Classic Values, Innovative Advice

Sheriffs' 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 Sheriffs' 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 Sheriffs' 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 Sheriffs' 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 Sheriffs' 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 4.60% 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 9.60%. This return was above the assumed rate of return of 7.75% and resulted in an actuarial gain on investments of $4.9 million.

The System also experienced an actuarial gain on System liabilities resulting from salary increases different than assumed and members retiring, terminating, becoming disabled, and dying at rates different from the actuarial assumptions. This experience gain deducted $0.1 million from the expected actuarial liability. This type of activity is normal in the course of the System's 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 $60.6 million. This is a decrease from last year's unfunded actuarial liability of $61.1 million. The funded ratio increased from 81% at the prior valuation to 83% 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 $7.4 million more than actuarial value. If market value were used rather than actuarial value, the funded ratio on the valuation date would be 85%, and the statutory contribution rates are not 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

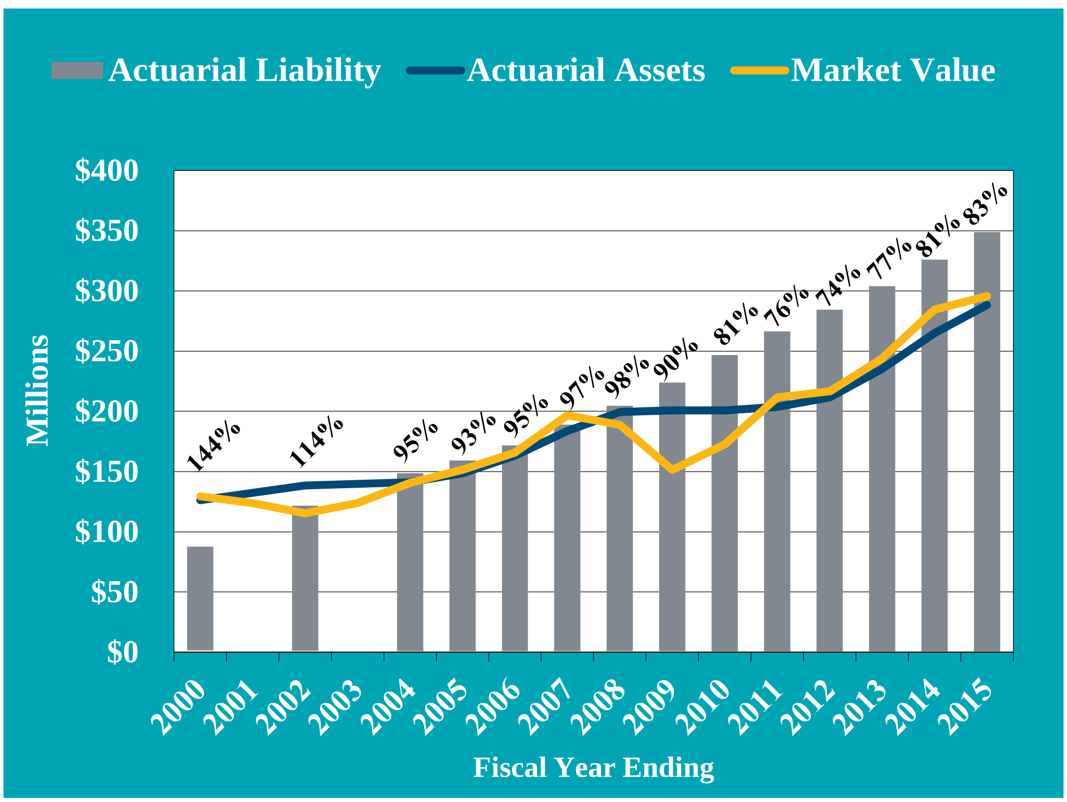
Trends

<u>Assets and Liabilities</u>

The market value of assets (MVA) increased over last year, returning 4.60% 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 7.6% 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.

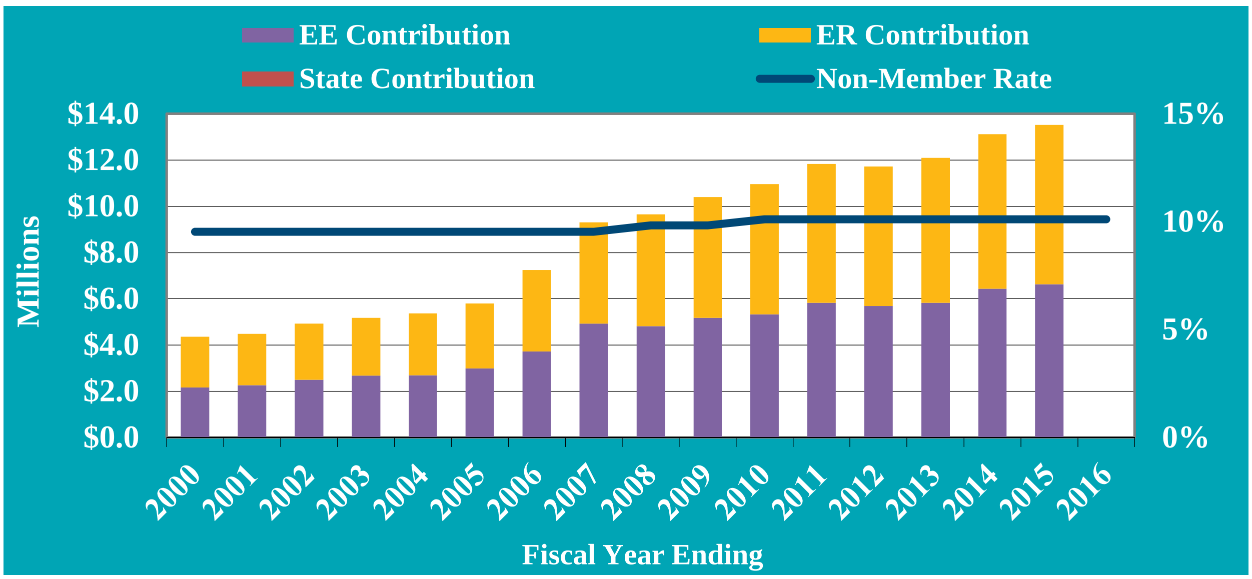


SECTION I
BOARD SUMMARY

<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.

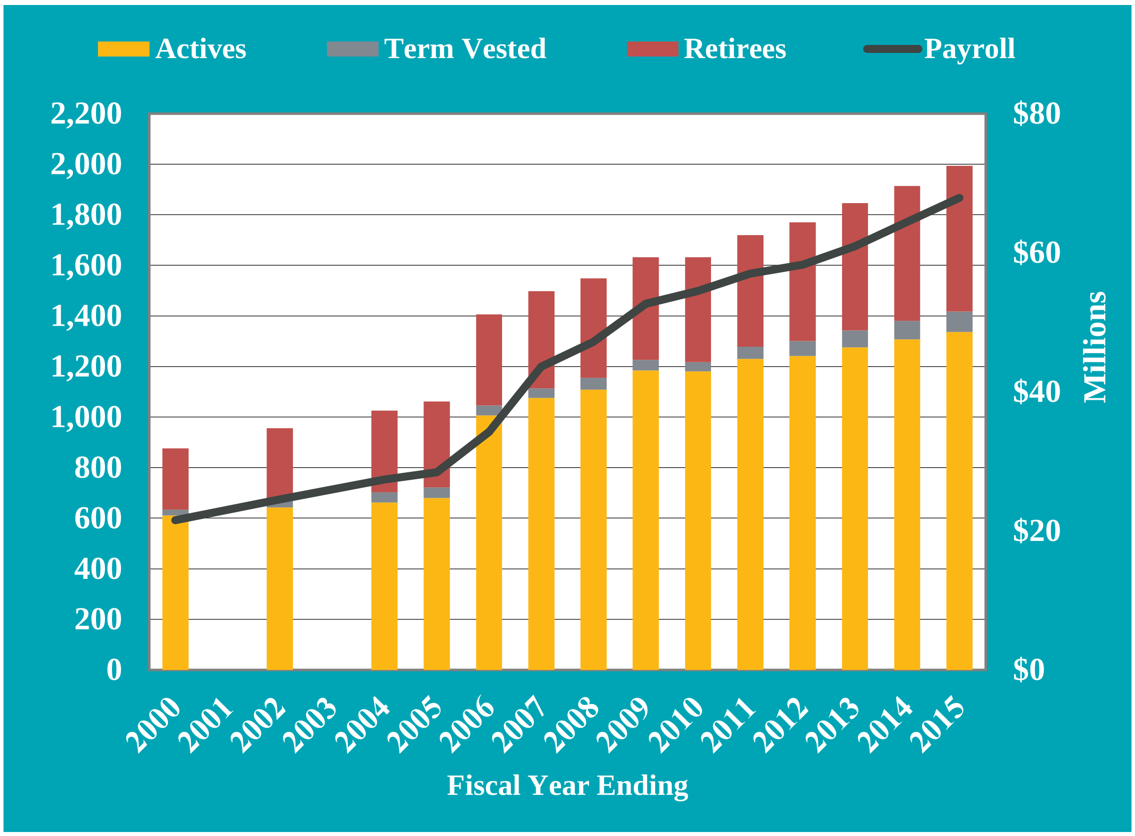


SECTION I
BOARD SUMMARY

Participant Trends

The bars show the number of participants in each category and should be read using the left-hand scale. The active-to-inactive ratio has decreased from 2.3 actives for each inactive in 2000 to 2.0 actives for each inactive today. This level of actives compared to retirees indicates a growing employee base which is somewhat keeping pace with the increasing inactive population.

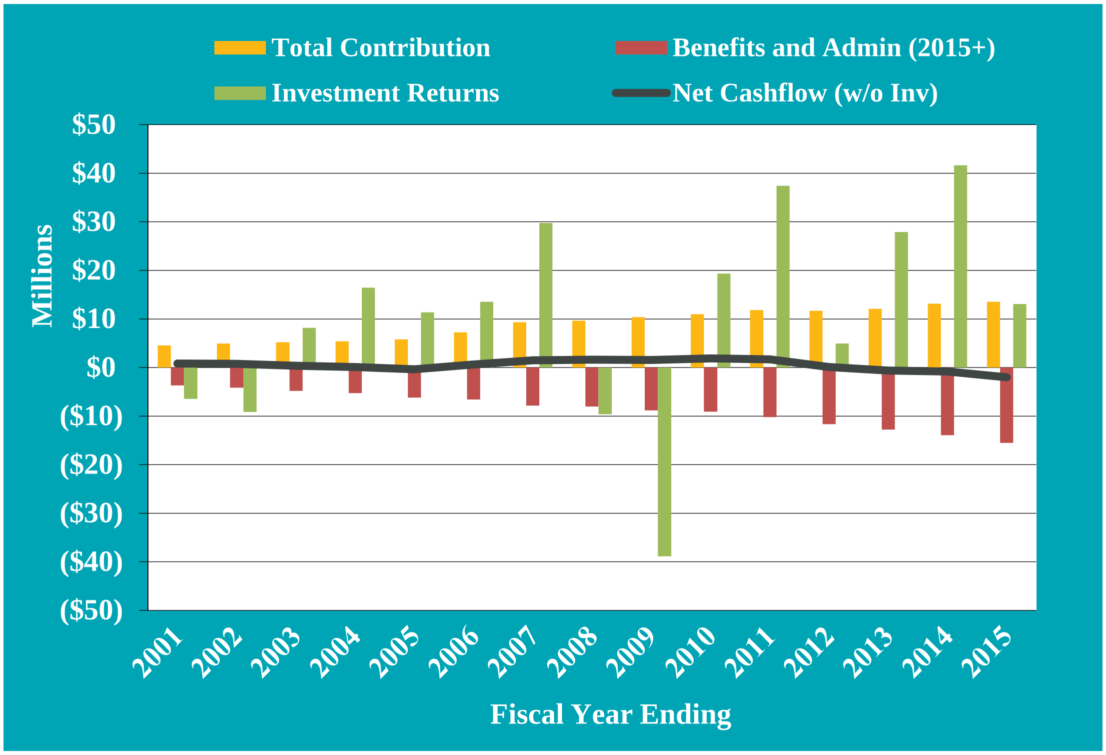
The black line shows the covered payroll in the System and is read using the right-hand scale.



SECTION I
BOARD SUMMARY

<u>Net Cash Flow</u>

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).



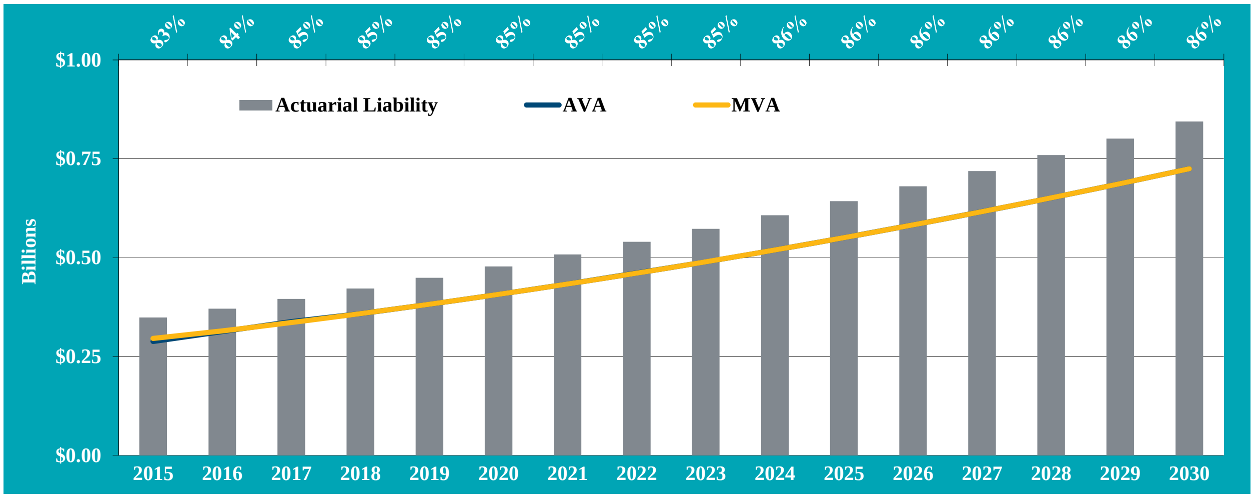
SECTION I
BOARD SUMMARY

Future Outlook

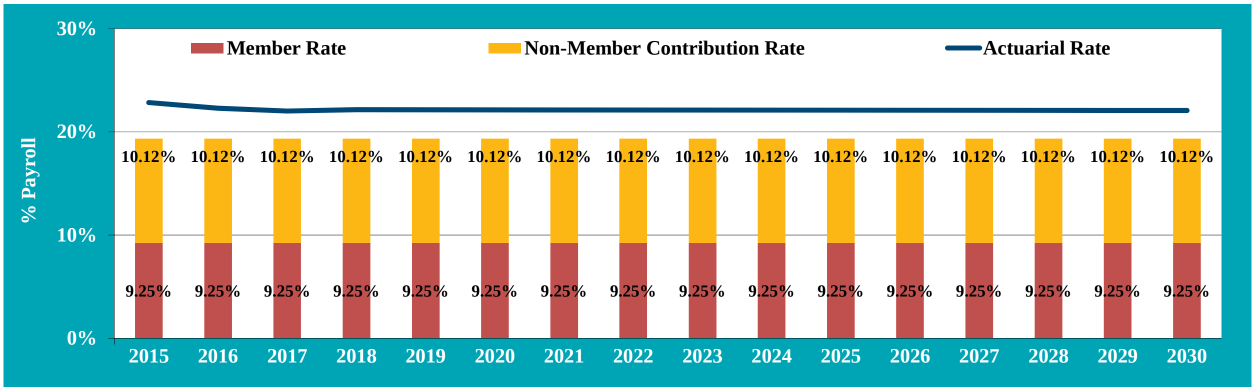
<u>Base Line Projections</u>

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 the funded status of the System is expected to increase next year as excluded investment gains are recognized by the smoothing method. The funded status is then expected to remain relatively level over the remainder of the 15 years.



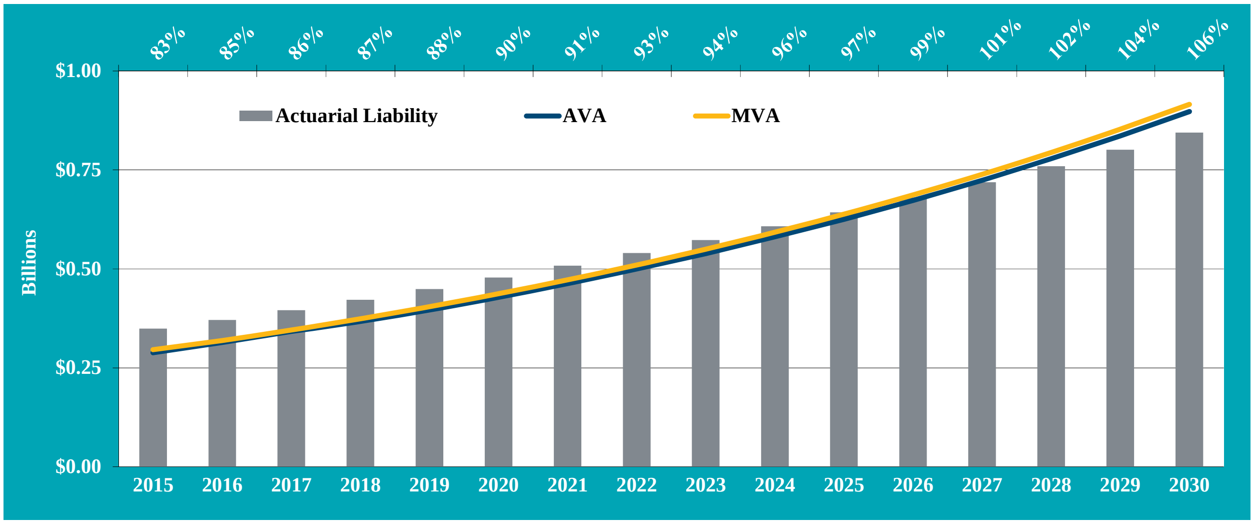
The chart below shows that the total contribution computed on an Actuarial Rate basis will decrease slightly over the 15-year period, however the statutory contributions will continue to be less than the actuarial rate throughout the period. The Actuarial Rate is calculated as the normal cost, administrative expense, and a level percent of pay 30-year open amortization of the unfunded actuarial liability.



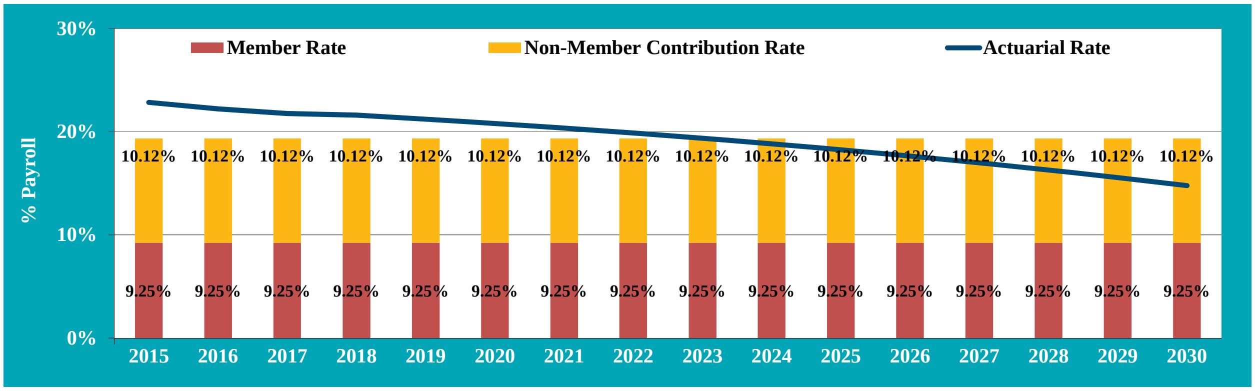
SECTION I
BOARD SUMMARY

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).



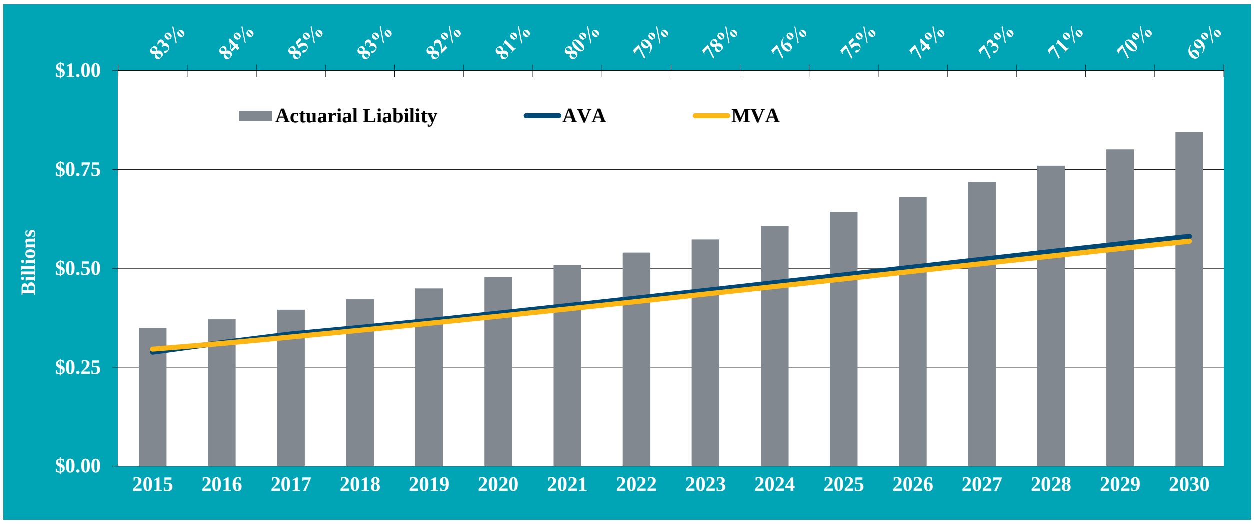
Compared to the baseline projections, the funded status increases to 106% over 15 years. The non-member portion of the Actuarial Rate decreases steadily over the 15-year period as the System becomes fully funded.



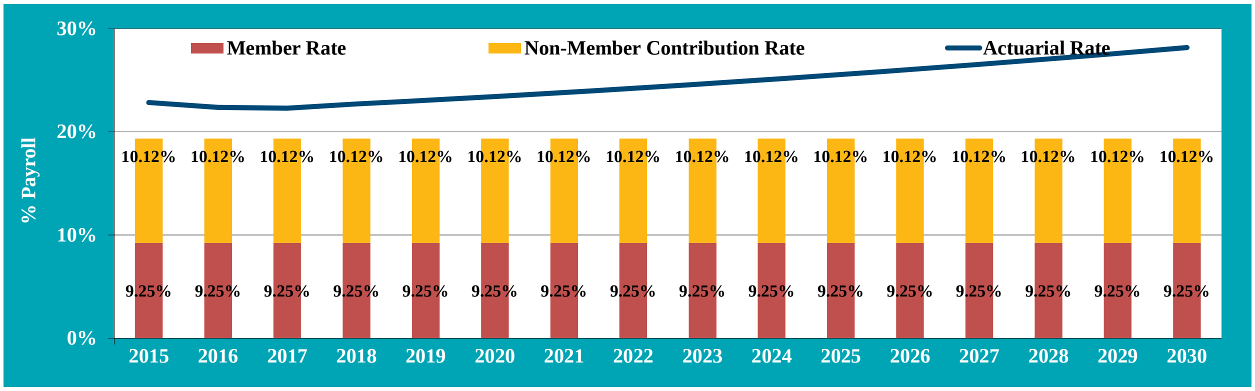
SECTION I
BOARD SUMMARY

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 increases over the near-term but then begins to decrease over the remaining projection period. The Actuarial Rate increases to just above 28% of pay by the end of the 15-year period.



SECTION I
BOARD SUMMARY

Table I-1
Sheriffs' Retirement System
Summary of Principal System Results

Valuation as of:	June 30, 2014	June 30, 2015	% Change
Participant Counts			
Active Members	1,307	1,336	2.2%
Disabled Members*	35	32	(8.6%)
Retirees and Beneficiaries*	498	545	9.4%
Terminated Vested Members	73	81	11.0%
Terminated Non-Vested Members	288	342	18.8%
Total**	2,201	2,336	6.1%
Annual Salaries of Active Members	$ 64,423,961	$ 67,881,262	5.4%
Average Annual Salary	$ 49,291	$ 50,809	3.1%
Annual Retirement Allowances for Retired Members and Beneficiaries	$ 13,044,129	$ 14,432,238	10.6%
Assets and Liabilities			
Actuarial Liability (AL)	$ 326,077,305	$ 348,912,406	7.0%
Actuarial Value of Assets (AVA)	264,944,662	288,269,194	8.8%
Unfunded AL	$ 61,132,643	$ 60,643,212	(0.8%)
Funded Ratio (AVA/AL)	81.3%	82.6%	
Present Value of Accrued Benefits (PVAB)	$ 276,660,307	$ 297,460,382	7.5%
Market Value of Assets	284,655,279	295,695,213	3.9%
Unfunded PVAB	$ (7,994,972)	$ 1,765,169	(122.1%)
Accrued Benefit Funding Ratio	102.9%	99.4%	
Ratio of Actuarial Value to Market Value	93.1%	97.5%	
Contributions as a Percentage of Payroll			
Statutory Funding Rate	19.36%	19.36%	
Normal Cost Rate	18.29%	18.05%	
Administrative Expense	0.17%	0.17%	
Available for Amortization of UAL	0.90%	1.14%	
Period to Amortize	Does not amortize	Does not amortize	
Projected 30-year Level Funding Rate	23.37%	22.84%	
Projected Shortfall (Surplus)	4.01%	3.48%	

* Based on PERB categorization for the annual report. For actuarial valuation purposes, 64 members in 2014 and 65 members in 2015 were valued as disabled members with offsetting reductions to the number of retired members.

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

SECTION II
ASSETS

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

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

- **Disclosure** of System assets at June 30, 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		**$ 284,655,279**
Additions		
Member Contributions	$ 6,623,175	
Employer Contributions	6,902,448	
Investment Return	13,041,786	
Other	0	
Total Additions	**$ 26,567,409**	
Deductions		
Benefit Payments	$ 15,280,070	
Administrative Expenses	247,405	
Total Deductions	**$ 15,527,475**	
Value of Assets – June 30, 2015		**$ 295,695,213**

SECTION II
ASSETS

Actuarial Value of Assets

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	$ 284,655,279
Total Contributions	$ 13,525,623
Benefit Payments	(15,280,070)
Administrative Expense	(247,405)
Expected Return at 7.75%	21,984,660
Expected Value at June 30, 2015	$ 304,638,087
Actual Value at June 30, 2015	$ 295,695,213
Investment Gain/(Loss)	$ (8,942,874)

Table II-3 Develop Excluded Gain/(Loss)	Total Gain/(Loss)	Excluded Portion
Exclude 75% of 2015 Gain/(Loss)	$ (8,942,874)	$ (6,707,155)
Exclude 50% of 2014 Gain/(Loss)	$ 22,716,222	$ 11,358,110
Exclude 25% of 2013 Gain/(Loss)	$ 11,100,255	$ 2,775,064
Total Excluded Gain/(Loss) for AVA Calculation		$ 7,426,019

Table II-4 Actuarial Value of Assets	
Market Value of Assets – June 30, 2015	$ 295,695,213
Total Gain/(Loss) excluded	7,426,019
Actuarial Value of Assets – June 30, 2015	$ 288,269,194

SECTION II
ASSETS

Investment Performance

The market value of assets (MVA) returned 4.60% during the Fiscal Year ended 2015, which is less than the assumed 7.75% return. A return of 9.60% on the actuarial value of assets (AVA) is primarily the result of the asset smoothing method being utilized for the calculation of the actuarial value of assets. Since only 25% of the gain or loss from the performance of the System is recognized in a given year, in periods of very good performance, the AVA can lag significantly behind the MVA. In a period of negative returns, the AVA does not decline as rapidly as the MVA.

Table II-5
Annual Rates of Return

Year Ending June 30,	Market Value	Actuarial Value
2005	8.11%	5.58%
2006	8.94%	9.35%
2007	17.87%	11.88%
2008	(4.86%)	7.56%
2009	(20.53%)	(0.15%)
2010	12.65%	(0.92%)
2011	21.57%	0.65%
2012	2.32%	3.82%
2013	12.88%	11.57%
2014	17.08%	12.96%
2015	4.60%	9.60%

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	$ 17,783	$ 123	$ 14,037	$ (3,869)	$ 22,769	$ 18,900
2016	17,349	128	14,598	(2,879)	24,272	21,393
2017	18,449	133	15,182	(3,400)	25,910	22,510
2018	19,640	139	15,790	(3,989)	27,632	23,643
2019	20,700	144	16,421	(4,423)	29,448	25,025
2020	21,951	150	17,078	(5,023)	31,364	26,341
2021	23,437	156	17,761	(5,832)	33,375	27,543
2022	25,130	162	18,472	(6,820)	35,472	28,652
2023	26,904	169	19,210	(7,863)	37,653	29,790
2024	28,751	175	19,979	(8,947)	39,920	30,973

* 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 further 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 System 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	$	249,465,490	$	257,813,062
Retiree and Inactive Benefits		181,311,849		200,213,973
Present Value of Benefits (PVB)	**$**	**430,777,339**	**$**	**458,027,035**
Market Value of Assets (MVA)	$	284,655,279	$	295,695,213
Future Member Contributions		54,015,725		57,080,081
Future Employer Contributions		59,098,871		62,451,598
Funding Shortfall/(Surplus)		33,007,464		42,800,143
Total Resources	**$**	**430,777,339**	**$**	**458,027,035**
Actuarial Liability				
Present Value of Benefits (PVB)	$	430,777,339	$	458,027,035
Present Value of Future Normal Costs (PVFNC)		104,700,034		109,114,629
Actuarial Liability (AL=PVB–PVFNC)		**326,077,305**		**348,912,406**
Actuarial Value of Assets (AVA)		264,944,662		288,269,194
Net (Surplus)/Unfunded (AL – AVA)	**$**	**61,132,643**	**$**	**60,643,212**
Present Value of Accrued Benefits				
Present Value of Benefits (PVB)	$	430,777,339	$	458,027,035
Present Value of Future Benefit Accruals (PVFBA)		154,117,032		160,566,653
Present Value of Accrued Benefits (PVAB=PVB–PVFBA)	**$**	**276,660,307**	**$**	**297,460,382**
Market Value of Assets (MVA)		284,655,279		295,695,213
Net Unfunded (PVAB – MVA)	**$**	**(7,994,972)**	**$**	**1,765,169**

SECTION III
LIABILITIES

Changes in Liabilities

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

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

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

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

In each valuation, we report on those elements of change which are of particular significance, potentially affecting the long-term financial outlook of the System. Below, we present key changes in liabilities since the last valuation. On the next page, we provide more detail on the sources of the actuarial (gain)/loss as measured on the basis of actuarial liability.

Table III-2
Changes in Liabilities

	Present Value of Benefits	Actuarial Liability	Present Value of Accrued Liability
Liabilities June 30, 2014	$ 430,777,339	$ 326,077,305	$ 276,660,307
Liabilities June 30, 2015	458,027,035	348,912,406	297,460,382
Liability Increase (Decrease)	27,249,696	22,835,101	20,800,075
Change Due to:			
Actuarial (Gain)/Loss	NC*	(123,449)	NC*
Plan Changes	0	0	0
Benefits Accumulated and Other Sources	27,249,696	22,958,550	20,800,075

* 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	$ 326,077,305
Normal Cost	12,574,185
Actual Benefit Payments	(15,280,070)
Interest	25,664,435
Expected Actuarial Liability as of June 30, 2015	349,035,855
Actuarial Liability as of June 30, 2015	$ 348,912,406
Liability (Gain)/Loss	$ (123,449)
Sources of Liability (Gain)/Loss	
Salary (Gain)/Loss	$ (201,250)
New Participant (Gain)/Loss	1,076,790
Active Retirements (Gain)/Loss	(1,008,682)
Active Terminations (Gain)/Loss	(1,106,758)
Active Deaths (Gain)/Loss	168,615
Active Disability (Gain)/Loss	(373,590)
Inactive Mortality (Gain)/Loss	1,706,551
Other (Gain)/Loss	(385,125)
Actuarial Liability as of June 30, 2015	$ 348,912,406
Liability (Gain)/Loss due to plan changes	$ 0
Actuarial Value of Assets as of June 30, 2014	$ 264,944,662
Net Cash Flow	(2,001,852)
Expected Earnings	20,457,087
Expected Actuarial Value of Assets as of June 30, 2015	283,399,897
Actuarial Value of Assets as of June 30, 2015	$ 288,269,194
Investment (Gain)/Loss	$ (4,869,297)
Total Liability (Gain)/Loss	(123,449)
Total Actuarial (Gain)/Loss	$ (4,992,746)

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	$ 181,311,849	$ 200,213,973
	Active Member Benefits	144,765,456	148,698,433
	Total Actuarial Liability	**$ 326,077,305**	**$ 348,912,406**
2.	Actuarial Value of Assets	$ 264,944,662	$ 288,269,194
3.	Unfunded Actuarial Liability	$ 61,132,643	$ 60,643,212
4.	Funded Ratio	81.3%	82.6%

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	$ 181,311,849	$ 200,213,973
	Active Member Benefits	144,765,456	148,698,433
	Total Actuarial Liability	**$ 326,077,305**	**$ 348,912,406**
2.	Market Value of Assets	$ 284,655,279	$ 295,695,213
3.	Unfunded Actuarial Liability	$ 41,422,026	$ 53,217,193
4.	Funded Ratio	87.3%	84.7%

SECTION IV
CONTRIBUTIONS

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

For this System, the funding method employed is the **Entry Age Normal Actuarial Cost Method**. Under this method, there are three components to the total contribution: the **normal cost rate,** the **unfunded actuarial liability rate** (UAL rate), and the **administrative expense rate**. The normal cost rate is determined by taking the value, as of entry age into the System, of each member's projected future benefits. This value is then divided by the value, also at entry age, of each member's expected future salary. The normal cost rate is multiplied by current salary to determine each member's normal cost rate. Finally, the total normal cost rate is reduced by the member contribution 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	9.25%	9.25%
Employers	10.12%	10.12%
Total	19.36%	19.36%
Normal Cost Rate *	18.29%	18.05%
Administrative Expense	0.17%	0.17%
Funding Rate Available for Amortization	0.90%	1.14%
Unfunded Actuarial Liability (Surplus)	$61,132,643	$60,643,212
Years to Amortize	Does not amortize	Does not amortize

* The normal cost rate is projected to be 16.28% for members eligible after July 1, 2011. It is expected that the average normal cost rate will decrease over the next generation of active plan members.

Table IV-2
Years to Amortize Unfunded Actuarial Liability
Under Alternate Assumptions

	June 30, 2014	June 30, 2015
Years to Amortize		
Using Market Value of Assets	Does not amortize	Does not amortize
Excluding additional contributions under HB131		
Using Actuarial Value of Assets	Does not amortize	Does not amortize
Using Market Value of Assets	Does not amortize	Does not amortize

SECTION IV
CONTRIBUTIONS

Table IV-3
Calculated Actuarial Contribution Basis

	June 30, 2014	June 30, 2015
Normal Cost Rate	18.29%	18.05%
Amortization Payment (30-years)	4.91%	4.62%
Administrative Expense	0.17%	0.17%
Total Calculated Contribution Rate	23.37%	22.84%
Less Statutory Rate	19.36%	19.36%
Shortfall (Surplus) in Statutory Rate	4.01%	3.48%

Table IV-4
Calculated Actuarial Contribution on Market Value (MCA 19-2-407)

	June 30, 2014	June 30, 2015
Normal Cost Rate	18.29%	18.05%
Amortization Payment (30-years)	3.33%	4.05%
Administrative Expense	0.17%	0.17%
Total Calculated Contribution Rate	21.79%	22.27%
Less Statutory Rate	19.36%	19.36%
Shortfall (Surplus) in Statutory Rate	2.43%	2.91%

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

Table IV-5
Projected Actuarial Contribution Rates

Valuation Year	Rate
2016	22.30%
2017	22.04%
2018	22.17%
2019	22.16%
2020	22.15%

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

Type of Activity	*Gain (or Loss) for Year ending June 30, (expressed in thousands)* 2010	2011	2012	2013	2014	2015
Investment Income on Actuarial Assets	$ (17,978)	$ (14,309)	$ (8,014)	$ 8,062	$ 12,235	$ 4,869
Combined Liability Experience	1,988	(386)	1,822	642	195	123
(Loss)/Gain During Year from Financial Experience	$ (15,990)	$ (14,695)	$ (6,192)	$ 8,704	$ 12,430	$ 4,992
Non-Recurring Items	(5,509)	0	0	0	0	0
Composite Gain (or Loss) During Year	$ (21,499)	$ (14,695)	$ (6,192)	$ 8,704	$ 12,430	$ 4,992

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	$ 288,269	$ 348,912	83 %	$ 60,643	$ 68,046	89 %
2014	264,945	326,077	81 %	61,132	64,673	95 %
2013	235,310	304,185	77 %	68,875	61,467	112 %
2012	211,535	284,559	74 %	73,024	59,583	123 %
2011	203,689	266,506	76 %	62,817	57,041	110 %
2010	200,739	246,734	81 %	45,995	54,681	84 %

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	$ 46,500	$ 193,359	$ 109,054	$ 288,269	100 %	100 %	44 %
2014	45,595	176,538	103,944	264,945	100 %	100 %	41 %
2013	43,007	164,339	96,838	235,310	100 %	100 %	29 %
2012	41,694	149,254	93,612	211,535	100 %	100 %	22 %
2011	40,737	135,189	90,579	203,689	100 %	100 %	31 %
2010	39,841	117,422	89,470	200,739	100 %	100 %	49 %

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	1,336	65	513	81	342	2,337
Disabled members having attained normal retirement age		(33)	33			0
Beneficiaries of Disabled Members						0
Beneficiaries with less than one year of certain payments remaining			0			0
Other Adjustments			(1)			(1)
Participant counts shown in Annual Financial Report	1,336	32	545	81	342	2,336

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	1,307	391	73	288	64	79	2,202
New Hires	208	0	0	0	0	0	208
Rehires	9	0	(5)	(4)	0	0	0
Retired	(37)	40	(3)	0	0	0	0
Terminated Vested	(23)	0	23	0	0	0	0
Terminated Non Vested	(61)	0	0	61	0	0	0
Active Deaths	(3)	0	0	0	0	3	0
Became Disabled	(1)	0	(1)	0	2	0	0
In Pay Deaths	0	(5)	0	0	(1)	(1)	(7)
Survivors	0	0	0	0	0	6	6
Cash Out	(63)	0	(6)	(3)	0	0	(72)
Members on July 1, 2015	1,336	426	81	342	65	87	2,337

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 are 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 are 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

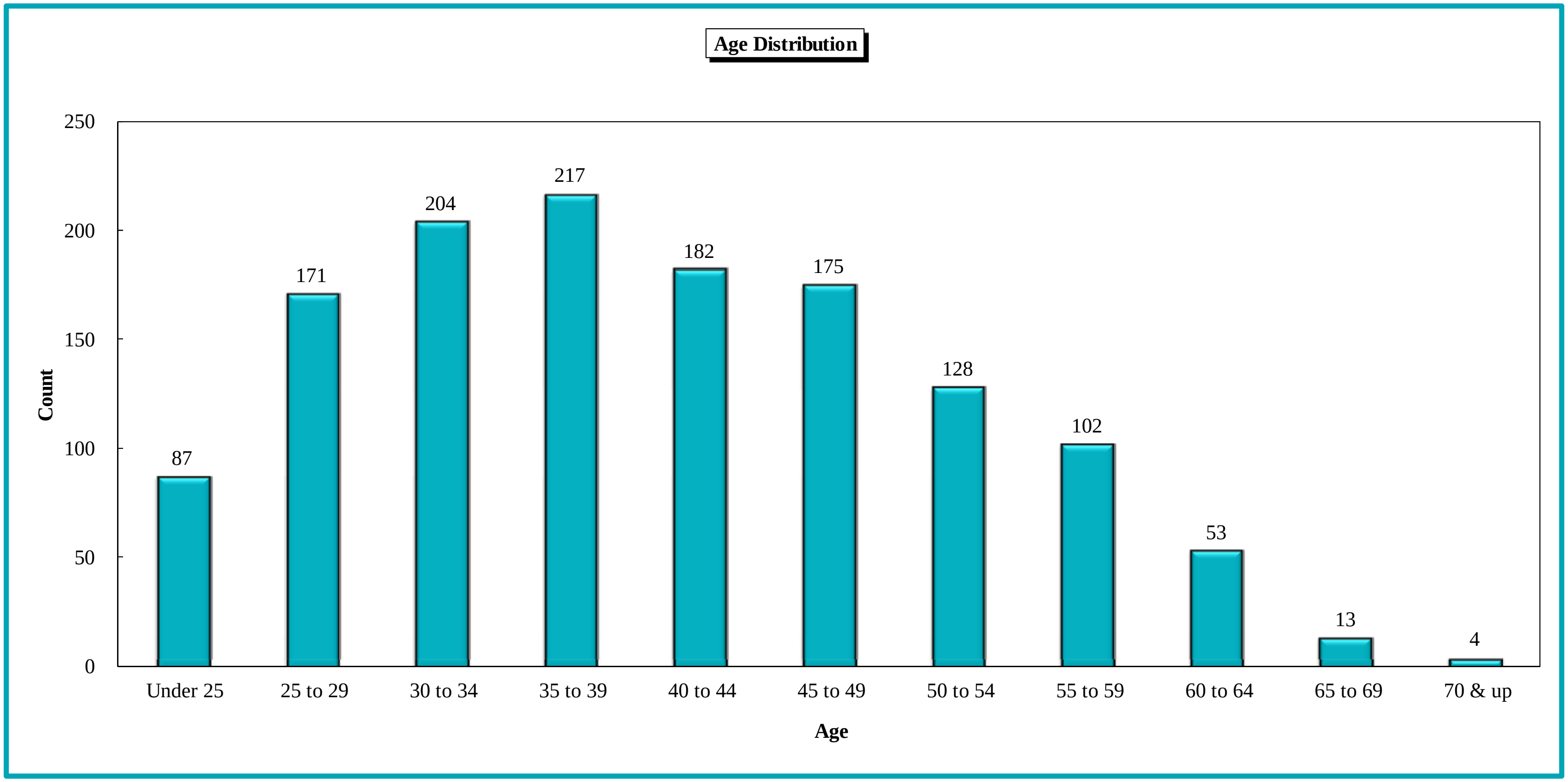
Sheriffs' Retirement System Distribution of Active Members by Age and Service as of June 30, 2015

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	47	40	0	0	0	0	0	0	0	0	87
25 to 29	47	108	16	0	0	0	0	0	0	0	171
30 to 34	34	104	61	5	0	0	0	0	0	0	204
35 to 39	40	63	66	38	10	0	0	0	0	0	217
40 to 44	14	39	60	36	29	4	0	0	0	0	182
45 to 49	8	42	43	38	35	7	2	0	0	0	175
50 to 54	10	22	30	24	22	14	6	0	0	0	128
55 to 59	8	17	31	18	10	8	5	3	2	0	102
60 to 64	3	8	15	7	8	6	1	2	3	0	53
65 to 69	2	3	2	0	1	3	1	1	0	0	13
70 & up	0	1	0	3	0	0	0	0	0	0	4
Total	213	447	324	169	115	42	15	6	5	0	1,336

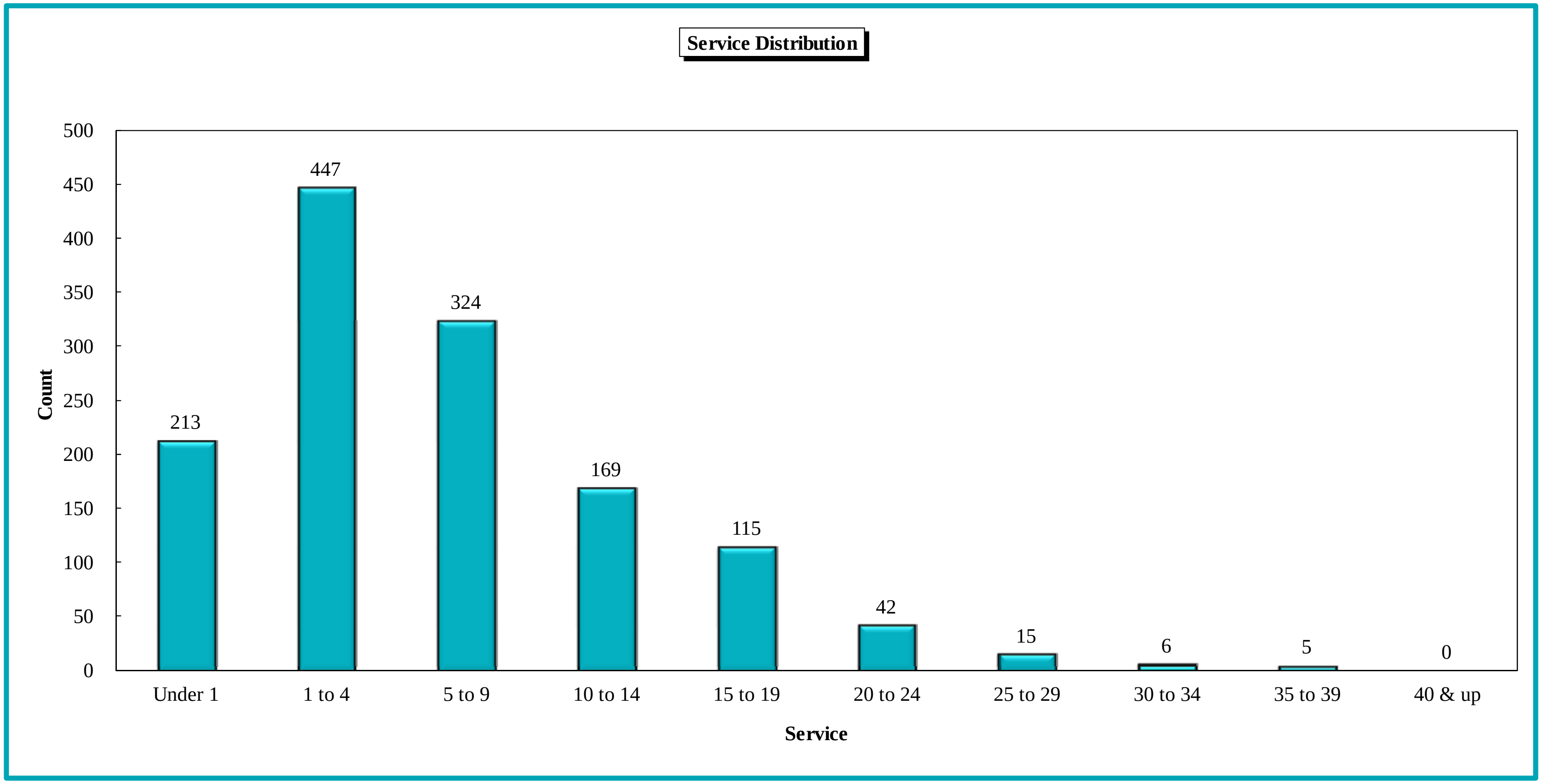
APPENDIX A
MEMBERSHIP INFORMATION

Sheriffs' Retirement System Distribution of Active Members by Age as of June 30, 2015



APPENDIX A
MEMBERSHIP INFORMATION

Sheriffs' Retirement System Distribution of Active Members by Service as of June 30, 2015



APPENDIX A
MEMBERSHIP INFORMATION

Sheriffs' Retirement System Distribution of Active Members by Age and Service as of June 30, 2015

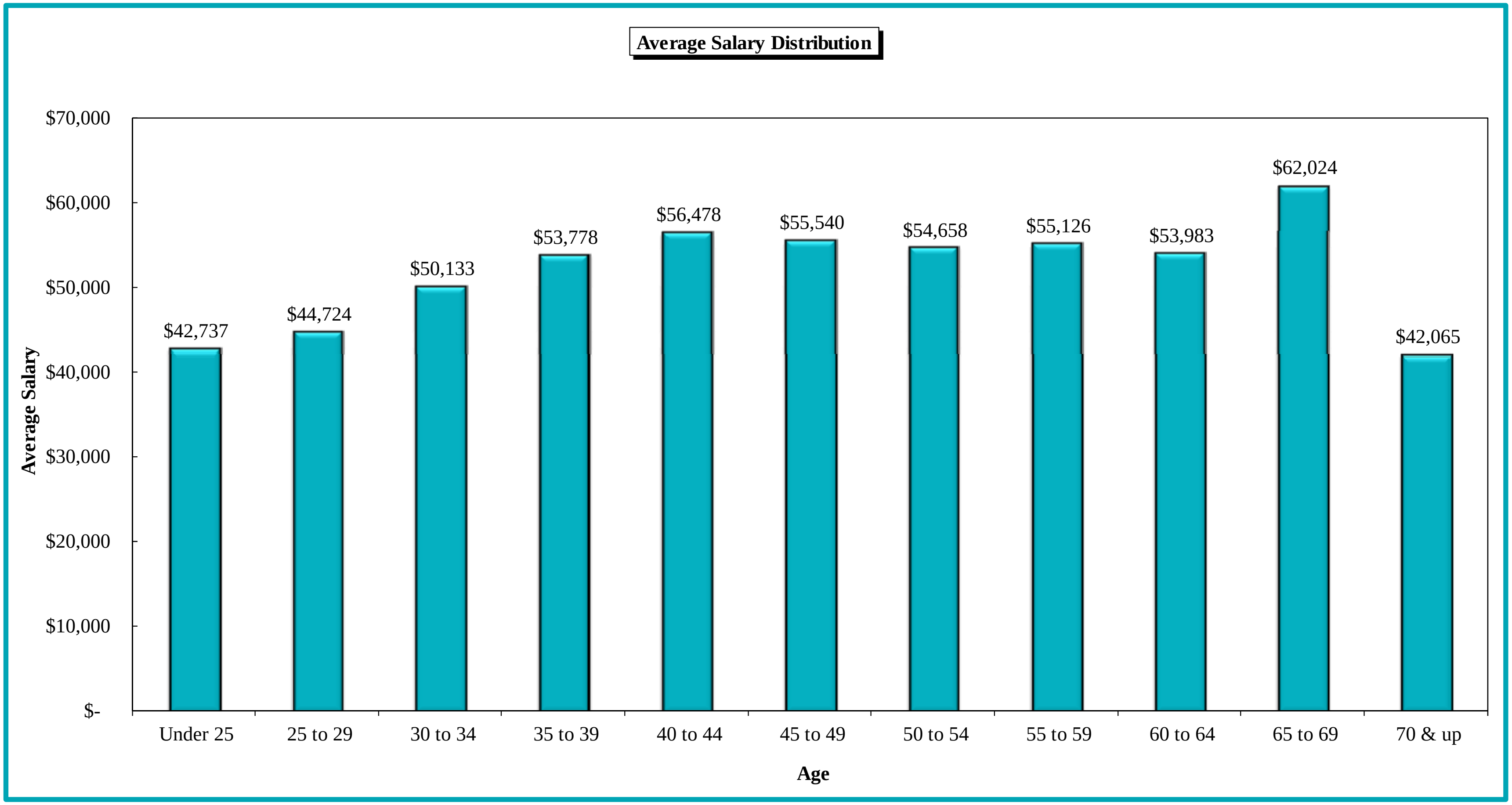
AVERAGE SALARY BY AGE/SERVICE

	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	$ 41,066	$ 44,699	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 42,737
25 to 29	$ 41,318	$ 45,983	$ 46,231	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 44,724
30 to 34	$ 45,717	$ 49,017	$ 53,532	$ 61,905	$ -	$ -	$ -	$ -	$ -	$ -	$ 50,133
35 to 39	$ 43,765	$ 50,727	$ 54,954	$ 64,452	$ 64,733	$ -	$ -	$ -	$ -	$ -	$ 53,778
40 to 44	$ 45,451	$ 46,466	$ 54,906	$ 63,672	$ 66,339	$ 80,015	$ -	$ -	$ -	$ -	$ 56,478
45 to 49	$ 42,274	$ 46,610	$ 51,242	$ 60,002	$ 66,629	$ 69,098	$ 62,220	$ -	$ -	$ -	$ 55,540
50 to 54	$ 33,864	$ 52,026	$ 48,499	$ 55,838	$ 62,414	$ 69,869	$ 61,113	$ -	$ -	$ -	$ 54,658
55 to 59	$ 48,939	$ 45,293	$ 48,723	$ 53,158	$ 61,750	$ 76,170	$ 83,056	$ 66,417	$ 76,372	$ -	$ 55,126
60 to 64	$ 35,510	$ 48,568	$ 45,652	$ 58,686	$ 61,881	$ 60,042	$ 65,800	$ 79,047	$ 63,755	$ -	$ 53,983
65 to 69	$ 52,434	$ 37,717	$ 55,749	$ -	$ 96,613	$ 64,032	$ 112,136	$ 75,952	$ -	$ -	$ 62,024
70 & up	$ -	$ 10,611	$ -	$ 52,550	$ -	$ -	$ -	$ -	$ -	$ -	$ 42,065
Total	$ 42,691	$ 47,526	$ 52,134	$ 60,333	$ 65,091	$ 70,086	$ 72,289	$ 72,216	$ 68,802	$ -	$ 52,183

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

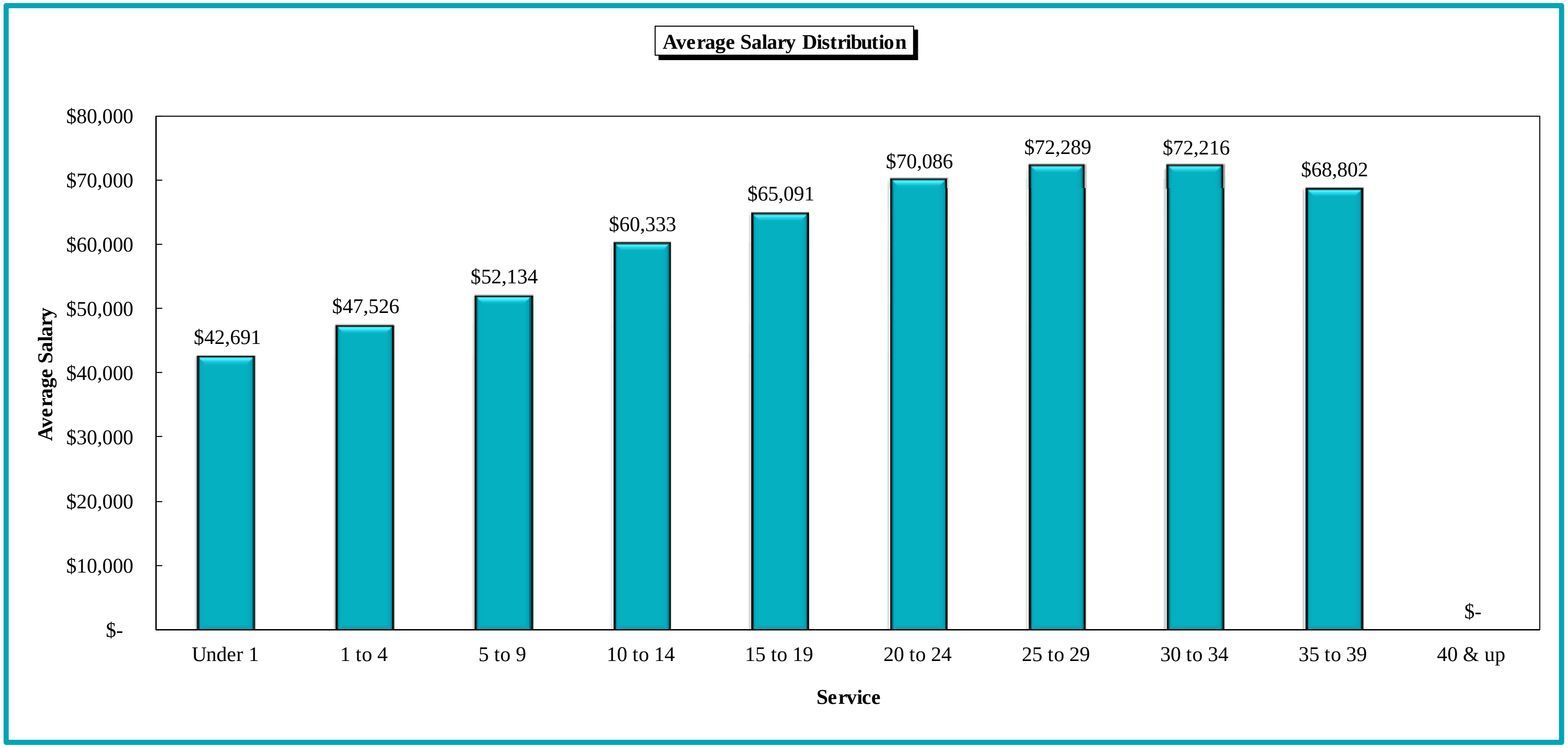
APPENDIX A
MEMBERSHIP INFORMATION

Sheriffs' Retirement System Distribution of Active Members by Age as of June 30, 2015



APPENDIX A
MEMBERSHIP INFORMATION

Sheriffs' Retirement System Distribution of Active Members by Service as of June 30, 2015



APPENDIX A
MEMBERSHIP INFORMATION

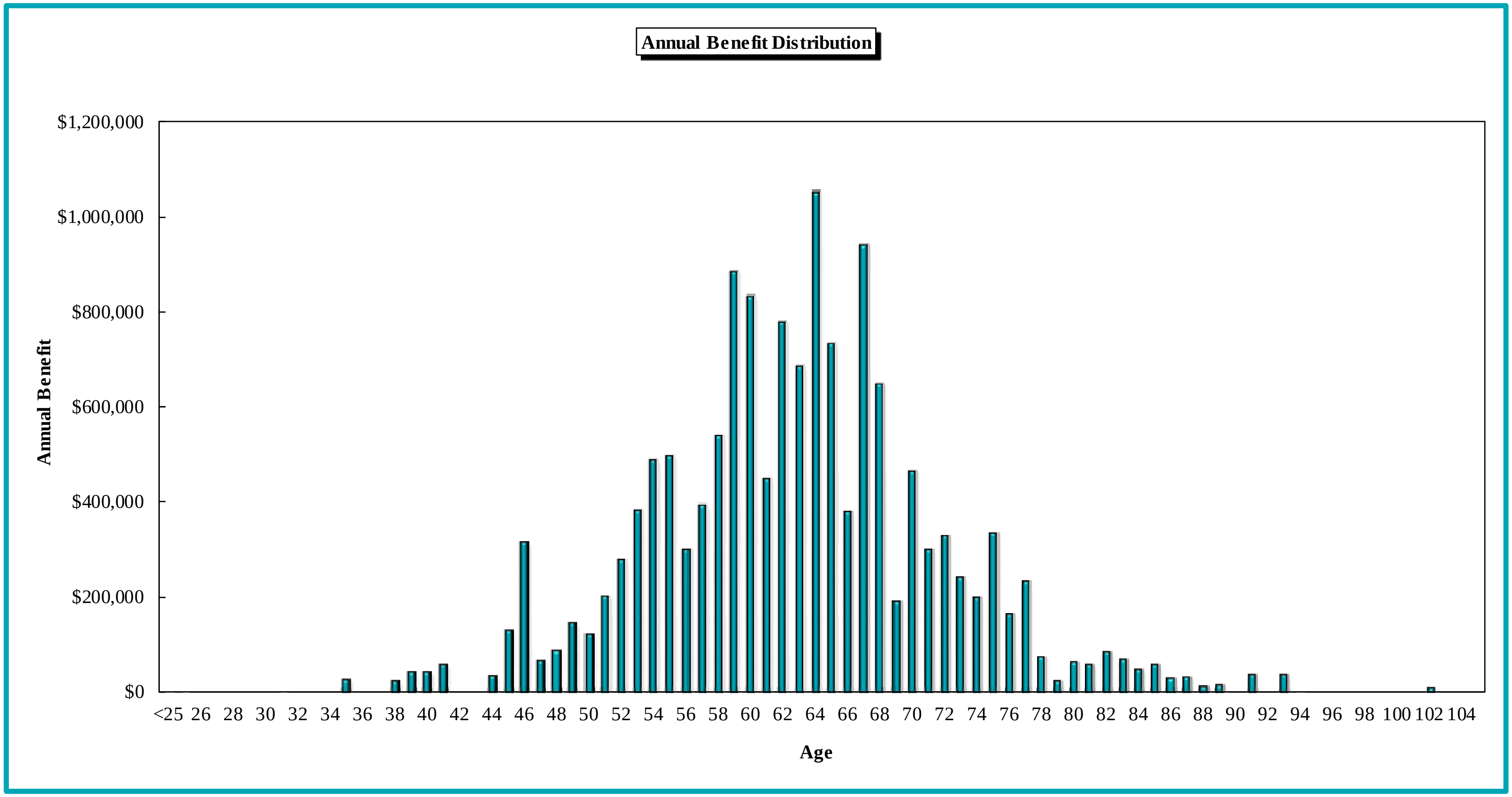
Sheriffs' Retirement System Distribution of Retired Members, Survivors, and Disabled Members as of June 30, 2015

Age	Count	Annual Benefit	Age	Count	Annual Benefit
<25	1	$998	73	8	$239,996
25	1	$2,976	74	6	$195,835
26	0	$0	75	12	$333,755
27	0	$0	76	9	$164,652
28	0	$0	77	13	$230,046
29	0	$0	78	4	$72,832
30	0	$0	79	2	$19,905
31	1	$2,976	80	4	$62,057
32	0	$0	81	2	$55,820
33	0	$0	82	5	$83,302
34	0	$0	83	5	$67,284
35	1	$24,783	84	5	$46,184
36	0	$0	85	4	$55,941
37	0	$0	86	2	$25,725
38	1	$21,766	87	2	$29,712
39	2	$39,996	88	1	$9,492
40	1	$40,462	89	1	$13,796
41	2	$56,940	90	0	$0
42	0	$0	91	3	$35,587
43	0	$0	92	0	$0
44	2	$32,281	93	1	$35,827
45	4	$127,749	94	1	$3,316
46	11	$315,548	95	0	$0
47	2	$64,887	96	0	$0
48	2	$86,859	97	0	$0
49	4	$144,793	98	0	$0
50	6	$120,743	99	0	$0
51	10	$197,710	100	0	$0
52	10	$278,366	101	0	$0
53	15	$381,180	102	1	$10,173
54	18	$487,178	103	0	$0
55	20	$496,682	104	0	$0
56	10	$299,220	105	0	$0
57	16	$391,838	106	0	$0
58	18	$539,539	107	0	$0
59	33	$884,319	108	0	$0
60	29	$832,568	109	0	$0
61	18	$446,942	110	0	$0
62	26	$779,529	111	0	$0
63	29	$683,298	112	0	$0
64	33	$1,052,471	113	0	$0
65	32	$732,727	114	0	$0
66	16	$378,616	115	0	$0
67	32	$939,383	116	0	$0
68	27	$646,666	117	0	$0
69	11	$188,973	118	0	$0
70	19	$464,037	119	0	$0
71	10	$299,155	120	0	$0
72	14	$329,296			
			Totals	578	$14,604,689

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

Sheriffs' Retirement System Distribution of Retired Members, Survivors, and Disabled Members as of June 30, 2015



APPENDIX A
MEMBERSHIP INFORMATION

Sheriffs' Retirement System Distribution of Terminated Vested Members as of June 30, 2015

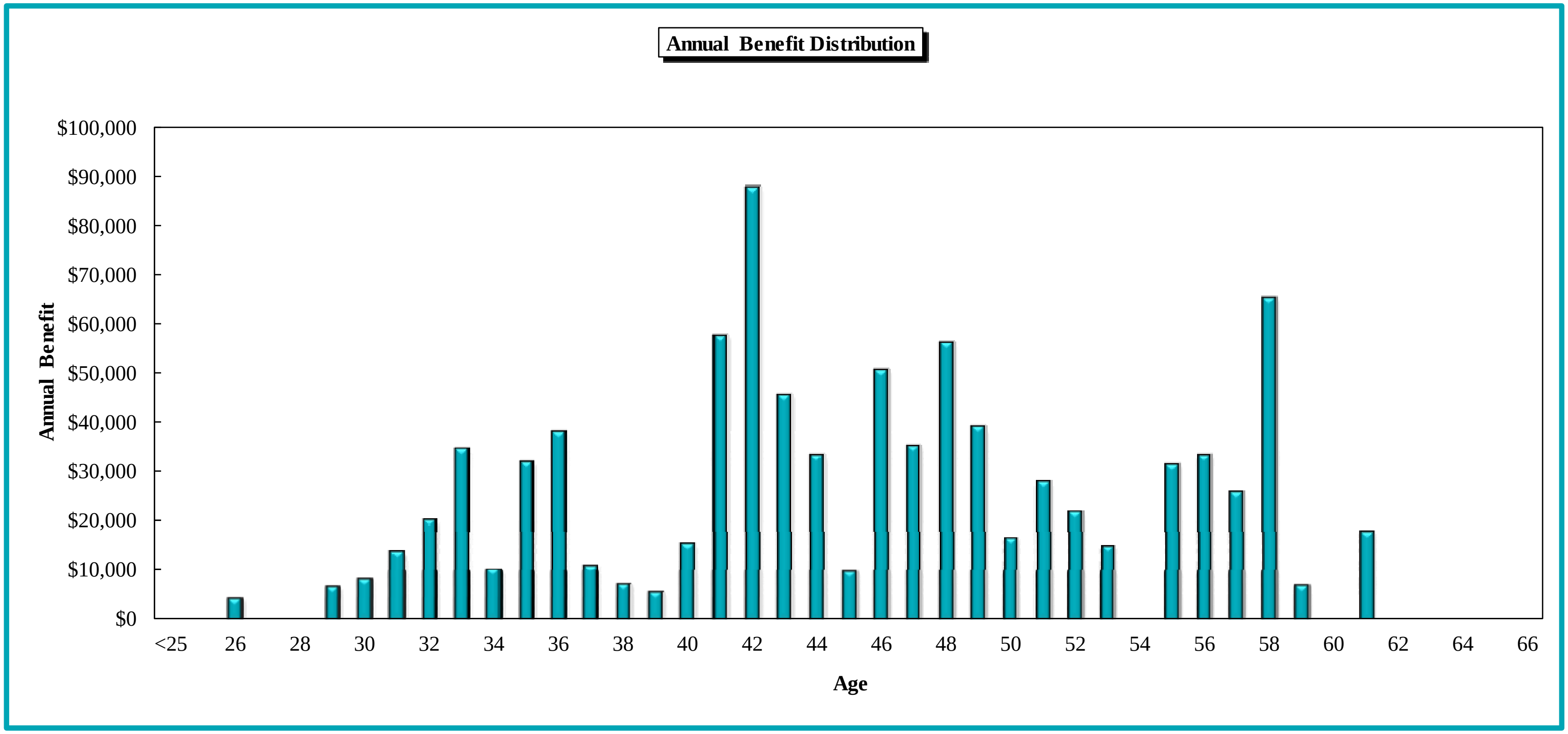
Age	Count	Annual Benefit*	Account Balance*	Age	Count	Annual Benefit*	Account Balance*
<25	0	$0	$0	73	0	$0	$0
25	0	$0	$0	74	0	$0	$0
26	1	$4,197	$0	75	0	$0	$0
27	0	$0	$0	76	0	$0	$0
28	0	$0	$0	77	0	$0	$0
29	1	$6,579	$0	78	0	$0	$0
30	1	$8,134	$0	79	0	$0	$0
31	2	$14,014	$0	80	0	$0	$0
32	2	$19,999	$0	81	0	$0	$0
33	4	$34,569	$0	82	0	$0	$0
34	2	$10,247	$0	83	0	$0	$0
35	2	$32,014	$0	84	0	$0	$0
36	4	$38,277	$0	85	0	$0	$0
37	1	$11,285	$0	86	0	$0	$0
38	1	$7,207	$0	87	0	$0	$0
39	1	$5,479	$0	88	0	$0	$0
40	2	$15,703	$0	89	0	$0	$0
41	5	$57,769	$0	90	0	$0	$0
42	9	$88,014	$0	91	0	$0	$0
43	5	$45,623	$0	92	0	$0	$0
44	5	$33,229	$64,613	93	0	$0	$0
45	1	$9,823	$0	94	0	$0	$0
46	3	$50,767	$0	95	0	$0	$0
47	4	$35,257	$0	96	0	$0	$0
48	4	$56,260	$0	97	0	$0	$0
49	3	$39,159	$0	98	0	$0	$0
50	2	$16,779	$0	99	0	$0	$0
51	2	$27,838	$0	100	0	$0	$0
52	2	$21,712	$0	101	0	$0	$0
53	1	$15,167	$0	102	0	$0	$0
54	0	$0	$0	103	0	$0	$0
55	1	$31,502	$0	104	0	$0	$0
56	3	$33,369	$0	105	0	$0	$0
57	1	$25,805	$0	106	0	$0	$0
58	3	$65,288	$0	107	0	$0	$0
59	1	$6,743	$0	108	0	$0	$0
60	0	$0	$0	109	0	$0	$0
61	2	$18,163	$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	81	$885,971	$64,613

** payable at the greater of age 60 or current age (use current age if member has 20 years of service)*

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

APPENDIX A
MEMBERSHIP INFORMATION

Sheriffs' Retirement System Distribution of Terminated Vested Members as of June 30, 2015



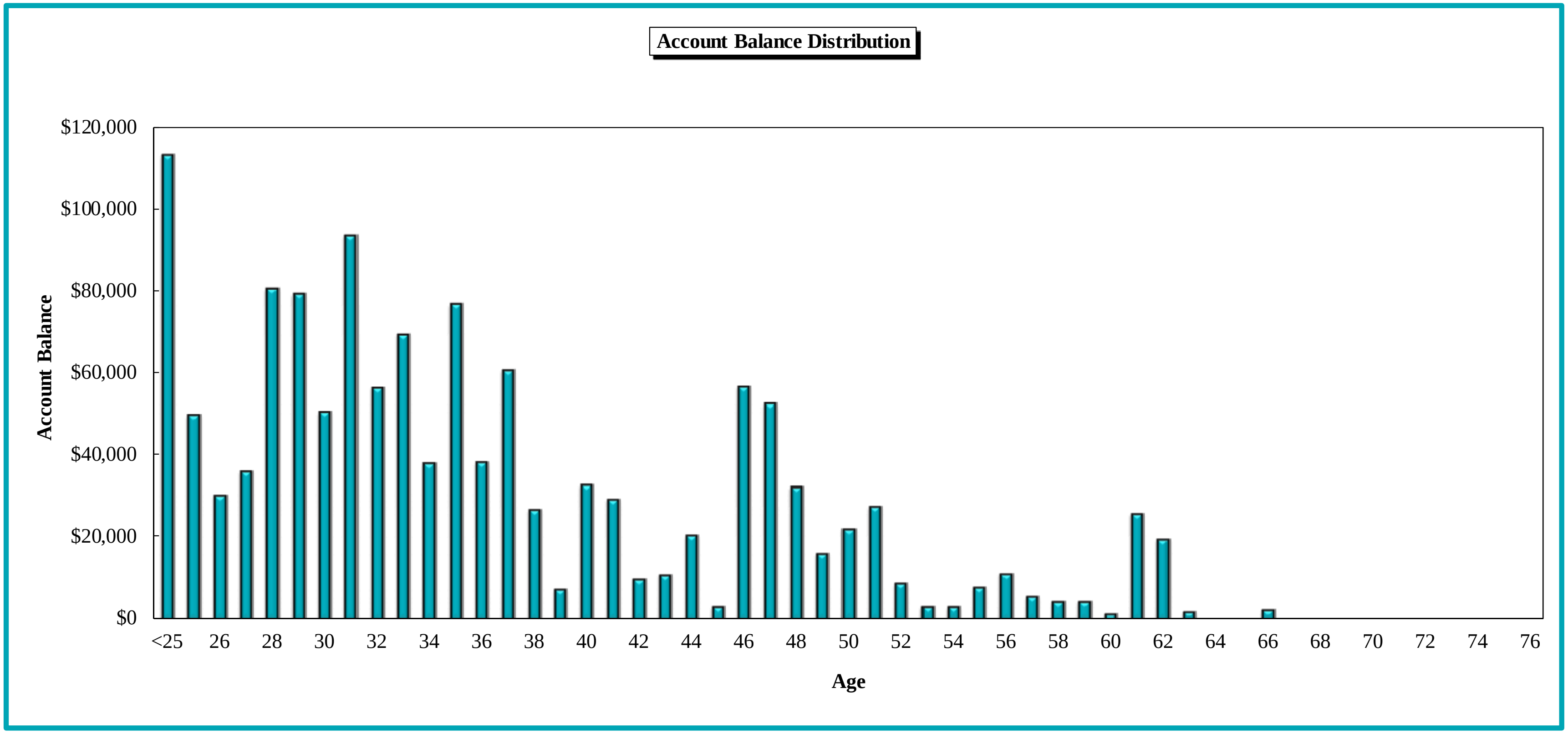
APPENDIX A
MEMBERSHIP INFORMATION

Sheriffs' Retirement System Distribution of Terminated Non-Vested Members as of June 30, 2015

Age	Count	Account Balance	Age	Count	Account Balance
<25	38	$113,305	73	0	$0
25	11	$49,670	74	0	$0
26	9	$30,086	75	0	$0
27	9	$35,887	76	0	$0
28	15	$80,618	77	0	$0
29	24	$79,319	78	0	$0
30	15	$50,417	79	0	$0
31	22	$93,460	80	0	$0
32	14	$56,338	81	0	$0
33	16	$69,580	82	0	$0
34	12	$37,859	83	0	$0
35	9	$76,680	84	0	$0
36	11	$38,074	85	0	$0
37	26	$60,602	86	0	$0
38	7	$26,610	87	0	$0
39	2	$7,144	88	0	$0
40	6	$32,466	89	0	$0
41	9	$29,064	90	0	$0
42	5	$9,585	91	0	$0
43	6	$10,730	92	0	$0
44	8	$20,246	93	0	$0
45	2	$2,737	94	0	$0
46	7	$56,542	95	0	$0
47	9	$52,443	96	0	$0
48	7	$32,063	97	0	$0
49	5	$15,695	98	0	$0
50	6	$21,740	99	0	$0
51	3	$27,349	100	0	$0
52	3	$8,533	101	0	$0
53	3	$2,771	102	0	$0
54	1	$2,719	103	0	$0
55	1	$7,673	104	0	$0
56	4	$10,966	105	0	$0
57	1	$5,305	106	0	$0
58	1	$4,105	107	0	$0
59	1	$4,140	108	0	$0
60	1	$891	109	0	$0
61	5	$25,600	110	0	$0
62	3	$19,164	111	0	$0
63	2	$1,402	112	0	$0
64	0	$0	113	0	$0
65	1	$204	114	0	$0
66	1	$1,963	115	0	$0
67	0	$0	116	0	$0
68	1	$123	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	342	$1,311,867

APPENDIX A
MEMBERSHIP INFORMATION

Sheriffs' Retirement System Distribution of Terminated Non-Vested Members as of June 30, 2015



APPENDIX B
ACTUARIAL ASSUMPTIONS AND METHOD

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 METHOD

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	20%
1	15%
2	12%
3	10%
4	10%
5-9	5%
10-14	3%
15 & over	1%

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

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

APPENDIX B
ACTUARIAL ASSUMPTIONS AND METHOD

f. Retirement

Annual Retirement Rates	
Age	**20 years or more**
<50	10.00%
50 – 54	10.00%
55 – 59	15.00%
60 – 64	20.00%
65 & over	100.00%

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%

h. Family Composition

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

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

Actual marital characteristics are used for pensioners.

APPENDIX B
ACTUARIAL ASSUMPTIONS AND METHOD

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 METHOD

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 sheriffs, investigators (effective 7/1/1993), and detention officers (effective 7/1/2005).

2. Contributions

Members contribute 9.245% 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 10.115% of each member's compensation. The rate increased from 9.535% to 9.825% on July 1, 2007 and to 10.115% on July 1, 2009. These increased contributions as of 2009 of 0.58% will terminate if an actuarial valuation shows that the period required to amortize the System's unfunded liabilities is less than 25 years, and that the termination of those increases would not cause the amortization to increase beyond 25 years.

Beginning July 1, 2013, employers of retirees who return to work in a position working less than 480 hours contribute 10.115% of the working retiree'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 Credit

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

Additionally, eligible active and inactive members may purchase some types of service that will count as membership service.

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.

APPENDIX C
SUMMARY OF PLAN PROVISIONS

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 is specifically defined in law for SRS.

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: 20 years of membership service.

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

7. Early Retirement

Eligibility: Age 50 with five years of membership service.

Benefit: Normal retirement benefit calculated using highest average compensation and service at early retirement, and reduced to the actuarial equivalent commencing at the earliest of age 60 or the attainment of 20 years of service credit.

8. Disability Benefit

Eligibility: Five years of membership service for non-duty disability; any service for duty-related 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 highest average compensation multiplied by years of service credit.

(ii) For non-duty-related disability, the actuarial equivalent of the accrued normal retirement benefit available at the time of disability.

APPENDIX C
SUMMARY OF PLAN PROVISIONS

9. Survivor's Benefit

Eligibility: Active or retired member.

Benefit: For duty-related deaths, (i) lump-sum payment of the member's accumulated contributions; or (ii) a monthly survivor benefit to the designated beneficiary equal to the greater of (a) 50% of HAC; or (b) 2.5% of HAC for each year of service credit actuarially reduced from age 60 or from the date when 20 years of membership service would have been completed, whichever provides the greater benefit.

For non-duty-related deaths, (i) a lump sum of the member's accumulated contributions, or (ii) a monthly survivor benefit equal to 2.5% of HAC for each year of service credit actuarially reduced from age 60 or from the date when 20 years of membership service would have been completed, whichever provides the greater benefit.

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

APPENDIX C
SUMMARY OF PLAN PROVISIONS

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, and (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 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

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

- SRS Membership from PERS Membership - If a PERS member transfers employment to a SRS covered position and fails to elect SRS membership within 90 days (was 30 days), the default is PERS membership. 19-7-301(18), 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 as follows:

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 estimate 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.