Game Wardens' and Peace Officers' Retirement System of the State of Montana

Actuarial Valuation as of June 30, 2012

Produced by Cheiron

September 2012

CHEIRON Classic Values, Innovative Advice

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September 14, 2012

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 Game Wardens' and Peace Officers' Retirement System as of June 30, 2012. 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 discloses employer contribution levels, and required disclosures under the Governmental Accounting Standards Board Statement No. 25. This report is for the use of the Public Employees' Retirement Board and its auditors in preparing financial reports in accordance with applicable laws and accounting requirements. Any other user of this report is not an intended user and is considered a third party.

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 2012 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, which are based on information supplied by the Montana Public Employees' Retirement Administration, are work products of Cheiron, Inc. These work products are complete and 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 opinions contained in this report. This report does not address any contractual or legal issues. We are not attorneys and our report does not provide any legal services or advice.

Cheiron's report was prepared exclusively for the Game Wardens' and Peace Officers' Retirement System for a specific and limited purpose. It is not for use or benefit of any third party for any purpose, 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 Game Wardens' and Peace Officers' Retirement System as of June 30, 2012. 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 2012 to meet the requirements of an Annual Required Contribution (ARC) under GASB 25; 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 No. 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. 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.

SECTION I
BOARD SUMMARY

General Comments

This is the fourth valuation of the Game Wardens' and Peace Officers' Retirement System performed by Cheiron.

As of June 30, 2012 the statutory contribution rates are not sufficient to amortize the unfunded actuarial liability. The anticipated amount of contributions in excess of the cost of the benefits earned each year (normal cost) is less than the annual accrual of interest on the unfunded liability.

During the year ended June 30, 2012, the System's assets gained 2.31% 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 4.43%. This return was below the assumed rate of return of 7.75% and resulted in an actuarial loss on investments of $3.0 million.

The System experienced an actuarial gain on liabilities resulting from salary increases different than assumed and members retiring, terminating, becoming disabled and dying at rates different from the actuarial assumptions. The experience gain deducted $3.3 million from the actuarial liability. Gains and losses are 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 reasonable. However, the current gain is approximately 2.5% of liabilities, mainly due to salaries not increasing as much as assumed.

A new plan was introduced for those hired on or after July 1, 2011. This change had no immediate impact on plan costs or liabilities. However, it does lower the normal cost rate going forward.

As of the June 30, 2012 actuarial valuation, the System's unfunded actuarial liability was $31.2 million. This is an increase from last year's unfunded actuarial liability of $29.4 million. The funded ratio was 75.4% at the prior valuation and increased slightly to 75.8% at June 30, 2012.

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, 2012 was $1.9 million greater than actuarial value. If market value were used rather than actuarial value, the funded ratio on the valuation date would be 77%, a decrease from last year's funded ratio of 79%. Also, the statutory contribution rates are not sufficient to amortize the unfunded actuarial liability.

This report does not reflect any changes in pension accounting requirements from newly issued GASB Statements Nos. 67 and 68. Statement No. 67 will be effective for the plan year ending June 30, 2014. Statement No. 68 will be effective for most employers' fiscal years ending June

30, 2015. All references and calculations with respect to GASB reflect current Statements No. 25 and 27. In addition, in accordance with the System's funding policy, the contribution levels are compared to an amount that would satisfy the requirements for an Annual Required Contribution (ARC) under GASB No. 25. Since the concept of the ARC will disappear when GASB Nos. 67 and 68 become effective, the System may need to define a different calculation basis for measuring funding sufficiency.

SECTION I
BOARD SUMMARY

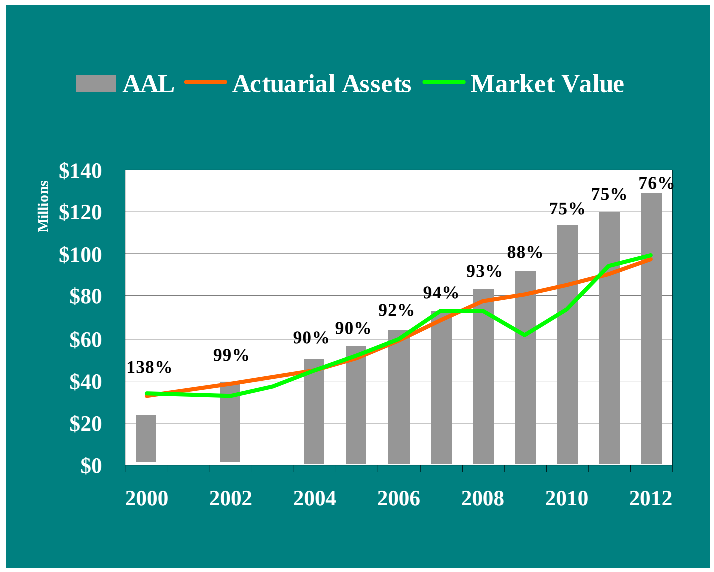
Trends

Assets and Liabilities

The market value of assets (MVA) increased over last year, gaining 2.31% 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%.

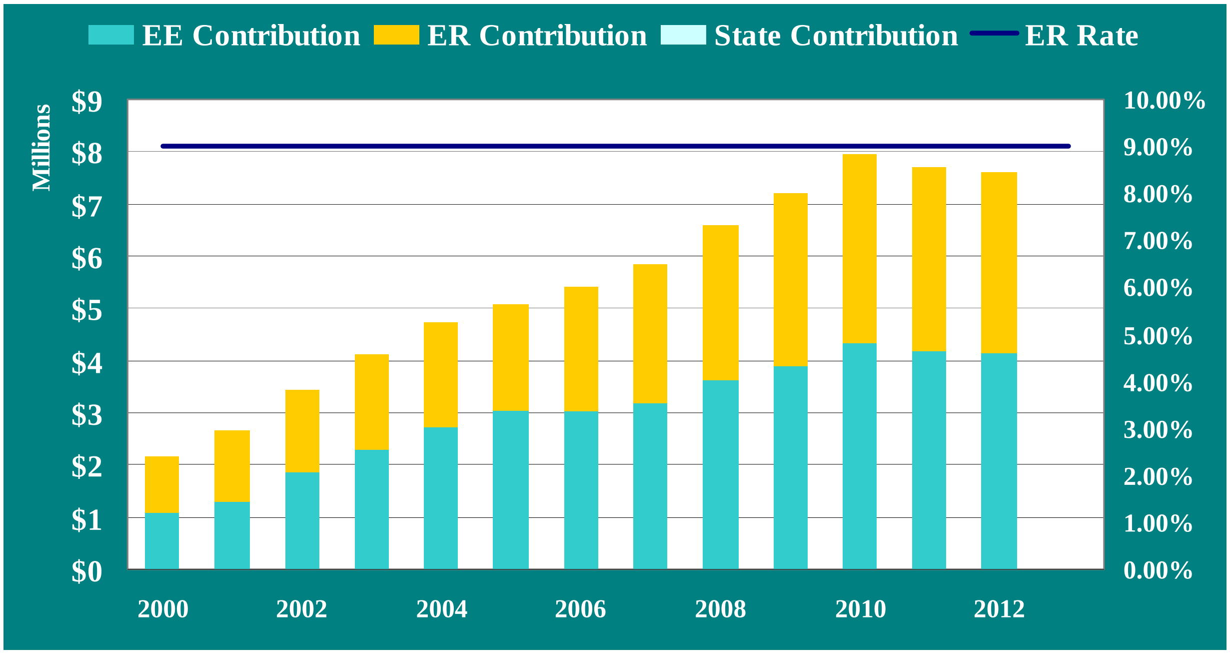
Over the period July 1, 2007 to June 30, 2012, the System's assets returned approximately 2.5% per year measured at actuarial value, compared to a current valuation assumption of 7.75% per year.

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.



SECTION I
BOARD SUMMARY

Contribution Rates



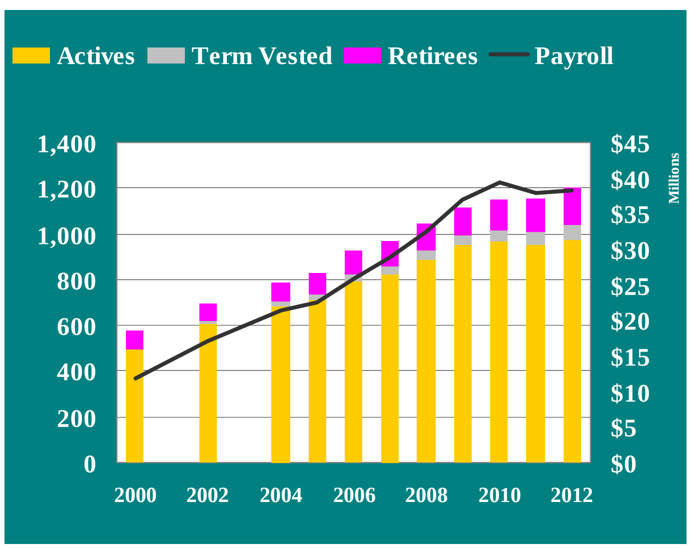
The stacked bars in this graph show the contributions made by members, employers, and the State (left hand scale). The navy line shows the employer contribution rate as a percent of payroll (right hand scale).

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. As with any maturing fund, this System continues to show growth in the number of retired members. The active-to-inactive ratio has decreased from 5.9 actives for each inactive in 2000 to 4.3 actives for each inactive today.

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



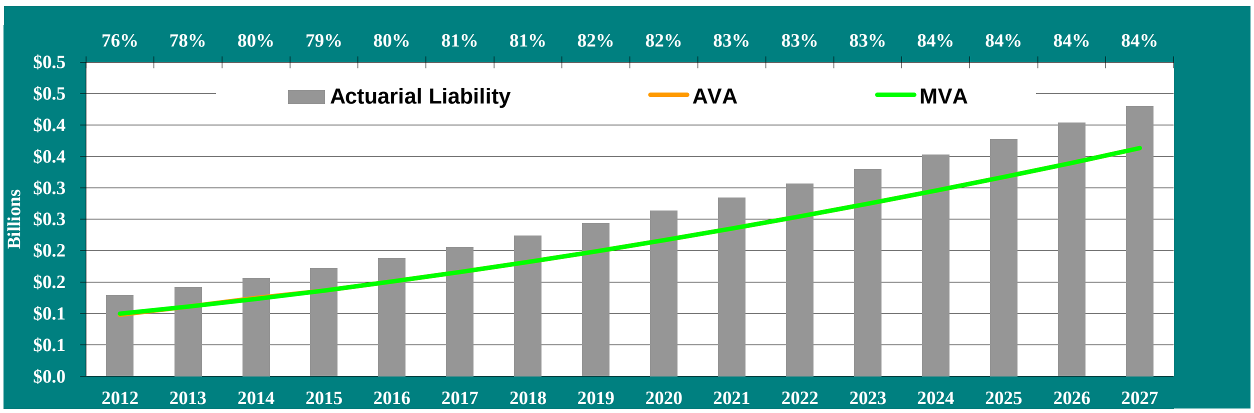
SECTION I
BOARD SUMMARY

Future Outlook

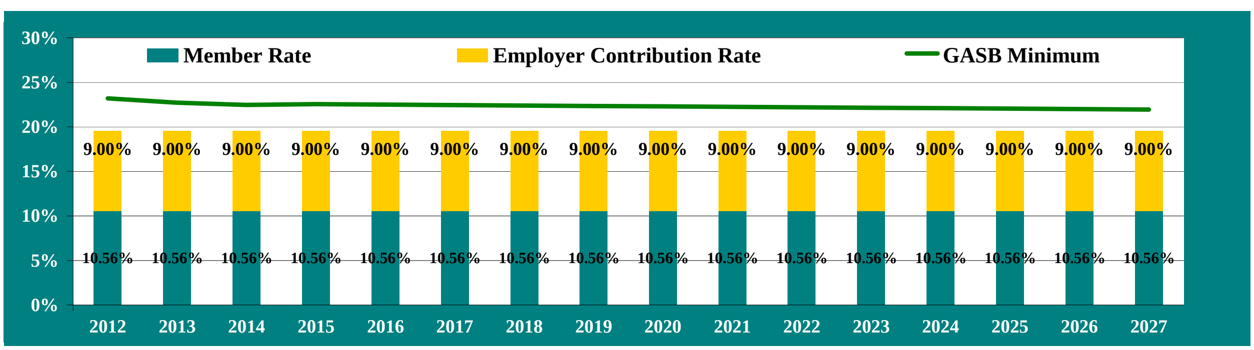
Base Line Projections

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 chart below shows that the funded status of the system is expected to increase gradually over the 15-year period, with a slight decrease in 2015, and remains relatively constant after 2024.



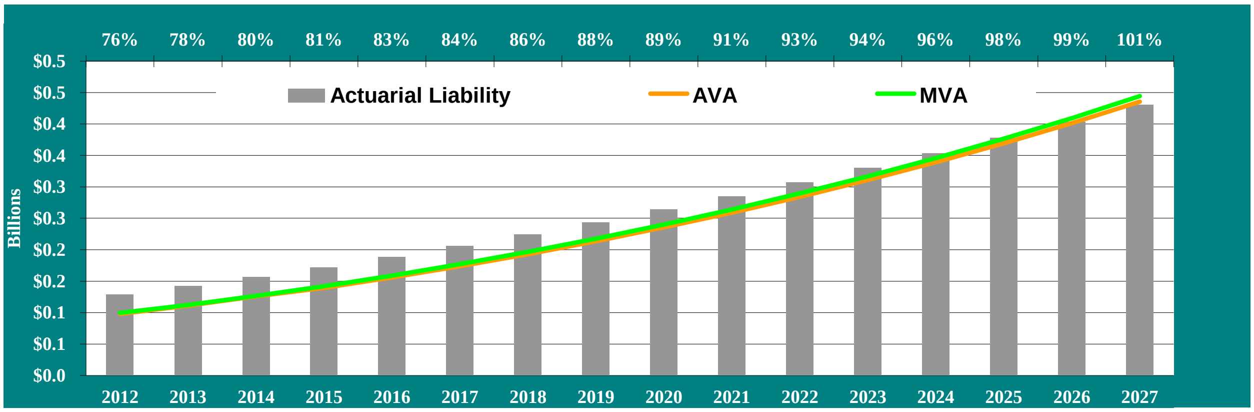
The chart below shows that the total contribution computed on a GASB Annual Required Contribution basis will decrease gradually over the 15-year period, but remain above the statutory rate.



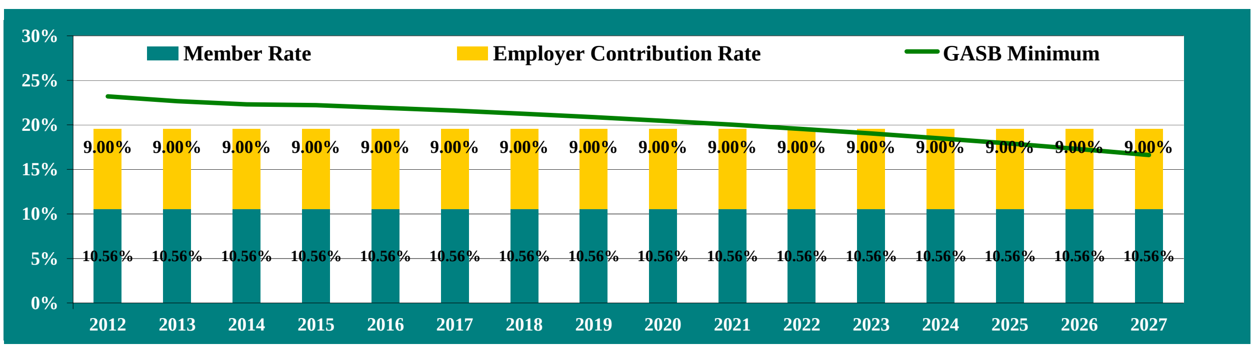
SECTION I
BOARD SUMMARY

Projections with Asset Returns of 9.25%

The future funding status of this System will be largely driven by the investment earnings. Relatively minor changes in market returns can have significant effects on the System's status. 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).



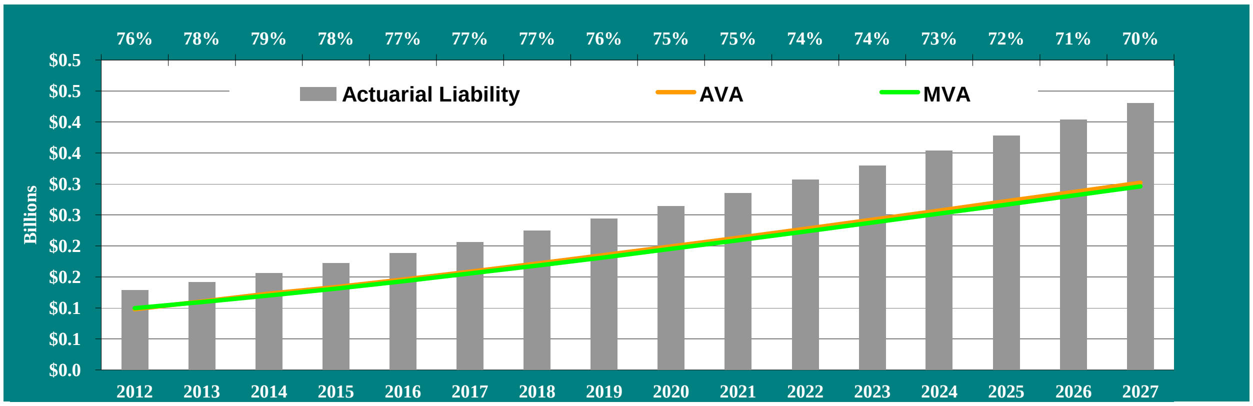
The funded status eventually exceeds 100%, and the GASB Annual Required Contribution becomes less than the statutory contribution by 2022.



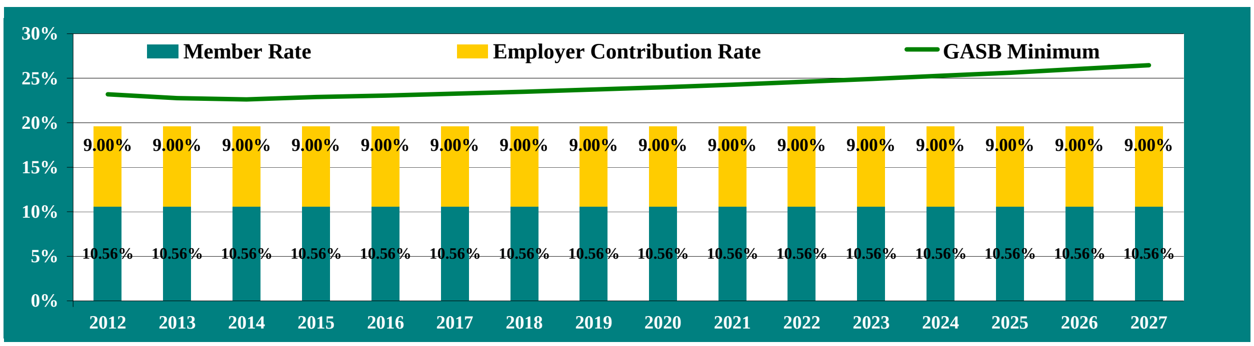
SECTION I
BOARD SUMMARY

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 15-year period (i.e., 1.5% less than the assumed rate of return).



Under this scenario, the funded status declines to 70%, and the GASB Annual Required Contribution increases to over 26% of pay by the end of the 15-year period.



SECTION I
BOARD SUMMARY

Table I-1
Montana Game Wardens' and Peace Officers' Retirement System
Summary of Principal System Results

Valuation as of:	June 30, 2011	June 30, 2012	% Change
Participant Counts			
Active Members	951	972	2.2%
Disabled Members*	0	2	100.0%
Retirees and Beneficiaries*	145	161	11.0%
Terminated Vested Members	61	64	4.9%
Terminated Non-Vested Members	113	146	29.2%
Total**	1,270	1,345	5.9%
Annual Salaries of Active Members	$ 37,832,307	$ 38,316,962	1.3%
Average Annual Salary	$ 39,782	$ 39,421	(0.9%)
Annual Retirement Allowances for Retired Members and Beneficiaries	$ 2,951,503	$ 3,316,510	12.4%
Assets and Liabilities			
Actuarial Accrued Liability (AAL)	$ 119,881,402	$ 128,926,514	7.5%
Actuarial Value of Assets (AVA)	90,436,950	97,691,102	8.0%
Unfunded AAL	$ 29,444,452	$ 31,235,412	6.1%
Funded Ratio (AVA/AAL)	75.44%	75.77%	
Present Value of Accrued Benefits (PVAB)	$ 92,635,103	$ 99,475,406	7.4%
Market Value of Assets	94,247,135	99,635,032	5.7%
Unfunded PVAB	$ (1,612,032)	$ (159,626)	(90.1%)
Accrued Benefit Funding Ratio	101.74%	100.16%	
Ratio of Actuarial Value to Market Value	95.96%	98.05%	
Contributions as a Percentage of Payroll			
Statutory Funding Rate	19.560%	19.560%	
Normal Cost Rate	19.330%	18.980%	
Available for Amortization of UAL	0.230%	0.580%	
Period to Amortize	Does not amortize	Does not amortize	
Projected 30-year Level Funding Rate	23.360%	23.200%	
Projected Shortfall (Surplus)	3.800%	3.640%	

* Based on PERA categorization for the annual report. For actuarial valuation purposes, 10 members in 2011 and 14 members in 2012 were valued as disabled members with offsetting reductions to the number of retired members.

** A reconciliation of participant counts 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 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, 2011 and June 30, 2012;
- 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 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 by the difference between the actual market return and the expected market return using the assumed rate of investment return.

SECTION II
ASSETS

Table II-1
Changes in Market Values

Value of Assets – June 30, 2011			**$**	**94,247,135**
Additions				
Member Contributions	$	4,143,480		
Employer Contributions		3,470,224		
Investment Return		2,387,555		
Other		4,694		
Total Additions	**$**	**10,005,953**		
Deductions				
Benefit Payments	$	4,444,687		
Administrative Expenses		173,369		
Total Deductions	**$**	**4,618,056**		
Value of Assets – June 30, 2012			**$**	**99,635,032**

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, 2012 valuation.

Table II-2
Market Value Gain/(Loss)

Value of Assets – June 30, 2011	$ 94,247,135
Employer and Member Contributions	$ 7,618,398
Benefit Payments	(4,444,687)
Expected Return at 7.75%	7,424,840
Expected Value at June 30, 2012	$ 104,845,686
Actual Value at June 30, 2012	$ 99,635,032
Investment Gain/(Loss)	$ (5,210,654)

Table II-3
Develop Excluded Gain/(Loss)

	Total Gain/(Loss)	Excluded Portion
Exclude 75% of 2012 Gain/(Loss)	$ (5,210,654)	$ (3,907,990)
Exclude 50% of 2011 Gain/(Loss)	$ 10,354,340	$ 5,177,170
Exclude 25% of 2010 Gain/(Loss)	$ 2,698,999	$ 674,750
Total Excluded Gain/(Loss) for AVA Calculation		$ 1,943,930

SECTION II
ASSETS

Table II-4
Actuarial Value of Assets

Market Value of Assets – June 30, 2012	$ 99,635,032
Total Gain/(Loss) excluded	1,943,930
Actuarial Value of Assets – June 30, 2012	$ 97,691,102

Investment Performance

The market value of assets (MVA) returned 2.31% during 2012, which is less than the assumed 7.75% return. A return of 4.43% 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. Because 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	7.92%	6.15%
2006	8.61%	9.16%
2007	17.78%	11.50%
2008	(4.87%)	7.31%
2009	(20.23%)	(0.22%)
2010	12.21%	(0.55%)
2011	21.36%	1.63%
2012	2.31%	4.43%

SECTION II
ASSETS

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

Year Beginning July 1,	Expected Benefits	Expected Contributions*	Net Cash Flow (excluding Investment Return)	Expected Investment Return**	Net Cash Flow (including Investment Return)
2012	$ 4,847	$ 8,151	$ 3,304	$ 7,847	$ 11,151
2013	4,770	8,477	3,707	8,727	12,434
2014	5,172	8,816	3,644	9,688	13,332
2015	5,640	9,168	3,528	10,717	14,245
2016	6,147	9,535	3,388	11,816	15,204
2017	6,828	9,916	3,088	12,982	16,070
2018	7,633	10,313	2,680	14,212	16,892
2019	8,545	10,726	2,181	15,503	17,684
2020	9,520	11,155	1,635	16,852	18,487
2021	10,533	11,601	1,068	18,263	19,331

* 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, 2012. 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, 2011 and June 30, 2012;
- 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 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 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 type, a **net surplus** or an **unfunded liability**.

SECTION III
LIABILITIES

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

	June 30, 2011	June 30, 2012
Present Value of Benefits		
Active Participant Benefits	$ 140,487,497	$ 143,359,074
Retiree and Inactive Benefits	39,993,303	44,704,221
Present Value of Benefits (PVB)	**$ 180,480,800**	**$ 188,063,295**
Market Value of Assets (MVA)	$ 94,247,135	$ 99,635,032
Future Member Contributions	34,227,376	34,023,706
Future Employer Contributions	29,171,059	28,997,477
Funding Shortfall/(Surplus)	22,835,230	25,407,080
Total Resources	**$ 180,480,800**	**$ 188,063,295**
Actuarial Accrued Liability		
Present Value of Benefits (PVB)	$ 180,480,800	$ 188,063,295
Present Value of Future Normal Costs (PVFNC)	60,599,398	59,136,781
Actuarial Accrued Liability (AAL=PVB–PVFNC)	**119,881,402**	**128,926,514**
Actuarial Value of Assets (AVA)	90,436,950	97,691,102
Net (Surplus)/Unfunded (AAL – AVA)	**$ 29,444,452**	**$ 31,235,412**
Present Value of Accrued Benefits		
Present Value of Benefits (PVB)	$ 180,480,800	$ 188,063,295
Present Value of Future Benefit Accruals (PVFBA)	87,845,697	88,587,889
Present Value of Accrued Benefits (PVAB=PVB–PVFBA)	**92,635,103**	**99,475,406**
Market Value of Assets (MVA)	94,247,135	99,635,032
Net Unfunded (PVAB – MVA)	**$ (1,612,032)**	**$ (159,626)**

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, 2011	$ 180,480,800	$ 119,881,402	$ 92,635,103
Liabilities June 30, 2012	188,063,295	128,926,514	99,475,406
Liability Increase (Decrease)	7,582,495	9,045,112	6,840,303
Change Due to:			
Actuarial (Gain)/Loss	NC*	(3,270,186)	NC*
Plan Changes	0	0	0
Benefits Accumulated and Other Sources	7,582,495	12,315,298	6,840,303

* NC = not calculated.

SECTION III
LIABILITIES

Table III-3
Summary of Actuarial Gains and Losses as of June 30, 2012

Actuarial Liabilities as of July 1, 2011	$ 119,881,402
Normal Cost	7,091,811
Actual Benefit Payments	(4,444,687)
Interest	9,668,174
Expected Actuarial Liability as of July 1, 2012	132,196,700
Actual Liability as of July 1, 2012	$ 128,926,514
Liability (Gain)/Loss	$ (3,270,186)
Sources of Liability (Gain)/Loss	
Salary (Gain)/Loss	$ (2,438,184)
New Participant (Gain)/Loss	351,620
Active Retirements (Gain)/Loss	35,579
Active Terminations (Gain)/Loss	(1,226,553)
Active Deaths (Gain)/Loss	(16,593)
Active Disability (Gain)/Loss	(42,620)
Inactive Decrements (Gain)/Loss	66,565
Actual Liability as of July 1, 2012	$ 128,926,514
Liability (Gain)/Loss due to plan changes	$ 0
Actuarial Value of Assets as of July 1, 2011	$ 90,436,950
Net Cash Flow	3,173,711
Expected Earnings	7,129,550
Expected Actuarial Value of Assets as of July 1, 2012	100,740,211
Actual Actuarial Value of Assets as of July 1, 2012	$ 97,691,102
Investment (Gain)/Loss	$ 3,049,109
Total Liability (Gain)/Loss	(3,270,186)
Total Actuarial (Gain)/Loss	$ (221,077)

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, 2011	**June 30, 2012**
1. Actuarial Liabilities		
Retiree and Inactive Benefits	$ 39,993,303	$ 44,704,221
Active Member Benefits	79,888,099	84,222,293
Total Actuarial Liability	**$ 119,881,402**	**$ 128,926,514**
2. Actuarial Value of Assets	$ 90,436,950	$ 97,691,102
3. Unfunded Actuarial Liability	$ 29,444,452	$ 31,235,412
4. Funded Ratio	75.44%	75.77%

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, 2011	**June 30, 2012**
1. Actuarial Liabilities		
Retiree and Inactive Benefits	$ 39,993,303	$ 44,704,221
Active Members Benefits	79,888,099	84,222,293
Total Actuarial Liability	**$ 119,881,402**	**$ 128,926,514**
2. Market Value of Assets	$ 94,247,135	$ 99,635,032
3. Unfunded Actuarial Liability	$ 25,634,267	$ 29,291,482
4. Funded Ratio	78.62%	77.28%

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 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 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 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%.

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, 2011	June 30, 2012
Statutory Funding Rates		
Members	10.560%	10.560%
Employers	9.000%	9.000%
Total	19.560%	19.560%
Normal Cost Rate *	19.330%	18.980%
Funding Rate Available for Amortization	0.230%	0.580%
Unfunded Actuarial Liability (Surplus)	29,444,452	31,235,412
Years to Amortize**	Does not amortize	Does not amortize

* The normal cost rate is projected to be 16.24% for members eligible on or after July 1, 2012. It is expected that the average normal cost rate will decrease over the next generation of active plan members.

** On a market value basis, the Years to Amortize the Unfunded Actuarial Liability does not amortize at both June 30, 2011 and at June 30, 2012.

SECTION IV
CONTRIBUTIONS

Table IV-2
Calculated Contribution Basis

	June 30, 2011	June 30, 2012
Normal Cost Rate	19.330%	18.980%
Amortization Payment (30 years)	4.030%	4.220%
Total Calculated Contribution Rate	23.360%	23.200%
Less Statutory Rate	19.560%	19.560%
Shortfall (Surplus) in Statutory Rate	3.800%	3.640%

Table IV-3
Calculated Contribution on Market Value (MCA 19-2-407)

	June 30, 2011	June 30, 2012
Normal Cost Rate	19.330%	18.980%
Amortization Payment (30 years)	3.510%	3.960%
Total Calculated Contribution Rate	22.840%	22.940%
Less Statutory Rate	19.560%	19.560%
Shortfall (Surplus) in Statutory Rate	3.280%	3.380%

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

Table IV-4
Projected Calculated Contribution Rates

Valuation Year	Rate
2013	22.71%
2014	22.46%
2015	22.56%
2016	22.50%
2017	22.45%

SECTION V
ACCOUNTING STATEMENT INFORMATION

Accounting Standard Codification Topic No. 960 of the Financial Accounting Standards Board specifies certain information for a plan to disclose 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, 2012 are exhibited in Table V-1.

Tables V-2 through V-5 are exhibits to be used with the System 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.

SECTION V
ACCOUNTING STATEMENT INFORMATION

Table V-1
Accounting Statement Information

	June 30, 2011	June 30, 2012
A. FASB ASC Topic No. 960 Basis		
1. Present Value of Benefits Accrued and Vested to Date		
a. Members Currently Receiving Payments	$ 35,165,912	$ 39,856,478
b. Former Vested Members	4,827,391	4,847,743
c. Active Members	52,641,800	54,771,185
2. Total Present Value of Accrued Benefits (1 (a) + 1(b) + 1(c))	$ 92,635,103	$ 99,475,406
3. Assets at Market Value	94,247,135	99,635,032
4. Unfunded Present Value of Accrued Benefits (2 – 3)	$ (1,612,032)	$ (159,626)
5. Ratio of Assets to Present Value of Accrued Benefits (3 / 2)	101.74%	100.16%
B. GASB No. 25 Basis		
1. Actuarial Accrued Liabilities for retirees and beneficiaries currently receiving benefits and terminated employees not yet receiving benefits	$ 39,993,303	$ 44,704,221
2. Actuarial Accrued Liabilities for current employees	79,888,099	84,222,293
3. Total Actuarial Accrued Liability (1 + 2)	$ 119,881,402	$ 128,926,514
4. Net Actuarial Assets available for benefits	90,436,950	97,691,102
5. Unfunded Actuarial Accrued Liability (3 – 4)	$ 29,444,452	$ 31,235,412

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, 2012
Actuarial cost method	Entry age
Amortization method	Open
Remaining amortization period for Annual Required 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 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.

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	2007	2008	2009	2010	2011	2012
Investment Income on Actuarial Assets	$ 2,064	$ (539)	$ (6,529)	$ (7,125)	$ (5,324)	$ (3,049)
Combined Liability Experience	(1,430)	(2,013)	1,325	(822)	6,714	3,270
(Loss)/Gain During Year from Financial Experience	$ 634	$ (2,552)	$ (5,204)	$ (7,947)	$ 1,390	$ 221
Non-Recurring Items	0	0	0	(10,100)	0	0
Composite Gain (or Loss) During Year	$ 634	$ (2,552)	$ (5,204)	$ (18,047)	$ 1,390	$ 221

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
2012	$ 97,691	$ 128,927	76 %	$ 31,236	$ 38,317	82 %
2011	90,437	119,881	75 %	29,444	38,306	77 %
2010	85,151	113,855	75 %	28,704	39,436	73 %
2009	81,177	92,155	88 %	10,978	36,023	30 %
2008	77,511	83,449	93 %	5,938	32,365	18 %
2007	68,755	72,992	94 %	4,237	28,799	15 %

* Results prior to 2009 were not developed by Cheiron. Previous years were taken from reports prepared by prior actuary.

SECTION V
ACCOUNTING STATEMENT INFORMATION

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)
2012	$ 29,975	$ 39,856	$ 59,095	$ 97,691	100 %	100 %	47 %
2011	28,468	35,166	56,247	90,437	100 %	100 %	48 %
2010	26,592	32,383	54,880	85,151	100 %	100 %	48 %
2009	23,800	29,536	38,820	81,177	100 %	100 %	72 %
2008	20,574	29,647	33,228	77,511	100 %	100 %	82 %
2007	17,813	27,070	28,109	68,755	100 %	100 %	85 %

* Results prior to 2009 were not developed by Cheiron. Previous years were taken from reports prepared by prior actuary.

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	972	14	149	64	146	1,345
Disabled members having attained normal retirement age		(12)	12			-
Beneficiaries of Disabled Members						-
Beneficiaries with less than one year of certain payments remaining			-			-
Other Adjustments						-
Participant counts shown in Annual Financial Report	972	2	161	64	146	1,345

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, if any, 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 8. 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.

APPENDIX A
MEMBERSHIP INFORMATION

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 8. 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.

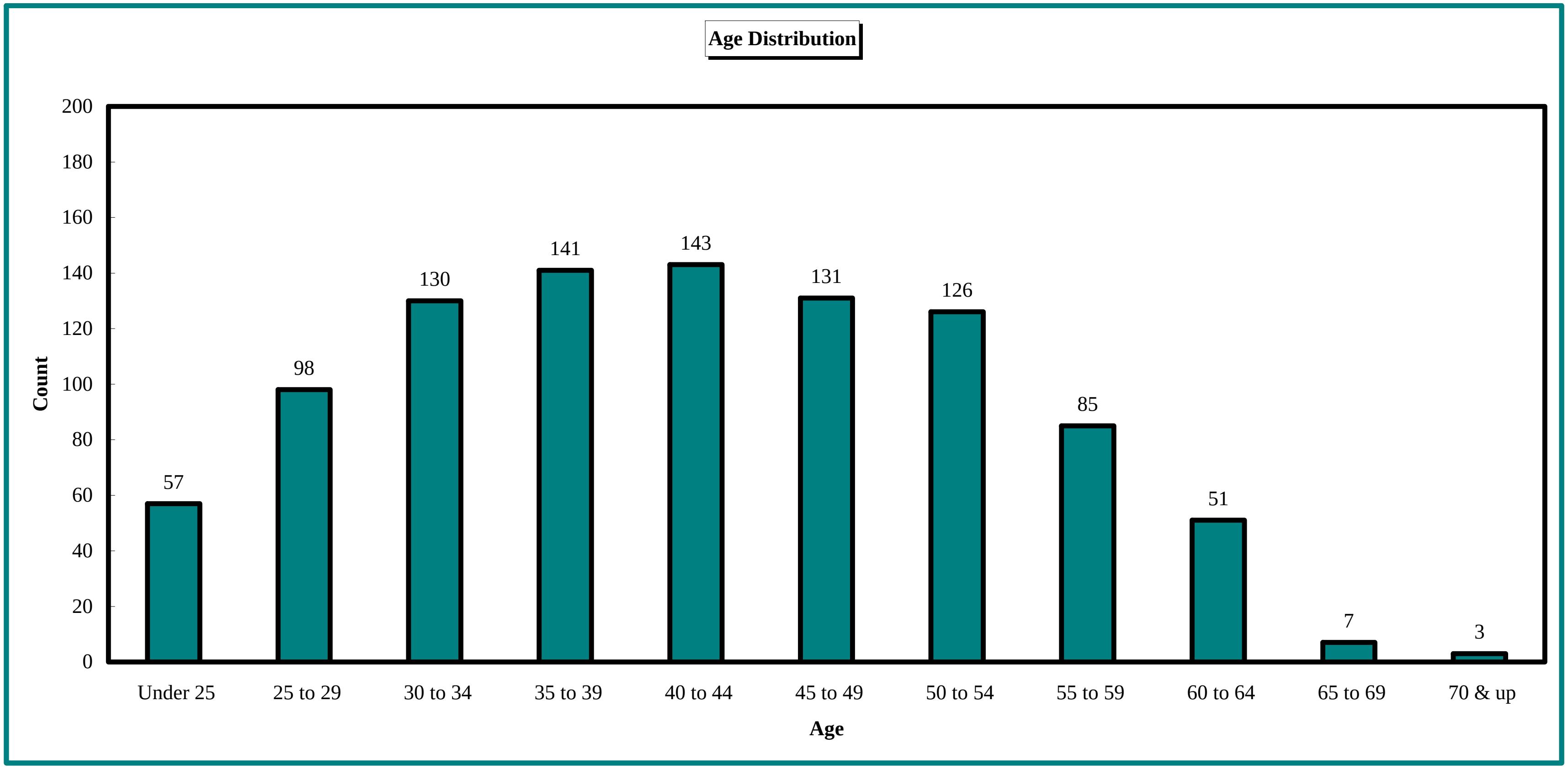
Montana Game Wardens' and Peace Officers' Retirement System Distribution of Active Members by Age and Service as of June 30, 2012

COUNTS BY AGE/SERVICE

	Service										
Age	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	Total
Under 25	36	21	0	0	0	0	0	0	0	0	57
25 to 29	21	59	18	0	0	0	0	0	0	0	98
30 to 34	18	64	37	11	0	0	0	0	0	0	130
35 to 39	34	31	43	29	4	0	0	0	0	0	141
40 to 44	11	38	37	37	20	0	0	0	0	0	143
45 to 49	5	34	31	42	11	3	4	1	0	0	131
50 to 54	12	24	32	35	12	7	2	2	0	0	126
55 to 59	3	22	19	27	6	4	1	3	0	0	85
60 to 64	4	14	12	11	8	2	0	0	0	0	51
65 to 69	1	0	4	1	1	0	0	0	0	0	7
70 & up	1	0	1	0	1	0	0	0	0	0	3
Total	146	307	234	193	63	16	7	6	0	0	972

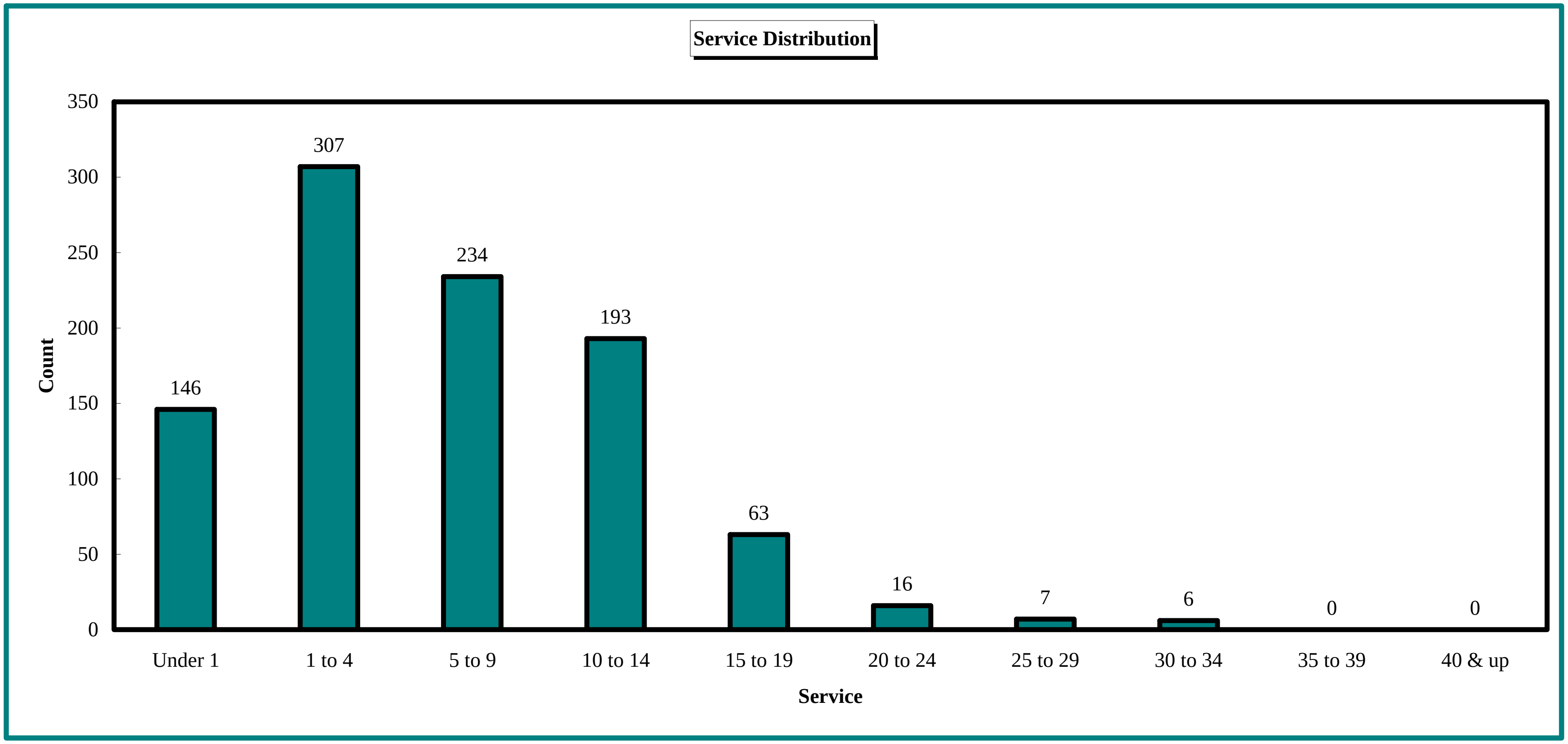
APPENDIX A
MEMBERSHIP INFORMATION

Montana Game Wardens' and Peace Officers' Retirement System Distribution of Active Members by Age as of June 30, 2012



APPENDIX A
MEMBERSHIP INFORMATION

Montana Game Wardens' and Peace Officers' Retirement System Distribution of Active Members by Service as of June 30, 2012



APPENDIX A
MEMBERSHIP INFORMATION

Montana Game Wardens' and Peace Officers' Retirement System Distribution of Active Members by Age and Service as of June 30, 2012

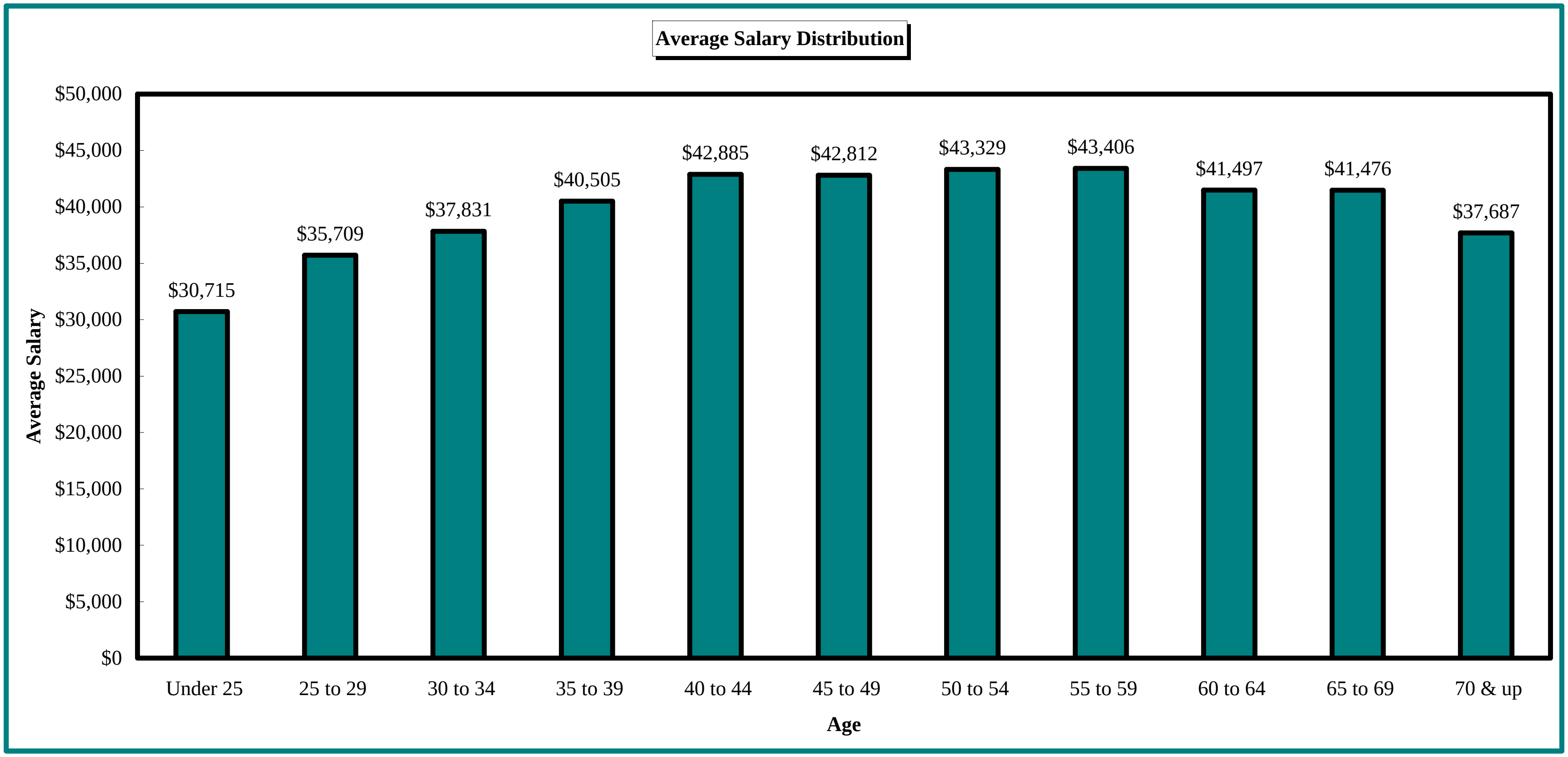
AVERAGE SALARY BY AGE/SERVICE

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	$30,557	$30,988	$0	$0	$0	$0	$0	$0	$0	$0	$30,715
25 to 29	$33,408	$35,113	$40,344	$0	$0	$0	$0	$0	$0	$0	$35,709
30 to 34	$32,628	$36,137	$42,154	$41,661	$0	$0	$0	$0	$0	$0	$37,831
35 to 39	$34,364	$35,424	$44,772	$46,089	$45,703	$0	$0	$0	$0	$0	$40,505
40 to 44	$34,252	$36,826	$44,246	$44,388	$53,848	$0	$0	$0	$0	$0	$42,885
45 to 49	$37,788	$35,853	$40,124	$45,281	$54,764	$59,219	$54,213	$57,931	$0	$0	$42,812
50 to 54	$31,512	$40,138	$42,085	$43,580	$50,909	$53,594	$60,406	$69,544	$0	$0	$43,329
55 to 59	$33,279	$36,985	$38,182	$47,925	$44,050	$67,711	$52,265	$56,402	$0	$0	$43,406
60 to 64	$31,881	$37,801	$40,420	$48,018	$43,819	$47,903	$0	$0	$0	$0	$41,497
65 to 69	$13,450	$0	$44,243	$49,314	$50,597	$0	$0	$0	$0	$0	$41,476
70 & up	$25,022	$0	$48,442	$0	$39,596	$0	$0	$0	$0	$0	$37,687
Total	$32,651	$36,019	$42,199	$45,263	$50,447	$57,467	$55,704	$61,038	$0	$0	$40,421

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

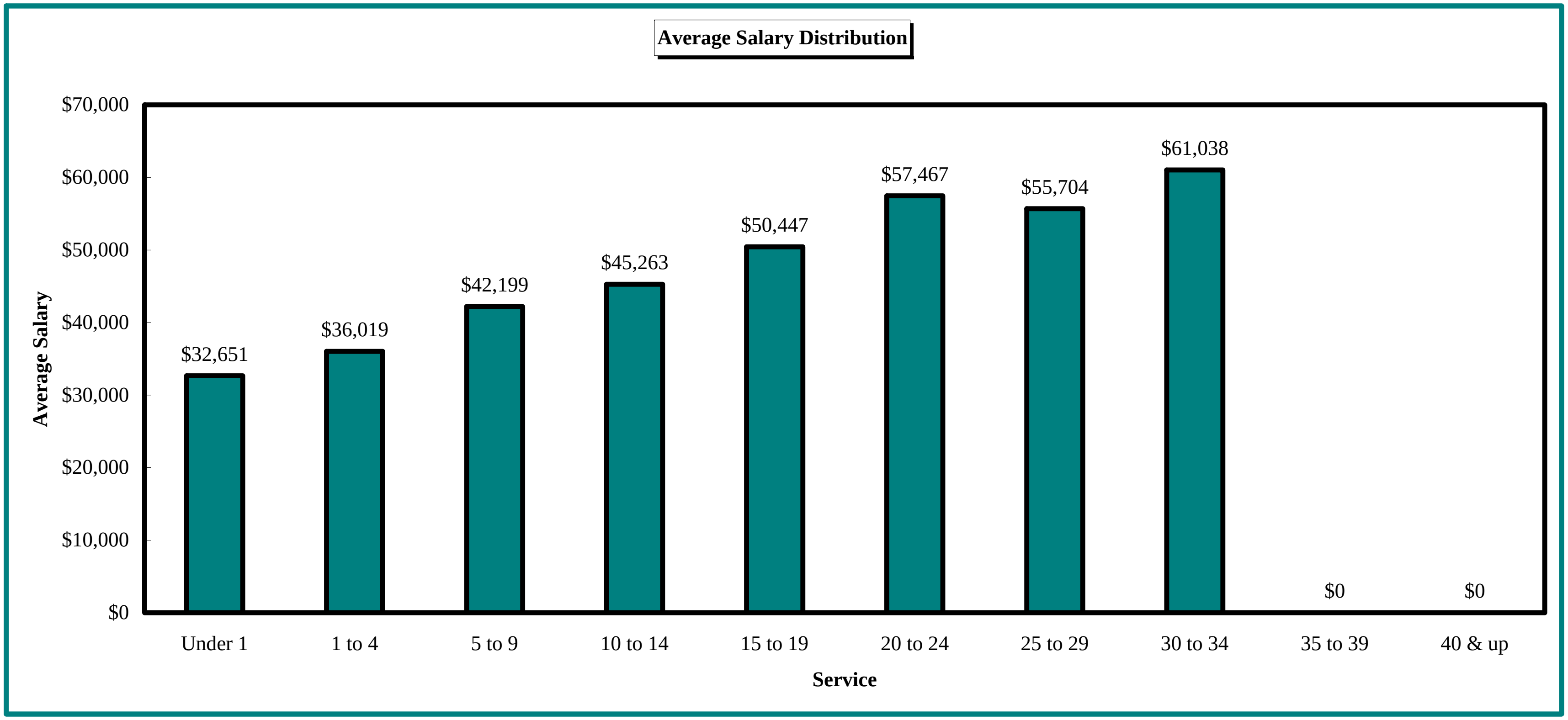
APPENDIX A
MEMBERSHIP INFORMATION

Montana Game Wardens' and Peace Officers' Retirement System Distribution of Active Members by Age as of June 30, 2012



APPENDIX A
MEMBERSHIP INFORMATION

Montana Game Wardens' and Peace Officers' Retirement System Distribution of Active Members by Service as of June 30, 2012



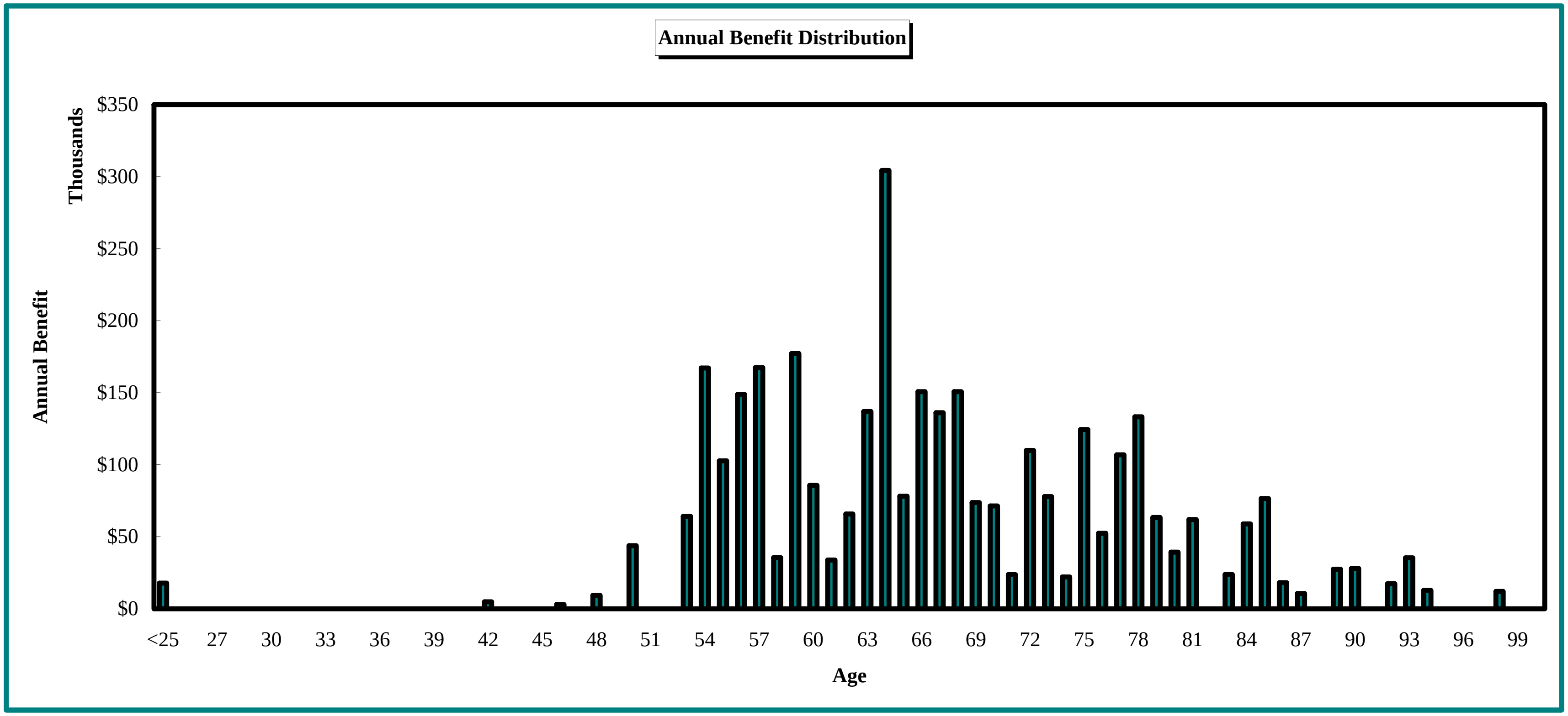
APPENDIX A
MEMBERSHIP INFORMATION

Montana Game Wardens' and Peace Officers' Retirement System Distribution of Retired Members, Survivors, and Disabled Members as of June 30, 2012

Age	Count	Annual Benefit	Age	Count	Annual Benefit
<25	2	$17,788	73	4	$77,871
25	0	$0	74	1	$22,140
26	0	$0	75	4	$124,444
27	0	$0	76	2	$52,443
28	0	$0	77	5	$106,995
29	0	$0	78	4	$133,291
30	0	$0	79	2	$63,381
31	0	$0	80	2	$39,399
32	0	$0	81	2	$61,932
33	0	$0	82	0	$0
34	0	$0	83	3	$23,922
35	0	$0	84	3	$59,003
36	0	$0	85	2	$76,591
37	0	$0	86	1	$18,114
38	0	$0	87	1	$10,610
39	0	$0	88	0	$0
40	0	$0	89	1	$27,408
41	0	$0	90	2	$27,976
42	1	$4,833	91	0	$0
43	0	$0	92	1	$17,431
44	0	$0	93	2	$35,377
45	0	$0	94	1	$12,789
46	1	$3,072	95	0	$0
47	0	$0	96	0	$0
48	1	$9,390	97	0	$0
49	0	$0	98	1	$12,010
50	1	$43,770	99	0	$0
51	0	$0	100	0	$0
52	0	$0	101	0	$0
53	3	$64,201	102	0	$0
54	5	$167,209	103	0	$0
55	5	$102,731	104	0	$0
56	6	$148,806	105	0	$0
57	6	$167,401	106	0	$0
58	2	$35,501	107	0	$0
59	6	$177,174	108	0	$0
60	7	$85,714	109	0	$0
61	2	$33,922	110	0	$0
62	7	$65,784	111	0	$0
63	7	$137,026	112	0	$0
64	16	$304,319	113	0	$0
65	8	$78,128	114	0	$0
66	6	$150,731	115	0	$0
67	6	$136,064	116	0	$0
68	5	$150,801	117	0	$0
69	6	$73,801	118	0	$0
70	5	$71,366	119	0	$0
71	1	$23,652	120	0	$0
72	4	$109,950			
			Totals	163	$3,366,257

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 Game Wardens' and Peace Officers' Retirement System Distribution of Retired Members, Survivors, and Disabled Members as of June 30, 2012



APPENDIX A
MEMBERSHIP INFORMATION

Montana Game Wardens' and Peace Officers' Retirement System Distribution of Terminated Vested Members as of June 30, 2012

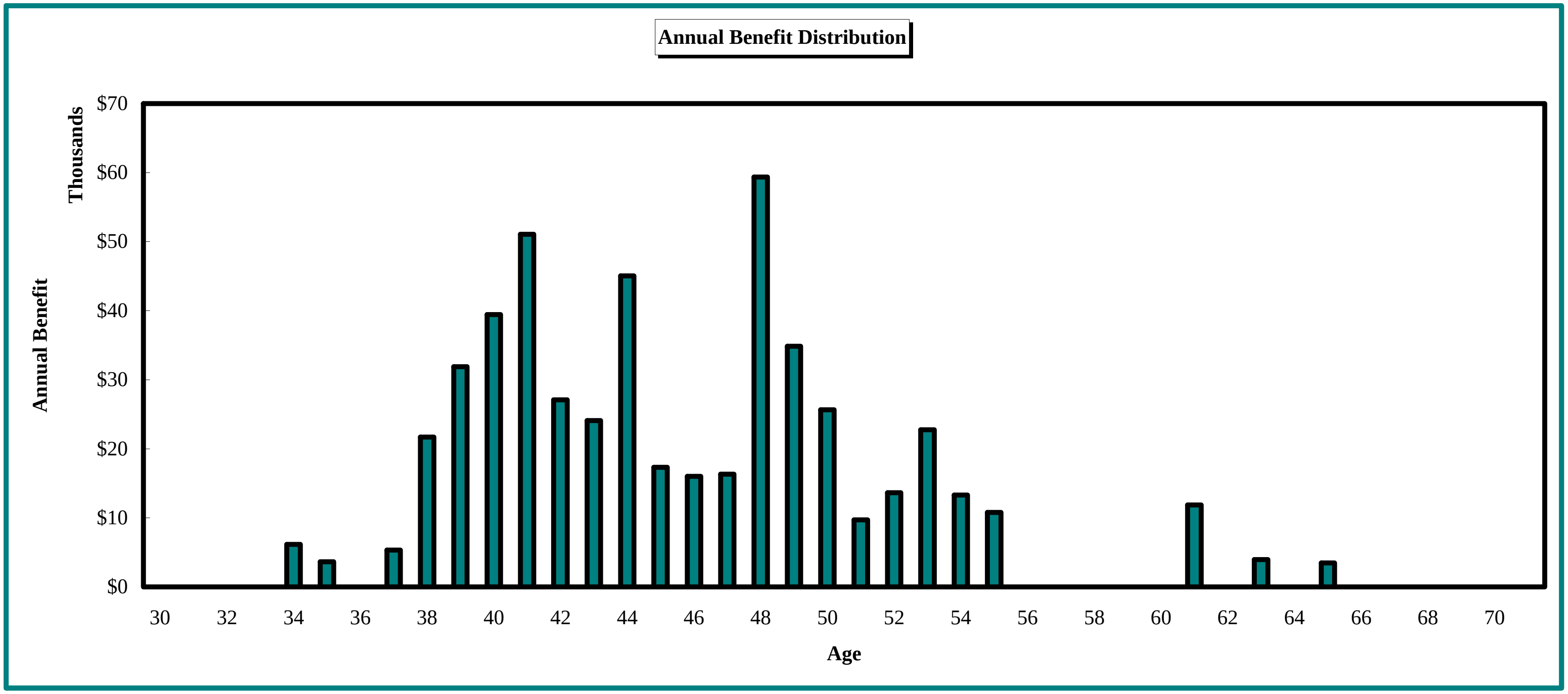
Age	Count	Annual Benefit*	Account Balance*	Age	Count	Annual Benefit*	Account Balance*
<25	0	$0	$0	73	0	$0	$0
25	0	$0	$0	74	0	$0	$0
26	0	$0	$0	75	0	$0	$0
27	0	$0	$0	76	0	$0	$0
28	0	$0	$0	77	0	$0	$0
29	1	$0	$102,551	78	0	$0	$0
30	0	$0	$0	79	0	$0	$0
31	1	$0	$63,323	80	0	$0	$0
32	0	$0	$0	81	0	$0	$0
33	0	$0	$0	82	0	$0	$0
34	1	$6,144	$0	83	0	$0	$0
35	1	$3,617	$0	84	0	$0	$0
36	0	$0	$0	85	0	$0	$0
37	1	$5,331	$0	86	0	$0	$0
38	4	$21,696	$68,380	87	0	$0	$0
39	2	$31,878	$0	88	0	$0	$0
40	5	$39,424	$0	89	0	$0	$0
41	5	$51,053	$0	90	0	$0	$0
42	4	$27,103	$0	91	0	$0	$0
43	3	$24,096	$0	92	0	$0	$0
44	5	$45,039	$0	93	0	$0	$0
45	3	$17,312	$0	94	0	$0	$0
46	2	$16,006	$0	95	0	$0	$0
47	1	$16,345	$0	96	0	$0	$0
48	4	$59,376	$0	97	0	$0	$0
49	3	$34,837	$0	98	0	$0	$0
50	5	$25,636	$0	99	0	$0	$0
51	2	$9,702	$0	100	0	$0	$0
52	2	$13,639	$0	101	0	$0	$0
53	2	$22,735	$0	102	0	$0	$0
54	2	$13,299	$0	103	0	$0	$0
55	2	$10,800	$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	1	$11,862	$0	110	0	$0	$0
62	0	$0	$0	111	0	$0	$0
63	1	$3,957	$0	112	0	$0	$0
64	0	$0	$0	113	0	$0	$0
65	1	$3,481	$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	64	$514,367	$234,254

* payable at the greater of age 55 or current age

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

APPENDIX A
MEMBERSHIP INFORMATION

Montana Game Wardens' and Peace Officers' Retirement System Distribution of Terminated Vested Members as of June 30, 2012



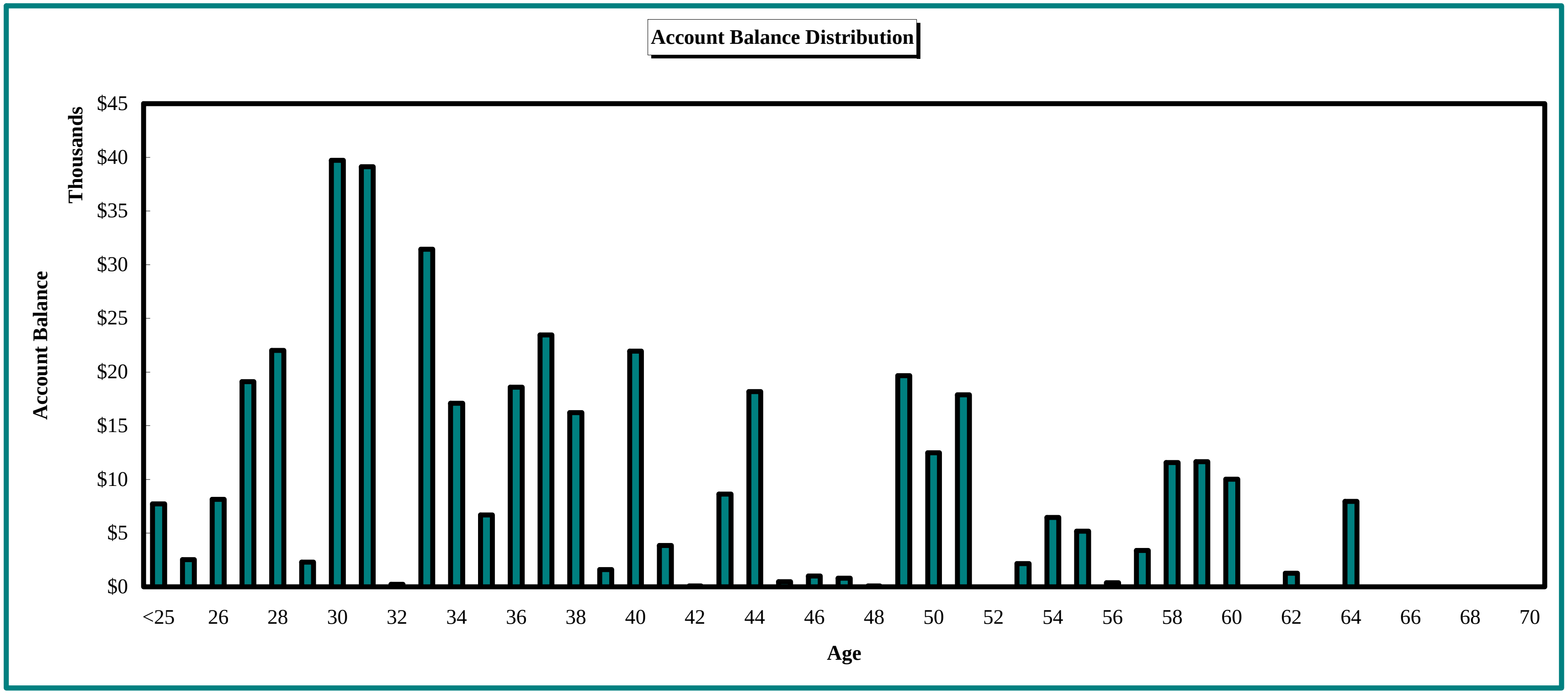
APPENDIX A
MEMBERSHIP INFORMATION

Montana Game Wardens' and Peace Officers' Retirement System Distribution of Terminated Non-Vested Members as of June 30, 2012

Age	Count	Account Balance	Age	Count	Account Balance
<25	7	$7,727	73	0	$0
25	4	$2,529	74	0	$0
26	10	$8,158	75	0	$0
27	5	$19,106	76	0	$0
28	6	$22,019	77	0	$0
29	3	$2,297	78	0	$0
30	11	$39,731	79	0	$0
31	5	$39,120	80	0	$0
32	2	$237	81	0	$0
33	5	$31,437	82	0	$0
34	6	$17,091	83	0	$0
35	4	$6,683	84	0	$0
36	2	$18,582	85	0	$0
37	21	$23,470	86	0	$0
38	2	$16,224	87	0	$0
39	1	$1,604	88	0	$0
40	3	$21,937	89	0	$0
41	4	$3,853	90	0	$0
42	1	$82	91	0	$0
43	3	$8,625	92	0	$0
44	3	$18,178	93	0	$0
45	2	$490	94	0	$0
46	2	$1,005	95	0	$0
47	2	$813	96	0	$0
48	1	$82	97	0	$0
49	4	$19,671	98	0	$0
50	5	$12,477	99	0	$0
51	2	$17,871	100	0	$0
52	0	$0	101	0	$0
53	1	$2,164	102	0	$0
54	4	$6,456	103	0	$0
55	1	$5,180	104	0	$0
56	3	$377	105	0	$0
57	5	$3,390	106	0	$0
58	1	$11,571	107	0	$0
59	1	$11,651	108	0	$0
60	2	$10,013	109	0	$0
61	0	$0	110	0	$0
62	1	$1,278	111	0	$0
63	0	$0	112	0	$0
64	1	$7,956	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	146	$421,137

APPENDIX A
MEMBERSHIP INFORMATION

Montana Game Wardens' and Peace Officers' Retirement System Distribution of Terminated Non-Vested Members as of June 30, 2012



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.

Sample Rates of Healthy Mortality		
Age	**Male**	**Female**
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%

10% of all member deaths are assumed to be duty-related.

b. Disabled Inactive Mortality

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

Sample Rates of Disabled Inactive Mortality		
Age	**Male**	**Female**
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%

APPENDIX B
ACTUARIAL ASSUMPTIONS AND METHODS

c. Rates of Active Disability

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

75% of disabilities are assumed to be duty-related. All disabilities are assumed to be permanent and without recovery.

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

Service	Rate
0	25%
1	20%
2	15%
3	12%
4	10%
5-9	6%
10-14	3%
15 & over	2%

e. 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%	50%
45-49	100%	40%
50 & Over	100%	0%

APPENDIX B
ACTUARIAL ASSUMPTIONS AND METHODS

f. Retirement Rates

	Annual Retirement Rates	
Age	**Age 55 with 5 years of service**	**Age 50 with 20 years of service**
<50	N/A	0%
50 – 54	N/A	15%
55	15%	25%
56 – 59	5%	25%
60 – 61	15%	15%
62	40%	40%
63 – 64	15%	15%
65 & over	100%	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).

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%

APPENDIX B
ACTUARIAL ASSUMPTIONS AND METHODS

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.

i. 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% (net of expenses)
b. Rate of Wage Inflation:	4.00% (3.00% inflation plus 1.00% real wage growth)
c. Interest on Member Contributions:	3.50%
d. Rate of Increase in Total Payroll (for Amortization):	4.00%

3. Changes since Last Valuation

None.

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. The valuation determines the period over which the statutory contributions will fully amortize the unfunded actuarial accrued 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 persons employed as a game warden, warden supervisor, or state peace officer.

2. Contributions

Members contribute 10.56% 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.

Employers contribute 9.0% 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 worked 160 hours. This includes certain transferred and purchased service.

4. Membership Service

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

5. Highest Average Compensation (HAC)

For members hired on or before June 30, 2011 The Highest Average Compensation (HAC) is the average of the highest 36 consecutive months (or shorter period of total service) of compensation paid to the member.

For new members hired on or after July 1, 2011 The Highest Average Compensation (HAC) is the average of the highest 60 consecutive months (or shorter period of total service) of compensation paid to the member.

Compensation generally means total compensation paid, excluding maintenance, allowances and expenses. Compensation is specifically defined in law for GWPORS.

APPENDIX C
SUMMARY OF PLAN PROVISIONS

6. Service Retirement

Eligibility: Age 50 with 20 years of membership service.

Benefit: 2.5% of HAC multiplied by years of service credit.

7. Early Retirement

Eligibility: Age 55 with 5 years of membership service.

Benefit: A reduced normal retirement benefit calculated using highest average compensation and service credit at early retirement.

8. Disability Benefit

Eligibility: (i) Five years of membership service for duty-related disability, or (ii) any service for regular disability.

Benefit: (i) For duty-related disability, (a) if less than 20 years of membership service: 50% of highest average compensation and (b) if 20 years or more of membership service: 2.5% of HAC multiplied by years of service credit.

(ii) For regular disability, the actuarial equivalent of the accrued normal retirement benefit on a retirement age of 50.

9. Survivor's Benefit

Eligibility: Active or retired member.

Benefit: For duty-related deaths, a monthly survivor benefit to the designated beneficiary equal to (i) if less than 25 years of membership service: 50% of highest average compensation or (ii) if deceased member has more than 25 years of membership service: 2% of highest average compensation multiplied by years of service credit.

For non-duty-related deaths, a refund of the member's accumulated contributions.

A beneficiary may elect to receive the payment as an annuity that is the actuarial equivalent of the amount of benefit based on the member's service.

For retired members without a contingent annuitant, a payment will be made to the member's designated beneficiary equal to the accumulated contributions reduced by any retirement benefits already paid.

APPENDIX C
SUMMARY OF PLAN PROVISIONS

10. Vesting

Eligibility: 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 receipt of 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 member contributions.

12. Form of Payment

The normal form of payment is a life annuity.

Optional benefits: (i) Option 2, a joint and 100% survivor benefit, (ii) Option 3, a joint and 50% survivor benefit, or (iii) Option 4, a life annuity with a period certain. If a retiring member elects Option 2 or 3 and the designated beneficiary predeceases the member, the benefit may revert to the higher Option 1 benefit available at retirement if the retiree provides notification within 18 months, or select a different beneficiary and/or a different option.

13. Post Retirement Benefit Increases

For retired members who have been retired at least 12 months, a Guaranteed Annual Benefit Adjustment (GABA) will be made each year in January equal to (i) 3% for members hired before July 1, 2007 and (ii) 1.5% for members hired on or after July 1, 2007.

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:

Amount		Probability of Payment	1/(1+Investment Return)		
$100	x	(1 - .01)	1/(1+.1)	=	$90

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. 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.

12. Unfunded Actuarial Liability

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

13. 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.

14. Funded Percentage

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

APPENDIX D
GLOSSARY

15. Mortality Table

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

16. Investment Return Assumption

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

17. 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).