Classic Values, Innovative Advice

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

Actuarial Valuation as of June 30, 2015

Produced by Cheiron

September 2015

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September 29, 2015

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, 2015. 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 Game Wardens' and Peace Officers' 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 laws 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 2015 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 Game Wardens' and Peace Officers' Retirement System for the purpose described herein. Other users of this valuation report are not intended users as defined in the Actuarial Standards of Practice, and Cheiron assumes no duty or liability to any other user.

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, 2015. 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 2015 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 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.

Future results may differ significantly from the current results presented in this valuation report due to such factors as the following: plan experience differing from that anticipated by the assumptions; changes in assumptions; and changes in plan provisions or applicable law.

SECTION I
BOARD SUMMARY

General Comments

As of the June 30, 2014 valuation, the statutory contribution rates were not sufficient to amortize the unfunded actuarial liability. As of June 30, 2015, the statutory contribution rates are still not sufficient to amortize the unfunded actuarial liability. During the year ended June 30, 2015, the System's assets gained 4.58% 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 9.47%. This return was above the assumed rate of return of 7.75% and resulted in an actuarial gain on investments of $2.3 million.

The System experienced an actuarial loss 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 loss added $2.5 million to 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.

As of the June 30, 2015 Actuarial Valuation, the System's unfunded actuarial liability was $26.8 million. This is an increase from last year's unfunded actuarial liability of $25.2 million. The funded ratio was 84% at the prior valuation and remains 84% at June 30, 2015.

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, 2015 was $3.3 million greater than actuarial value. If market value were used rather than actuarial value, the funded ratio on the valuation date would be 86%, a decrease from last year's funded ratio of 90%. Also, the statutory contribution rates would not be sufficient to amortize the unfunded actuarial liability.

GASB Statement No. 67 became effective for the plan year ending June 30, 2014. GASB Statement No. 68 became effective for the employers' Fiscal Years ending June 30, 2015. Actuarial information related to required disclosures under GASB 67 and GASB 68 will be provided in a separate report.

SECTION I
BOARD SUMMARY

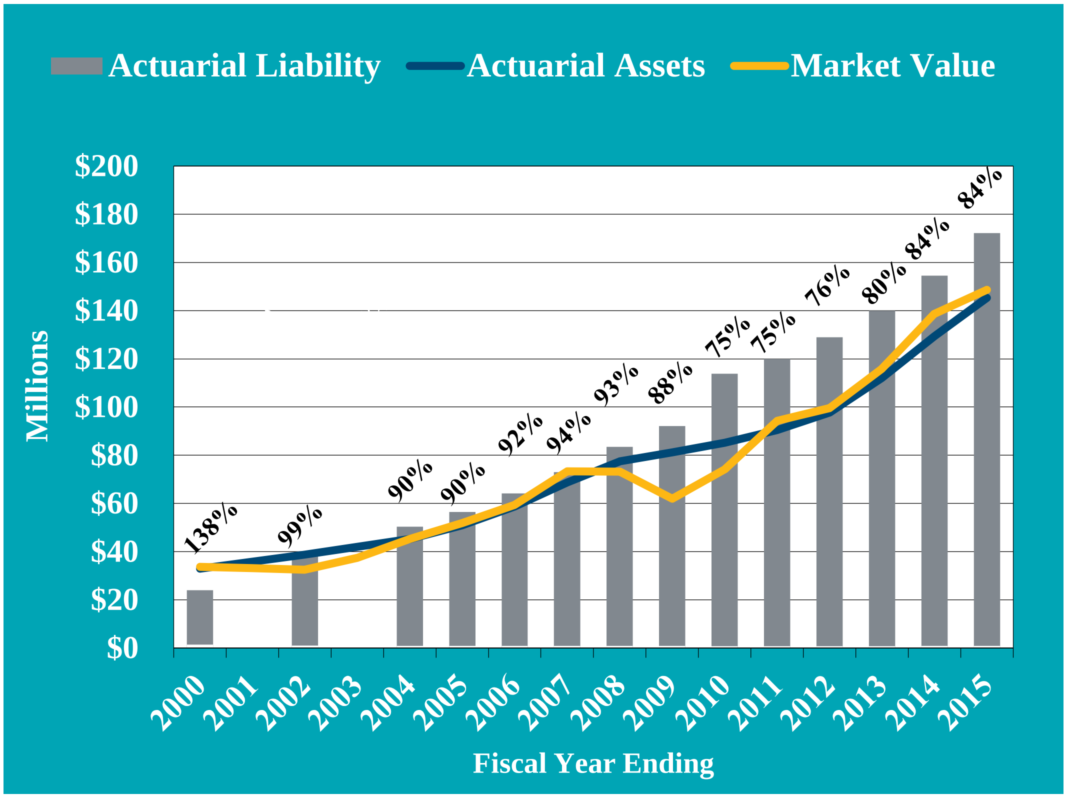
Trends

<u>Assets and Liabilities</u>

The market value of assets (MVA) increased over last year, gaining 4.58% 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 differs from the assumed rate of 7.75%.

Over the period July 1, 2010 to June 30, 2015, the System's assets returned approximately 7.8% 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.

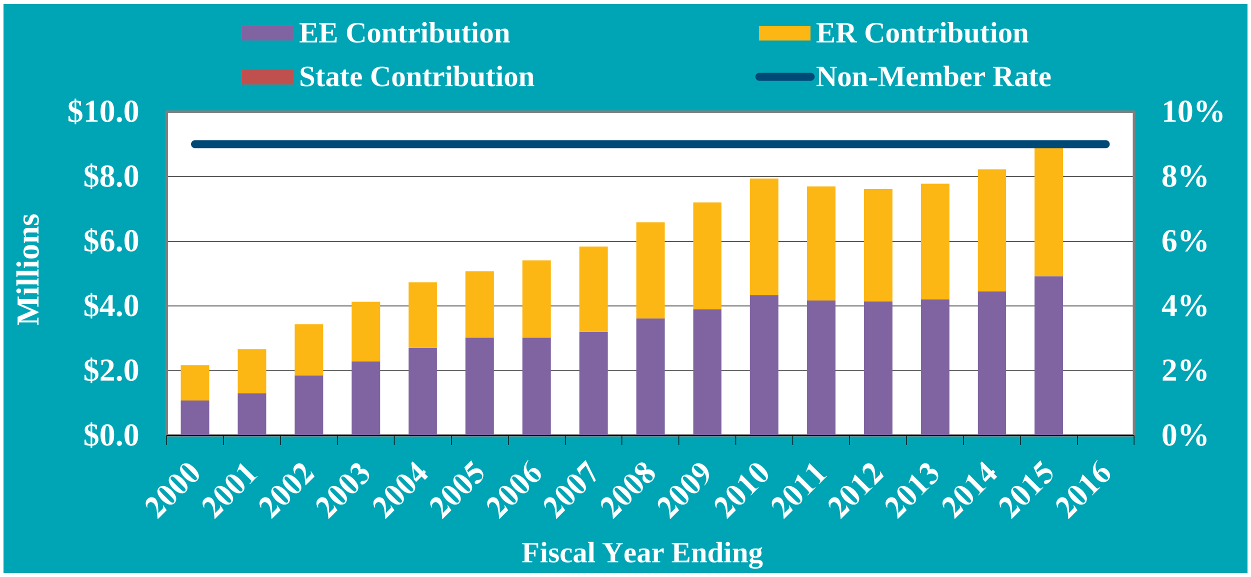


SECTION I
BOARD SUMMARY

<u>Contribution Rates</u>

The stacked bars in this graph show the contributions made by members and employers (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.

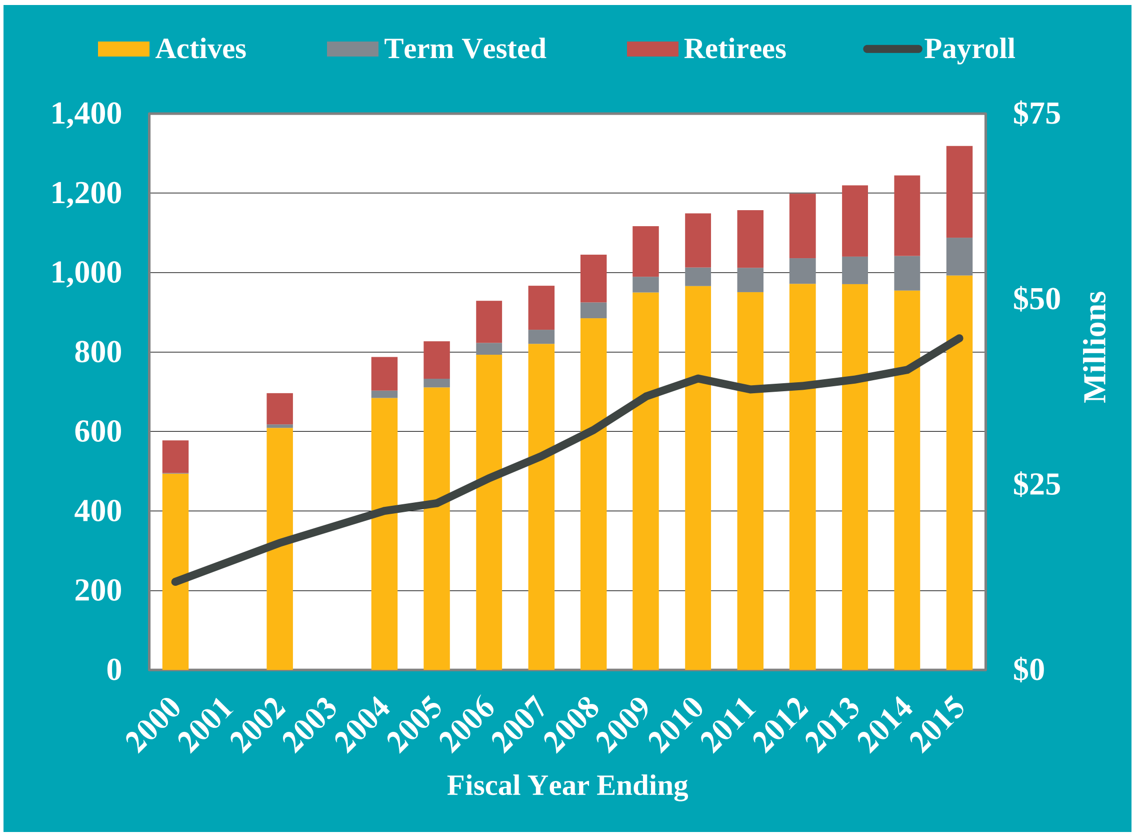


SECTION I
BOARD SUMMARY

<u>Participant Trends</u>

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 3.0 actives for each inactive today.

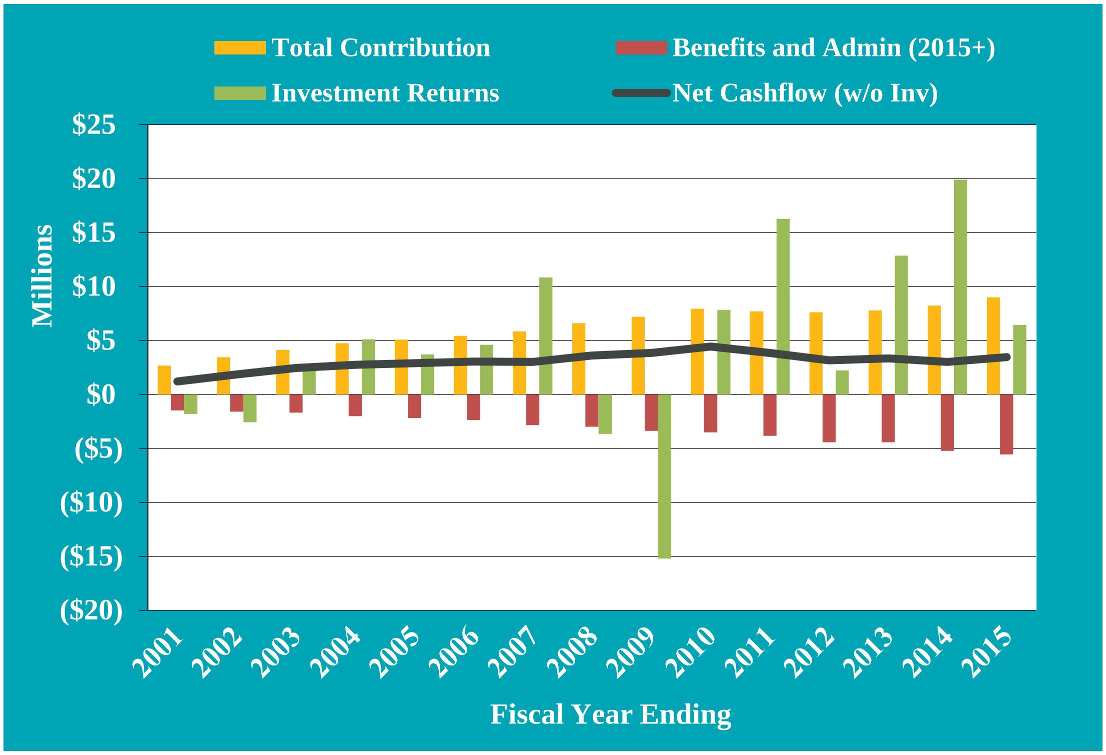
The black line shows the covered payroll in the System and is read using the right-hand scale.



SECTION I
BOARD SUMMARY

Net Cash Flow

This graph shows the historical contributions compared to benefit payments and, for 2015 and later, administrative expenses. The difference between these two measures is shown in the solid black line, and is the net cash flow (excluding investment returns).



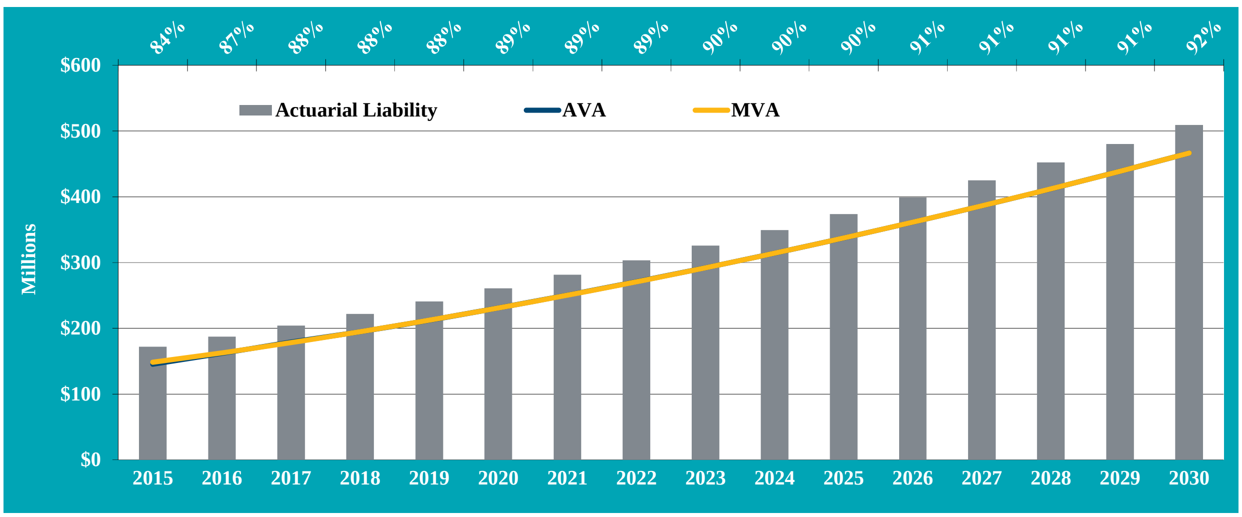
SECTION I
BOARD SUMMARY

Future Outlook

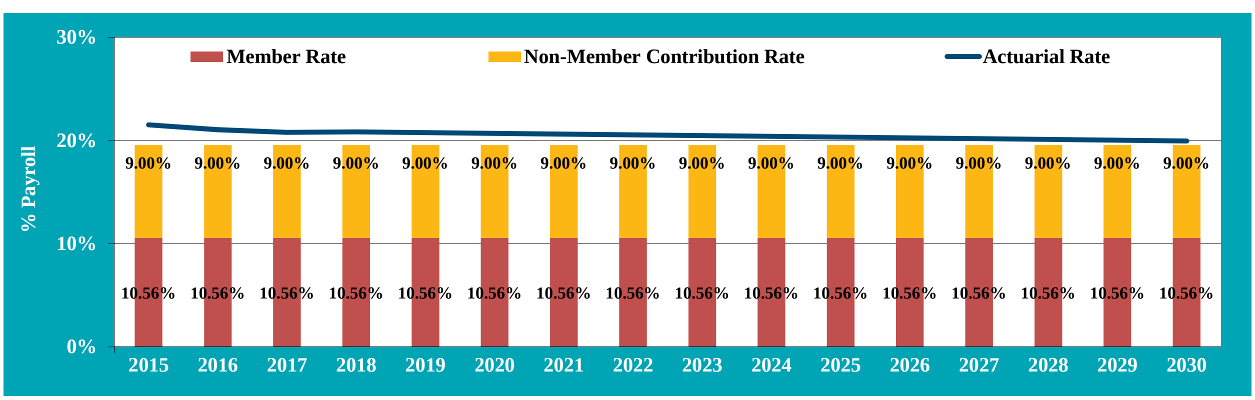
Baseline Projections

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 chart below shows that the funded status of the System is expected to increase over the next couple of years as excluded investment gains are recognized by the asset smoothing method. The funded status is then expected to become relatively constant.



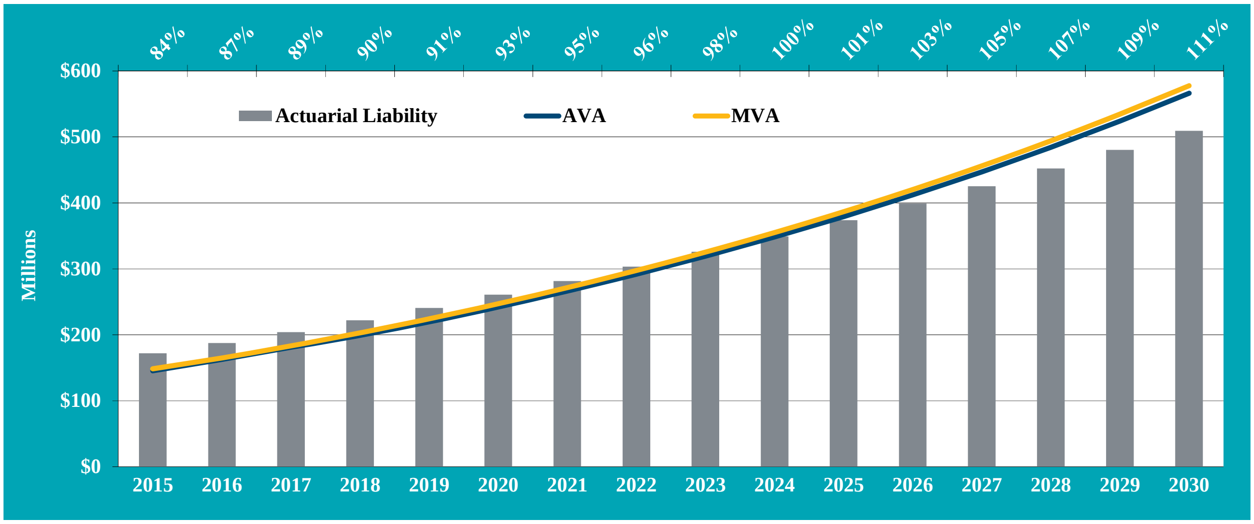
The chart below shows that the total contribution computed on an Actuarial Rate basis will decline slightly throughout the 15-year period. The Actuarial Rate is calculated as the normal cost, administrative expense, and a level percent of pay 30-year open amortization of the unfunded actuarial liability.



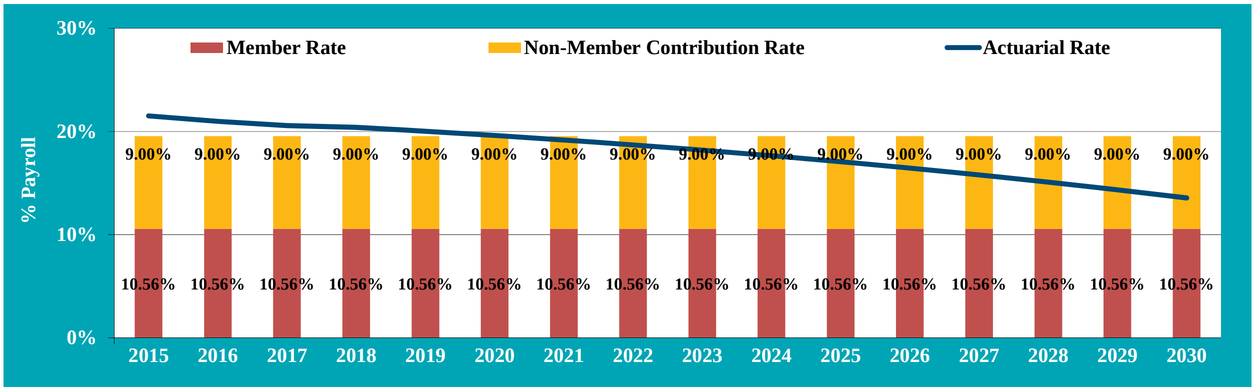
SECTION I
BOARD SUMMARY

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).



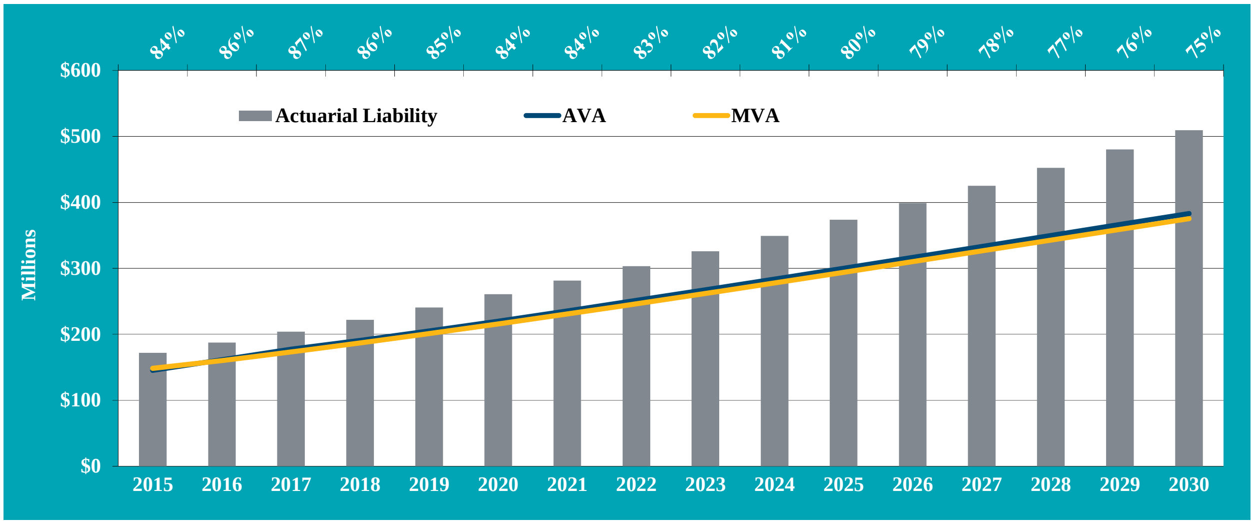
Compared to the baseline projections, the funded status begins to improve more quickly, reaching 100% by the year 2024. The employer portion of the Actuarial Rate declines toward zero throughout this 15-year period.



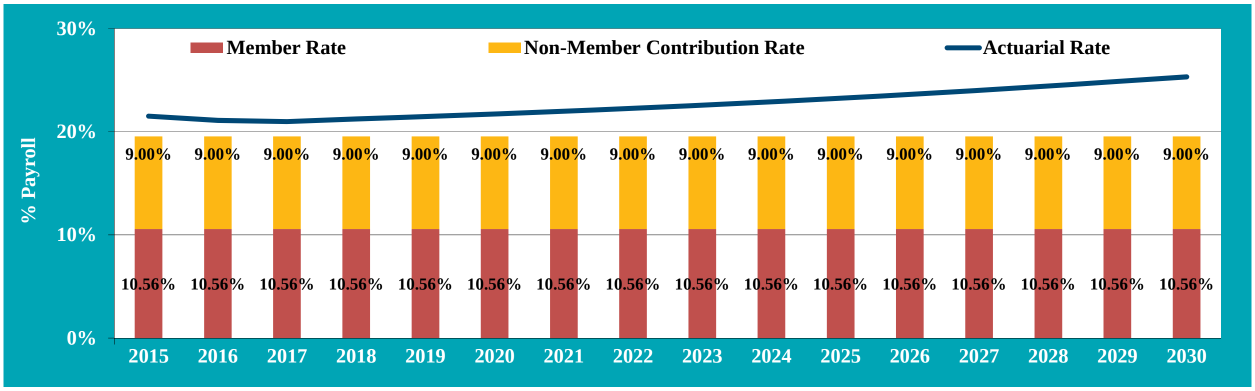
SECTION I
BOARD SUMMARY

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 slightly increases then declines to 75%, and the employer portion of the Actuarial Rate begins to rise steadily after 2017.



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, 2014	June 30, 2015	% Change
Participant Counts			
Active Members	955	993	4.0%
Disabled Members*	2	4	100.0%
Retirees and Beneficiaries*	201	227	12.9%
Terminated Vested Members	87	95	9.2%
Terminated Non-Vested Members	175	235	34.3%
Total**	1,420	1,554	9.4%
Annual Salaries of Active Members	$ 40,458,127	$ 44,713,334	10.5%
Average Annual Salary	$ 42,365	$ 45,029	6.3%
Annual Retirement Allowances for Retired Members and Beneficiaries	$ 4,105,807	$ 4,720,886	15.0%
Assets and Liabilities			
Actuarial Liability (AL)	$ 154,594,729	$ 172,159,908	11.4%
Actuarial Value of Assets (AVA)	129,428,506	145,314,074	12.3%
Unfunded AL	$ 25,166,223	$ 26,845,834	6.7%
Funded Ratio (AVA/AL)	83.7%	84.4%	
Present Value of Accrued Benefits (PVAB)	$ 120,952,417	$ 135,256,058	11.8%
Market Value of Assets	138,743,106	148,637,767	7.1%
Unfunded PVAB	$ (17,790,689)	$ (13,381,709)	(24.8%)
Accrued Benefit Funding Ratio	114.7%	109.9%	
Ratio of Actuarial Value to Market Value	93.3%	97.8%	
Contributions as a Percentage of Payroll			
Statutory Funding Rate	19.56%	19.56%	
Normal Cost Rate	18.58%	18.24%	
Administrative Expense	0.17%	0.17%	
Available for Amortization of UAL	0.81%	1.15%	
Period to Amortize	Does not amortize	Does not amortize	
Projected 30-year Level Funding Rate	21.97%	21.52%	
Projected Shortfall (Surplus)	2.41%	1.96%	

* Based on PERA categorization for the annual report. For actuarial valuation purposes, 16 members in 2014 and 16 members in 2015 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 have an impact upon benefit levels, contributions, and the ultimate security of participants' benefits.

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

- **Disclosure** of System assets at June 30, 2014 and June 30, 2015;
- 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.

SECTION II
ASSETS

Table II-1 Changes in Market Values				
Value of Assets – June 30, 2014			**$**	**138,743,106**
Additions				
Member Contributions	$	4,924,265		
Employer Contributions		4,088,117		
Investment Return		6,434,871		
Other		0		
Total Additions	**$**	**15,447,253**		
Deductions				
Benefit Payments	$	5,351,847		
Administrative Expenses		200,745		
Total Deductions	**$**	**5,552,592**		
Value of Assets – June 30, 2015			**$**	**148,637,767**

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, 2015 valuation.

Table II-2
Market Value Gain/(Loss)

Value of Assets – June 30, 2014	$ 138,743,106
Total Contributions	$ 9,012,382
Benefit Payments	(5,351,847)
Administrative Expense	(200,745)
Expected Return at 7.75%	10,884,156
Expected Value at June 30, 2015	$ 153,087,052
Actual Value at June 30, 2015	$ 148,637,767
Investment Gain/(Loss)	$ (4,449,285)

Table II-3
Develop Excluded Gain/(Loss)

	Total Gain/(Loss)	Excluded Portion
Exclude 75% of 2015 Gain/(Loss)	$ (4,449,285)	$ (3,336,964)
Exclude 50% of 2014 Gain/(Loss)	$ 10,816,200	$ 5,408,100
Exclude 25% of 2013 Gain/(Loss)	$ 5,010,227	$ 1,252,557
Total Excluded Gain/(Loss) for AVA Calculation		$ 3,323,693

Table II-4
Actuarial Value of Assets

Market Value of Assets – June 30, 2015	$ 148,637,767
Total Gain/(Loss) excluded	3,323,693
Actuarial Value of Assets – June 30, 2015	$ 145,314,074

SECTION II
ASSETS

Investment Performance

The market value of assets (MVA) returned 4.58% during the Fiscal Year ended 2015, which is less than the assumed 7.75% return. A return of 9.47% 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%
2013	12.69%	11.13%
2014	16.97%	12.62%
2015	4.58%	9.47%

SECTION II
ASSETS

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

Year Beginning July 1,	Expected Benefits	Expected Admin Expense	Expected Contributions*	Net Cash Flow (excluding Investment Return)	Expected Investment Return**	Net Cash Flow (including Investment Return)
2015	$ 6,889	$ 81	$ 9,329	$ 2,359	$ 11,609	$ 13,968
2016	6,712	84	9,702	2,906	12,712	15,618
2017	7,334	88	10,090	2,668	13,914	16,582
2018	7,983	91	10,494	2,420	15,190	17,610
2019	8,782	95	10,914	2,037	16,540	18,577
2020	9,710	99	11,350	1,541	17,961	19,502
2021	10,709	103	11,804	992	19,451	20,443
2022	11,860	107	12,276	309	21,009	21,318
2023	13,133	111	12,767	(477)	22,632	22,155
2024	14,403	115	13,278	(1,240)	24,320	23,080

* Expected contributions include Employer 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, 2015. 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 the System's liabilities including:

- **Disclosure** of the System's liabilities at June 30, 2014 and June 30, 2015;
- 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, 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 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**.

SECTION III
LIABILITIES

Table III-1 Liabilities/Net (Surplus)/Unfunded	June 30, 2014	June 30, 2015
Present Value of Benefits		
Active Participant Benefits	$ 155,810,815	$ 169,585,949
Retiree and Inactive Benefits	58,515,701	67,112,776
Present Value of Benefits (PVB)	**$ 214,326,516**	**$ 236,698,725**
Market Value of Assets (MVA)	$ 138,743,106	$ 148,637,767
Future Member Contributions	35,151,399	38,666,473
Future Employer Contributions	29,958,579	32,954,380
Funding Shortfall/(Surplus)	10,473,432	16,440,105
Total Resources	**$ 214,326,516**	**$ 236,698,725**
Actuarial Liability		
Present Value of Benefits (PVB)	$ 214,326,516	$ 236,698,725
Present Value of Future Normal Costs (PVFNC)	59,731,787	64,538,817
Actuarial Liability (AL=PVB–PVFNC)	**154,594,729**	**172,159,908**
Actuarial Value of Assets (AVA)	129,428,506	145,314,074
Net (Surplus)/Unfunded (AL – AVA)	**$ 25,166,223**	**$ 26,845,834**
Present Value of Accrued Benefits		
Present Value of Benefits (PVB)	$ 214,326,516	$ 236,698,725
Present Value of Future Benefit Accruals (PVFBA)	93,374,099	101,442,667
Present Value of Accrued Benefits (PVAB=PVB–PVFBA)	**120,952,417**	**135,256,058**
Market Value of Assets (MVA)	138,743,106	148,637,767
Net Unfunded (PVAB – MVA)	**$ (17,790,689)**	**$ (13,381,709)**

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's 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.

Table III-2
Changes in Liabilities

	Present Value of Benefits	Actuarial Liability	Present Value of Accrued Liability
Liabilities June 30, 2014	$ 214,326,516	$ 154,594,729	$ 120,952,417
Liabilities June 30, 2015	236,698,725	172,159,908	135,256,058
Liability Increase (Decrease)	22,372,209	17,565,179	14,303,641
Change Due to:			
Actuarial (Gain)/Loss	NC*	2,510,662	NC*
Plan Changes	0	0	0
Benefits Accumulated and Other Sources	22,372,209	15,054,517	14,303,641

* NC = not calculated.

SECTION III
LIABILITIES

Table III-3
Summary of Actuarial Gains and Losses as of June 30, 2015

Actuarial Liabilities as of June 30, 2014	$	154,594,729
Normal Cost		8,008,155
Actual Benefit Payments		(5,351,847)
Interest		12,398,209
Expected Actuarial Liability as of June 30, 2015	$	169,649,246
Actuarial Liability as of June 30, 2015	$	172,159,908
Liability (Gain)/Loss	$	2,510,662
Sources of Liability (Gain)/Loss		
Salary (Gain)/Loss	$	2,462,381
New Participant (Gain)/Loss		1,106,008
Active Retirements (Gain)/Loss		258,617
Active Terminations (Gain)/Loss		(919,400)
Active Deaths (Gain)/Loss		(8,064)
Active Disability (Gain)/Loss		(125,422)
Inactive Mortality (Gain)/Loss		302,309
Other (Gain)/Loss		(565,767)
Actuarial Liability as of June 30, 2015	$	172,159,908
Liability (Gain)/Loss due to plan changes	$	0
Actuarial Value of Assets as of June 30, 2014	$	129,428,506
Net Cash Flow		3,459,790
Expected Earnings		10,162,275
Expected Actuarial Value of Assets as of June 30, 2015	$	143,050,571
Actuarial Value of Assets as of June 30, 2015	$	145,314,074
Investment (Gain)/Loss	$	(2,263,503)
Total Liability (Gain)/Loss		2,510,662
Total Actuarial (Gain)/Loss	$	247,159

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, 2014	June 30, 2015
1. Actuarial Liabilities		
Retiree and Inactive Benefits	$ 58,515,701	$ 67,112,776
Active Member Benefits	96,079,028	105,047,132
Total Actuarial Liability	**$ 154,594,729**	**$ 172,159,908**
2. Actuarial Value of Assets	$ 129,428,506	$ 145,314,074
3. Unfunded Actuarial Liability	$ 25,166,223	$ 26,845,834
4. Funded Ratio	83.7%	84.4%

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, 2014	June 30, 2015
1. Actuarial Liabilities		
Retiree and Inactive Benefits	$ 58,515,701	$ 67,112,776
Active Members Benefits	96,079,028	105,047,132
Total Actuarial Liability	**$ 154,594,729**	**$ 172,159,908**
2. Market Value of Assets	$ 138,743,106	$ 148,637,767
3. Unfunded Actuarial Liability	$ 15,851,623	$ 23,522,141
4. Funded Ratio	89.7%	86.3%

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 rate 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 in accordance with Board funding policy. However, this rate should not necessarily be construed as a recommended contribution level and this policy will not fully amortize the unfunded actuarial liability. 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 0.17% 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.

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, 2014	June 30, 2015
Statutory Funding Rates		
Members	10.56%	10.56%
Employers	9.00%	9.00%
Total	19.56%	19.56%
Normal Cost Rate *	18.58%	18.24%
Administrative Expense	0.17%	0.17%
Funding Rate Available for Amortization	0.81%	1.15%
Unfunded Actuarial Liability (Surplus)	25,166,223	26,845,834
Years to Amortize**	Does not amortize	Does not amortize

* The normal cost rate is projected to be 16.59% for members eligible on or after July 1, 2011. 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, 2014 and at June 30, 2015.

SECTION IV
CONTRIBUTIONS

Table IV-2
Calculated Actuarial Contribution Basis

	June 30, 2014	June 30, 2015
Normal Cost Rate	18.58%	18.24%
Amortization Payment (30 years)	3.22%	3.11%
Administrative Expense	0.17%	0.17%
Total Calculated Contribution Rate	21.97%	21.52%
Less Statutory Rate	19.56%	19.56%
Shortfall (Surplus) in Statutory Rate	2.41%	1.96%

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

	June 30, 2014	June 30, 2015
Normal Cost Rate	18.58%	18.24%
Amortization Payment (30 years)	2.03%	2.72%
Administrative Expense	0.17%	0.17%
Total Calculated Contribution Rate	20.78%	21.13%
Less Statutory Rate	19.56%	19.56%
Shortfall (Surplus) in Statutory Rate	1.22%	1.57%

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 Actuarial Contribution Rates

Valuation Year	Rate
2016	21.05%
2017	20.79%
2018	20.83%
2019	20.76%
2020	20.69%

SECTION V
FINANCIAL STATEMENT INFORMATION

The Government Finance Officers Association (GFOA) maintains a checklist of items to be included in a public retirement system's Comprehensive Annual Financial Report (CAFR) in order to receive recognition for excellence in financial reporting. Therefore, we have included certain schedules in this section for possible inclusion within the System's audited financial statements.

Tables V-1 through V-4 are exhibits which could be used with the CAFR report. Table V-1 is the Note to Required Supplementary Information, Table V-2 is a history of Financial Experience, Table V-3 is the Schedule of Funding Progress and Table V-4 is the Solvency Test which shows the portion of actuarial liability covered by assets.

SECTION V
FINANCIAL STATEMENT INFORMATION

Table V-1
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, 2015
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.

SECTION V
FINANCIAL STATEMENT INFORMATION

Table V-2
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	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
Investment Income on Actuarial Assets	$ (7,125)	$ (5,324)	$ (3,049)	$ 3,364	$ 5,532	$ 2,264
Combined Liability Experience	(822)	6,714	3,270	1,894	(731)	(2,511)
(Loss)/Gain During Year from Financial Experience	$ (7,947)	$ 1,390	$ 221	$ 5,258	$ 4,801	$ (247)
Non-Recurring Items	(10,100)	0	0	0	0	0
Composite Gain (or Loss) During Year	$ (18,047)	$ 1,390	$ 221	$ 5,258	$ 4,801	$ (247)

Table V-3
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
2015	$ 145,314	$ 172,160	84 %	$ 26,846	$ 44,885	60 %
2014	129,429	154,595	84 %	25,166	41,637	60 %
2013	112,100	139,985	80 %	27,885	39,471	71 %
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 %

SECTION V
FINANCIAL STATEMENT INFORMATION

Table V-4
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)
2015	$ 34,396	$ 58,648	$ 79,116	$ 145,314	100 %	100 %	66 %
2014	32,779	50,062	71,753	129,429	100 %	100 %	65 %
2013	31,918	43,498	64,569	112,100	100 %	100 %	57 %
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 %

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	993	16	215	95	235	1,554
Disabled members having attained normal retirement age		(12)	12			0
Beneficiaries of Disabled Members						0
Beneficiaries with less than one year of certain payments remaining			0			0
Other Adjustments					0	0
Participant counts shown in Annual Financial Report	993	4	227	95	235	1,554

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, if any, have no material effect upon the liability calculation.

APPENDIX A
MEMBERSHIP INFORMATION

The following table shows a reconciliation of the participants used in the previous valuation to this valuation.

Status Reconciliation							
	Active	Retired	Vested	Non Vested	Disabled	Survivor	Total
Members on July 1, 2014	955	152	87	174	16	35	1,419
New Hires	188	0	0	0	0	0	188
Rehires	8	0	(3)	(5)	0	0	0
Retired	(20)	30	(10)	0	0	0	0
Terminated Vested	(23)	0	23	0	0	0	0
Terminated Non Vested	(66)	0	0	66	0	0	0
Active Deaths	(1)	0	0	0	0	0	(1)
Became Disabled	(1)	0	(1)	0	2	0	0
In Pay Deaths	0	(3)	0	0	(2)	(1)	(6)
Survivors	0	0	0	0	0	2	2
Cash Out	(47)	0	(1)	0	0	0	(48)
Members on July 1, 2015	993	179	95	235	16	36	1,554

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 Guaranteed Annual Benefit Adjustment (GABA) where applicable), whereas for the Board Summary, annual benefits are as of the valuation date.

APPENDIX A
MEMBERSHIP INFORMATION

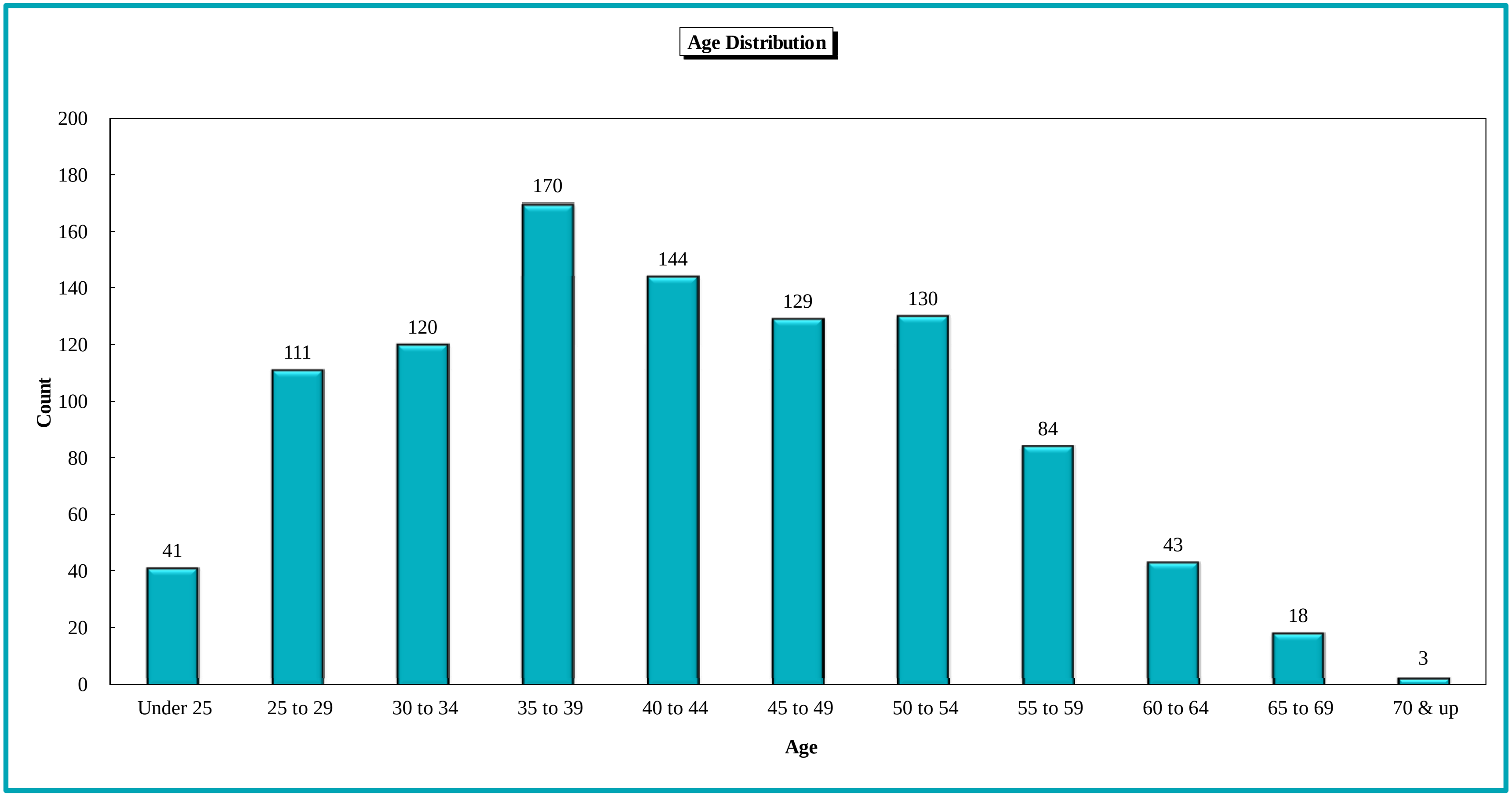
Montana Game Wardens' and Peace Officers' Retirement System Distribution of Active Members by Age and Service as of June 30, 2015

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	24	17	0	0	0	0	0	0	0	0	41
25 to 29	35	56	20	0	0	0	0	0	0	0	111
30 to 34	19	54	40	7	0	0	0	0	0	0	120
35 to 39	51	40	48	26	5	0	0	0	0	0	170
40 to 44	10	35	37	37	20	5	0	0	0	0	144
45 to 49	6	29	28	32	24	8	2	0	0	0	129
50 to 54	7	23	32	29	30	4	3	2	0	0	130
55 to 59	5	13	23	17	17	3	3	3	0	0	84
60 to 64	2	6	13	8	10	1	1	1	1	0	43
65 to 69	1	2	5	6	2	2	0	0	0	0	18
70 & up	0	1	0	2	0	0	0	0	0	0	3
Total	160	276	246	164	108	23	9	6	1	0	993

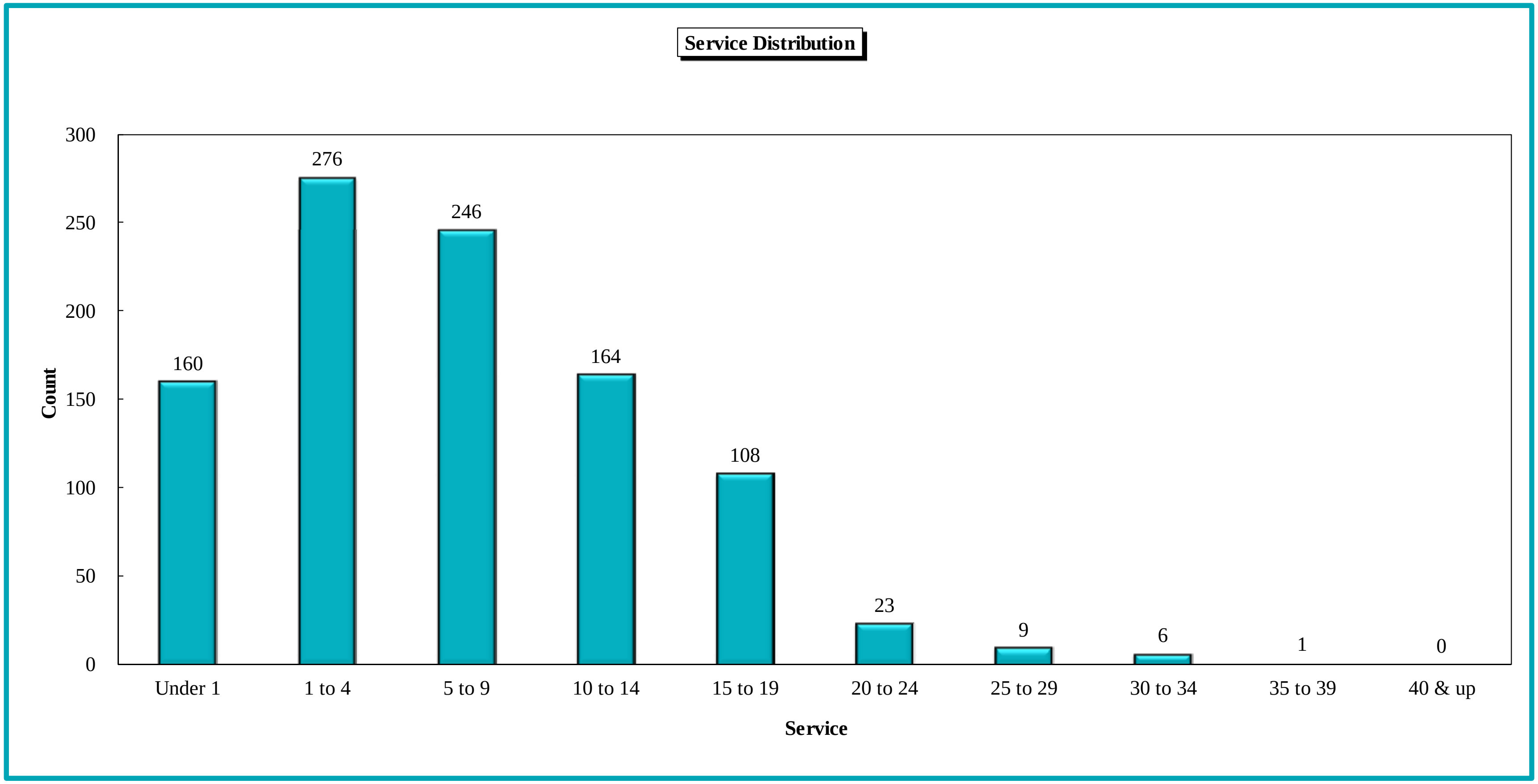
APPENDIX A
MEMBERSHIP INFORMATION

Montana Game Wardens' and Peace Officers' Retirement System Distribution of Active Members by Age as of June 30, 2015



APPENDIX A
MEMBERSHIP INFORMATION

Montana Game Wardens' and Peace Officers' Retirement System Distribution of Active Members by Service as of June 30, 2015



APPENDIX A
MEMBERSHIP INFORMATION

Montana Game Wardens' and Peace Officers' Retirement System Distribution of Active Members by Age and Service as of June 30, 2015

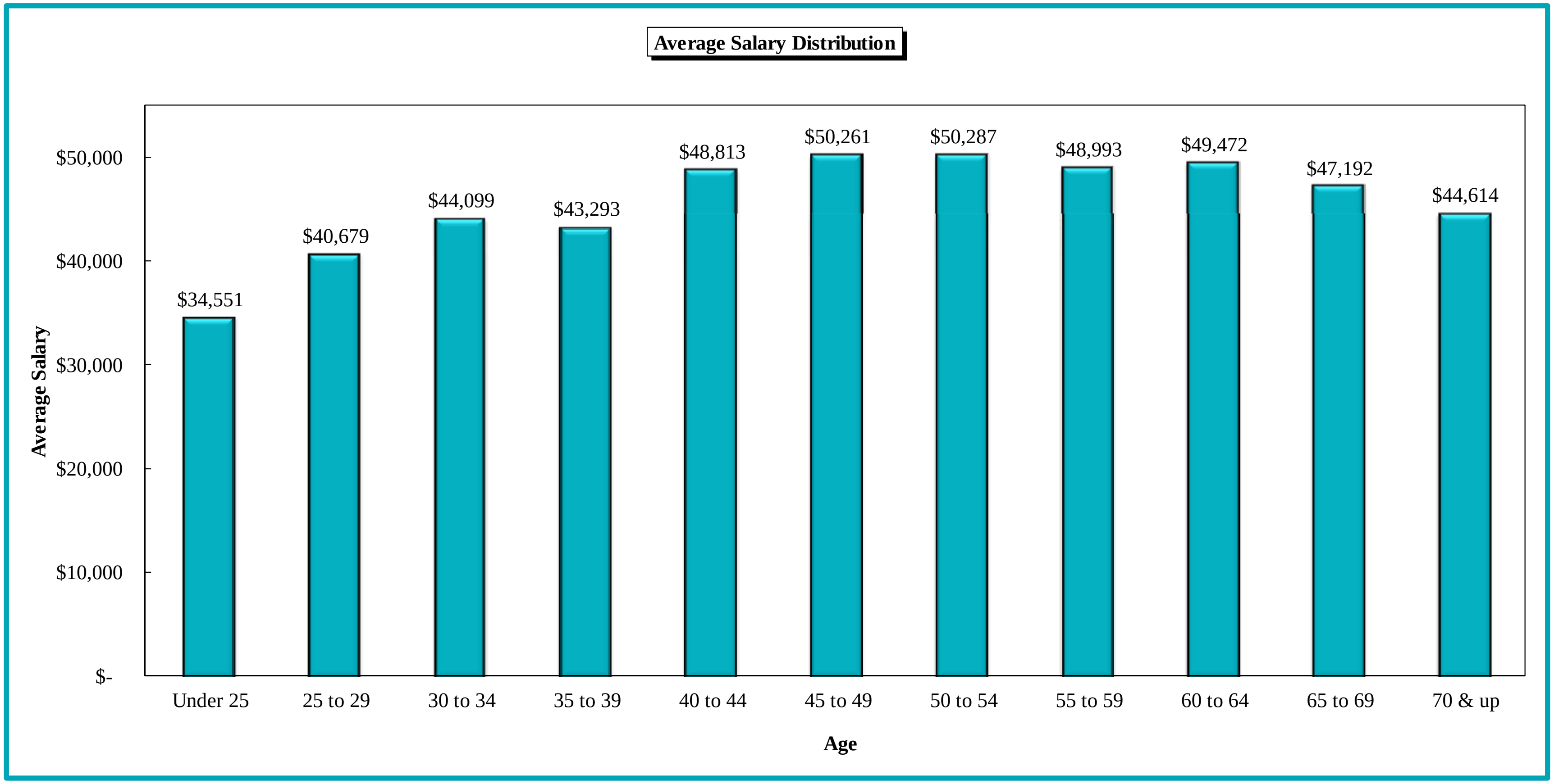
AVERAGE SALARY BY AGE/SERVICE

	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	$ 34,043	$ 35,267	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 34,551
25 to 29	$ 36,454	$ 41,649	$ 45,357	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 40,679
30 to 34	$ 39,117	$ 41,798	$ 48,250	$ 51,642	$ -	$ -	$ -	$ -	$ -	$ -	$ 44,099
35 to 39	$ 35,266	$ 44,001	$ 46,352	$ 50,409	$ 53,146	$ -	$ -	$ -	$ -	$ -	$ 43,293
40 to 44	$ 39,813	$ 43,856	$ 48,057	$ 49,057	$ 58,059	$ 68,319	$ -	$ -	$ -	$ -	$ 48,813
45 to 49	$ 40,363	$ 44,786	$ 49,318	$ 51,737	$ 53,783	$ 60,026	$ 67,623	$ -	$ -	$ -	$ 50,261
50 to 54	$ 46,546	$ 44,013	$ 48,439	$ 46,499	$ 56,638	$ 63,638	$ 70,050	$ 68,431	$ -	$ -	$ 50,287
55 to 59	$ 48,907	$ 43,260	$ 45,304	$ 49,738	$ 52,776	$ 40,088	$ 65,322	$ 69,194	$ -	$ -	$ 48,993
60 to 64	$ 35,854	$ 50,149	$ 45,515	$ 46,364	$ 56,842	$ 46,804	$ 54,161	$ 53,375	$ 69,328	$ -	$ 49,472
65 to 69	$ 7,615	$ 46,945	$ 47,643	$ 48,631	$ 54,586	$ 54,387	$ -	$ -	$ -	$ -	$ 47,192
70 & up	$ -	$ 25,332	$ -	$ 54,255	$ -	$ -	$ -	$ -	$ -	$ -	$ 44,614
Total	$ 37,029	$ 42,672	$ 47,329	$ 49,439	$ 55,478	$ 58,791	$ 66,169	$ 66,303	$ 69,328	$ -	$ 46,183

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

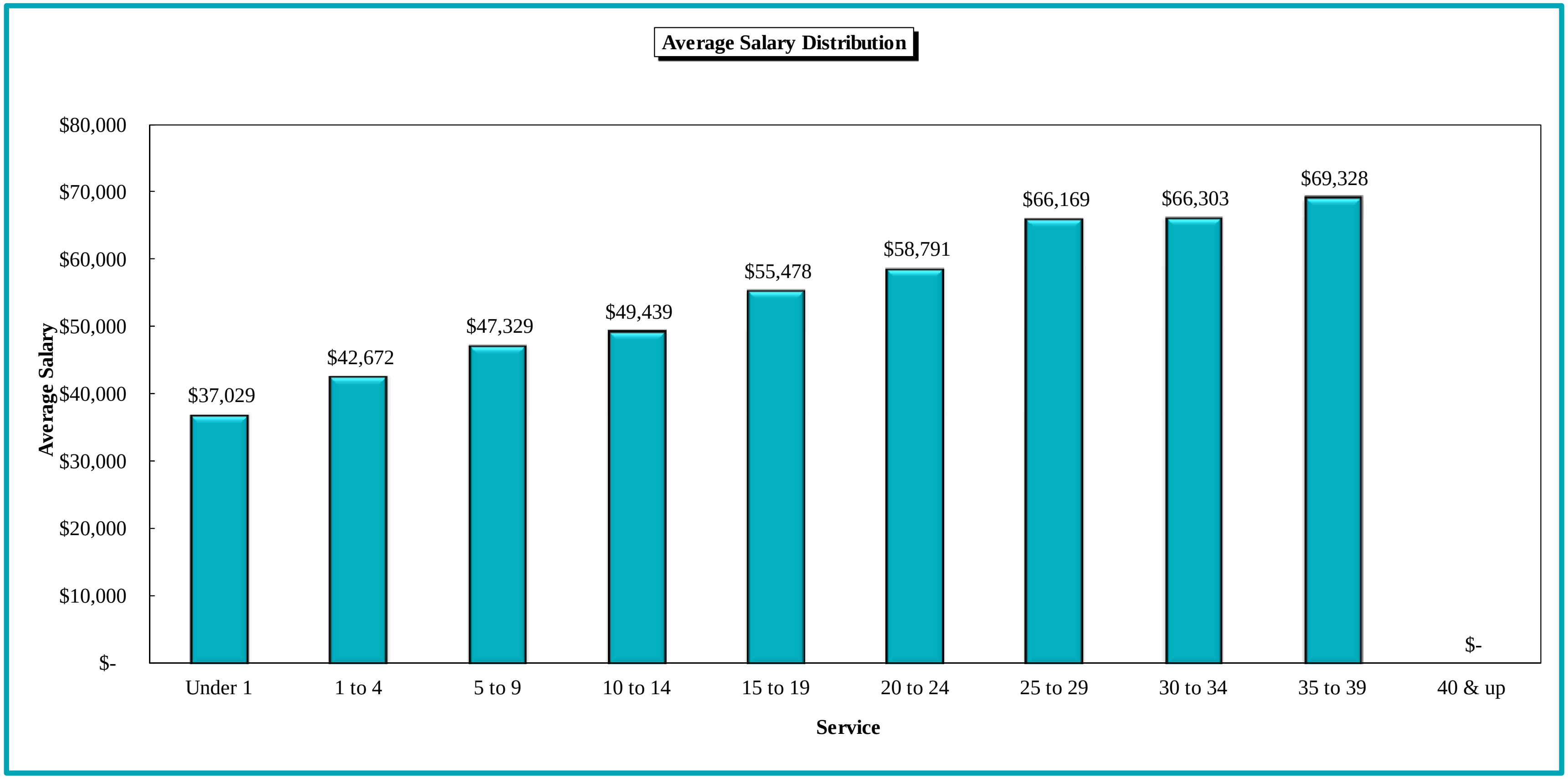
APPENDIX A
MEMBERSHIP INFORMATION

Montana Game Wardens' and Peace Officers' Retirement System Distribution of Active Members by Age as of June 30, 2015



APPENDIX A
MEMBERSHIP INFORMATION

Montana Game Wardens' and Peace Officers' Retirement System Distribution of Active Members by Service as of June 30, 2015



APPENDIX A
MEMBERSHIP INFORMATION

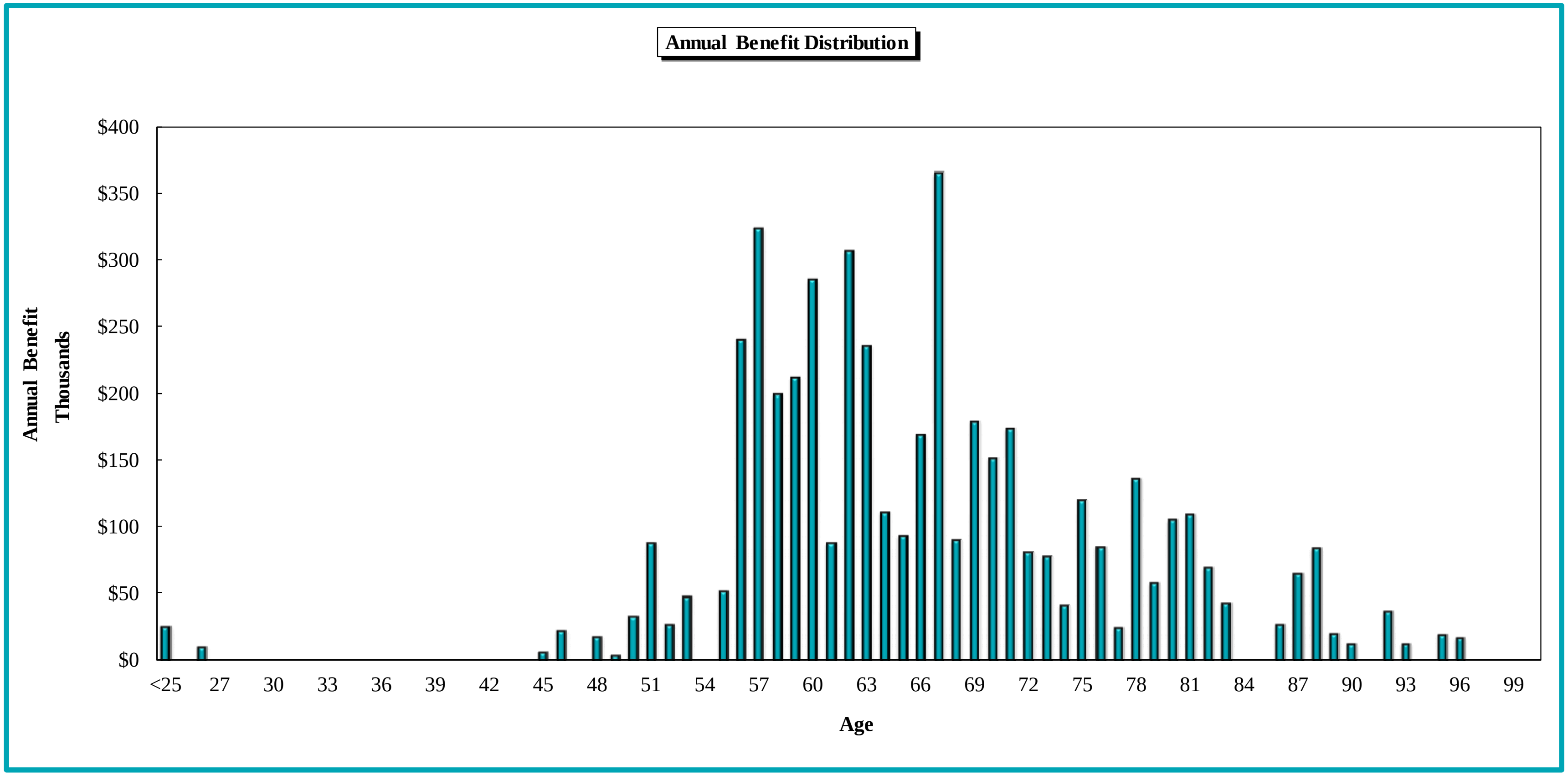
Montana Game Wardens' and Peace Officers' Retirement System Distribution of Retired Members, Survivors, and Disabled Members as of June 30, 2015

Age	Count	Annual Benefit	Age	Count	Annual Benefit
<25	2	$24,842	73	5	$77,983
25	0	$0	74	2	$41,330
26	1	$9,719	75	4	$120,146
27	0	$0	76	4	$85,091
28	0	$0	77	1	$24,193
29	0	$0	78	4	$135,984
30	0	$0	79	2	$57,306
31	0	$0	80	5	$104,710
32	0	$0	81	3	$109,285
33	0	$0	82	2	$69,258
34	0	$0	83	2	$43,053
35	0	$0	84	0	$0
36	0	$0	85	0	$0
37	0	$0	86	3	$26,140
38	0	$0	87	3	$64,474
39	0	$0	88	2	$83,693
40	0	$0	89	1	$19,793
41	0	$0	90	1	$11,594
42	0	$0	91	0	$0
43	0	$0	92	2	$36,511
44	0	$0	93	1	$12,022
45	1	$5,281	94	0	$0
46	1	$21,681	95	1	$19,047
47	0	$0	96	1	$16,643
48	1	$17,263	97	0	$0
49	1	$3,357	98	0	$0
50	1	$32,533	99	0	$0
51	4	$87,617	100	0	$0
52	1	$26,158	101	0	$0
53	1	$47,829	102	0	$0
54	0	$0	103	0	$0
55	3	$51,418	104	0	$0
56	12	$240,735	105	0	$0
57	13	$323,586	106	0	$0
58	9	$198,973	107	0	$0
59	9	$211,743	108	0	$0
60	10	$285,481	109	0	$0
61	7	$87,932	110	0	$0
62	11	$306,959	111	0	$0
63	15	$236,183	112	0	$0
64	8	$110,768	113	0	$0
65	9	$93,695	114	0	$0
66	9	$169,050	115	0	$0
67	18	$365,600	116	0	$0
68	9	$90,069	117	0	$0
69	7	$179,320	118	0	$0
70	7	$151,227	119	0	$0
71	6	$173,603	120	0	$0
72	6	$80,644			
			Totals	231	$4,791,518

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.

APPENDIX A
MEMBERSHIP INFORMATION

Montana Game Wardens' and Peace Officers' Retirement System Distribution of Retired Members, Survivors, and Disabled Members as of June 30, 2015



APPENDIX A
MEMBERSHIP INFORMATION

Montana Game Wardens' and Peace Officers' Retirement System Distribution of Terminated Vested Members as of June 30, 2015

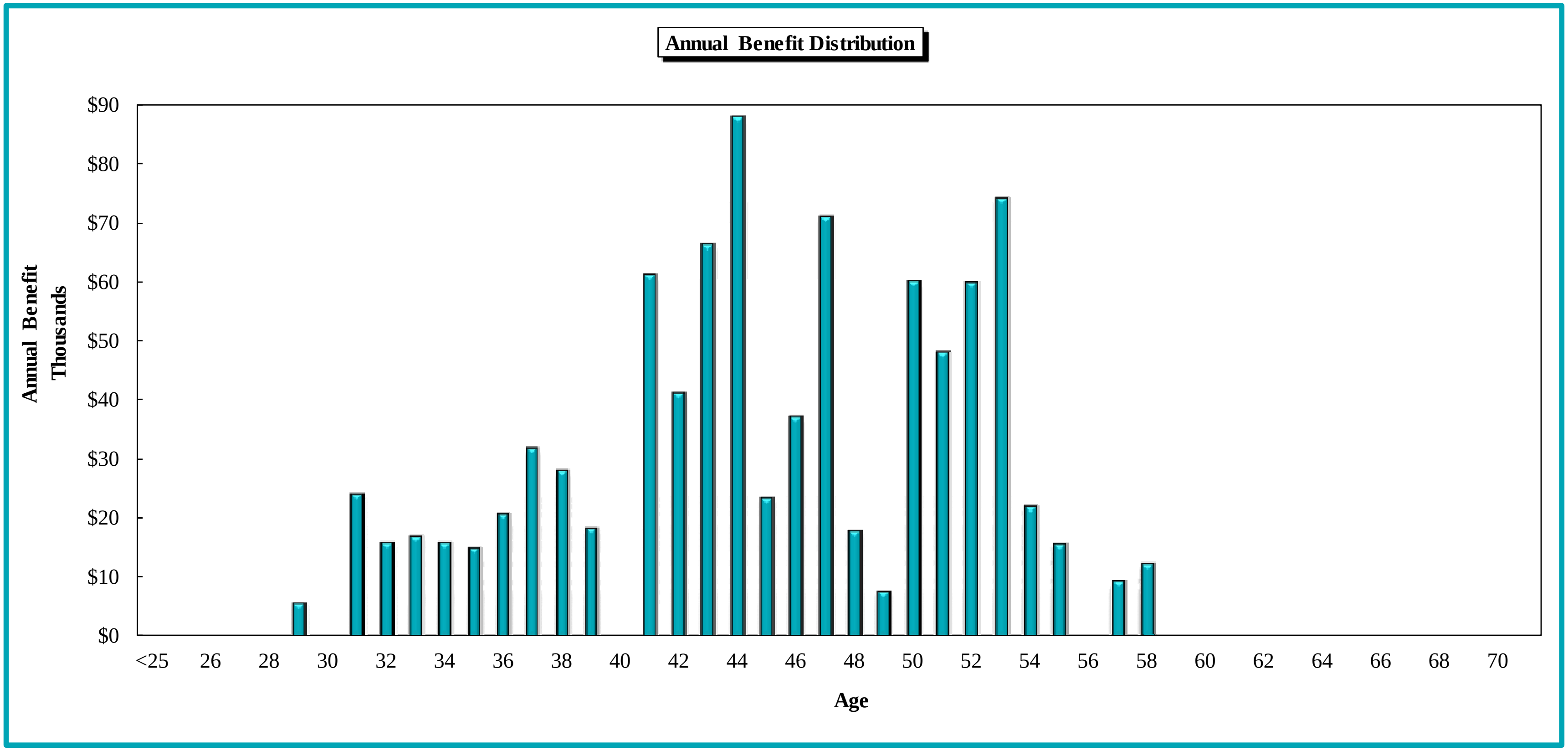
Age	Count	Annual Benefit*	Account Balance*	Age	Count	Annual Benefit*	Account Balance*
<25	0	$0	$0	73	0	$0	$0
25	0	$0	$0	74	0	$0	$0
26	0	$0	$0	75	0	$0	$0
27	0	$0	$0	76	0	$0	$0
28	0	$0	$0	77	0	$0	$0
29	1	$5,694	$0	78	0	$0	$0
30	0	$0	$0	79	0	$0	$0
31	3	$23,916	$0	80	0	$0	$0
32	2	$15,720	$0	81	0	$0	$0
33	2	$16,956	$0	82	0	$0	$0
34	3	$15,690	$0	83	0	$0	$0
35	2	$14,788	$0	84	0	$0	$0
36	2	$20,676	$0	85	0	$0	$0
37	2	$31,829	$0	86	0	$0	$0
38	3	$28,003	$0	87	0	$0	$0
39	2	$18,283	$0	88	0	$0	$0
40	0	$0	$0	89	0	$0	$0
41	6	$61,160	$0	90	0	$0	$0
42	4	$41,165	$0	91	0	$0	$0
43	6	$66,195	$0	92	0	$0	$0
44	7	$87,974	$0	93	0	$0	$0
45	3	$23,196	$0	94	0	$0	$0
46	4	$37,036	$0	95	0	$0	$0
47	7	$70,846	$0	96	0	$0	$0
48	3	$17,866	$0	97	0	$0	$0
49	1	$7,410	$0	98	0	$0	$0
50	5	$60,134	$0	99	0	$0	$0
51	4	$48,118	$0	100	0	$0	$0
52	6	$59,829	$0	101	0	$0	$0
53	9	$74,160	$0	102	0	$0	$0
54	3	$21,969	$0	103	0	$0	$0
55	2	$15,502	$0	104	0	$0	$0
56	0	$0	$0	105	0	$0	$0
57	1	$9,180	$0	106	0	$0	$0
58	2	$12,276	$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	95	$905,571	$0

** 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, 2015



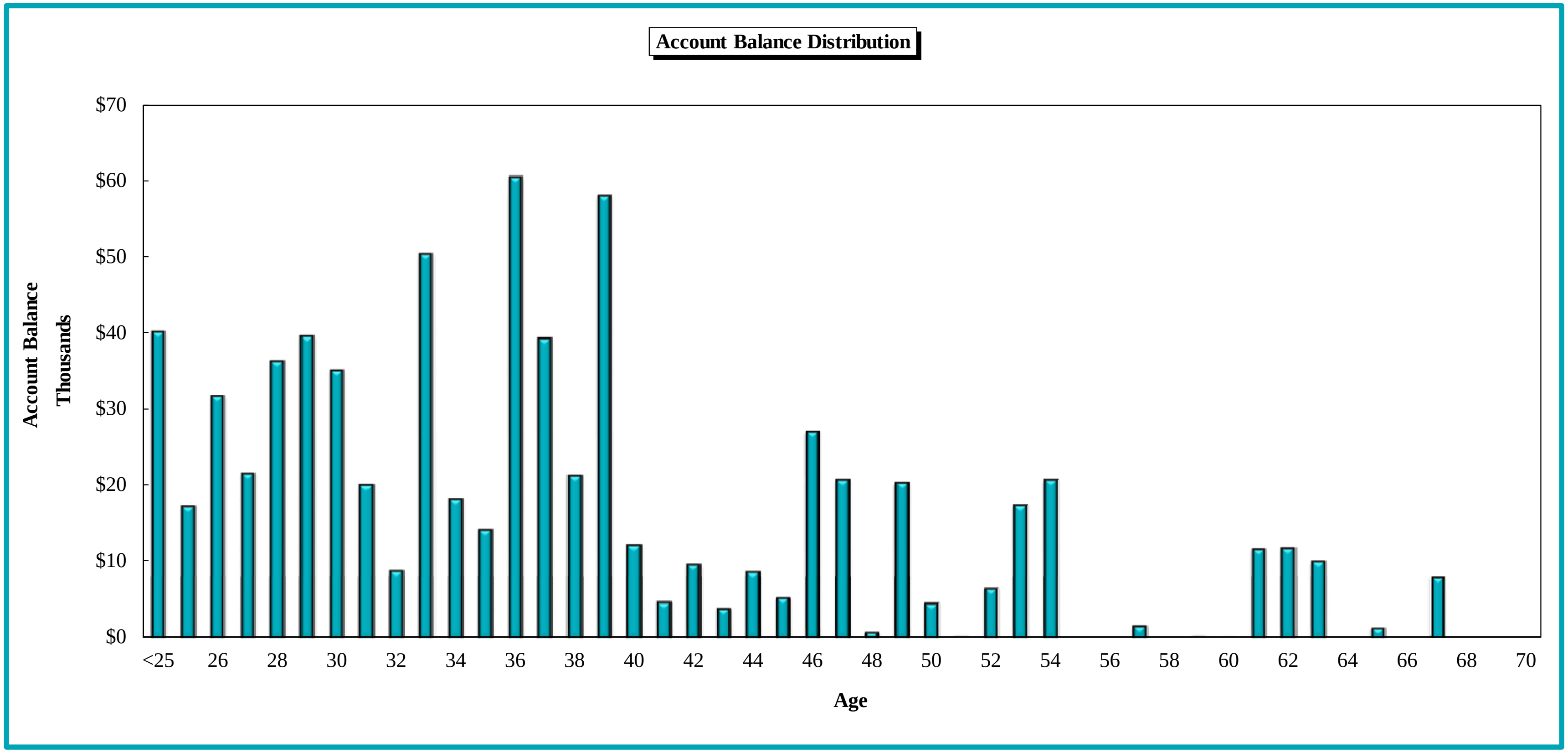
APPENDIX A
MEMBERSHIP INFORMATION

Montana Game Wardens' and Peace Officers' Retirement System
Distribution of Terminated Non-Vested Members as of June 30, 2015

Age	Count	Account Balance
<25	19	$40,060
25	7	$17,238
26	9	$31,615
27	7	$21,617
28	10	$36,259
29	11	$39,532
30	8	$35,041
31	7	$20,080
32	5	$8,665
33	15	$50,342
34	4	$18,175
35	6	$14,047
36	8	$60,542
37	43	$39,283
38	6	$21,294
39	9	$57,962
40	2	$12,123
41	2	$4,685
42	2	$9,494
43	1	$3,837
44	10	$8,619
45	3	$5,239
46	5	$27,050
47	3	$20,711
48	1	$639
49	3	$20,344
50	4	$4,502
51	2	$291
52	3	$6,423
53	4	$17,326
54	3	$20,674
55	0	$0
56	0	$0
57	2	$1,518
58	0	$0
59	1	$325
60	3	$151
61	1	$11,658
62	1	$11,739
63	3	$9,968
64	0	$0
65	1	$1,288
66	0	$0
67	1	$8,015
68	0	$0
69	0	$0
70	0	$0
71	0	$0
72	0	$0
73	0	$0
74	0	$0
75	0	$0
76	0	$0
77	0	$0
78	0	$0
79	0	$0
80	0	$0
81	0	$0
82	0	$0
83	0	$0
84	0	$0
85	0	$0
86	0	$0
87	0	$0
88	0	$0
89	0	$0
90	0	$0
91	0	$0
92	0	$0
93	0	$0
94	0	$0
95	0	$0
96	0	$0
97	0	$0
98	0	$0
99	0	$0
100	0	$0
101	0	$0
102	0	$0
103	0	$0
104	0	$0
105	0	$0
106	0	$0
107	0	$0
108	0	$0
109	0	$0
110	0	$0
111	0	$0
112	0	$0
113	0	$0
114	0	$0
115	0	$0
116	0	$0
117	0	$0
118	0	$0
119	0	$0
120	0	$0
Totals	235	$718,370

APPENDIX A
MEMBERSHIP INFORMATION

Montana Game Wardens' and Peace Officers' Retirement System Distribution of Terminated Non-Vested Members as of June 30, 2015



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 investment 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:	4.00% (for amortization and non-GABA post retirement increases)
e. Administrative Expenses as a Percentage of Payroll:	0.17%

3. Changes since Last Valuation

None.

4. Rationale for Demographic and Economic Actuarial Assumptions

The actuarial assumptions (other than the administrative expense rate) were adopted by the Board based upon the results of an actuarial experience study covering the period July 1, 2003 through June 30, 2009. The administrative expense rate is based upon actual recurring administrative expenses during the period July 1, 2008 through June 30, 2013.

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 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 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 is specifically defined in law for GWPORS.

APPENDIX C
SUMMARY OF PLAN PROVISIONS

For members hired on or after July 1, 2013: 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: 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.

APPENDIX C
SUMMARY OF PLAN PROVISIONS

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

A beneficiary may elect to receive the present value of a monthly benefit as a single lump sum.

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.

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. Retirement Benefits - Form of Payment

The normal form of payment is a single life annuity with a refund of any remaining accumulated contributions (account balance) to a designated beneficiary. (Option 1)

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 selects Option 2 or 3 and the contingent annuitant predeceases or is divorced from the member, the benefit may revert to the higher Option 1 benefit available at retirement or the retiree may select a different contingent annuitant and/or a different option within 18 months of the death or divorce.

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.

APPENDIX C
SUMMARY OF PLAN PROVISIONS

14. Changes Since Last Valuation

General Revisions - House Bill 101, effective January 1, 2016:

- GWPORS Membership from PERS Membership - If a PERS member transfers employment to a GWPORS covered position and fails to elect GWPORS membership within 90 days, the default is PERS membership. 19-8-302(22), MCA
- GWPORS Factor Change - If a GWPORS member dies before retirement with more than 25 years of service credit, the survivor benefit is 2.5% of the Highest Average Compensation (HAC), not 2%. 19-8-1001(24), MCA

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)	x	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. 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.