	\$0	\$55,766
45 to 49	\$37,280	\$43,454	\$49,429	\$59,837	\$61,364	\$71,295	\$75,581	\$0	\$0	\$0	\$57,221
50 to 54	\$0	\$45,143	\$49,881	\$56,985	\$62,742	\$69,376	\$65,681	\$0	\$0	\$0	\$60,206
55 to 59	\$24,007	\$49,532	\$51,672	\$46,559	\$52,744	\$63,340	\$64,021	\$93,918	\$0	\$0	\$51,224
60 to 64	\$0	\$0	\$68,233	\$0	\$0	\$61,147	\$94,572	\$55,442	\$0	\$0	\$67,132
65 to 69	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
70 & up	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total	\$42,985	\$46,323	\$50,730	\$55,934	\$62,317	\$67,550	\$75,169	\$74,680	\$0	\$0	\$51,951

The salary shown in the above chart was used for valuation purposes and assumes pay increases for the year.

MONTANA MUNICIPAL POLICE OFFICERS' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2010

APPENDIX A
MEMBERSHIP INFORMATION

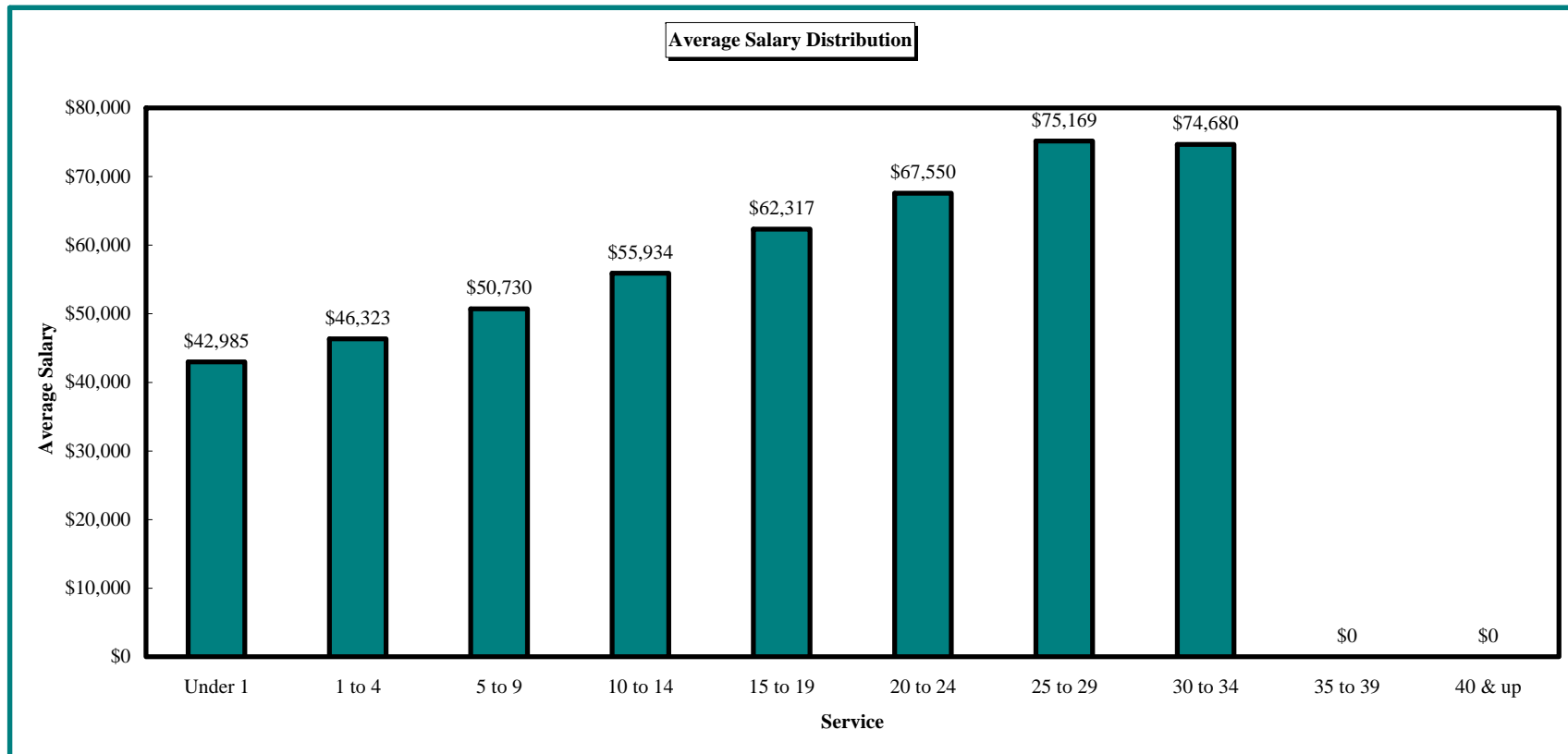
Montana Municipal Police Officers' Retirement System Distribution of Active Members
by Age as of June 30, 2010



MONTANA MUNICIPAL POLICE OFFICERS' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2010

APPENDIX A
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**Montana Municipal Police Officers' Retirement System Distribution of Active Members
by Service as of June 30, 2010**



**MONTANA MUNICIPAL POLICE OFFICERS' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2010**

**APPENDIX A
MEMBERSHIP INFORMATION**

**Montana Municipal Police Officers' Retirement System Distribution of
Retired Members, Survivors, and Disabled Members as of June 30, 2010**

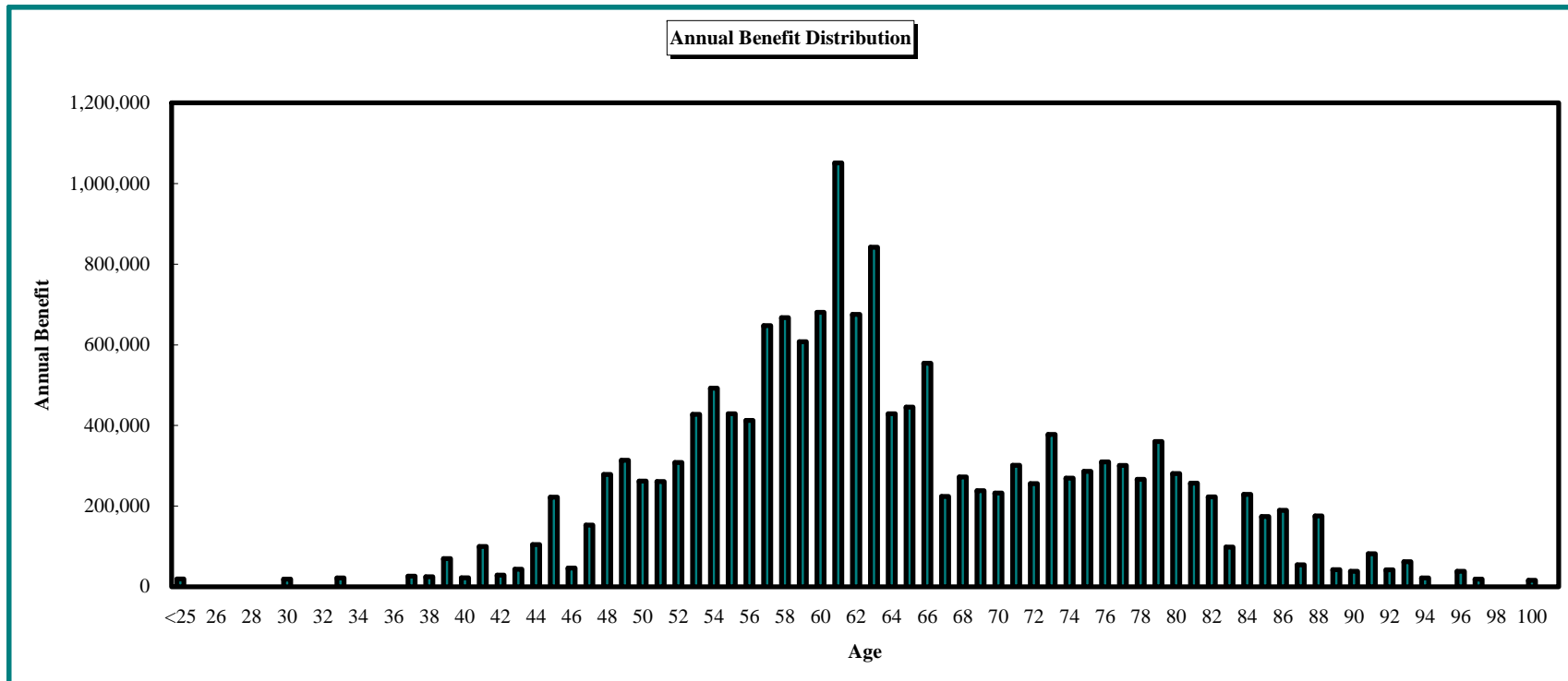
Age	Count	Annual Benefit	Age	Count	Annual Benefit
<25	1	\$19,372	73	17	\$377,753
25	0	\$0	74	13	\$269,670
26	0	\$0	75	13	\$286,573
27	0	\$0	76	14	\$310,075
28	0	\$0	77	14	\$300,939
29	0	\$0	78	11	\$266,567
30	1	\$18,885	79	16	\$360,421
31	0	\$0	80	14	\$281,059
32	0	\$0	81	12	\$256,835
33	1	\$21,741	82	10	\$223,107
34	0	\$0	83	4	\$98,298
35	0	\$0	84	11	\$229,052
36	0	\$0	85	7	\$174,377
37	1	\$26,257	86	9	\$189,369
38	1	\$24,802	87	3	\$54,349
39	3	\$69,796	88	9	\$175,404
40	1	\$22,392	89	2	\$42,338
41	4	\$99,695	90	2	\$38,376
42	1	\$28,734	91	4	\$81,687
43	2	\$43,417	92	2	\$41,796
44	5	\$104,910	93	3	\$62,516
45	9	\$221,952	94	1	\$22,057
46	2	\$46,651	95	0	\$0
47	5	\$153,205	96	2	\$38,441
48	11	\$278,247	97	1	\$18,765
49	14	\$313,651	98	0	\$0
50	10	\$262,143	99	0	\$0
51	10	\$260,749	100	1	\$15,881
52	13	\$308,378	101	0	\$0
53	16	\$427,628	102	0	\$0
54	21	\$492,271	103	0	\$0
55	16	\$429,114	104	0	\$0
56	16	\$412,566	105	0	\$0
57	21	\$647,624	106	0	\$0
58	25	\$667,770	107	0	\$0
59	24	\$607,764	108	0	\$0
60	26	\$680,639	109	0	\$0
61	36	\$1,051,335	110	0	\$0
62	23	\$675,673	111	0	\$0
63	32	\$842,005	112	0	\$0
64	17	\$428,861	113	0	\$0
65	17	\$445,803	114	0	\$0
66	19	\$554,255	115	0	\$0
67	11	\$223,956	116	0	\$0
68	11	\$272,637	117	0	\$0
69	10	\$238,624	118	0	\$0
70	11	\$232,302	119	0	\$0
71	14	\$301,570	120	0	\$0
72	12	\$255,966			
			Totals	668	\$16,429,047

The chart above reflects the counts and benefits used for valuation purposes as a result of data processing. The benefit amounts shown have been projected using a half year cola assumption.

MONTANA MUNICIPAL POLICE OFFICERS' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2010

APPENDIX A
MEMBERSHIP INFORMATION

**Montana Municipal Police Officers' Retirement System Distribution of
Retired Members, Survivors, and Disabled Members as of June 30, 2010**



**MONTANA MUNICIPAL POLICE OFFICERS' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2010**

**APPENDIX A
MEMBERSHIP INFORMATION**

**Montana Municipal Police Officers' Retirement System Distribution of
Vested Members as of June 30, 2010**

Age	Count	Annual Benefit	Account Balance*	Age	Count	Annual Benefit	Account Balance*
<25	0	\$0	\$0	73	0	\$0	\$0
25	0	\$0	\$0	74	0	\$0	\$0
26	0	\$0	\$0	75	0	\$0	\$0
27	0	\$0	\$0	76	0	\$0	\$0
28	0	\$0	\$0	77	0	\$0	\$0
29	0	\$0	\$0	78	0	\$0	\$0
30	0	\$0	\$0	79	0	\$0	\$0
31	0	\$0	\$0	80	0	\$0	\$0
32	1	\$0	\$79,004	81	0	\$0	\$0
33	0	\$0	\$0	82	0	\$0	\$0
34	2	\$6,491	\$51,330	83	0	\$0	\$0
35	2	\$19,289	\$0	84	0	\$0	\$0
36	3	\$23,397	\$0	85	0	\$0	\$0
37	2	\$22,016	\$0	86	0	\$0	\$0
38	2	\$13,817	\$0	87	0	\$0	\$0
39	4	\$19,212	\$57,008	88	0	\$0	\$0
40	2	\$9,176	\$119,735	89	0	\$0	\$0
41	3	\$32,982	\$0	90	0	\$0	\$0
42	3	\$29,703	\$22,431	91	0	\$0	\$0
43	6	\$34,720	\$203,161	92	0	\$0	\$0
44	1	\$21,617	\$0	93	0	\$0	\$0
45	6	\$75,379	\$49,598	94	0	\$0	\$0
46	3	\$14,374	\$36,550	95	0	\$0	\$0
47	2	\$7,923	\$35,006	96	0	\$0	\$0
48	1	\$12,976	\$0	97	0	\$0	\$0
49	3	\$77,113	\$0	98	0	\$0	\$0
50	0	\$0	\$0	99	0	\$0	\$0
51	0	\$0	\$0	100	0	\$0	\$0
52	0	\$0	\$0	101	0	\$0	\$0
53	1	\$11,830	\$0	102	0	\$0	\$0
54	0	\$0	\$0	103	0	\$0	\$0
55	0	\$0	\$0	104	0	\$0	\$0
56	0	\$0	\$0	105	0	\$0	\$0
57	0	\$0	\$0	106	0	\$0	\$0
58	0	\$0	\$0	107	0	\$0	\$0
59	0	\$0	\$0	108	0	\$0	\$0
60	0	\$0	\$0	109	0	\$0	\$0
61	0	\$0	\$0	110	0	\$0	\$0
62	0	\$0	\$0	111	0	\$0	\$0
63	0	\$0	\$0	112	0	\$0	\$0
64	0	\$0	\$0	113	0	\$0	\$0
65	0	\$0	\$0	114	0	\$0	\$0
66	0	\$0	\$0	115	0	\$0	\$0
67	0	\$0	\$0	116	0	\$0	\$0
68	0	\$0	\$0	117	0	\$0	\$0
69	0	\$0	\$0	118	0	\$0	\$0
70	0	\$0	\$0	119	0	\$0	\$0
71	0	\$0	\$0	120	0	\$0	\$0
72	0	\$0	\$0				
Totals					47	\$432,016	\$653,825

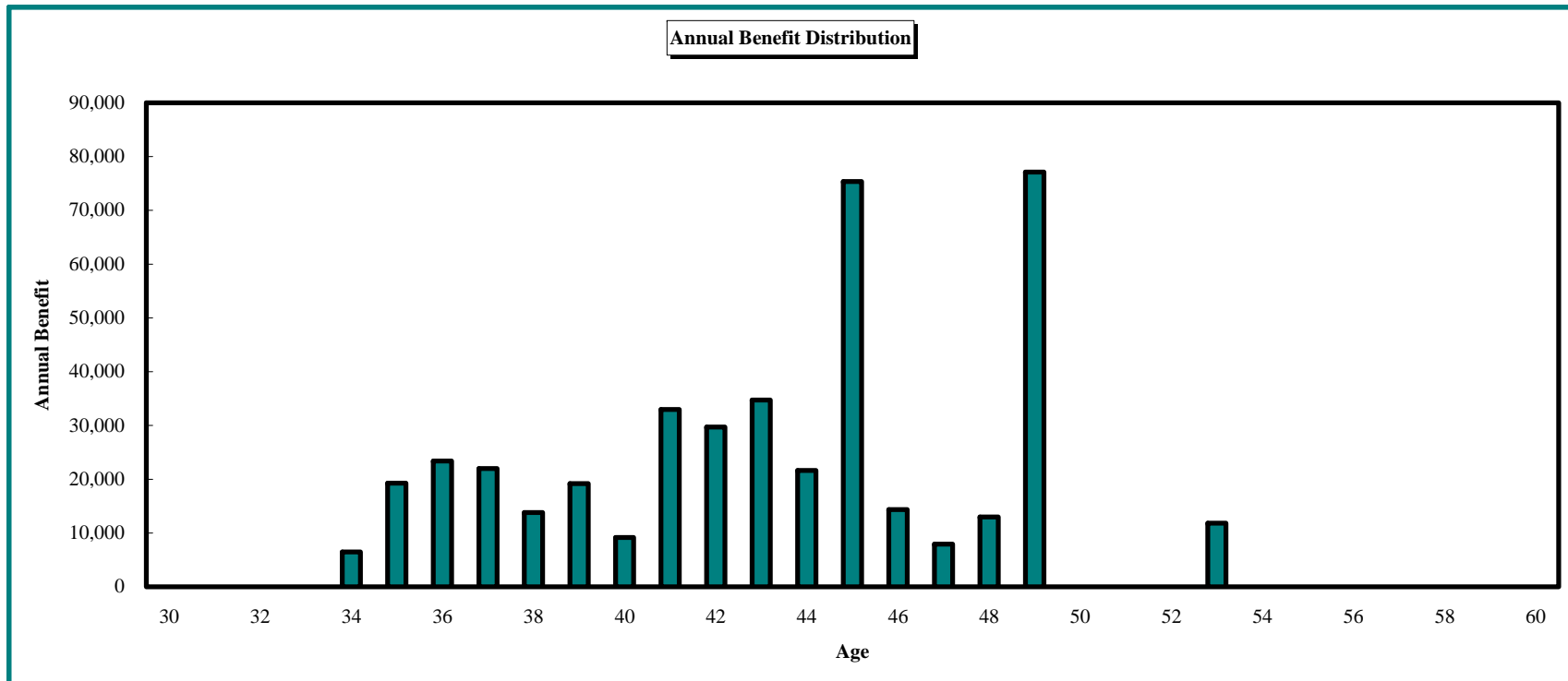
* projected to the greater of age 50 or current age

The chart above reflects the counts and benefits used for valuation purposes as a result of data processing.

MONTANA MUNICIPAL POLICE OFFICERS' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2010

APPENDIX A
MEMBERSHIP INFORMATION

**Montana Municipal Police Officers' Retirement System Distribution of
Vested Members as of June 30, 2010**



**MONTANA MUNICIPAL POLICE OFFICERS' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2010**

**APPENDIX A
MEMBERSHIP INFORMATION**

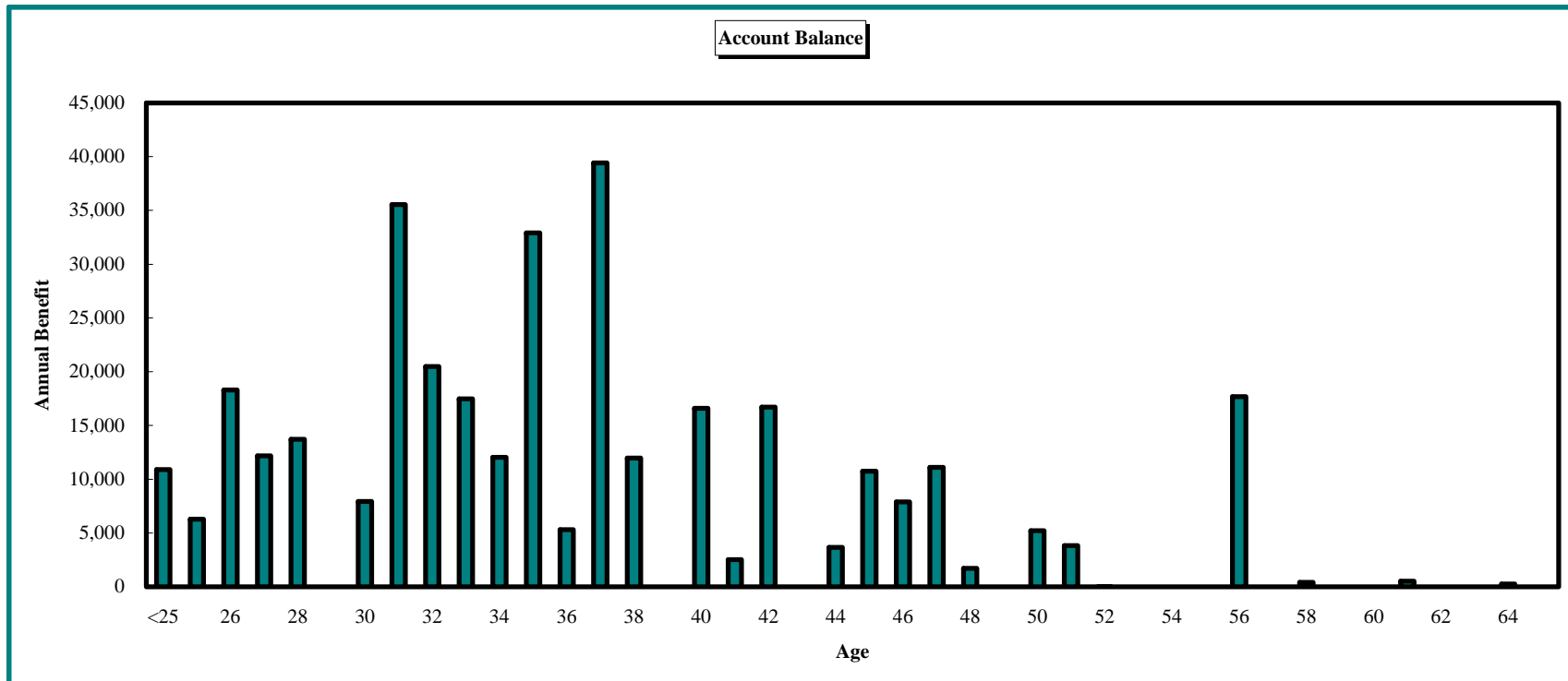
**Montana Municipal Police Officers' Retirement System Distribution of
Non-Vested Members as of June 30, 2010**

Age	Count	Account Balance	Age	Count	Account Balance
<25	2	\$10,914	73	0	\$0
25	2	\$6,284	74	0	\$0
26	2	\$18,307	75	0	\$0
27	3	\$12,174	76	0	\$0
28	3	\$13,706	77	0	\$0
29	0	\$0	78	0	\$0
30	2	\$7,935	79	0	\$0
31	3	\$35,549	80	0	\$0
32	2	\$20,484	81	0	\$0
33	6	\$17,485	82	0	\$0
34	3	\$12,042	83	0	\$0
35	3	\$32,910	84	0	\$0
36	2	\$5,321	85	0	\$0
37	10	\$39,428	86	0	\$0
38	2	\$11,971	87	0	\$0
39	0	\$0	88	0	\$0
40	1	\$16,596	89	0	\$0
41	1	\$2,524	90	0	\$0
42	1	\$16,702	91	0	\$0
43	0	\$0	92	0	\$0
44	1	\$3,660	93	0	\$0
45	2	\$10,767	94	0	\$0
46	2	\$7,889	95	0	\$0
47	1	\$11,115	96	0	\$0
48	1	\$1,721	97	0	\$0
49	0	\$0	98	0	\$0
50	1	\$5,224	99	0	\$0
51	3	\$3,839	100	0	\$0
52	1	\$10	101	0	\$0
53	0	\$0	102	0	\$0
54	0	\$0	103	0	\$0
55	0	\$0	104	0	\$0
56	2	\$17,688	105	0	\$0
57	0	\$0	106	0	\$0
58	1	\$414	107	0	\$0
59	0	\$0	108	0	\$0
60	0	\$0	109	0	\$0
61	1	\$532	110	0	\$0
62	0	\$0	111	0	\$0
63	0	\$0	112	0	\$0
64	1	\$269	113	0	\$0
65	0	\$0	114	0	\$0
66	0	\$0	115	0	\$0
67	0	\$0	116	0	\$0
68	0	\$0	117	0	\$0
69	0	\$0	118	0	\$0
70	0	\$0	119	0	\$0
71	0	\$0	120	0	\$0
72	0	\$0			
Totals				65	\$343,460

MONTANA MUNICIPAL POLICE OFFICERS' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2010

APPENDIX A
MEMBERSHIP INFORMATION

Montana Municipal Police Officers' Retirement System Distribution of
Non-Vested Members as of June 30, 2010



MONTANA MUNICIPAL POLICE OFFICERS' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2010

APPENDIX B
ACTUARIAL ASSUMPTIONS AND METHODS

A. Long-Term Assumptions Used to Determine Plan Costs and Liabilities

1. Demographic Assumptions

a. Healthy Retirees, Beneficiaries and Non-Retired Members

RP-2000 Combined Healthy Male and Female Mortality Tables projected to 2015 with scale AA.

Sample Rates of Healthy Mortality		
Age	Male	Female
50	0.163%	0.130%
55	0.241%	0.241%
60	0.530%	0.469%
65	1.031%	0.900%
70	1.770%	1.553%
75	3.062%	2.492%
80	5.536%	4.129%
85	9.968%	7.076%
90	17.271%	12.588%

b. Disabled Inactive Mortality

RP-2000 Combined Healthy Male and Female Mortality Tables with no projections.

Sample Rates of Disabled Inactive Mortality		
Age	Male	Female
50	0.241%	0.168%
55	0.362%	0.272%
60	0.675%	0.506%
65	1.274%	0.971%
70	2.221%	1.674%
75	3.783%	2.811%
80	6.437%	4.588%
85	11.076%	7.745%
90	18.341%	13.168%

**MONTANA MUNICIPAL POLICE OFFICERS' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2010**

**APPENDIX B
ACTUARIAL ASSUMPTIONS AND METHODS**

c. Rates of Active Disability

Sample Rates of Active Disability	
Age	Rate
22	0.00%
27	0.25%
32	0.25%
37	0.50%
42	0.50%
47	0.50%
52	0.50%
57	0.50%
62	0.00%

All disabilities are assumed to be permanent and without recovery.

d. Termination of Employment (Prior to Normal Retirement Eligibility)

Service	Rate
0	15%
1	10%
2	10%
3	10%
4	5%
5-9	5%
10-14	2%
15 & over	1%

e. Probability of Electing a Refund of Member Contributions Upon Termination

Probability of Electing Refund		
Age at Term.	Non-Vested	Vested
Under 35	100%	60%
35-39	100%	10%
40-44	100%	10%
45-49	100%	10%
50 & Over	100%	0%

**MONTANA MUNICIPAL POLICE OFFICERS' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2010**

**APPENDIX B
ACTUARIAL ASSUMPTIONS AND METHODS**

f. Retirement

Annual Retirement Rates	
Age	20 years or more
<50	12.00%
50 – 54	15.00%
55 – 61	20.00%
62 & Over	100.00%

Vested terminations are assumed to retire at their earliest unreduced eligibility.

g. DROP Retirement

DROP accounts are assumed to earn the actuarial rate of return. 15% of active members are assumed to elect to enter the DROP for each of the first six years following DROP eligibility. These members are assumed to elect to participate in the DROP for five years. Members who have elected to participate in the DROP as of the valuation date are assumed to remain in the DROP until the end of the DROP period elected, unless they die or become disabled while in the DROP.

h. Merit/Seniority Salary Increase (in addition to across-the-board increase)

Service based table plus an annual inflation rate of 4.00% (rates shown below exclude amount for inflation).

Service	Annual Increase
1	7.3%
2	5.6%
3	4.4%
4	3.5%
5	2.8%
6	2.2%
7	1.7%
8	1.3%
9	1.0%
10	0.7%
11-15	0.4%
16-20	0.2%
21 & over	0.0%

**MONTANA MUNICIPAL POLICE OFFICERS' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2010**

**APPENDIX B
ACTUARIAL ASSUMPTIONS AND METHODS**

i. Family Composition

Female spouses are assumed to be three years younger than males.

100% of non-retired employees are assumed married for both male and female employees.

Actual marital characteristics are used for pensioners.

j. Vested Benefits for Terminated Members

Vested benefits for members who terminated during the years ending June 30, 2009 and later were estimated based upon compensation and service information in the census data. For members who terminated prior to June 30, 2008, vested benefits valued were the same as had been calculated by the prior actuary for the June 30, 2008 actuarial valuation.

2. Economic Assumptions

- | | |
|-------------------------------------------------------------|-------|
| a. Rate of Investment Return: | 7.75% |
| b. Rate of Wage Inflation: | 4.00% |
| c. Interest on Member Contributions: | 3.50% |
| d. Interest on DROP accounts: | 7.75% |
| e. Rate of Increase in Total Payroll
(for Amortization): | 4.00% |

**MONTANA MUNICIPAL POLICE OFFICERS' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2010**

**APPENDIX B
ACTUARIAL ASSUMPTIONS AND METHODS**

3. Changes Since Last Valuation

The demographic and economic assumptions were updated to reflect the 2009 experience study. The prior assumptions are listed below for those assumptions where changes were made:

a. Demographic Assumptions

i. Healthy Retirees, Beneficiaries and Non-Retired Members

Male: Male UP-1994 Mortality Table set back one year
Female: Female UP-1994 Mortality Table

Sample Rates of Healthy Mortality		
Age	Male	Female
50	0.250%	0.154%
55	0.428%	0.247%
60	0.762%	0.477%
65	1.391%	0.929%
70	2.336%	1.476%
75	3.661%	2.439%
80	6.007%	4.236%
85	9.636%	7.284%
90	14.995%	12.502%

ii. Beneficiaries

Male: Male UP-1994 Mortality Table set back one year
Female: Female UP-1994 Mortality Table set back one year

Sample Rates of Beneficiary Mortality		
Age	Male	Female
50	0.250%	0.141%
55	0.428%	0.224%
60	0.762%	0.415%
65	1.391%	0.819%
70	2.336%	1.367%
75	3.661%	2.192%
80	6.007%	3.802%
85	9.636%	6.557%
90	14.995%	11.247%

**MONTANA MUNICIPAL POLICE OFFICERS' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2010**

**APPENDIX B
ACTUARIAL ASSUMPTIONS AND METHODS**

iii. Disabled Inactive Mortality

Male: Male UP-1994 Mortality Table set forward three years

Female: Female UP-1994 Mortality Table set forward two years

Sample Rates of Disabled Inactive Mortality		
Age	Male	Female
50	0.385%	0.186%
55	0.677%	0.314%
60	1.234%	0.627%
65	2.135%	1.157%
70	3.355%	1.775%
75	5.399%	3.050%
80	8.872%	5.285%
85	13.654%	9.035%
90	21.333%	15.266%

iv. Rates of Active Disability

Sample Rates of Active Disability		
Age	Male	Female
22	0.00%	0.00%
27	0.10%	0.10%
32	0.10%	0.10%
37	0.10%	0.10%
42	0.40%	0.40%
47	0.40%	0.40%
52	0.40%	0.40%
57	0.40%	0.40%
62	0.00%	0.00%

All disabilities are assumed to be permanent and without recovery.

**MONTANA MUNICIPAL POLICE OFFICERS' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2010**

**APPENDIX B
ACTUARIAL ASSUMPTIONS AND METHODS**

v. Termination of Employment (Prior to Normal Retirement Eligibility)

Service	Rate
0	10%
1	7%
2	7%
3	6%
4	5%
5-9	3%
10-14	1%
15 & over	1%

vi. Probability of Electing a Refund of Member Contributions Upon Termination

Probability of Electing Refund		
Age at Term.	Non-Vested	Vested
Under 35	100%	70%
35-39	100%	60%
40-44	100%	40%
45-49	100%	40%
50 & Over	100%	0%

**MONTANA MUNICIPAL POLICE OFFICERS' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2010**

**APPENDIX B
ACTUARIAL ASSUMPTIONS AND METHODS**

vii. Retirement

Annual Retirement Rates	
Age	20 years or more
<50	20.00%
50 – 54	25.00%
55	20.00%
56	20.00%
57	20.00%
58	20.00%
59	20.00%
60	20.00%
61	20.00%
62	20.00%
63	20.00%
64	20.00%
65	100.00%

Vested terminations are assumed to retire at their earliest unreduced eligibility.

viii. DROP Retirement

33% of active members are assumed to elect to enter the DROP upon their first attainment of 20 years of membership service. These members are assumed to elect to participate in the DROP for five years. Members who have elected to participate in the DROP as of the valuation date are assumed to remain in the DROP until the end of the DROP period elected, unless they die or become disabled while in the DROP.

ix. Merit/Seniority Salary Increase (in addition to across-the-board increase)

Service based table plus an annual inflation rate of 4.25% (rates shown below exclude amount for inflation).

**MONTANA MUNICIPAL POLICE OFFICERS' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2010**

**APPENDIX B
ACTUARIAL ASSUMPTIONS AND METHODS**

b. Economic Assumptions

i.	Rate of Investment Return:	8.00%
ii.	Rate of Wage Inflation:	4.25%
iii.	Interest on Member Contributions:	5.00%
iv.	Rate of Increase in Total Payroll (for Amortization):	4.25%

APPENDIX B
ACTUARIAL ASSUMPTIONS AND METHODS

B. Actuarial Methods

1. Funding Method

The Entry Age Normal Actuarial Cost method is used to determine costs. Under this funding method, a normal cost is determined as a level percent of pay individually for each active employee.

The actuarial accrued liability is that portion of the present value of projected benefits that will not be paid by future normal costs. The difference between this liability and funds accumulated as of the same date is referred to as the unfunded actuarial liability.

The portion of the actuarial accrued liability in excess of plan assets is amortized to develop an additional cost or savings which is added to each year's employer normal cost. Under this cost method, actuarial gains and losses are directly reflected in the size of the unfunded actuarial liability.

2. Actuarial Value of Assets

For purposes of determining the unfunded actuarial accrued liability, we use an actuarial value of assets. The asset adjustment method dampens the volatility in asset values that could occur because of fluctuations in market conditions. Use of an asset smoothing method is consistent with the long-term nature of the actuarial valuation process.

The actuarial value of assets is the current market value, adjusted by a four-year smoothing of gains and losses on a market value basis. Each year's gain or loss is determined as the difference between the actual market return and the expected market return using the assumed rate of investment return.

3. Amortization Method

The unfunded actuarial accrued liability is amortized as a level percentage of future payroll.

4. Changes Since Last Valuation

None.

**APPENDIX C
SUMMARY OF PLAN PROVISIONS**

1. Membership

The Plan is a multiple-employer cost sharing plan that covers police officers of cities within the state, other than those cities which maintain a separate local police fund.

2. Member Contributions

Members' contributions depend upon date of hire and whether the member has elected to be covered by GABA. For members who have not elected GABA the rates of contribution are as follows:

- (a) Hired on or before June 30, 1975: 5.8%
- (b) Hired after June 30, 1975 but on or before June 30, 1979: 7.0%
- (c) Hired after June 30, 1979 but before July 1, 1997: 8.5%.

For members hired on and after July 1, 1997, and for all members who have elected GABA, the rate is 9.0% of compensation.

Interest is credited at rates determined by the Board.

Member contributions are made through an "employer pick-up" arrangement which results in deferral of taxes on the contributions.

Employers contribute 14.41% of each member's compensation.

The State contributes 29.37% of each member's compensation.

3. Service Credit

Service used to determine the amount of retirement benefit. One month of service credit is earned for each month where the member works 160 hours. This includes certain purchased service.

4. Membership Service

Service used to determine eligibility for vesting, retirement or other MPORS benefits. One month of membership service is earned for any month member contributions are made to MPORS, regardless of the number of hours worked.

**APPENDIX C
SUMMARY OF PLAN PROVISIONS**

5. Final Average Compensation

Final Average Compensation is the average over the last 36 months (or shorter period of total service) of compensation paid to the member. Compensation is specifically defined by law.

6. Normal Retirement

Eligibility: (i) age 50 with five years of membership service; or (ii) any age with 20 years of membership service.

Benefit: 2.5% of final average compensation multiplied by years of service credit.

7. Disability Benefit

Eligibility: Immediately upon employment

Benefit: (i) Before completing 20 years of membership service, 50% of final average compensation.

(ii) After completing 20 years or more of membership service, 2.5% of final average compensation for each year of service credit.

8. Survivor's Benefit

Eligibility: Any active member

Benefit: (i) Before completing 20 years of membership service, 50% of member's final average compensation.

(ii) After completing 20 years of membership service, 2.5% of member's final average compensation for each year of service credit.

Benefits are paid to the surviving spouse (or equally to dependent children if there is no surviving spouse or after a surviving spouse dies, for as long as they remain dependent children). In the absence of a spouse or child, the accumulated contributions minus any benefits already paid will be paid to the member's designated beneficiary.

APPENDIX C
SUMMARY OF PLAN PROVISIONS

9. Vesting

Eligibility: Five years of membership service.

Benefit: Accrued normal retirement benefit, payable at age 50. In lieu of a pension, a member may receive a refund of accumulated contributions. Upon receipt of a refund of contributions a member's vested right to a monthly benefit shall be forfeited.

10. Withdrawal of Employee Contributions

Eligibility: Terminates service and is not eligible for other benefits.

Benefit: Accumulated member contributions.

11. Form of Payment

The normal form of payment is a life annuity, with 100% continuation after death to a surviving spouse. If there is no surviving spouse, or after the death of a surviving spouse, benefits are paid to the dependent children, if any, for as long as they remain dependent children.

12. Post Retirement Benefit Increases

For retired members not covered by the Guaranteed Annual Benefit Adjustment (GABA), the benefit may not be less than one-half the compensation that will be paid to newly confirmed police officers in the current year in the city or town from which the member retired.

For retired members covered by GABA who have been retired at least 12 months, an adjustment will be made each year equal to 3% of the current benefit amount.

13. Deferred Retirement Option Plan (DROP)

Eligibility: 20 years of membership service.

Period: Maximum of five years. Member may not receive service credit during DROP period.

Contributions: State, employer and member contributions continue during the DROP period and are to be made to the retirement system.

**MONTANA MUNICIPAL POLICE OFFICERS' RETIREMENT SYSTEM
ACTUARIAL VALUATION AS OF JUNE 30, 2010**

**APPENDIX C
SUMMARY OF PLAN PROVISIONS**

Disability: If a member becomes disabled during the DROP period, the member will not be eligible for MPORS disability benefits. If the member must terminate their service, their service retirement benefit will be paid to them rather than to their monthly DROP account. The member will also be eligible to receive their DROP account.

Survivor Benefit: If a member dies before the end of their DROP period, the surviving spouse or dependent children are entitled to receive a lump-sum payment equal to the member's DROP benefit and the member's accumulated contributions minus any benefits paid from the member's DROP account, including monthly DROP accruals.

If the member does not have a surviving spouse or dependent children, then the member's designated beneficiary is entitled to receive a lump-sum payment equal to the member's DROP benefit.

The benefit paid must include interest reflecting the retirement system's annual investment earnings from the date the member's DROP period commenced

Benefit: Member receives DROP accruals equal to the retirement benefit calculated at DROP commencement made, added each month during the DROP period plus interest reflecting the retirement system's assumed annual investment earnings.

NOTE: There is a change in wording in the 2009 Montana Code Annotated from the 2007 Montana Code Annotated (MCA).

Section 19-9-1206 (3), MCA Survivorship benefits:

(3) The benefit paid pursuant to this section must include interest credited to the participant's account as follows:

(a) through June 30, 2009, interest must be credited every fiscal year end at a rate reflecting the retirement system's annual investment earnings for the applicable fiscal year.

(b) after June 30, 2009, interest must be credited every fiscal year end at the actuarially assumed rate of return. Proportionate interest must be credited for distributions taking place at other than a fiscal year end.

14. Changes Since Last Valuation

None.