



**Montana Firefighters' Unified  
Retirement System  
of the  
State of Montana**

**Actuarial Valuation  
as of June 30, 2014**

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

**September 2014**

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September 30, 2014

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 Firefighters' Unified Retirement System as of June 30, 2014. 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 the System's assets, as well as analyses which combine asset and liability performance and projections. The report also provides information regarding employer contribution levels and certain required disclosures for financial statements. The purpose of this report is to present the annual actuarial valuation of the Firefighters' Unified Retirement System. This report is for the use of the Public Employees' Retirement Board and its auditors in preparing financial reports in accordance with applicable law and accounting requirements.

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. The results of this report are only applicable for Fiscal Year ending 2014 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.

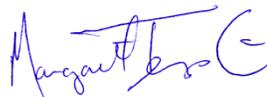
We hereby certify that, to the best of our knowledge, this report and its contents have been prepared in accordance with generally recognized and accepted actuarial principles and practices which are consistent with the Code of Professional Conduct and applicable Actuarial Standards of Practice set out by the Actuarial Standards Board. 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 actuarial report was prepared exclusively for the Firefighters' Unified Retirement System for the purpose described herein. This valuation 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  
Principal Consulting Actuary



Margaret Tempkin, FSA  
Principal Consulting Actuary



## FOREWORD

Cheiron has performed the Actuarial Valuation of the Firefighters' Unified Retirement System as of June 30, 2014. 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 2014 to meet the requirements of an actuarial rate calculated as the normal cost, administrative expense, and a level percent of pay 30-year open amortization of the unfunded actuarial liability; and
- 4) **Provide specific information** and documentation as may be required for financial statements.

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 certain required disclosures for financial statements.

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 valuation.

In preparing our report, we relied 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. 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 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 cost of the benefits would vary from our projections.

**MONTANA FIREFIGHTERS' UNIFIED RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2014**

**SECTION I  
BOARD SUMMARY**

**General Comments**

The period to amortize unfunded actuarial liability decreased from 13.9 years at the June 30, 2013 valuation to 11.3 years as of June 30, 2014. During the year ended June 30, 2014, the System's assets gained 16.53% 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 continues to reflect prior year investment gains and losses resulting in a return of 12.44%. This return was above the assumed rate of return of 7.75% and resulted in an actuarial gain on investments of \$12.5 million.

The System also experienced an actuarial gain on system liabilities resulting from salary growth, members retiring, terminating, becoming disabled, and dying at rates different from the actuarial assumptions. The experience gain deducted \$0.2 million from the expected actuarial liability, which represents a 0.04% decrease to the overall liabilities of the System. 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 system experiences alternating gains and losses that are small compared to the total actuarial liability, then the system's actuarial assumptions are considered reasonable.

As of the June 30, 2014 Actuarial Valuation, the System's unfunded actuarial liability was \$118.1 million. This is a decrease from last year's unfunded actuarial liability of \$133.3 million. The funded ratio increased from 66% at the prior valuation to 72% at June 30, 2014.

Montana Code Annotated (MCA) 19-2-407 requires an analysis of how market performance is affecting the actuarial funding of the Retirement System. It is our understanding of the Code to report certain key results on a market value of assets basis. The market value at June 30, 2014 was \$20.6 million more than actuarial value. If market value were used rather than actuarial value, the funded ratio on the valuation date would be 77%, and the amortization period for the unfunded actuarial liability would be 9.0 years.

GASB Statement No. 67 became effective for the plan year ending June 30, 2014. Actuarial information related to required disclosures under GASB 67 has been provided in a separate report. Section V of this actuarial valuation report contains disclosures that have previously been required under GASB Statement No. 25, which has now been superseded by GASB 67. However, since GASB Statement No. 68 will not be effective until the fiscal year ending June 30, 2015 for most employers, employers must still provide disclosures under GASB Statement No. 27 for fiscal years ending June 30, 2014. Therefore, this information is provided in a format similar to prior years.

MONTANA FIREFIGHTERS' UNIFIED RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2014

SECTION I  
BOARD SUMMARY

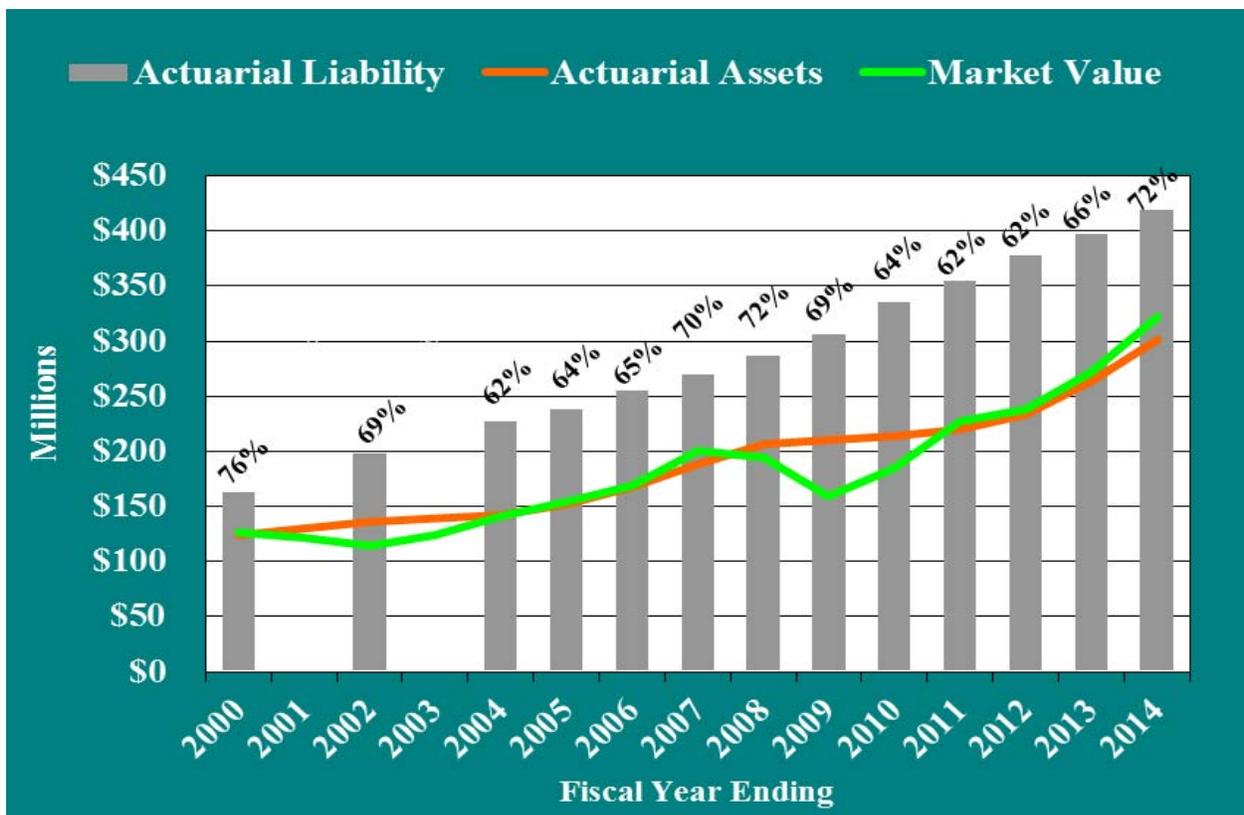
Trends

Assets and Liabilities

The market value of assets (MVA) increased over last year, gaining 16.53% 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 above the assumed rate of 7.75%.

Over the period July 1, 2009 to June 30, 2014, the System's assets returned approximately 5.3% per year measured at actuarial value, compared to a current valuation assumption of 7.75% 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.



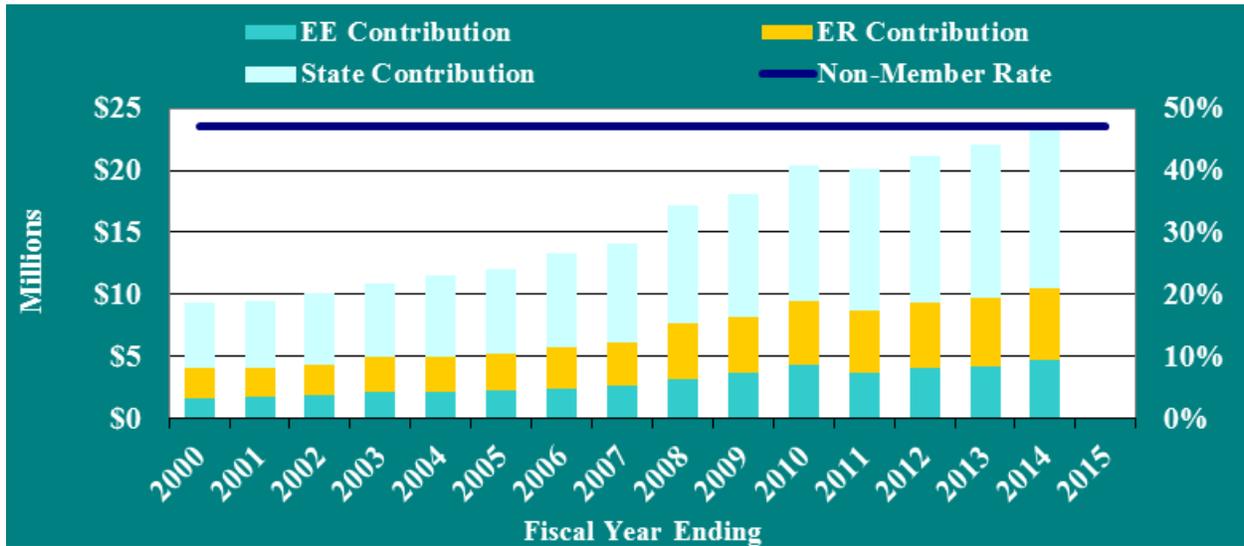
**MONTANA FIREFIGHTERS' UNIFIED RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2014**

**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 navy line shows the employer contribution rate (including the State 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.



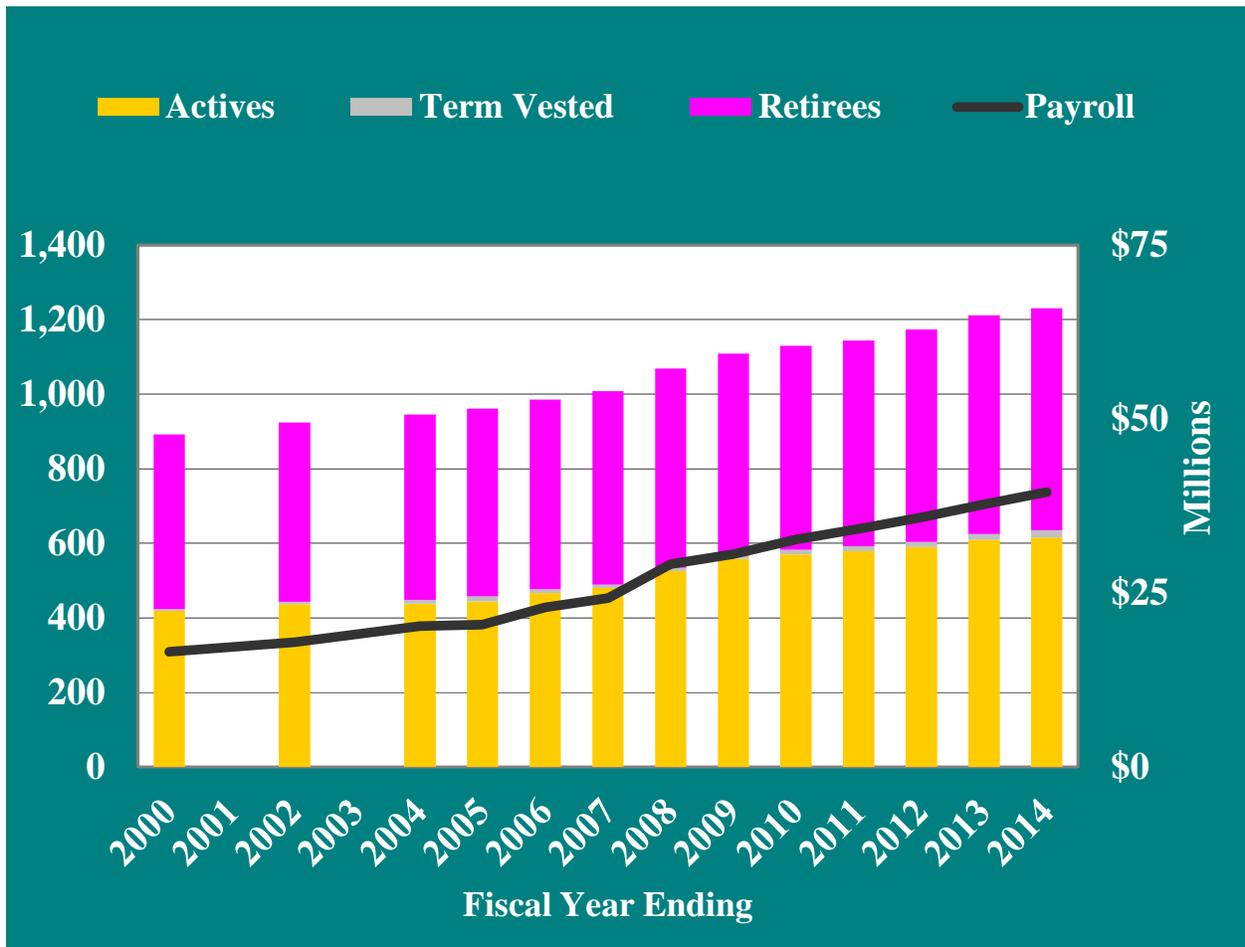
MONTANA FIREFIGHTERS' UNIFIED RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2014

SECTION I  
BOARD SUMMARY

Participant Trends

The bars show the number of participants in each category and should be read using the left-hand scale. As with any maturing fund, this System continues to show growth in the number of retired members. The active-to-inactive ratio has increased slightly from 0.9 actives for each inactive in 2000 to 1.0 actives for each inactive today.

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

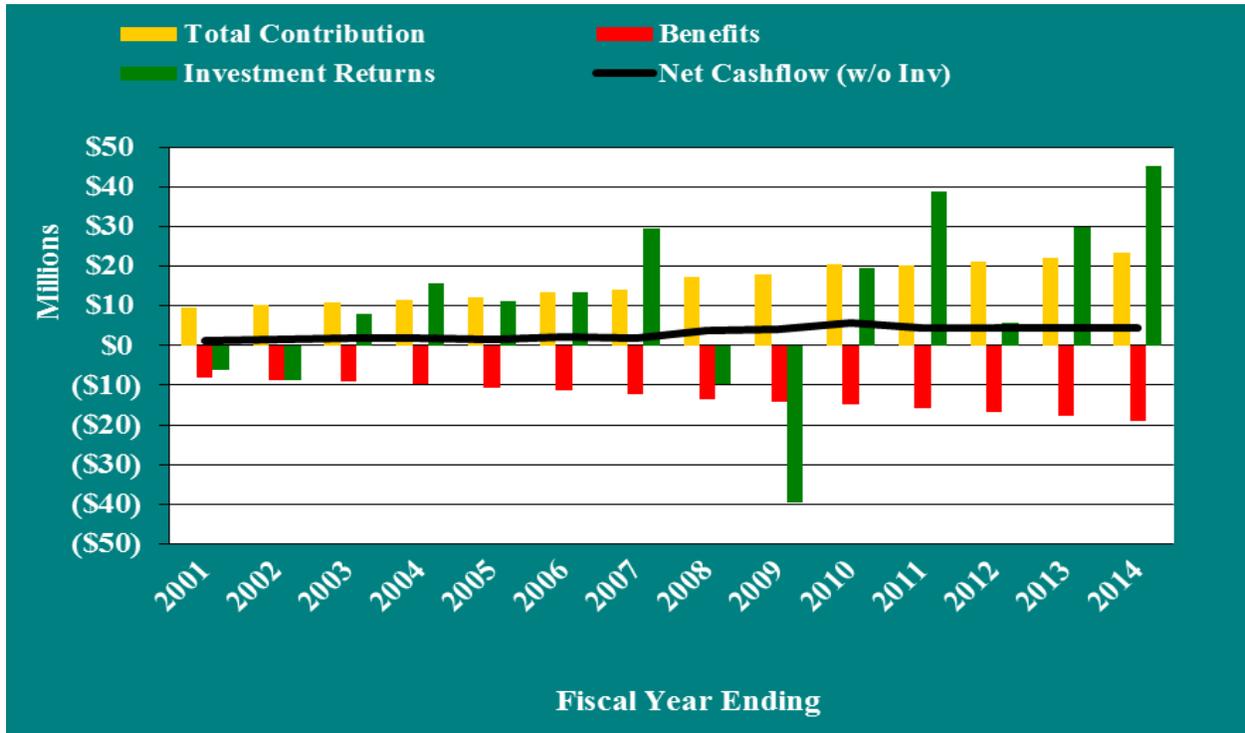


MONTANA FIREFIGHTERS' UNIFIED RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2014

SECTION I  
BOARD SUMMARY

Net Cash Flow

This graph shows the historical contributions compared to benefit payments. The difference between these two measures is shown in the solid black line and is the net cash flow (without including investment returns).



**MONTANA FIREFIGHTERS' UNIFIED RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2014**

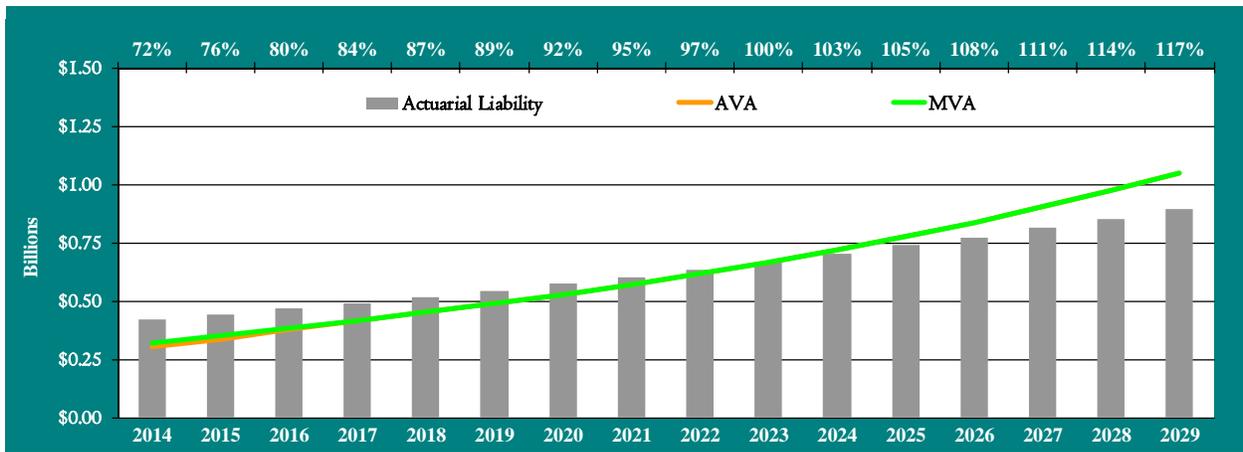
**SECTION I  
BOARD SUMMARY**

**Future Outlook**

Baseline Projections

These graphs show the expected progress of the System over the next 15 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 values on top of the chart show that the funded status of the System is expected to increase gradually from the current ratio of 72% and will reach 117% by the end of the 15-year period.



The chart below shows that the total contribution computed on an Actuarial Rate basis will decrease gradually over the 15-year period as the System moves to become fully funded. The Actuarial Rate is calculated as the normal cost, administrative expense, and a level percent of pay 30-year open amortization of the unfunded actuarial liability.

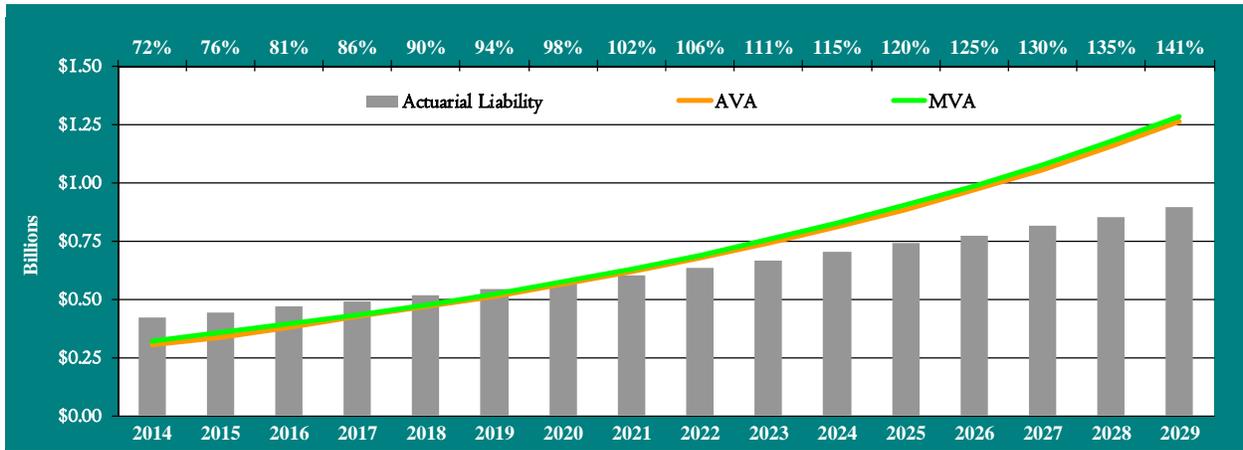


**MONTANA FIREFIGHTERS' UNIFIED RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2014**

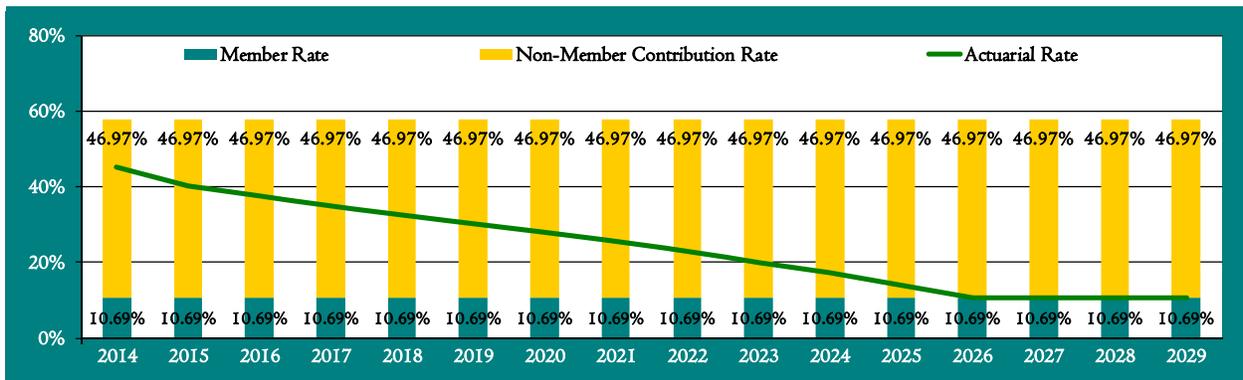
**SECTION I  
BOARD SUMMARY**

Projections with Asset Returns of 9.25%

The future funding status of this System will be impacted by the investment earnings. These two charts below show what the next 15 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 improvement is even greater, and the Actuarial Rate drops further below the statutory contribution rates as projected surplus is applied to offset the normal cost. The non-member portion of the Actuarial Rate drops to zero in the last few years of the 15-year period.

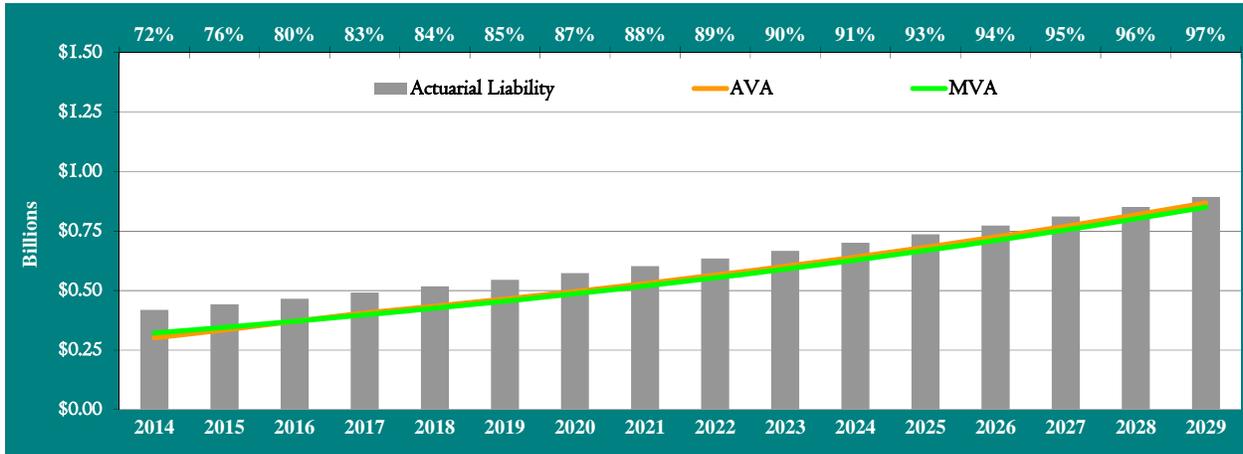


**MONTANA FIREFIGHTERS' UNIFIED RETIREMENT SYSTEM  
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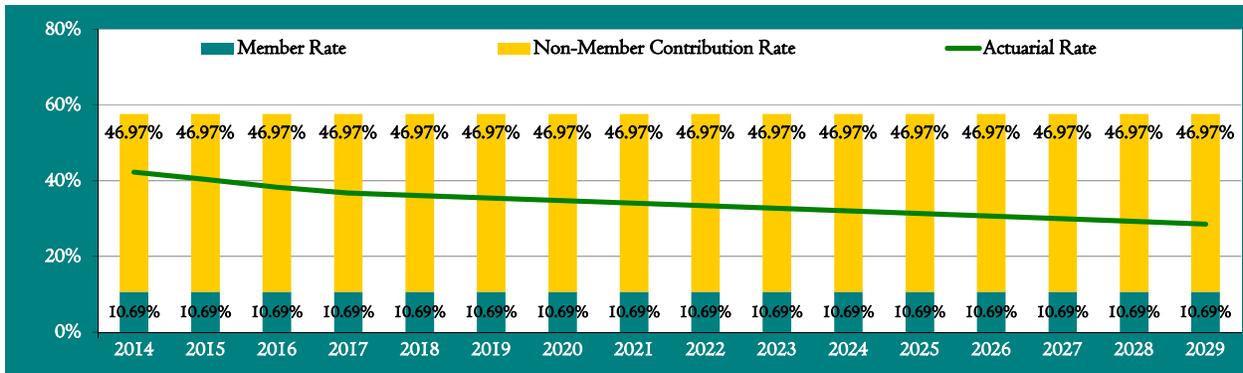
**SECTION I  
BOARD SUMMARY**

Projections with Asset Returns of 6.25%

To further demonstrate how fluctuations in the earnings rate can impact funding, we show the anticipated system funding projections if the invested assets earn 6.25% per year over the entire 15-year period (i.e., 1.5% less than the assumed rate of return).



Under this scenario, the improvement in the funded status is less than under the baseline projection. The decrease in the Actuarial Rate is also less than under the baseline projection. However, the funded ratio is still anticipated to improve over this time which supports the position that the current statutory contribution rates will be sufficient to meet the benefit obligations under investment returns below the current assumption.



MONTANA FIREFIGHTERS' UNIFIED RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2014

SECTION I  
BOARD SUMMARY

Valuation as of:	June 30, 2013	June 30, 2014	% Change
<b>Table I-1</b>			
<b>Montana Firefighters' Unified Retirement System</b>			
<b>Summary of Principal System Results</b>			
<b><u>Participant Counts</u></b>			
Active Members	610	616	1.0%
Disabled Members*	8	10	25.0%
Retirees and Beneficiaries*	579	585	1.0%
Terminated Vested Members	15	19	26.7%
Terminated Non-Vested Members	63	66	4.8%
Total**	1,275	1,296	1.6%
Annual Salaries of Active Members	\$ 37,727,304	\$ 39,494,619	4.7%
Average Annual Salary	\$ 61,848	\$ 64,115	3.7%
Annual Retirement Allowances for Retired Members and Beneficiaries	\$ 18,233,679	\$ 19,207,518	5.3%
<b><u>Assets and Liabilities</u></b>			
Actuarial Liability (AL)	\$ 396,769,177	\$ 419,013,363	5.6%
Actuarial Value of Assets (AVA)	263,482,680	300,949,326	14.2%
Unfunded AL (AVA/AL)	\$ 133,286,497	\$ 118,064,037	(11.4%)
Funded Ratio	66.4%	71.8%	
Present Value of Accrued Benefits (PVAB)	\$ 353,335,669	\$ 372,450,035	5.4%
Market Value of Assets	271,825,743	321,556,669	18.3%
Unfunded PVAB	\$ 81,509,926	\$ 50,893,366	(37.6%)
Accrued Benefit Funding Ratio	76.9%	86.3%	
Ratio of Actuarial Value to Market Value	96.9%	93.6%	
<b><u>Contributions as a Percentage of Payroll</u></b>			
Statutory Funding Rate	57.66%	57.66%	
Normal Cost Rate	26.59%	26.51%	
Administrative Expense	N/A	0.19%	
Available for Amortization of UAL	31.07%	30.96%	
Period to Amortize	13.9 years	11.3 years	
Projected 30-year Level Funding Rate	45.03%	42.31%	
Projected Shortfall (Surplus)	(12.63%)	(15.35%)	

\* Based on PERA categorization for the annual report. For actuarial valuation purposes, 63 members in 2013 and 63 members in 2014 were valued as disabled members with offsetting reductions to the number of retired members.

\*\* A reconciliation between participant counts used in the valuation and counts used in the annual report appears at the beginning of Appendix A.

## 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 have an impact upon benefit levels, State contributions, and the ultimate security of participants' benefits.

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

- **Disclosure** of System assets at June 30, 2013 and June 30, 2014;
- 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 **cash flows** for the next 10 years.

### **Disclosure**

The market value of assets represents "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 as the difference between the actual market return and the expected market return using the assumed rate of investment return.

MONTANA FIREFIGHTERS' UNIFIED RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2014

**SECTION II  
ASSETS**

<b>Table II-1</b>	
<b>Changes in Market Values</b>	
<b>Value of Assets – June 30, 2013</b>	<b>\$ 271,825,743</b>
<b><u>Additions</u></b>	
Member Contributions	\$ 4,691,799
Employer Contributions	5,767,277
State Contributions	13,007,210
Investment Return	45,464,858
Other	5,534
<b>Total Additions</b>	<b>\$ 68,936,678</b>
<b><u>Deductions</u></b>	
Benefit Payments	\$ 19,052,130
Administrative Expenses	153,622
<b>Total Deductions</b>	<b>\$ 19,205,752</b>
<b>Value of Assets – June 30, 2014</b>	<b>\$ 321,556,669</b>

**MONTANA FIREFIGHTERS' UNIFIED RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2014**

**SECTION II  
ASSETS**

**Actuarial Value of Assets (AVA)**

The actuarial value of assets represents a “smoothed” value developed by the actuary to reduce, or eliminate, volatile 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, 2014 valuation.

<b>Table II-2 Market Value Gain/(Loss)</b>	
Value of Assets – June 30, 2013	\$ 271,825,743
Total Contributions	\$ 23,471,820
Benefit Payments	(19,052,130)
Expected Return at 7.75%	<u>21,234,563</u>
Expected Value at June 30, 2014	\$ 297,479,996
Actual Value at June 30, 2014	\$ 321,556,669
Investment Gain/(Loss)	\$ 24,076,673

<b>Table II-3 Develop Excluded Gain/(Loss)</b>		
	<b>Total Gain/(Loss)</b>	<b>Excluded Portion</b>
Exclude 75% of 2014 Gain/(Loss)	\$ 24,076,673	\$ 18,057,505
Exclude 50% of 2013 Gain/(Loss)	\$ 11,221,779	\$ 5,610,890
Exclude 25% of 2012 Gain/(Loss)	\$ (12,244,208)	\$ (3,061,052)
Total Excluded Gain/(Loss) for AVA Calculation		\$ 20,607,343

<b>Table II-4 Actuarial Value of Assets</b>	
Market Value of Assets – June 30, 2014	\$ 321,556,669
Total Gain/(Loss) excluded	<u>20,607,343</u>
Actuarial Value of Assets – June 30, 2014	\$ 300,949,326

**MONTANA FIREFIGHTERS' UNIFIED RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2014**

**SECTION II  
ASSETS**

**Investment Performance**

The market value of assets (MVA) returned 16.53% during fiscal year ended 2014, which is more than the assumed 7.75% return. A return of 12.44% on the 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.

<b>Table II-5</b>		
<b>Annual Rates of Return</b>		
<b>Year Ending June 30,</b>	<b>Market Value</b>	<b>Actuarial Value</b>
2005	7.85%	5.47%
2006	8.66%	9.02%
2007	17.36%	11.44%
2008	(4.80%)	7.31%
2009	(20.08%)	(0.17%)
2010	11.99%	(0.83%)
2011	20.71%	0.84%
2012	2.42%	3.87%
2013	12.43%	11.05%
2014	16.53%	12.44%

**MONTANA FIREFIGHTERS' UNIFIED RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2014**

**SECTION II  
ASSETS**

**Table II-6  
Projection of System's Benefit Payments and Contributions  
(in thousands)**

<b>Year Beginning July 1,</b>	<b>Expected Benefits</b>	<b>Expected Admin Expense</b>	<b>Expected Contributions*</b>	<b>Net Cash Flow (excluding Investment Return)</b>	<b>Expected Investment Return**</b>	<b>Net Cash Flow (including Investment Return)</b>
2014	\$ 20,300	\$ 79	\$ 24,070	\$ 3,691	\$ 25,061	\$ 28,752
2015	21,277	82	25,033	3,674	27,289	30,963
2016	22,576	86	26,034	3,372	29,677	33,049
2017	23,856	89	27,075	3,130	32,229	35,359
2018	25,180	93	28,158	2,885	34,960	37,845
2019	26,597	96	29,284	2,591	37,882	40,473
2020	28,122	100	30,456	2,234	41,005	43,239
2021	29,612	104	31,674	1,958	44,345	46,303
2022	31,177	109	32,941	1,655	47,922	49,577
2023	32,839	113	34,259	1,307	51,751	53,058

\* 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 investment return is based upon an assumed return of 7.75% per annum.

Expected benefit payments are projected for the closed group valued at June 30, 2014. Projecting any farther than 10 years using a closed-group would not yield reliable predictions due to the omission of new hires.

### SECTION III LIABILITIES

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

- **Disclosure** of System liabilities at June 30, 2013 and June 30, 2014;
- Statement of **changes** in these liabilities during the year;
- 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 19-2-407.

#### 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 for the current participants, assuming participants continue to accrue benefits and all of the assumptions are met.
- **Actuarial 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 Benefits:** 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 liability type, a **net surplus** or an **unfunded liability**.

MONTANA FIREFIGHTERS' UNIFIED RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2014

**SECTION III  
LIABILITIES**

**Table III-1  
Liabilities/Net (Surplus)/Unfunded**

	June 30, 2013	June 30, 2014
<b><u>Present Value of Benefits</u></b>		
Active Participant Benefits	\$ 249,388,410	\$ 263,121,452
Retiree and Inactive Benefits	251,498,837	263,382,739
<b>Present Value of Benefits (PVB)</b>	<b>\$ 500,887,247</b>	<b>\$ 526,504,191</b>
Market Value of Assets (MVA)	\$ 271,825,743	\$ 321,556,669
Future Member Contributions	42,336,359	43,803,467
Future Employer Contributions	186,018,595	192,464,812
Funding Shortfall/(Surplus)	706,550	(31,320,757)
<b>Total Resources</b>	<b>\$ 500,887,247</b>	<b>\$ 526,504,191</b>
<b><u>Actuarial Liability</u></b>		
Present Value of Benefits (PVB)	\$ 500,887,247	\$ 526,504,191
Present Value of Future Normal Costs (PVFNC)	104,118,070	107,490,828
<b>Actuarial Liability (AL=PVB-PVFNC)</b>	<b>396,769,177</b>	<b>419,013,363</b>
Actuarial Value of Assets (AVA)	263,482,680	300,949,326
<b>Net (Surplus)/Unfunded (AL – AVA)</b>	<b>\$ 133,286,497</b>	<b>\$ 118,064,037</b>
<b><u>Present Value of Accrued Benefits</u></b>		
Present Value of Benefits (PVB)	\$ 500,887,247	\$ 526,504,191
Present Value of Future Benefit Accruals (PVFBA)	147,551,578	154,054,156
<b>Present Value of Accrued Benefits (PVAB=PVB-PVFBA)</b>	<b>\$ 353,335,669</b>	<b>\$ 372,450,035</b>
Market Value of Assets (MVA)	271,825,743	321,556,669
<b>Net Unfunded (PVAB – MVA)</b>	<b>\$ 81,509,926</b>	<b>\$ 50,893,366</b>

**MONTANA FIREFIGHTERS' UNIFIED RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2014**

**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 changing 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 the 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. On the next page we provide more detail on the sources of the actuarial (gain)/loss as measured on the basis of actuarial liability.

<b>Table III-2 Changes in Liabilities</b>			
	<b>Present Value of Benefits</b>	<b>Actuarial Liability</b>	<b>Present Value of Accrued Liability</b>
Liabilities June 30, 2013	\$ 500,887,247	\$ 396,769,177	\$ 353,335,669
Liabilities June 30, 2014	526,504,191	419,013,363	372,450,035
Liability			
Increase (Decrease)	25,616,944	22,244,186	19,114,366
Change Due to:			
Actuarial (Gain)/Loss	NC*	(159,885)	NC*
Plan Changes	0	0	0
Benefits Accumulated and Other Sources	25,616,944	22,404,071	19,114,366

\* NC = not calculated.

**MONTANA FIREFIGHTERS' UNIFIED RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2014**

**SECTION III  
LIABILITIES**

**Table III-3  
Summary of Actuarial Gains and Losses as of June 30, 2014**

Actuarial Liabilities as of June 30, 2013	\$ 396,769,177
Normal Cost	10,608,895
Actual Benefit Payments	(19,052,130)
Interest	<u>30,847,306</u>
Expected Actuarial Liability as of June 30, 2014	\$ 419,173,248
Actuarial Liability as of June 30, 2014	\$ 419,013,363
Liability (Gain)/Loss	\$ (159,885)
Sources of Liability (Gain)/Loss	
Salary (Gain)/Loss	\$ (208,577)
New Participant (Gain)/Loss	304,912
Active Retirements (Gain)/Loss	(345,503)
Active Terminations (Gain)/Loss	(190,937)
Active Deaths (Gain)/Loss	(21,879)
Active Disability (Gain)/Loss	342,191
Inactive Mortality (Gain)/Loss	(907,758)
Other (Gain)/Loss	867,666
Actuarial Liability as of June 30, 2014	\$ 419,013,363
Liability (Gain)/Loss due to plan changes	\$ 0
Liability (Gain)/Loss due to new fire districts	\$ 0
Actuarial Value of Assets as of June 30, 2013	\$ 263,482,680
Net Cash Flow	4,419,690
Expected Earnings	<u>20,587,975</u>
Expected Actuarial Value of Assets as of June 30, 2014	\$ 288,490,345
Actuarial Value of Assets as of June 30, 2014	\$ 300,949,326
Investment (Gain)/Loss	\$ (12,458,981)
Total Liability (Gain)/Loss	<u>(159,885)</u>
Total Actuarial (Gain)/Loss	\$ (12,618,866)

**MONTANA FIREFIGHTERS' UNIFIED RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2014**

**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.

<b>Table III-4 Actuarial Liabilities for Funding</b>		
	<b>June 30, 2013</b>	<b>June 30, 2014</b>
1. Actuarial Liabilities		
Retiree and Inactive Benefits	\$ 251,498,837	\$ 263,382,739
Active Member Benefits	<u>145,270,340</u>	<u>155,630,624</u>
<b>Total Actuarial Liability</b>	<b>\$ 396,769,177</b>	<b>\$ 419,013,363</b>
2. Actuarial Value of Assets	\$ 263,482,680	\$ 300,949,326
3. Unfunded Actuarial Liability	\$ 133,286,497	\$ 118,064,037
4. Funded Ratio	66.4%	71.8%

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.

<b>Table III-5 Actuarial Liabilities on Market Value Basis (MCA 19-2-407)</b>		
	<b>June 30, 2013</b>	<b>June 30, 2014</b>
1. Actuarial Liabilities		
Retiree and Inactive Benefits	\$ 251,498,837	\$ 263,382,739
Active Member Benefits	<u>145,270,340</u>	<u>155,630,624</u>
<b>Total Actuarial Liability</b>	<b>\$ 396,769,177</b>	<b>\$ 419,013,363</b>
2. Market Value of Assets	\$ 271,825,743	\$ 321,556,669
3. Unfunded Actuarial Liability	\$ 124,943,434	\$ 97,456,694
4. Funded Ratio	68.5%	76.7%

**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 System. 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 Normal Actuarial Cost Method**. Under this method, there are three components to the total contribution: the **normal cost rate**, the **unfunded actuarial liability rate** (UAL rate), and the **administrative expense rate**. The normal cost rate is determined by taking the value, as of entry age into the System, 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, consistent with prior years, is the maximum amortization period that was permitted under GASB Statement No. 25. However, this rate 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%.

The assumed administrative expense rate is 0.19% of payroll. This rate, when applied to payroll, is intended to provide an allowance above the cost of funding the benefits to pay for the expense of operating this System.

**MONTANA FIREFIGHTERS' UNIFIED RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2014**

**SECTION IV  
CONTRIBUTIONS**

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

<b>Table IV-1 Statutory Basis</b>		
	<b>June 30, 2013</b>	<b>June 30, 2014</b>
<b>Statutory Funding Rates</b>		
Members	10.69%	10.69%
Employers	14.36%	14.36%
State	32.61%	32.61%
Total	57.66%	57.66%
Normal Cost Rate	26.59%	26.51%
Administrative Expense	N/A	0.19%
Funding Rate Available for Amortization	31.07%	30.96%
Unfunded Actuarial Liability (Surplus)	\$ 133,286,497	\$ 118,064,037
Years to Amortize*	13.9 years	11.3 years

\* On a market value basis, the years to amortize the Unfunded Actuarial Liability were 12.8 years at June 30, 2013 and 9.0 years at June 30, 2014.

**MONTANA FIREFIGHTERS' UNIFIED RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2014**

**SECTION IV  
CONTRIBUTIONS**

<b>Table IV-2 Calculated Contribution Basis</b>		
	<b>June 30, 2013</b>	<b>June 30, 2014</b>
Normal Cost Rate	26.59%	26.51%
Amortization Payment (30-years)	18.44%	15.61%
Administrative Expense	<u>N/A</u>	<u>0.19%</u>
Total Calculated Contribution Rate	45.03%	42.31%
Less Statutory Rate	<u>57.66%</u>	<u>57.66%</u>
Shortfall (Surplus) in Statutory Rate	(12.63%)	(15.35%)

<b>Table IV-3 Calculated Contribution on Market Value (MCA 19-2-407)</b>		
	<b>June 30, 2013</b>	<b>June 30, 2014</b>
Normal Cost Rate	26.59%	26.51%
Amortization Payment (30-years)	17.29%	12.89%
Administrative Expense	<u>N/A</u>	<u>0.19%</u>
Total Calculated Contribution Rate	43.88%	39.59%
Less Statutory Rate	<u>57.66%</u>	<u>57.66%</u>
Shortfall (Surplus) in Statutory Rate	(13.78%)	(18.07%)

The following table projects results for the next five valuations (assuming all assumptions are met, including 7.75% return).

<b>Table IV-4 Projected Actuarial Contribution Rates</b>	
<b>Valuation Year</b>	<b>Rate</b>
2015	40.24%
2016	37.81%
2017	35.74%
2018	34.36%
2019	32.93%

**MONTANA FIREFIGHTERS' UNIFIED RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2014**

**SECTION V  
FINANCIAL STATEMENT INFORMATION**

Prior to the current plan year, Statement No. 25 of the Governmental Accounting Standards Board (GASB) established standards for disclosure of pension information by public employee retirement systems (PERS) and governmental employers in notes to financial statements and supplementary information. While GASB-25 is no longer applicable for this System, the requirements of GASB Statement No. 27 remain in effect for the employer(s) who contribute(s) to the System. Therefore, the GASB-25 information is provided similarly as in prior years. The GASB-25 actuarial liability is the same as the actuarial liability amount calculated for funding purposes.

GASB-25 was replaced by GASB-67 effective June 30, 2014 for plan disclosures, which have been provided in a separate report. For employers with June 30 fiscal years, GASB-68 will replace GASB-27 effective for the fiscal year ending June 30, 2015.

Accounting Standard Codification Topic No. 960 of the Financial Accounting Standards Board specifies certain information for a plan to disclose regarding its funded status. 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.

Both the present value of accrued benefits (FASB ASC Topic No. 960) and the actuarial liability (GASB-25/27) 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. 25/27 required the actuarial liability be compared with the actuarial value of assets for funding purposes. The relevant amounts as of June 30, 2014 are exhibited in Table V-1.

Table V-2, Note to Required Supplementary Information, may be used for employers’ CAFRs in relation to GASB-27.

Tables V-3 through V-5 are exhibits which may be used for the System’s CAFR. Table V-3 is a history of gains and losses in Accrued Liability, Table V-4 is the Schedule of Funding Progress, and Table V-5 is the Solvency Test which shows the portion of Accrued Liability covered by Assets.

MONTANA FIREFIGHTERS' UNIFIED RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2014

**SECTION V**  
**FINANCIAL STATEMENT INFORMATION**

<b>Table V-1</b>		
<b>Financial Statement Information</b>		
	<b>June 30, 2013</b>	<b>June 30, 2014</b>
<b>A. FASB ASC Topic No. 960 Basis</b>		
1. Present Value of Benefits Accrued and Vested to Date		
a. Members Currently Receiving Payments	\$ 248,722,570	\$ 260,538,058
b. Former Vested Members	2,776,267	2,844,681
c. Active Members	<u>101,836,832</u>	<u>109,067,296</u>
2. Total Present Value of Accrued Benefits (1 (a) + 1(b) + 1(c))	\$ 353,335,669	\$ 372,450,035
3. Assets at Market Value	<u>271,825,743</u>	<u>321,556,669</u>
4. Unfunded Present Value of Accrued Benefits (2 – 3)	\$ 81,509,926	\$ 50,893,366
5. Ratio of Assets to Present Value of Accrued Benefits (3 / 2)	76.9%	86.3%
<b>B. GASB No. 25/27 Basis</b>		
1. Actuarial Liabilities for retirees and beneficiaries currently receiving benefits and terminated employees not yet receiving benefits	\$ 251,498,837	\$ 263,382,739
2. Actuarial Liabilities for current employees	<u>145,270,340</u>	<u>155,630,624</u>
3. Total Actuarial Liability (1 + 2)	\$ 396,769,177	\$ 419,013,363
4. Net Actuarial Assets available for benefits	<u>263,482,680</u>	<u>300,949,326</u>
5. Unfunded Actuarial Liability (3 – 4)	\$ 133,286,497	\$ 118,064,037

**MONTANA FIREFIGHTERS' UNIFIED RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2014**

**SECTION V  
FINANCIAL 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, 2014
Actuarial cost method	Entry Age Normal
Amortization method	Open
Remaining amortization period for Actuarial Contribution	30 years
Asset valuation method	Four-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, amortization of the unfunded actuarial liability, and an allowance for administrative expenses. The normal cost is a level percent of payroll cost which will pay for projected benefits at retirement for each participant. The actuarial 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 liability. The allowance for administrative expenses is based upon the System's recent history of administrative expenses.

MONTANA FIREFIGHTERS' UNIFIED RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2014

**SECTION V**  
**FINANCIAL 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**

<b>Type of Activity</b>	<i>Gain (or Loss) for Year ending June 30, (expressed in thousands)</i>					
	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>
Investment Income on Actuarial Assets	\$ (17,007)	\$ (18,762)	\$(14,918)	\$ (8,621)	\$ 7,762	\$ 12,459
Combined Liability Experience	<u>(2,846)</u>	<u>(1,396)</u>	<u>(804)</u>	<u>(2,047)</u>	<u>1,384</u>	<u>160</u>
(Loss)/Gain During Year from Financial Experience	\$ (19,853)	\$ (20,158)	\$(15,722)	\$ (10,668)	\$ 9,146	\$ 12,619
Non-Recurring Items	<u>0</u>	<u>(9,873)</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Composite Gain (or Loss) During Year	\$ (19,853)	\$ (30,031)	\$(15,722)	\$ (10,668)	\$ 9,146	\$ 12,619

MONTANA FIREFIGHTERS' UNIFIED RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2014

**SECTION V**  
**FINANCIAL STATEMENT INFORMATION**

**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
2014	\$ 300,949	\$ 419,013	72 %	\$ 118,064	\$ 39,892	296 %
2013	263,483	396,769	66 %	133,286	37,963	351 %
2012	233,121	377,211	62 %	144,090	36,177	398 %
2011	219,959	355,188	62 %	135,229	34,852	388 %
2010	213,755	335,463	64 %	121,708	33,339	365 %
2009	209,775	306,235	69 %	96,460	30,160	320 %

**Table V-5**  
**Solvency Test**  
**Aggregate Accrued Liabilities for**  
(expressed in thousands)

Valuation Date June 30,	Active Member Contributions (1)	Retirees & Beneficiaries (2)	Active Member Employer Financed Contributions (3)	Actuarial Value of Reported Assets	Portion of Accrued Liabilities Covered by Reported Assets		
					(1)	(2)	(3)
2014	\$ 38,805	\$ 260,538	\$ 119,670	\$ 300,949	100 %	100 %	1 %
2013	36,441	248,723	111,606	263,483	100 %	91 %	0 %
2012	34,790	235,553	106,868	233,121	100 %	84 %	0 %
2011	33,089	219,842	102,257	219,959	100 %	85 %	0 %
2010	31,422	207,715	96,326	213,755	100 %	88 %	0 %
2009	28,561	194,949	82,725	209,775	100 %	93 %	0 %

**MONTANA FIREFIGHTERS' UNIFIED RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2014**

**APPENDIX A  
MEMBERSHIP INFORMATION**

<b>Reconciliation of Participant Counts</b>						
	<b>Active</b>	<b>Disabled</b>	<b>Retirees and Beneficiaries</b>	<b>Terminated Vested Members</b>	<b>Terminated Non-Vested Members</b>	<b>Total</b>
Participant counts used for valuation	616	63	533	19	66	1,297
Disabled members having attained normal retirement age		(53)	53			-
Beneficiaries of Disabled Members						-
Beneficiaries with less than one year of certain payments remaining						-
Other Adjustments			(1)			(1)
Participant counts shown in Annual Financial Report	616	10	585	19	66	1,296

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 9) match the CAFR reports at the request of the Board. The differences between the counts have no material effect upon the liability calculation.

**MONTANA FIREFIGHTERS' UNIFIED RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2014**

**APPENDIX A  
MEMBERSHIP INFORMATION**

<b>Status Reconciliation</b>							
	<b>Active</b>	<b>Retired</b>	<b>Vested</b>	<b>Non Vested</b>	<b>Disabled</b>	<b>Survivor</b>	<b>Total</b>
<b>Members on July 1, 2013</b>	610	371	15	63	63	153	1,275
<b>New Hires</b>	37	0	0	0	0	0	37
<b>Rehires</b>	1	0	0	(1)	0	0	0
<b>Retired</b>	(11)	13	(2)	0	0	0	0
<b>Terminated Vested</b>	(6)	0	6	0	0	0	0
<b>Terminated Non Vested</b>	(11)	0	0	11	0	0	0
<b>Active Deaths</b>	(1)	0	0	0	0	1	0
<b>Became Disabled</b>	(3)	0	0	0	3	0	0
<b>In Pay Deaths</b>	0	(12)	0	0	(3)	(9)	(24)
<b>Survivors</b>	0	1	0	0	0	15	16
<b>Cash Out</b>	0	0	0	(7)	0	0	(7)
<b>Members on July 1, 2014</b>	616	373	19	66	63	160	1,297

The salaries used in the tables and charts which follow are different than the salaries used for the Board Summary on page 9. For this Appendix A, the valuation projected salaries to be paid for the following fiscal year, whereas for the Board Summary, salaries are applicable in the year ending on 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 9. 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 FIREFIGHTERS' UNIFIED RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2014**

**APPENDIX A  
MEMBERSHIP INFORMATION**

**Montana Firefighters' Unified Retirement System Distribution of Active Members  
by Age and Service as of June 30, 2014**

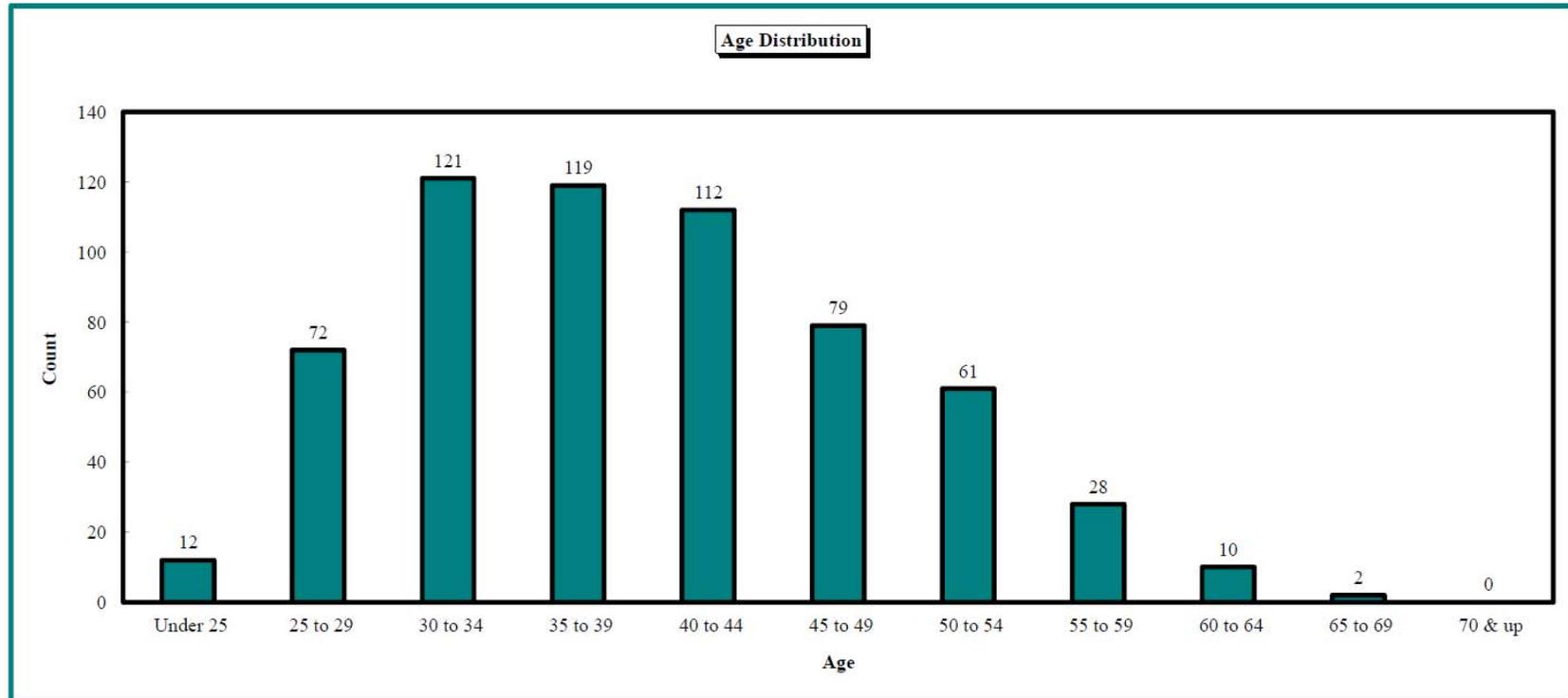
COUNTS BY AGE/SERVICE

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	7	5	0	0	0	0	0	0	0	0	12
25 to 29	9	51	12	0	0	0	0	0	0	0	72
30 to 34	9	38	67	7	0	0	0	0	0	0	121
35 to 39	6	19	54	35	5	0	0	0	0	0	119
40 to 44	2	9	22	43	32	3	1	0	0	0	112
45 to 49	1	4	5	21	30	18	0	0	0	0	79
50 to 54	0	1	2	5	11	20	20	2	0	0	61
55 to 59	1	3	2	1	2	6	9	2	2	0	28
60 to 64	0	2	1	0	1	1	4	0	1	0	10
65 to 69	0	0	1	1	0	0	0	0	0	0	2
70 & up	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	35	132	166	113	81	48	34	4	3	0	616

MONTANA FIREFIGHTERS' UNIFIED RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2014

APPENDIX A  
MEMBERSHIP INFORMATION

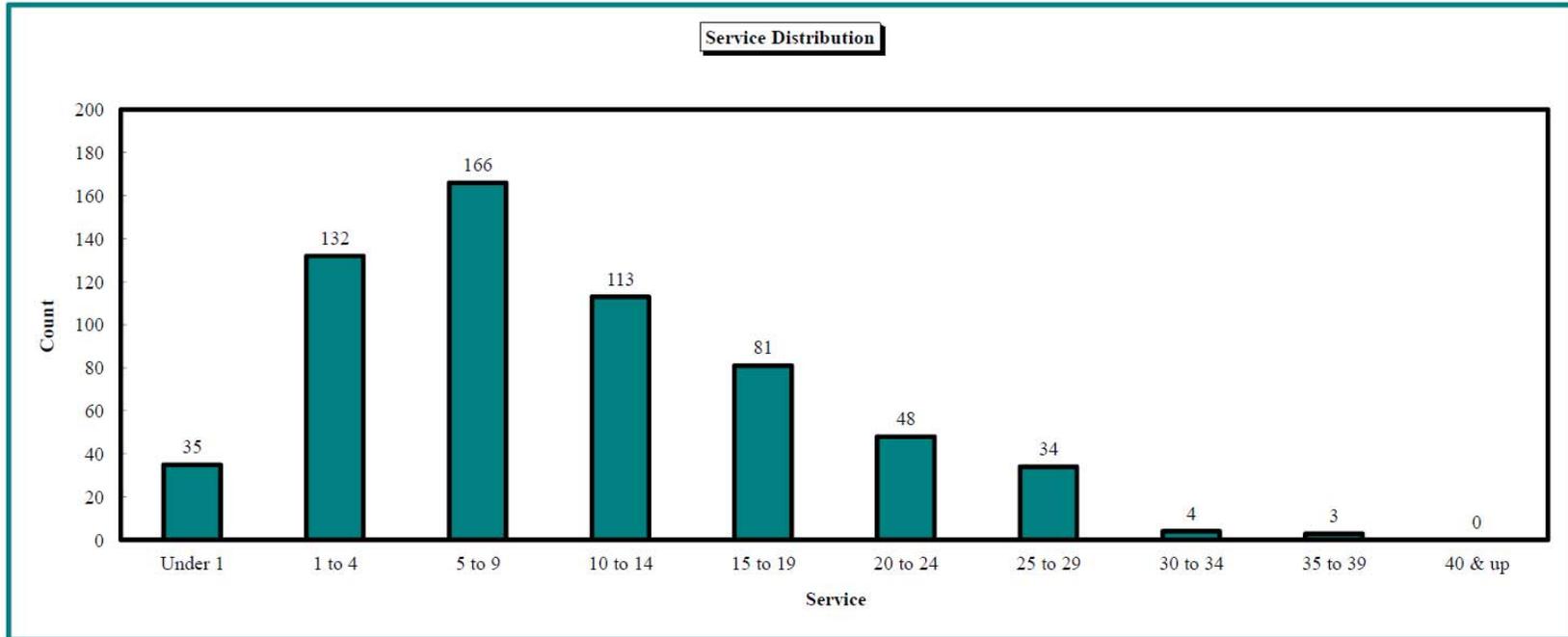
Montana Firefighters' Unified Retirement System Distribution of Active Members  
by Age as of June 30, 2014



MONTANA FIREFIGHTERS' UNIFIED RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2014

APPENDIX A  
MEMBERSHIP INFORMATION

Montana Firefighters' Unified Retirement System Distribution of Active Members  
by Service as of June 30, 2014



**MONTANA FIREFIGHTERS' UNIFIED RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2014**

**APPENDIX A  
MEMBERSHIP INFORMATION**

**Montana Firefighters' Unified Retirement System Distribution of Active Members  
by Age and Service as of June 30, 2014**

**AVERAGE SALARY BY AGE/SERVICE**

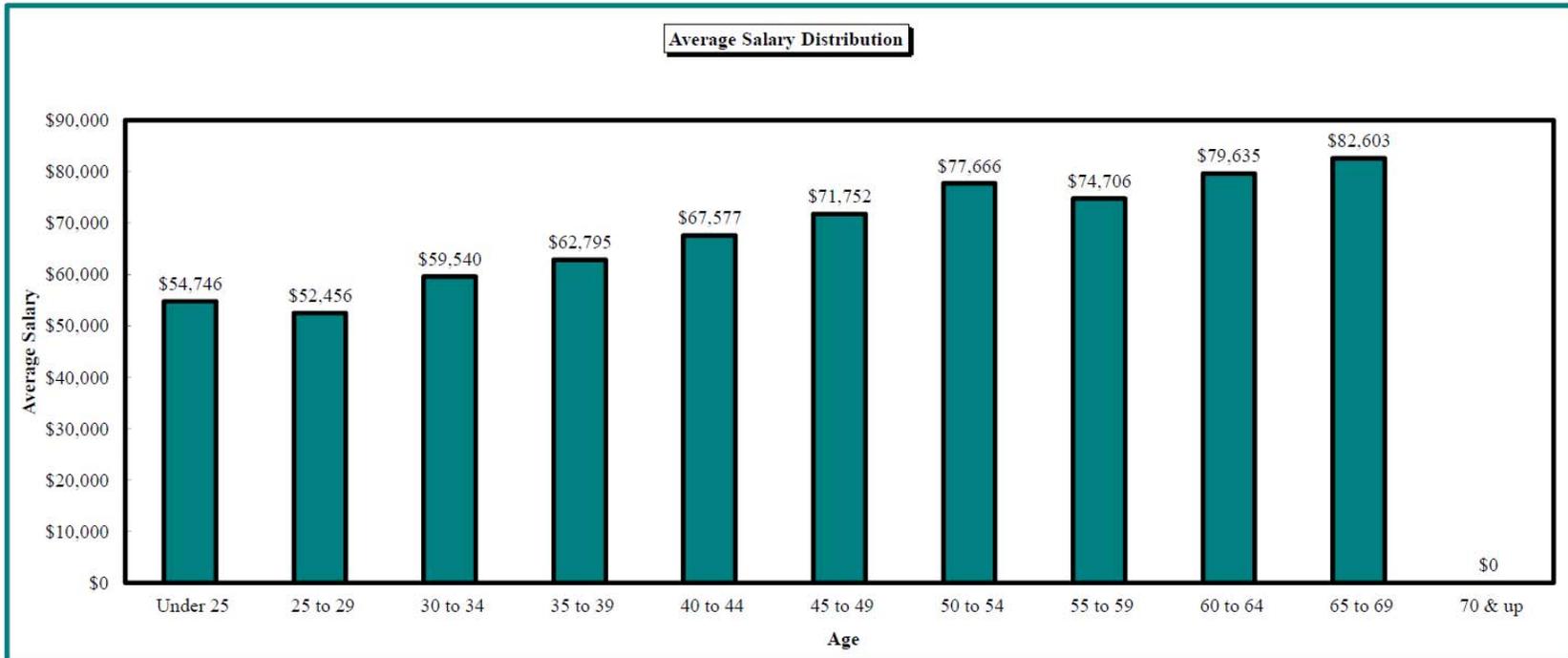
Age	Service										Total
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up	
Under 25	\$52,340	\$58,114	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$54,746
25 to 29	\$47,198	\$51,708	\$59,577	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$52,456
30 to 34	\$52,221	\$54,480	\$62,185	\$71,100	\$0	\$0	\$0	\$0	\$0	\$0	\$59,540
35 to 39	\$42,382	\$56,359	\$62,307	\$68,916	\$74,166	\$0	\$0	\$0	\$0	\$0	\$62,795
40 to 44	\$53,001	\$53,109	\$60,013	\$69,643	\$74,407	\$75,256	\$62,940	\$0	\$0	\$0	\$67,577
45 to 49	\$37,262	\$87,085	\$66,266	\$67,231	\$69,532	\$80,759	\$0	\$0	\$0	\$0	\$71,752
50 to 54	\$0	\$42,713	\$70,073	\$62,740	\$73,178	\$77,501	\$84,778	\$95,279	\$0	\$0	\$77,666
55 to 59	\$84,449	\$77,327	\$71,308	\$69,468	\$62,982	\$69,305	\$78,142	\$83,900	\$75,188	\$0	\$74,706
60 to 64	\$0	\$71,545	\$120,934	\$0	\$40,659	\$75,673	\$83,229	\$0	\$83,078	\$0	\$79,635
65 to 69	\$0	\$0	\$90,586	\$74,621	\$0	\$0	\$0	\$0	\$0	\$0	\$82,603
70 & up	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Total</b>	\$49,805	\$55,400	\$62,601	\$68,797	\$71,721	\$77,520	\$82,197	\$89,589	\$77,818	\$0	\$65,160

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

MONTANA FIREFIGHTERS' UNIFIED RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2014

APPENDIX A  
MEMBERSHIP INFORMATION

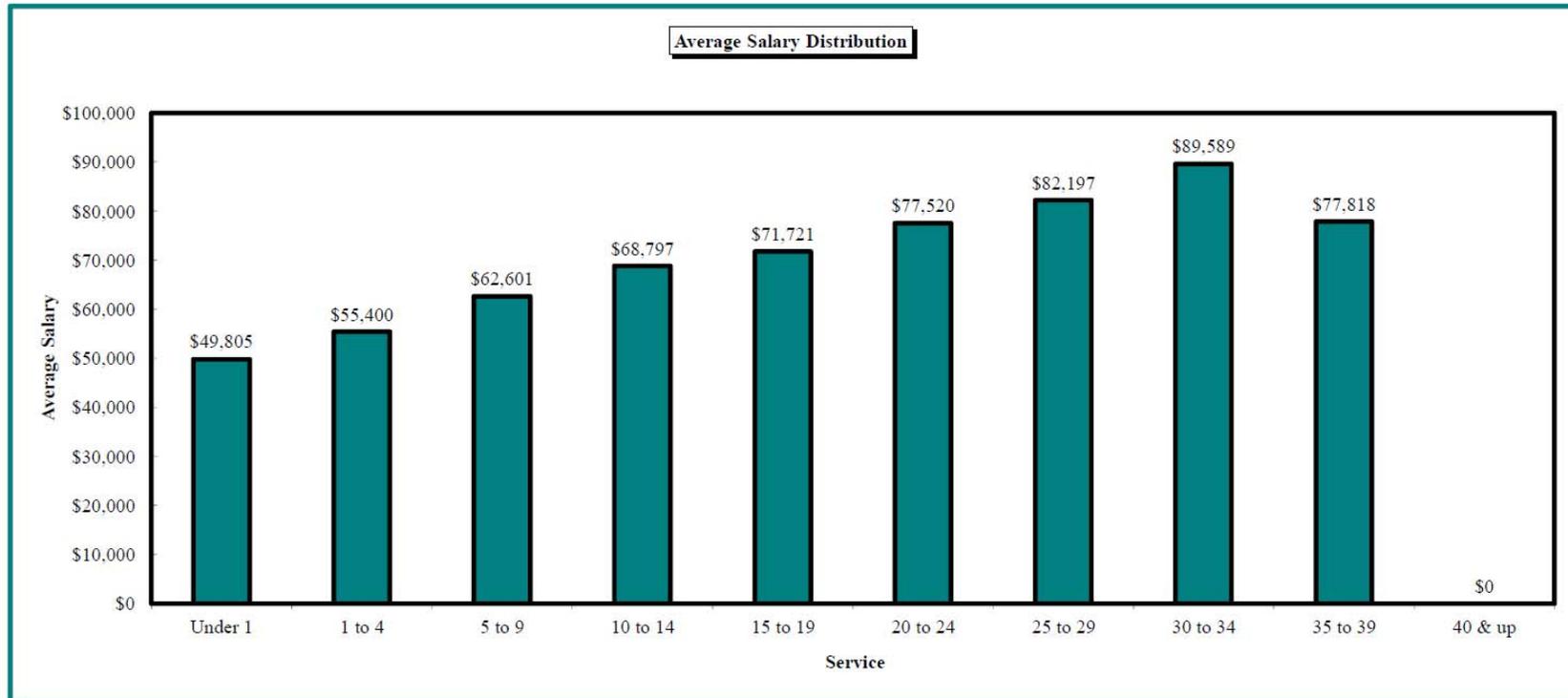
Montana Firefighters' Unified Retirement System Distribution of Active Members  
by Age as of June 30, 2014



MONTANA FIREFIGHTERS' UNIFIED RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2014

APPENDIX A  
MEMBERSHIP INFORMATION

Montana Firefighters' Unified Retirement System Distribution of Active Members  
by Service as of June 30, 2014



**MONTANA FIREFIGHTERS' UNIFIED RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2014**

**APPENDIX A  
MEMBERSHIP INFORMATION**

**Montana Firefighters' Unified Retirement System Distribution of Retired  
Members, Survivors, and Disabled Members as of June 30, 2014**

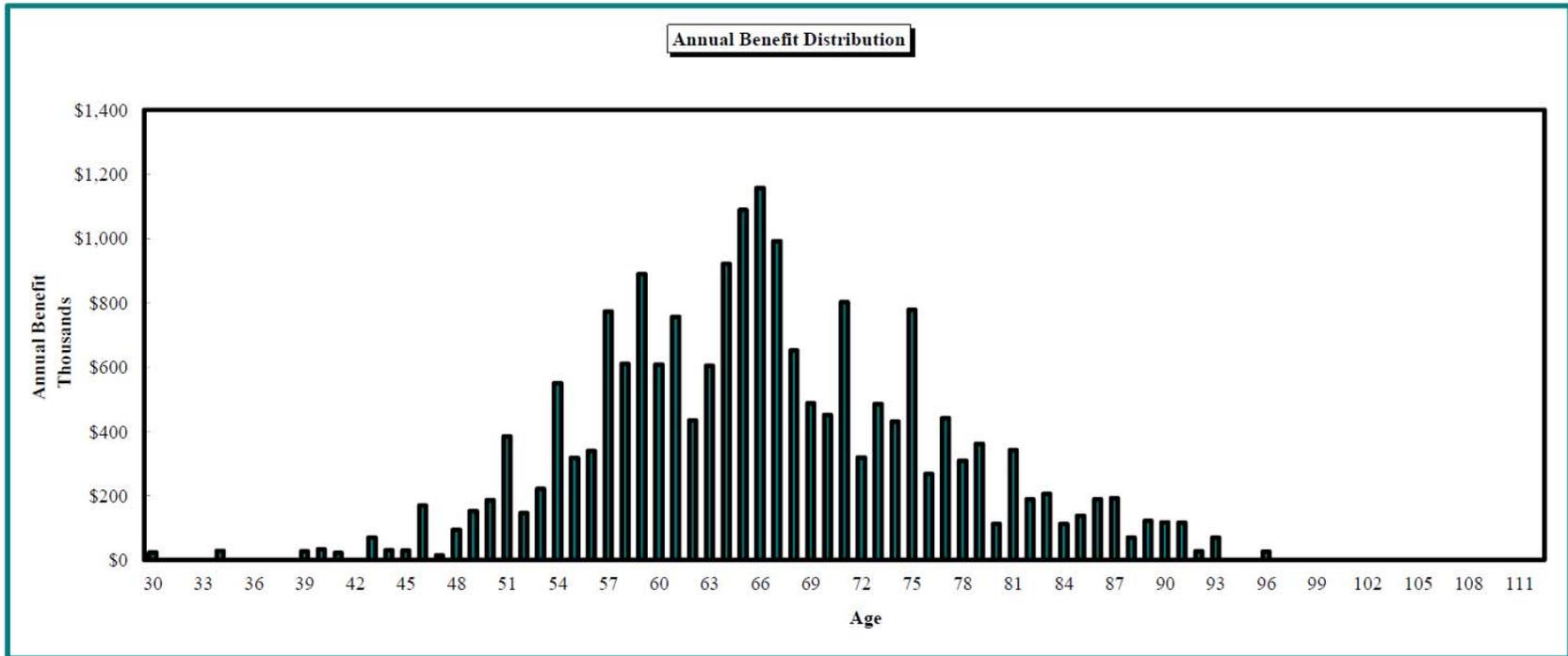
Age	Count	Annual Benefit	Age	Count	Annual Benefit
<25	0	\$0	73	17	\$485,498
25	0	\$0	74	13	\$430,308
26	0	\$0	75	27	\$777,941
27	0	\$0	76	11	\$267,871
28	0	\$0	77	14	\$441,322
29	0	\$0	78	15	\$309,218
30	1	\$23,266	79	17	\$361,245
31	0	\$0	80	4	\$112,645
32	0	\$0	81	13	\$341,702
33	0	\$0	82	7	\$188,943
34	1	\$28,811	83	8	\$205,913
35	0	\$0	84	5	\$112,385
36	0	\$0	85	7	\$137,150
37	0	\$0	86	10	\$188,442
38	0	\$0	87	8	\$192,413
39	1	\$26,993	88	5	\$69,580
40	2	\$33,169	89	5	\$121,946
41	1	\$22,316	90	6	\$117,241
42	0	\$0	91	5	\$115,208
43	2	\$69,990	92	1	\$26,981
44	1	\$30,735	93	3	\$69,016
45	1	\$29,259	94	0	\$0
46	5	\$169,550	95	0	\$0
47	1	\$14,855	96	1	\$25,301
48	4	\$94,127	97	0	\$0
49	4	\$152,815	98	0	\$0
50	4	\$186,106	99	0	\$0
51	10	\$384,160	100	0	\$0
52	8	\$146,678	101	0	\$0
53	10	\$220,950	102	0	\$0
54	16	\$549,547	103	0	\$0
55	11	\$317,433	104	0	\$0
56	9	\$339,923	105	0	\$0
57	21	\$773,745	106	0	\$0
58	17	\$610,741	107	0	\$0
59	22	\$889,640	108	0	\$0
60	16	\$608,361	109	0	\$0
61	19	\$756,342	110	0	\$0
62	11	\$434,273	111	0	\$0
63	19	\$604,330	112	0	\$0
64	20	\$921,487	113	1	\$21,840
65	27	\$1,088,754	114	0	\$0
66	28	\$1,157,077	115	0	\$0
67	26	\$992,319	116	0	\$0
68	18	\$652,043	117	0	\$0
69	12	\$488,041	118	0	\$0
70	13	\$451,404	119	0	\$0
71	23	\$802,539	120	0	\$0
72	9	\$318,974			
			Totals	596	\$19,510,865

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 where applicable.

MONTANA FIREFIGHTERS' UNIFIED RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2014

APPENDIX A  
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Montana Firefighters' Unified Retirement System Distribution of Retired  
Members, Survivors, and Disabled Members as of June 30, 2014



**MONTANA FIREFIGHTERS' UNIFIED RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2014**

**APPENDIX A  
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**Montana Firefighters' Unified Retirement System Distribution of  
Terminated Vested Members as of June 30, 2014**

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	1	\$11,017	\$0	79	0	\$0	\$0
31	0	\$0	\$0	80	0	\$0	\$0
32	3	\$28,335	\$0	81	0	\$0	\$0
33	0	\$0	\$0	82	0	\$0	\$0
34	1	\$7,854	\$0	83	0	\$0	\$0
35	0	\$0	\$0	84	0	\$0	\$0
36	0	\$0	\$0	85	0	\$0	\$0
37	4	\$46,137	\$0	86	0	\$0	\$0
38	1	\$8,323	\$0	87	0	\$0	\$0
39	0	\$0	\$0	88	0	\$0	\$0
40	0	\$0	\$0	89	0	\$0	\$0
41	1	\$5,759	\$0	90	0	\$0	\$0
42	1	\$9,628	\$0	91	0	\$0	\$0
43	2	\$22,187	\$0	92	0	\$0	\$0
44	1	\$12,081	\$0	93	0	\$0	\$0
45	0	\$0	\$0	94	0	\$0	\$0
46	0	\$0	\$0	95	0	\$0	\$0
47	0	\$0	\$0	96	0	\$0	\$0
48	1	\$39,485	\$0	97	0	\$0	\$0
49	1	\$19,397	\$0	98	0	\$0	\$0
50	0	\$0	\$0	99	0	\$0	\$0
51	0	\$0	\$0	100	0	\$0	\$0
52	1	\$10,478	\$0	101	0	\$0	\$0
53	0	\$0	\$0	102	0	\$0	\$0
54	1	\$7,697	\$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					19	\$228,378	\$0

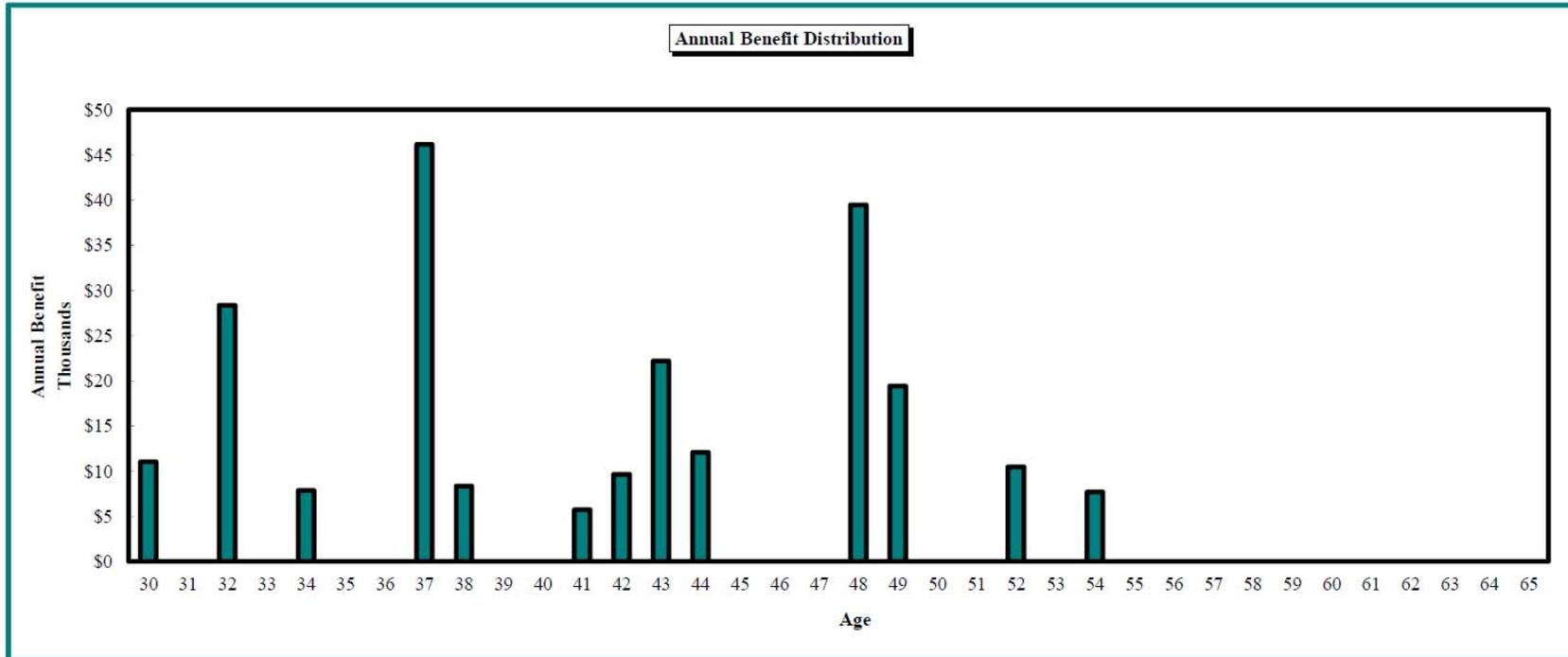
\* payable at the greater of age 50 or current age (use current age if member has 20 years of service)

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

MONTANA FIREFIGHTERS' UNIFIED RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2014

APPENDIX A  
MEMBERSHIP INFORMATION

Montana Firefighters' Unified Retirement System Distribution of  
Terminated Vested Members as of June 30, 2014



**MONTANA FIREFIGHTERS' UNIFIED RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2014**

**APPENDIX A  
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**Montana Firefighters' Unified Retirement System Distribution of  
Terminated Non-Vested Members as of June 30, 2014**

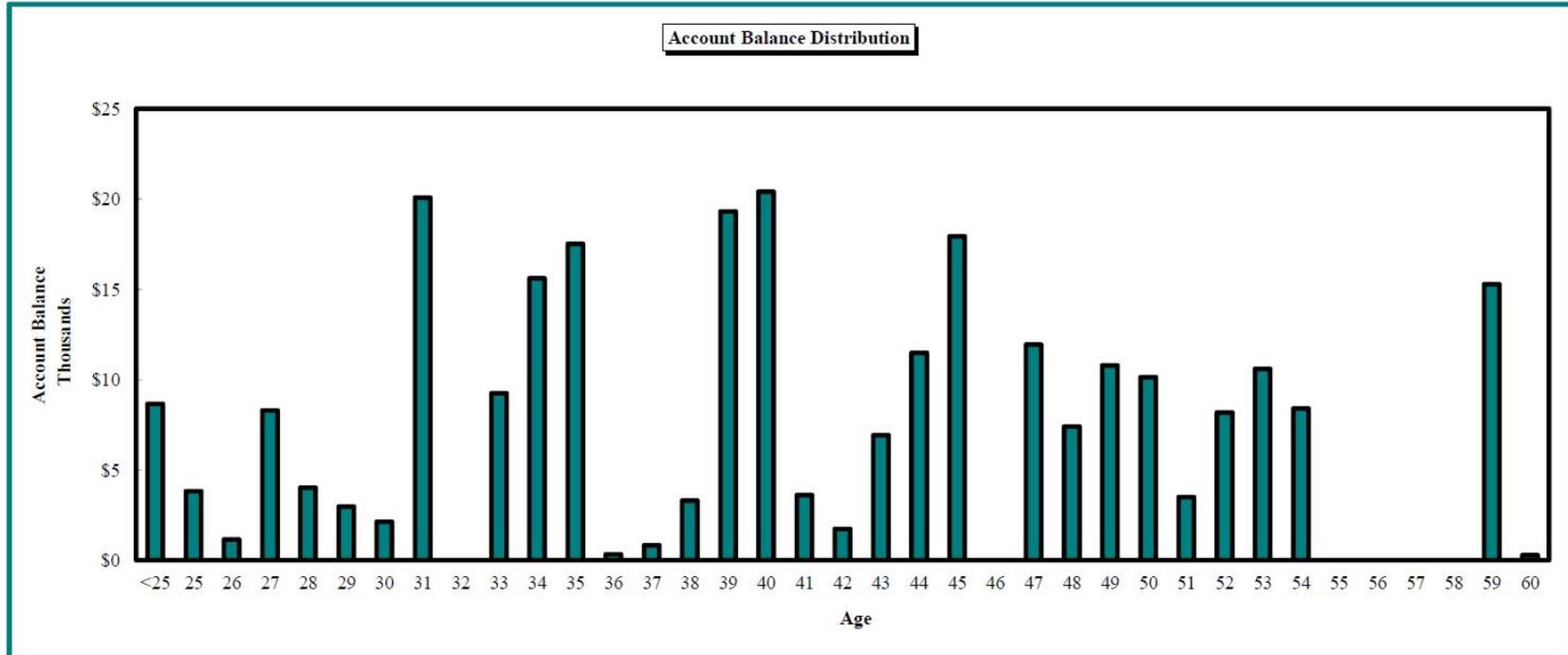
Age	Count	Account Balance	Age	Count	Account Balance
<25	6	\$8,656	73	0	\$0
25	1	\$3,832	74	0	\$0
26	1	\$1,159	75	0	\$0
27	2	\$8,303	76	0	\$0
28	4	\$4,020	77	0	\$0
29	3	\$2,979	78	0	\$0
30	1	\$2,131	79	0	\$0
31	3	\$20,077	80	0	\$0
32	0	\$0	81	0	\$0
33	2	\$9,262	82	0	\$0
34	1	\$15,616	83	0	\$0
35	3	\$17,517	84	0	\$0
36	1	\$333	85	0	\$0
37	3	\$833	86	0	\$0
38	3	\$3,308	87	0	\$0
39	5	\$19,315	88	0	\$0
40	5	\$20,398	89	0	\$0
41	2	\$3,613	90	0	\$0
42	1	\$1,744	91	0	\$0
43	1	\$6,938	92	0	\$0
44	2	\$11,477	93	0	\$0
45	2	\$17,925	94	0	\$0
46	0	\$0	95	0	\$0
47	2	\$11,942	96	0	\$0
48	1	\$7,397	97	0	\$0
49	2	\$10,802	98	0	\$0
50	1	\$10,142	99	0	\$0
51	2	\$3,508	100	0	\$0
52	1	\$8,197	101	0	\$0
53	2	\$10,602	102	0	\$0
54	1	\$8,413	103	0	\$0
55	0	\$0	104	0	\$0
56	0	\$0	105	0	\$0
57	0	\$0	106	0	\$0
58	0	\$0	107	0	\$0
59	1	\$15,278	108	0	\$0
60	1	\$277	109	0	\$0
61	0	\$0	110	0	\$0
62	0	\$0	111	0	\$0
63	0	\$0	112	0	\$0
64	0	\$0	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	66	\$265,995

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

MONTANA FIREFIGHTERS' UNIFIED RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2014

APPENDIX A  
MEMBERSHIP INFORMATION

Montana Firefighters' Unified Retirement System Distribution of  
Terminated Non-Vested Members as of June 30, 2014



**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**

Male and Female RP-2000 Combined Employee and Annuitant Mortality Tables. To reflect mortality improvements since the date of the table and to project future mortality improvements, the tables are projected to 2015 using scale AA.

<b>Sample Rates of Healthy Mortality</b>		
<b>Age</b>	<b>Male</b>	<b>Female</b>
50	0.163%	0.130%
55	0.272%	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**

Male and Female RP-2000 Combined Employee and Annuitant Mortality Tables with no projections. No future mortality improvement is assumed.

<b>Sample Rates of Disabled Inactive Mortality</b>		
<b>Age</b>	<b>Male</b>	<b>Female</b>
50	0.214%	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 FIREFIGHTERS' UNIFIED RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2014**

**APPENDIX B  
ACTUARIAL ASSUMPTIONS AND METHODS**

**c. Rates of Active Disability**

<b>Sample Rates of Active Disability</b>	
<b>Age</b>	<b>Rate</b>
22	0.00%
27	0.10%
32	0.10%
37	0.10%
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)**

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

**e. Probability of Electing a Refund of Member Contributions upon Termination**

<b>Probability of Electing Refund</b>		
<b>Age at Term.</b>	<b>Non-Vested</b>	<b>Vested</b>
Under 35	100%	50%
35-39	100%	20%
40-44	100%	20%
45-49	100%	20%
50 & Over	100%	0%

**MONTANA FIREFIGHTERS' UNIFIED RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2014**

**APPENDIX B  
ACTUARIAL ASSUMPTIONS AND METHODS**

**f. Retirement**

<b>Annual Retirement Rates</b>	
<b>Age</b>	<b>20 years or more</b>
<50	5%
50 – 54	10%
55 – 59	25%
60 – 62	50%
63 & over	100%

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

**g. 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).

<b>Service</b>	<b>Annual Increase</b>
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%

**h. 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.

**APPENDIX B**  
**ACTUARIAL ASSUMPTIONS AND METHODS**

**i. Vested Benefits for Terminated Members**

Vested benefits for members who terminated during 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**

<b>a. Rate of Investment Return:</b>	7.75% (net of investment expenses)
<b>b. Rate of Wage Inflation:</b>	4.00% (3.00% inflation plus 1.00% real wage growth)
<b>c. Interest on Member Contributions:</b>	3.50%
<b>d. Rate of Increase in Total Payroll:</b>	4.00% (for amortization and non-GABA post retirement increases)
<b>e. Administrative Expenses as a Percentage of Payroll</b>	0.19%

**3. Changes since Last Valuation**

The administrative expense assumption is now explicitly stated as a cost element rather than being included implicitly within the investment return.

**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 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 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 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 liability is amortized as a level percentage of future payroll. The valuation determines the period over which the statutory contributions will fully amortize the unfunded actuarial liability.

**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 firefighters in cities of the first and second class, and those in other cities where the city has elected to participate. The plan also covers firefighters hired by the Montana Air National Guard on or after October 1, 2001.

**2. Contributions**

For members not electing Guaranteed Annual Benefit Adjustment (GABA), members contribute 9.5% of their compensation. For members electing GABA, members contribute 10.7% of their 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.

The employer contributes 14.36% of each member’s compensation.

Beginning July 1, 2013, employers of retirees who return to work contribute 14.36% of the working retiree’s compensation.

The State contributes 32.61% 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 is paid for 160 hours. This includes certain transferred and purchased service.

**4. Membership Service**

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

**5. Highest Average Compensation (HAC)**

Highest Average Compensation is the average of the highest 36 consecutive months (or shorter period of total service) of compensation paid to the member. Compensation generally means total compensation paid, excluding overtime, holiday payments, shift differential payments, compensatory time payments, payments in lieu of sick leave or annual leave, and also excludes maintenance, allowances and expenses. Compensation is specifically defined in law for FURS. For a part-time firefighter, compensation is calculated as 15% of the regular compensation of a newly confirmed full-time firefighter.

**APPENDIX C**  
**SUMMARY OF PLAN PROVISIONS**

For members hired on or after July 1, 2013, the Highest Average Compensation calculations initially exclude amounts over 110% of the compensation included for each previous year with this excess compensation, if any, divided by the member's total months of service credit and added to the compensation for each month considered part of the member's HAC.

Bonuses paid on or after July 1, 2013 to any member will not be treated as compensation for retirement purposes. No member or employer contributions will be paid on bonuses.

**6. Service Retirement**

Eligibility: 20 years of membership service.

- Benefit:
- (i) For a member hired on or after July 1, 1981, or a member who has elected to be covered by GABA, 2.5% of HAC multiplied by years of service credit.
  - (ii) For a member hired prior to July 1, 1981 and who had not elected to be covered by GABA, the greater of (i) or:
    - (a) if membership service is less than 20, 2% of HAC multiplied by years of service credit, and
    - (b) if membership service is greater or equal to 20, 50% of highest average compensation plus 2% of HAC multiplied by years of service credit in excess of 20.

**7. Early Retirement**

Eligibility: Age 50 with five years of membership service.

Benefit: Normal retirement benefit calculated using highest average compensation and service credit at early retirement.

**8. Disability Benefit**

Eligibility: Any active member.

Benefit: The greater of (a) 50% of highest average compensation or (b) 2.5% of highest average compensation multiplied by years of service credit.

**9. Survivor's Benefit**

Eligibility: Active or retired member.

Benefit: For deaths of active members with less than 20 years of membership service, a monthly survivor benefit to the surviving spouse (or equally to dependent

**APPENDIX C**  
**SUMMARY OF PLAN PROVISIONS**

children if there is no surviving spouse or after a surviving spouse dies, for as long as they remain dependent children) equal to 50% of highest average compensation. For active or inactive members with more than 20 years of membership service, a benefit equal to the accrued retirement benefit.

**10. Vesting**

Eligibility: Employees who separate from service with at least five years of membership service.

Benefit: Accrued normal retirement benefit, payable at normal or early retirement date. In lieu of a pension, a member may receive a refund of accumulated contributions. Upon application for a refund of contributions, a member's vested right to a monthly benefit shall be forfeited.

**11. Withdrawal of Employee Contributions**

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

Benefit: Accumulated employee contributions. Upon receipt of a refund of contributions, a member's vested right to a monthly benefit is forfeited.

**12. Form of Payment**

The retirement benefit is paid for the retired member's life. Upon the death of the retired member, the benefit is paid to the 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.

**13. Post Retirement Benefit Increases**

For retired members who became active members on and after July 1, 1997 and those who elected to be covered under the GABA and who have been retired at least 12 months, a GABA will be paid each year in January equal to 3%.

For retired members who were hired prior to July 1, 1997 and who did not elect GABA, the minimum benefit adjustment is provided equal to 50% of the current base compensation of a newly confirmed active firefighter of the employer that last employed the member as a firefighter.

**14. Changes since Last Valuation**

None.

**APPENDIX D  
GLOSSARY**

**1. Actuarial Assumptions**

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disability, and retirement; changes in compensation; inflation; rates of investment earnings, and asset appreciation or depreciation; and other relevant items.

**2. Actuarial Cost Method**

A procedure for determining the Actuarial Present Value of pension plan benefits and expenses and for developing an allocation of such value to each year of service, usually in the form of a Normal Cost and an Actuarial Liability.

**3. Actuarial Gain (Loss)**

A measure of the difference between actual experience and that expected based upon a set of Actuarial Assumptions during the period between two Actuarial Valuation dates, as determined in accordance with a particular Actuarial Cost Method.

**4. Actuarial Liability**

The portion of the Actuarial Present Value of Projected Benefits which will not be paid by future Normal Costs. It represents the value of the past Normal Costs with interest to the valuation date.

**5. Actuarial Present Value (Present Value)**

The value as of a given date of a future amount or series of payments. The Actuarial Present Value discounts the payments to the given date at the assumed investment return and includes the probability of the payment being made. As a simple example: assume you owe \$100 to a friend one year from now. Also, assume there is a 1% probability of your friend dying over the next year, in which case you won't be obligated to pay him. If the assumed investment return is 10%, the actuarial present value is:

$$\begin{array}{ccccccc} \text{Amount} & & \text{Probability of} & & \text{1/(1+Investment} & & \\ & & \text{Payment} & & \text{Return)} & & \\ & & (1 - .01) & & 1/(1+.1) & & \\ \$100 & \times & & \times & & = & \$90 \end{array}$$

**6. Actuarial Valuation**

The determination, as of a specified date, of the Normal Cost, Actuarial Liability, Actuarial Value of Assets, and related Actuarial Present Values for a pension plan.

**APPENDIX D  
GLOSSARY**

**7. Actuarial Value of Assets**

The value of cash, investments and other property belonging to a pension plan as used by the actuary for the purpose of an Actuarial Valuation. The purpose of an Actuarial Value of Assets is to smooth out fluctuations in market values. This way, long-term costs are not distorted by short-term fluctuations in the market.

**8. Actuarially Equivalent**

Of equal Actuarial Present Value, determined as of a given date with each value based on the same set of Actuarial Assumptions.

**9. Amortization Payment**

The portion of the pension plan contribution which is designed to pay interest and principal on the Unfunded Actuarial Liability in order to pay for that liability in a given number of years.

**10. Entry Age Normal Actuarial Cost Method**

A method under which 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.

**11. Funded Percentage**

The ratio of the Actuarial Value of Assets to the Actuarial Liabilities.

**12. Inflation (CPI)**

The assumed increase in dollar related values in the future due to the general increase in the cost-of-living. The usual measure for inflation is the Consumer Price Index (CPI).

**13. Investment Return Assumption**

The assumed interest rate used for projecting dollar related values in the future.

**14. Mortality Table**

A set of percentages which estimates the probability of death at a particular point in time. Typically, the rates are annual and based on age and gender.

**APPENDIX D  
GLOSSARY**

**15. Normal Cost**

That portion of the Actuarial Present Value of pension plan benefits and expenses which is allocated to a valuation year by the Actuarial Cost Method.

**16. Projected Benefits**

Those pension plan benefit amounts which are expected to be paid in the future under a particular set of Actuarial Assumptions, taking into account such items as the effect of advancement in age and increases in future compensation and service credits.

**17. Unfunded Actuarial Liability**

The excess of the Actuarial Liability over the Actuarial Value of Assets.