Gabriel Roeder Smith & Company
Consultants & Actuaries

MISSOURI STATE EMPLOYEES' RETIREMENT SYSTEM
ANNUAL ACTUARIAL VALUATION
JUNE 30, 2013

GRS
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September 11, 2013

Board of Trustees
Missouri State Employees'
Retirement System
907 Wildwood Drive
Jefferson City, Missouri 65102

Re: Annual Actuarial Valuation as of June 30, 2013

Dear Board Members:

The results of the June 30, 2013 **Annual Actuarial Valuation** of the Missouri State Employees' Retirement System are presented in this report. The purposes of the valuation were to measure the System's funding progress, to determine the level cost employer contribution rate for the fiscal year beginning July 1, 2014, and prepare information in connection with Governmental Accounting Standards Board Statement No. 25.

Your attention is directed particularly to the Executive Summary and discussion in Section A.

The valuation was based upon data, furnished by the MOSERS' staff, concerning active, inactive and retired members along with pertinent financial information and plan provisions. The complete cooperation of the MOSERS' staff in furnishing materials requested is hereby acknowledged with appreciation. We checked for internal and year-to-year consistency, but did not otherwise audit the data. We are not responsible for the accuracy or completeness of the information provided by MOSERS.

The valuation results summarized in this report involve actuarial calculations that require assumptions about future events. We believe that the assumptions and methods used in this report are reasonable and appropriate for the purpose for which they have been used. However, other assumptions and methods could also be reasonable and could result in materially different results. In addition, because it is not possible or practical to consider every possible contingency, we may use summary information, estimates or simplications of calculations to facilitate the modeling of future events. We may also exclude factors or data that are deemed to be immaterial.

To the best of our knowledge the information contained in this report is accurate and fairly presents the actuarial position of the Missouri State Employees' Retirement System as of the valuation date. All calculations have been made in conformity with generally accepted actuarial principles and practices, Governmental Accounting Standards and with the Actuarial Standards of Practice issued by the Actuarial Standards Board.

This report was prepared at the request of the Board and is intended for use by the Retirement System and those designated or approved by the Board. This report may be provided to parties other than the System only in its entirety and only with the permission of the Board. This report should not be relied on for any purpose other than the purpose described.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as: plan experience differing from that anticipated by the economic and demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law. Due to the limited scope of our assignment, we did not perform an analysis of the potential range of such future measurements.

The financial assumptions used in making the valuations are shown in Section C of this report. Assumptions concerning future experience are needed for computing employer contribution rates. As time passes and actual experience develops, assumed and actual experiences are compared. From time to time one or more of the assumptions about the future are changed by the Board after consulting with the actuary.

The actuaries submitting this report, Brad Armstrong and David Kausch, are independent of the plan sponsor and are Members of the American Academy of Actuaries (M.A.A.A.) and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

Respectfully submitted,

Brad Lee Armstrong, A.S.A., M.A.A.A.
Senior Consultant & Actuary

David T. Kausch, F.S.A, M.A.A.A.
Consultant & Actuary

BLA/DTK:sc

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SECTION A
INTRODUCTION

Executive Summary
($ in Millions)

Valuation Date:	June 30, 2013	June 30, 2012
Contribution for Fiscal Year Ending:	June 30, 2015	June 30, 2014
Required Employer Contributions:		
• Annual Amount (Estimated)	$ 338.5	$ 335.8
• Percentage of Covered Payroll	16.97 %	16.98 %
Membership		
Number of		
• Active Members	50,833	51,332
• Retirees and Beneficiaries	39,139	37,308
• Inactive, Nonretired Members	19,836	19,360
• Total	109,808	108,000
• Reported Payroll	$ 1,880.2	$ 1,864.1
Assets		
• Market Value	$ 7,994	$ 7,582
• Actuarial Value	8,096	7,897
• Return on Market Value	10.52 %	2.09 %
• Return on Actuarial Value	7.33 %	2.80 %
• Ratio – Actuarial Value to Market Value	101.28 %	104.16 %
Actuarial Information		
• Actuarial Accrued Liability (AAL)	$ 11,135	$ 10,794
• Unfunded Actuarial Accrued Liability (UAAL)	3,038	2,897
• Funded Ratio	72.7 %	73.2 %
• Employer Normal Cost %	7.16 %	7.38 %
• UAAL as % of Reported Payroll	9.81 %	9.60 %
• Amortization Period	30 years	30 years
• Ratio of Assets to Payroll	4.3	4.2
• Ratio of Liability to Payroll	5.9	5.8

Highlights/Changes

- No changes to benefit provisions.
- No changes to actuarial assumptions.
- There was a change in the asset valuation method described on page 4.
- Effect of asset losses partly offset by liability gain due to salaries.
- The aggregate experience gain/loss was $307 million.

The executive summary provides an overview of the valuation report.
It cannot be used as a substitute for a thorough reading of the full report.

Discussion

Actuarial Valuation

This is the actuarial valuation of the Missouri State Employees' Retirement System, prepared as of June 30, 2013. Valuations are prepared annually, as of June 30 of each year, the last day of Missouri State Employees' Retirement System's plan and fiscal year.

The primary purposes of the valuation report are: to measure the plan's liabilities, to determine the adequacy of the required statutory employer contribution rate based upon the System's funding policy, and to analyze changes in Missouri State Employees' Retirement System's actuarial position.

In addition, the report provides information in connection with Governmental Accounting Standards Board Statement No. 25 (GASB 25), and it provides summaries of the member data, financial data, plan provisions, and actuarial assumptions and methods.

Financing Objectives

The Missouri State Employees' Retirement System is supported by member contributions, employer contributions, and net earnings on the investments of the fund. The member contribution rate is set by law at 4.0% of the member's compensation for members hired on of after January 1, 2011, while the employer contribution is determined by the actuarial valuation. The computed employer contribution rate is dependent upon timely receipt of both member and employer contributions.

The combined member and employer contributions are intended to be sufficient to pay the normal cost and to amortize the Unfunded Actuarial Accrued Liability (UAAL) over a period of 30 years from the valuation date. A thirty-year period is the maximum amortization period allowed by GASB No. 25 in computing the Annual Required Contribution (ARC). The Board adopted a new policy which closes the amortization period beginning in fiscal year 2016.

Contribution Requirement, Experience and Funded Ratio

The computed employer contribution rate for the fiscal year ending June 30, 2015 is 16.97% of covered payroll, estimated to be $338.5 million. This compares with an employer contribution rate for the fiscal year ending June 30, 2014 of 16.98% of covered payroll, estimated to be $335.8 million.

The plan experienced a loss of $307 million, which increased the required contribution rate by 0.99% of covered payroll. Of this change, (0.02) % was due to decrement experience gains and 1.01% was due to recognition of asset shortfalls under the prior asset valuation method. The change in asset valuation method decreased the required contribution rate by 0.85% of covered payroll. The normal cost decrease from new entrants under MSEP 2011, the payroll growth less than assumed and open amortization combined to decrease the rate by 0.15% of covered payroll.

As already mentioned, experience was unfavorable in the aggregate this year. Areas contributing to the loss were recognized asset losses, higher retiree reserve transfers and more BackDROP payments, and lower retiree mortality (by age and gender) offset by gains due to higher turnover, lower pay increases and lower COLAs. Experience impacts both the contribution requirement and the progress of the funded ratio.

As of the valuation date, the Unfunded Actuarial Accrued Liability (UAAL) is $3,038 million, and the funded ratio (Actuarial Value of Assets as a percentage of Actuarial Accrued Liability) is 72.7%. Conversely, the funded ratio on a market value basis is 71.8% compared to 70.2% last year. At the time of last year's valuation, the UAAL was $2,897 million, and the funded ratio was 73.2%.

See Section B for an analysis of the actuarial gains and losses over the last year and for a history of the funded ratios.

Variability of Future Contribution Rates

The Actuarial Cost Method used to determine the contribution rate is intended to produce contribution rates which are generally level as a percent of payroll. Even so, when experience differs from the assumptions, as it often does, the employer's contribution rate can vary significantly from year-to-year.

One risk-metric for contribution rate volatility is the ratio of assets to payroll, which is currently 4.3. The impact of this metric on the variability of contribution rates is illustrated in the following table.

Sensitivity of Contribution Rate	50% Confidence Interval	90% Confidence Interval
Range of Rate of Return (above or below 8.0%)	+/- 8.5%	+/- 20.8%
Ratio of Assets to Payroll	4.3	4.3
Range of Asset Gain/Loss as Percent of Pay	+/- 36.6%	+/- 89.6%
Smoothed and Amortized as Percent of Pay	+/- 0.8%	+/- 1.9%

Over time, if the year-to-year gains and losses offset each other, the unfunded contribution rate would be expected to return to the current level, but this does not always happen.

Relationship to Market Value

The Actuarial Value of Assets exceeds the Market Value of Assets by $102 million as of the valuation date (see Section C). This difference will be gradually recognized in the absence of offsetting gains.

If Market Value had been the basis for the valuation, the contribution rate would have been 17.31% and the funded ratio would have been 71.8%.

Impact of the 2011 Plan

The employer normal cost for 2011 plan members is lower than for MSEP and MSEP 2000 members due to later retirement eligibility and 4% member contributions. As the 2011 plan members replace MSEP and MSEP 2000 members, the System's total normal cost is expected to decline by approximately 4% of payroll relative to the June 30, 2013 valuation date.

Benefit Provisions

This valuation reflects benefits promised to members by statute as reported to us by the System's staff. There have been no changes since the prior valuation.

Actuarial Assumptions and Methods (Other than Asset Valuation Method)

In determining costs and liabilities, actuaries use assumptions about the future, such as rates of salary increase, probabilities of retirement, termination, death and disability, and an investment return assumption. The Board of Trustees sets the actuarial assumptions and methods taking into account recommendations made by the plan's actuary and other advisors. These assumptions and procedures were revised in 2012 following an analysis of plan experience for the four-year period ending June 30, 2011.

Section G summarizes the current assumptions. There have been no changes to the assumptions used in this valuation. The most significant assumptions are (i) the assumed investment return, currently set at 8.00%, and (ii) the assumption regarding future payroll increases of 3% per year.

We believe the assumptions are internally consistent and are reasonable, based on the actual experience of MOSERS. These actuarial assumptions and methods comply with the parameters for disclosure in GASB Statement No. 25.

The results of the actuarial valuation are dependent on the actuarial assumptions used. Actual results can, and almost certainly will, differ as actual experience deviates from the assumptions. Even seemingly minor changes in the assumptions can materially change the liabilities, calculated contribution rates, and amortization periods.

In addition to the actuarial assumptions, the actuary makes use of an Actuarial Cost Method to allocate costs to particular years. In accordance with Missouri statutes, MOSERS uses the Entry Age Normal method. Theoretically, this method produces a level contribution rate pattern of funding over time, and thereby provides equity between various generations of taxpayers. We continue to believe this method is appropriate for the Missouri State Employees' Retirement System and consistent with the statutory funding objective. The actuarial accrued liability determined by the Entry Age Normal method is compared to the Actuarial Value of Assets. Any difference is amortized as a level percentage of payroll over a period of 30 years through the June 30, 2014 valuation determining contribution requirements for the fiscal year ending June 30, 2016. After fiscal 2016, the amortization period will decrease by 1 each year. The open amortization policy decreased the contribution rate by 0.13% of covered payroll.

Assets

System assets are held in trust. The Missouri State Employees' Retirement System staff have provided the asset information used in this valuation.

Section C contains several exhibits summarizing the plan's assets, presents a summary of the Market Value of Assets held by the fund, shows the allocation of assets held for investment and shows a reconciliation of the assets from the last valuation date to the current valuation date.

Section C also shows the development of the Actuarial Value of Assets on pages 34 and 35. The Actuarial Value of Assets is a smoothed Market Value. A smoothed value is used in order to dampen some of the year-to-year fluctuations in valuation results that would occur if the Market Value were used instead. The method used phases in differences between the actual and expected market returns over three years. The asset smoothing method was changed from 5-year smoothing to 3-year rolling smoothing to reduce volatility in the asset smoothing process. For purposes of this valuation, both methods are shown in Section C to illustrate the prior method on page 34 and the current method on page 35.

The expected return is determined using the 8.00% assumption and the plan's Actuarial Value, adjusted for contributions received and benefits and refunds paid. Both the actual and expected returns are computed net of investment expenses.

Market experience during the year ended June 30, 2013 was above expectations. The asset valuation method currently in use by MOSERS smoothes investment gains and losses over an open period of 3 years and in addition requires the smoothed value of assets to be within a certain corridor limit of the market value of assets. The corridor limit is currently 80% to 125%.

The Actuarial Value is currently 101% of the Market Value. Over any short time period, a disparity between Actuarial Value and Market Value may appear, but in the long-run, we would expect the Actuarial Value and the Market Value to continue to track each other fairly closely.

The investment return rate for fiscal year 2013 on Market Value was 10.52%, while it was 7.33% on Actuarial Value. These figures differ because of the asset valuation procedure described above.

Active Member Data

The number of active members decreased from 51,332 last year to 50,833 this year. Total payroll increased 0.87% from $1,864.1 million last year to $1,880.2 million this year. Lower than expected payroll growth increased the contribution rate by 0.20% of covered payroll. The increase in the number of active members participating under MSEP 2011 decreased the Normal Cost contribution rate by 0.22% of covered payroll.

GASB Statement No. 25 Disclosure

Governmental Accounting Standards Board (GASB) Statement No. 25 governs reporting for government-sponsored retirement plans.

For MOSERS, the ARC is defined to be the sum of (a) the employer normal cost, and (b) the amount needed to amortize the UAAL as a level percentage of payroll over 30 years.

Conclusion

Based on the results of the June 30, 2013 regular annual actuarial valuation, it is our opinion that the Missouri State Employees' Retirement System continues to be funded in accordance with actuarial principles of level percent-of-payroll financing.

SECTION B
FUNDING RESULTS

Principal Valuation Results
As of June 30
($ in Millions)

Valuation Date:	**2013**	**2012**
A. Number of Participants		
Active Members	50,833	51,332
Vested Deferred Members	19,836	19,360
Retirees and Beneficiaries	39,139	37,308
Total	109,808	108,000
Covered Annual Payroll	$ 1,880	$ 1,864
Development of Contribution Rate For Fiscal Year Ending	**2015**	**2014**
B. Normal Cost %		
Total	8.31 %	8.34 %
Member	1.15 %	0.96 %
Employer	7.16 %	7.38 %
C. Unfunded Actuarial Accrued Liabilities (UAAL)		
Actuarial Accrued Liability	$ 11,135	$ 10,794
Actuarial Value of Assets	8,096	7,897
UAAL	$ 3,038	$ 2,897
% of Payroll Required to Amortize UAAL*	9.81 %	9.60 %
D. Total Computed Employer Contribution Rate	16.97%	16.98%
E. Estimated Dollar Contribution#	$ 338.5	$ 335.8

* *This corresponds to an amortization factor of 15.77495 applied to the unfunded actuarial accrued liability at the beginning of the applicable fiscal year assuming payroll growth of 3% per year.*

\# *Illustrative only. Estimated employer contribution amounts (shown in $millions) are based on the Total Computed Employer Contribution Rates shown and valuation payroll projected two years to the applicable fiscal year using the valuation assumptions of 3%.*

Computed Employer Contribution Rate
Expressed as Percents of Active Member Payroll
for the Fiscal Year Ending June 30, 2015
Actuarial Valuation Results as of June 30, 2013

	Contribution Expressed as Percents of Payroll for the Fiscal Year		
	2014/15		
	Pre-2011 Hires	Post-2010 Hires@	Weighted Average
A. Normal Cost			
(1) Service retirement benefits	5.77 %	3.79 %	5.22 %
(2) Vested termination benefits	1.68	0.80	1.43
(3) Disability benefits	0.72	0.73	0.72
(4) Survivor benefits	0.18	0.22	0.19
(5) Refunds	0.00	1.24	0.36
(6) Administrative expenses	0.39	0.39	0.39
(7) Total *[(1) + (2) + (3) + (4) + (5) + (6)]*	8.74	7.17	8.31
B. Less Member Contributions	0.00	4.00	1.15
C. Employer Normal Cost *[A(7) - B]*	8.74	3.17	7.16
D. Unfunded Actuarial Accrued Liabilities (UAAL) (30-year level percent-of-payroll amortization*)			9.81
E. TOTAL COMPUTED EMPLOYER CONTRIBUTION RATE *[C. + D.]*			**16.97 %**
ESTIMATED EMPLOYER CONTRIBUTION ($Millions)#			**$338.5**

@ Based on assumptions for new hires. Normal cost for post-2010 hires will depend on future hiring practices and is likely to change as actual experience emerges.

** This corresponds to an amortization factor of 15.77495 applied to the unfunded actuarial accrued liability at the beginning of the applicable fiscal year assuming payroll growth of 3% per year.*

 # Illustrative only. Estimated employer contribution amounts (shown in $millions) are based on the Total Computed Employer Contribution Rates shown and valuation payroll projected two years to the applicable fiscal year using the valuation assumptions of 3%. The comparable estimated employer contribution amount from last year's valuation is $335.8 million.

Sensitivity Analysis

There are several actuarial assumptions used in the valuation. Differences between expected and actual experience result in gains and losses from year to year. The most significant assumption in regards to gains and losses is the rate of return assumption. This illustration shows sensitivity of the valuation results to the investment return assumption by reproducing the valuation at investment return assumptions 1% higher and lower than the current 8% assumption.

(All figures are in $millions)

Investment Return Assumption	**7.0%**	**8.0%**	**9.0%**
Employer Normal Cost	9.22 %	7.16 %	5.58 %
UAAL Rate	12.54	9.81	6.88
Employer Contribution Rate	21.76 %	16.97 %	12.46 %
Projected $ Contribution (ER)	$ 434.1	$ 338.5	$ 248.5
Actuarial Accrued Liability	$ 12,394	$ 11,135	$ 10,064
Actuarial Value of Assets	$ 8,096	$ 8,096	$ 8,096
Unfunded Actuarial Accrued Liability	$ 4,298	$ 3,038	$ 1,968
Funded Ratio	65.3 %	72.7 %	80.4 %

Actuarial Liabilities
June 30, 2013

Actuarial Present Value, June 30, for	(1) Actuarial Present Value	(2) Portion Covered By Future Normal Cost Contributions	(3) Actuarial Accrued Liabilities (1) - (2)
Active Members			
Service retirement benefits based on service rendered before and likely to be rendered after valuation date	$4,754,705,778	$ 648,442,753	$ 4,106,263,025
Disability benefits likely to be paid to present active members who become totally and permanently disabled	138,509,142	86,334,651	52,174,491
Survivor benefits likely to be paid to widows and children of present active members who die before retiring	94,722,679	22,042,669	72,680,010
Separation benefits likely to be paid to present active members	407,756,601	191,406,641	216,349,960
Refunds likely to be paid to present active members	24,363,928	22,859,027	1,504,901
Active Member Totals	$5,420,058,128	$971,085,741	$ 4,448,972,387
Members on Leave of Absence & LTD Service retirement benefits based on service rendered before the valuation date			94,092,558
Terminated Vested Members Service retirement benefits based on service rendered before the valuation date			528,918,098
Retired Lives			6,061,942,427
BackDROP Installment Payments Incurred, but not yet paid			712,014
TOTAL ACTUARIAL ACCRUED LIABILITY			$11,134,637,484
ACTUARIAL VALUE OF ASSETS			8,096,436,929
UNFUNDED ACTUARIAL ACCRUED LIABILITY			$ 3,038,200,555
FUNDED RATIO			72.7%

Determination of the Unfunded Actuarial Accrued Liability (UAAL) Amortization ($ in Millions)

(1) Contribution Rate as a Percent of Payroll for the Year after the Valuation Date (as determined by the prior valuation)	
(a) Total Normal Cost Rate Beginning of Year	8.34%
(b) UAAL Beginning of Year	9.60%
(c) Total Contribution Rate Beginning of Year	17.94%
(2) UAAL on Valuation Date	$ 3,038.2
(3) Expected Interest on UAAL [(2) * 8.0%]	$ 243.1
(4) Projected Payroll for the Year After the Valuation Date	$ 1,936.6
(5) Total Normal Cost [(1)(a) x (4)]	$ 161.5
(6) 1/2 Year Interest on Normal Cost [(5) / 2 * 8.0%]	$ 6.5
(7) Total Expected Contributions [(1)(c) x (4)]	$ 347.4
(8) 1/2 Year Interest on Contributions [(7) / 2 * 8.0%]	$ 13.9
(9) Projected UAAL [(2) + (3) + (5) + (6) - (7) - (8)]	$ 3,087.9
(10) Amortization Factor (30 years)	15.77495
(11) Projected Payroll for Second Year after Valuation Date	$ 1,994.7
(12) UAAL Contribution Rate [(9) / (10) / (11)]	9.81%

Financing Unfunded Actuarial Accrued Liabilities Which Were Calculated Using a Wage Inflation Assumption of 3.0% and an Investment Return Assumption of 8.0% Compounded Annually

Level % of Payroll Amortization

Fiscal Year June 30	Projected Active Member Payroll	Unfunded Actuarial Accrued Liability	UAAL Adjusted for Wage Inflation	Amortization Years Remaining	Annual Contributions		UAAL as % of Payroll	BOY Funded Ratio
					Dollars	% of Payroll		
	----------$ in millions----------							
2014	$1,937	$3,038	$3,038	30	$186	9.60 %	156.88 %	72.7 %
2015	1,995	3,088	2,998	30	196	9.81	154.81	73.2
2016	2,055	3,132	2,952	30	199	9.66	152.42	73.6
2017	2,116	3,176	2,906	29	204	9.66	150.07	74.0
2018	2,180	3,217	2,858	28	211	9.66	147.60	74.3
2019	2,245	3,256	2,808	27	217	9.66	145.02	74.6
2020	2,312	3,291	2,756	26	223	9.66	142.30	74.8
2021	2,382	3,322	2,701	25	230	9.66	139.46	75.1
2022	2,453	3,348	2,643	24	237	9.66	136.48	75.3
2023	2,527	3,370	2,583	23	244	9.66	133.35	75.5
2024	2,603	3,385	2,519	22	251	9.66	130.08	75.8
2025	2,681	3,395	2,453	21	259	9.66	126.64	76.0
2026	2,761	3,397	2,383	20	267	9.66	123.04	76.2
2027	2,844	3,392	2,310	19	275	9.66	119.26	76.5
2028	2,929	3,377	2,233	18	283	9.66	115.30	76.8
2029	3,017	3,353	2,152	17	292	9.66	111.14	77.2
2030	3,108	3,319	2,068	16	300	9.66	106.78	77.6
2031	3,201	3,272	1,980	15	309	9.66	102.22	78.0
2032	3,297	3,212	1,887	14	319	9.66	97.43	78.5
2033	3,396	3,138	1,790	13	328	9.66	92.41	79.1
2034	3,498	3,048	1,688	12	338	9.66	87.14	79.8
2035	3,603	2,941	1,581	11	348	9.66	81.62	80.6
2036	3,711	2,814	1,469	10	359	9.66	75.83	81.5
2037	3,822	2,666	1,351	9	369	9.66	69.76	82.6
2038	3,937	2,496	1,228	8	380	9.66	63.40	83.8
2039	4,055	2,300	1,099	7	392	9.66	56.72	85.1
2040	4,176	2,077	963	6	404	9.66	49.73	86.7
2041	4,302	1,823	821	5	416	9.66	42.39	88.4
2042	4,431	1,537	672	4	428	9.66	34.69	90.3
2043	4,564	1,215	516	3	441	9.66	26.63	92.4
2044	4,701	854	352	2	454	9.66	18.17	94.7
2045	4,842	450	180	1	468	9.66	9.30	97.3
2046	4,987	0	0	0	0	0.00	0.00	100.0

Actuarial Balance Sheet as of June 30, 2013

Assets and Present Value of Expected Future Contributions

A. Present Actuarial Value of Assets		
1.	Net assets from System Financial Statements	$ 7,993,837,570
2.	Adjustment for Valuation Assets	102,599,359
3.	Actuarial Value of Assets	8,096,436,929
B. Actuarial Present Value of Expected Future Employer Contributions		
1.	For Normal Costs	896,662,087
2.	For Unfunded Actuarial Accrued Liability	3,038,200,555
3.	Total	3,934,862,642
C. Actuarial Present Value of Expected Future Member Contributions		74,423,654
D. Total Present and Expected Future Resources		$ 12,105,723,225

Present Value of Expected Future Benefit Payments

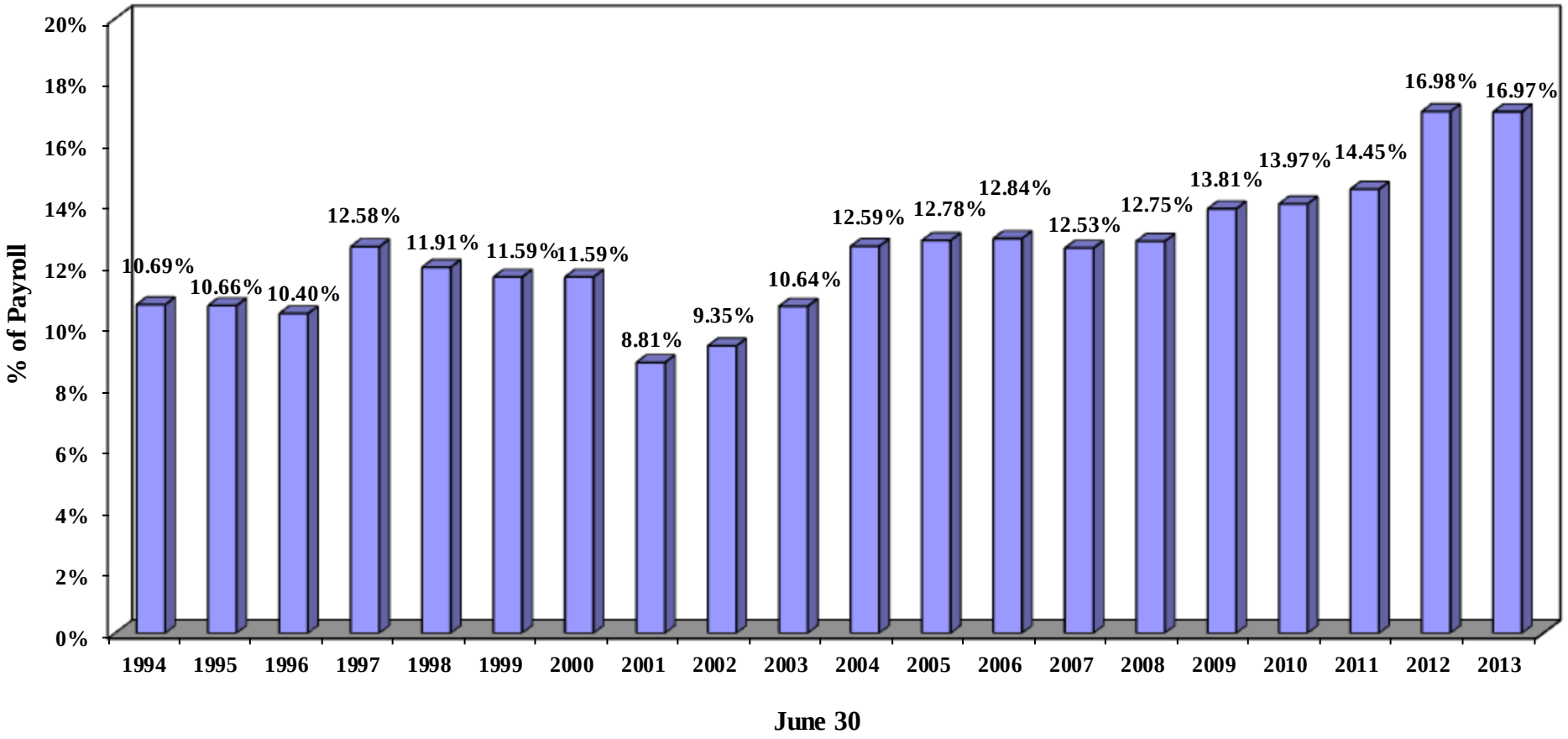
A. To Retirees and Beneficiaries		
1.	Annual Pensions	$ 6,061,942,427
2.	Members on Leave of Absence & LTD	94,092,558
3.	BackDROP Installment Payments Incurred, but not yet paid	712,014
4.	Total	6,156,746,999
B. To Vested Terminated Members		528,918,098
C. To Present Active Members		
1.	Allocated to Service Rendered Prior to Valuation Date – Actuarial Accrued Liability	4,448,972,387
2.	Allocated to Service likely to be Rendered after Valuation Date	971,085,741
3.	Total	5,420,058,128
D. Total Actuarial Present Value of Expected Future Benefit Payments		$ 12,105,723,225

Comparative Schedule

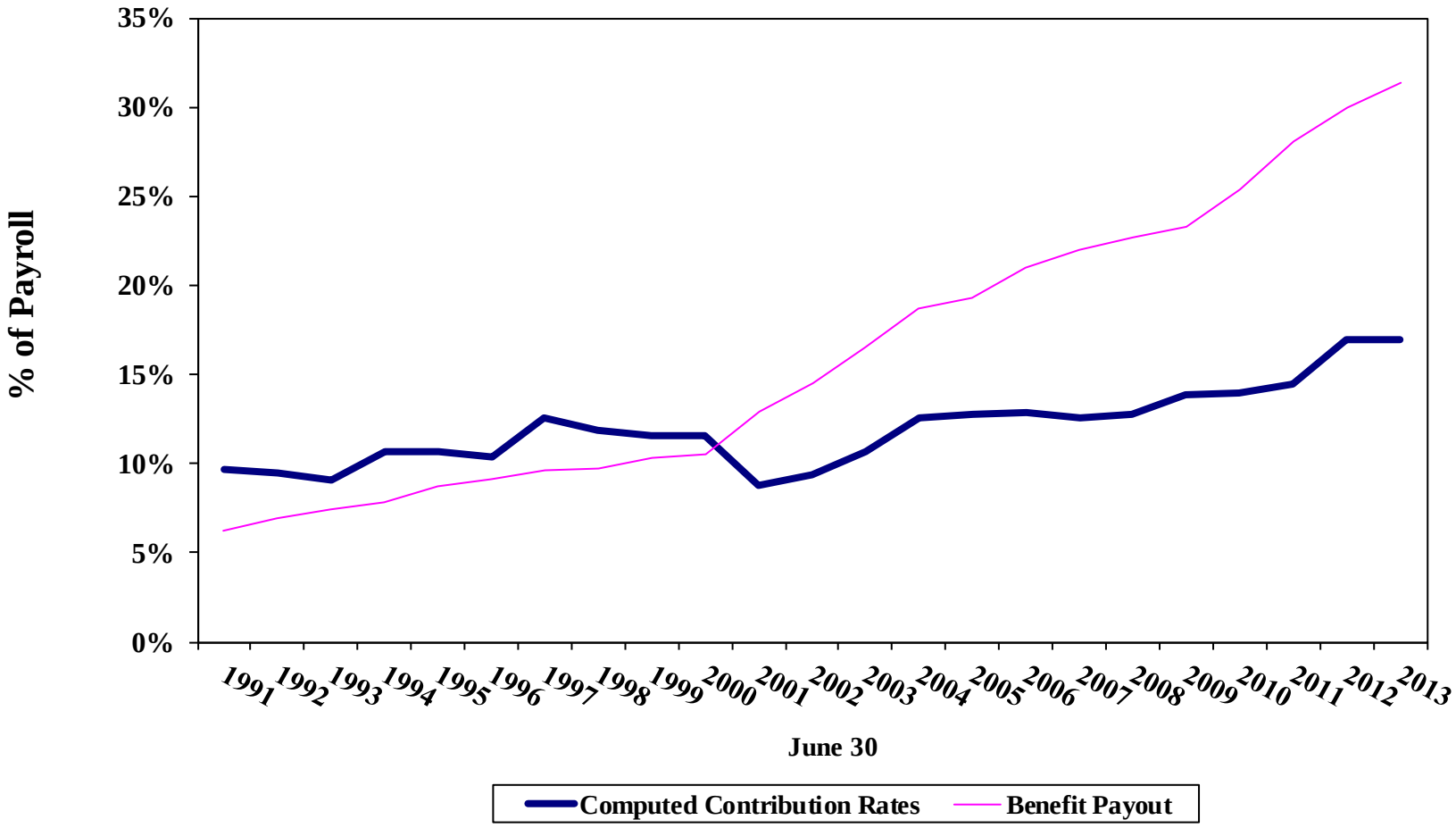
Valuation Date June 30	Active Members Number	Active Members Payroll $ Millions	Average Salary $	Average Salary % Incr.	Retired Lives Number Retired	Retired Lives Number Active/ Retired	Retired Lives Annual Benefits $ Million	Retired Lives Annual Benefits % of Payroll	Accrued Liability	Valuation Assets	UAAL
									----------million----------		
1993	$47,954	$1,063	$22,172	0.3 %	$13,115	3.7	$ 79.4	7.5 %	$2,447	$2,237	$ 210
1994 (2)	49,436	1,125	22,754	2.6	13,651	3.6	96.2	8.6	2,919	2,425	494
1995	50,524	1,199	23,730	4.3	14,384	3.5	104.9	8.8	3,151	2,649	502
1996 (1)	51,425	1,268	24,650	3.9	15,004	3.4	116.2	9.2	3,440	2,928	512
1997 (1)(2)(3)	52,737	1,360	25,782	4.6	15,609	3.4	130.4	9.6	4,484	3,581	903
1998	54,544	1,460	26,762	3.8	16,251	3.4	142.4	9.8	4,919	4,211	708
1999 (2)	56,158	1,565	27,860	4.1	17,117	3.3	161.3	10.3	5,506	4,909	597
2000 (1)	57,774	1,684	29,143	4.6	18,196	3.2	177.0	10.5	5,921	5,217	704
2001 (1)	58,431	1,758	30,090	3.3	20,237	2.9	227.4	12.9	6,065	5,881	184
2002 (3)	58,616	1,773	30,253	0.5	21,502	2.7	256.6	14.5	6,294	6,033	261
2003 (2) (3)	57,558	1,740	30,229	(0.1)	22,872	2.5	287.1	16.5	6,662	6,057	605
2004 (1)	55,914	1,737	31,074	2.8	24,757	2.3	324.6	18.7	7,230	6,118	1,112
2005 (3)(4)	55,944	1,807	32,293	3.9	25,780	2.2	348.1	19.3	7,578	6,435	1,143
2006	54,493	1,777	32,615	1.0	27,052	2.0	373.6	21.0	8,013	6,837	1,176
2007	54,363	1,847	33,969	4.2	28,692	1.9	406.4	22.0	8,500	7,377	1,123
2008 (1)	54,542	1,917	35,139	3.4	30,132	1.8	434.6	22.7	9,128	7,838	1,290
2009 (1) (3)	55,057	2,002	36,370	3.5	31,637	1.7	465.4	23.2	9,495	7,876	1,619
2010 (1)	53,478	1,945	36,372	0.0	33,251	1.6	493.7	25.4	9,853	7,923	1,930
2011 (1)	51,660	1,876	36,306	(0.2)	35,315	1.5	525.6	28.0	10,124	8,022	2,102
2012 (1)	51,332	1,864	36,314	0.0	37,308	1.4	558.6	30.0	10,794	7,897	2,897
2013	**50,833**	**1,880**	**36,988**	**1.9**	**39,139**	**1.3**	**589.9**	**31.4**	**11,135**	**7,834**	**3,301**
2013 (3)	**50,833**	**1,880**	**36,988**	**1.9**	**39,139**	**1.3**	**589.9**	**31.4**	**11,135**	**8,096**	**3,039**

(1) After changes in assumptions.
(2) After changes in benefit provisions.
(3) After changes in methods.
(4) Reflects the addition of the assets, liabilities, and members of the Administrative Law Judges Retirement System.

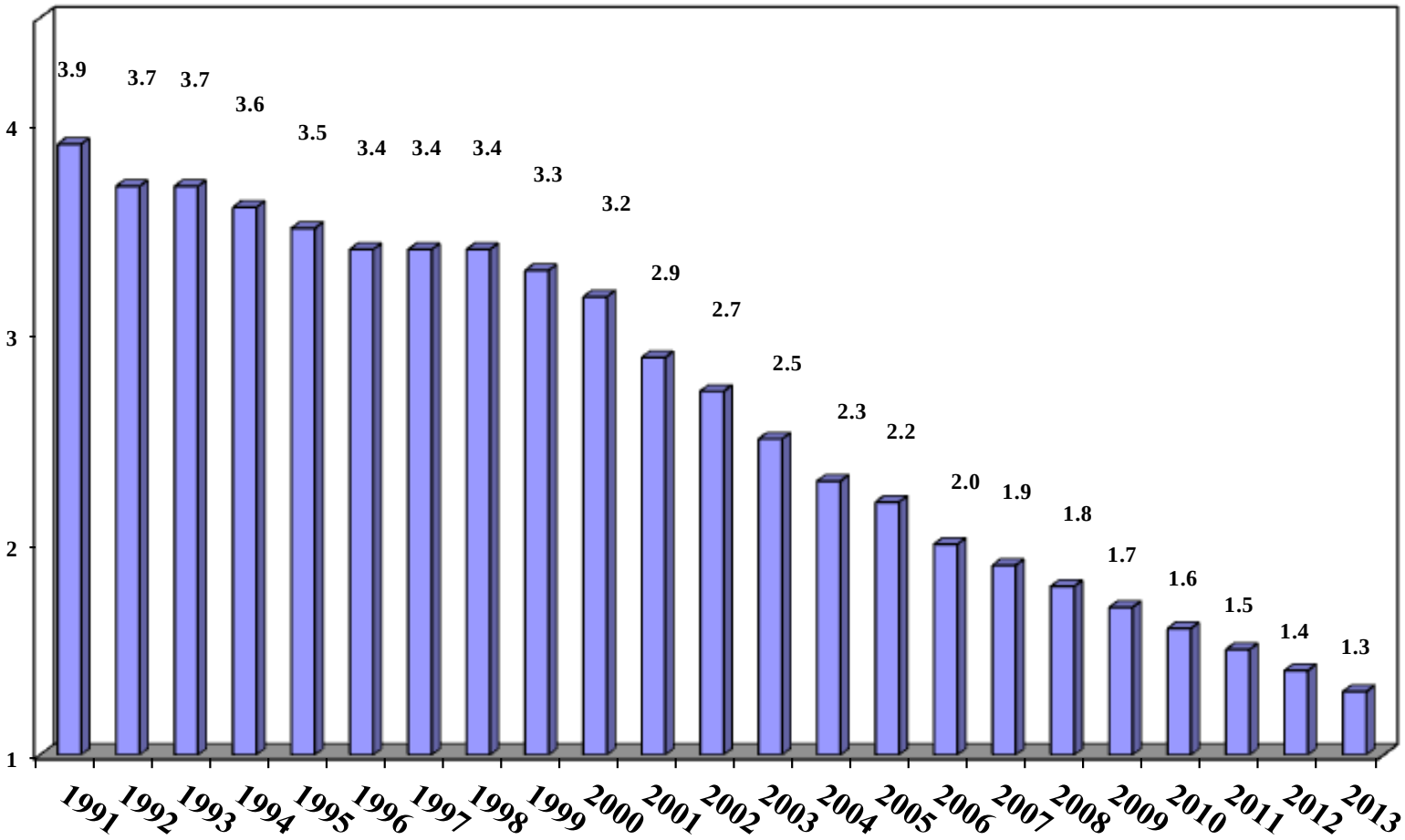
Computed Employer Contribution Rates



Contribution Rates vs. Benefit Payout

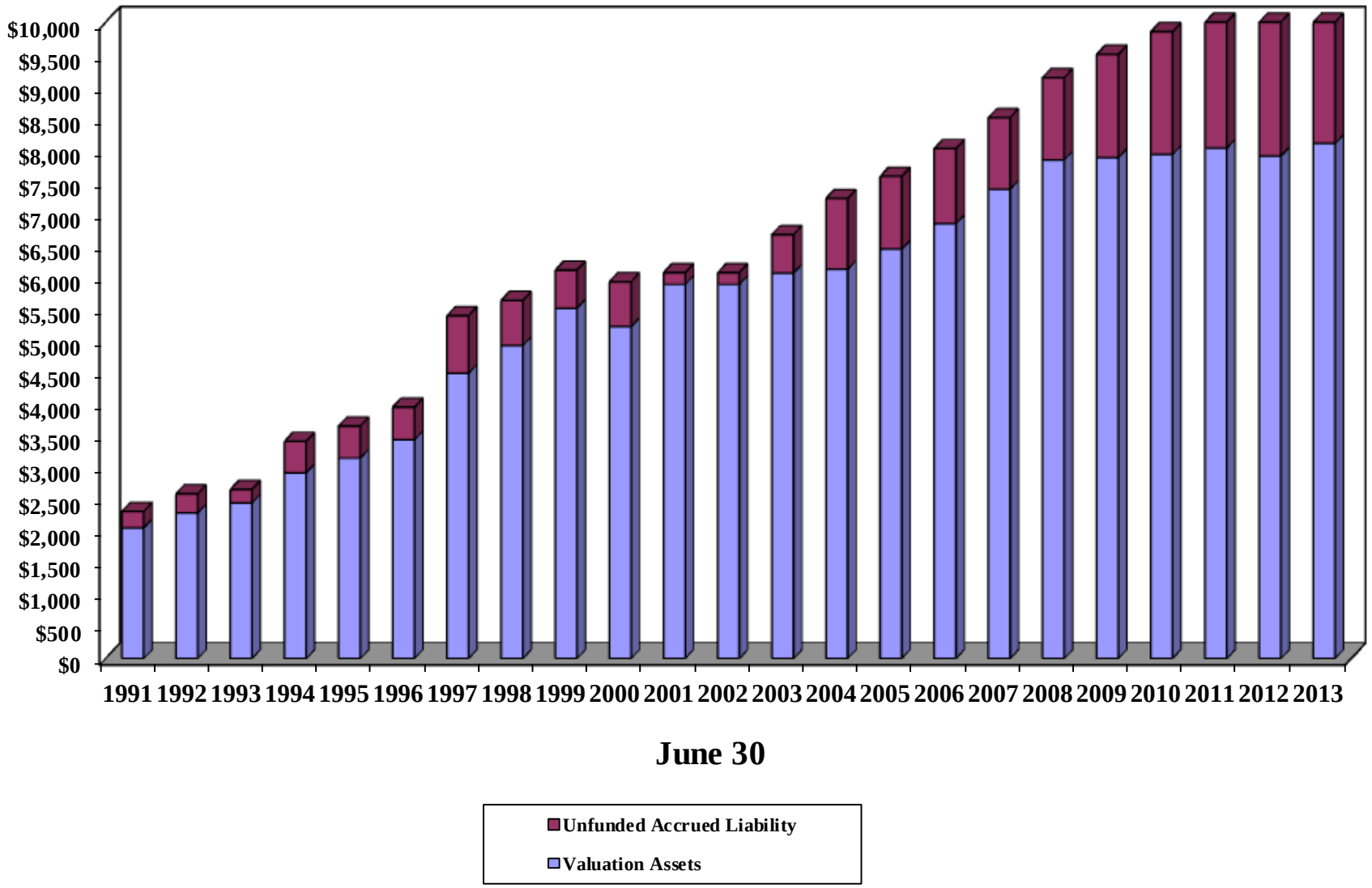


Number of Active Members Per Benefit Recipient

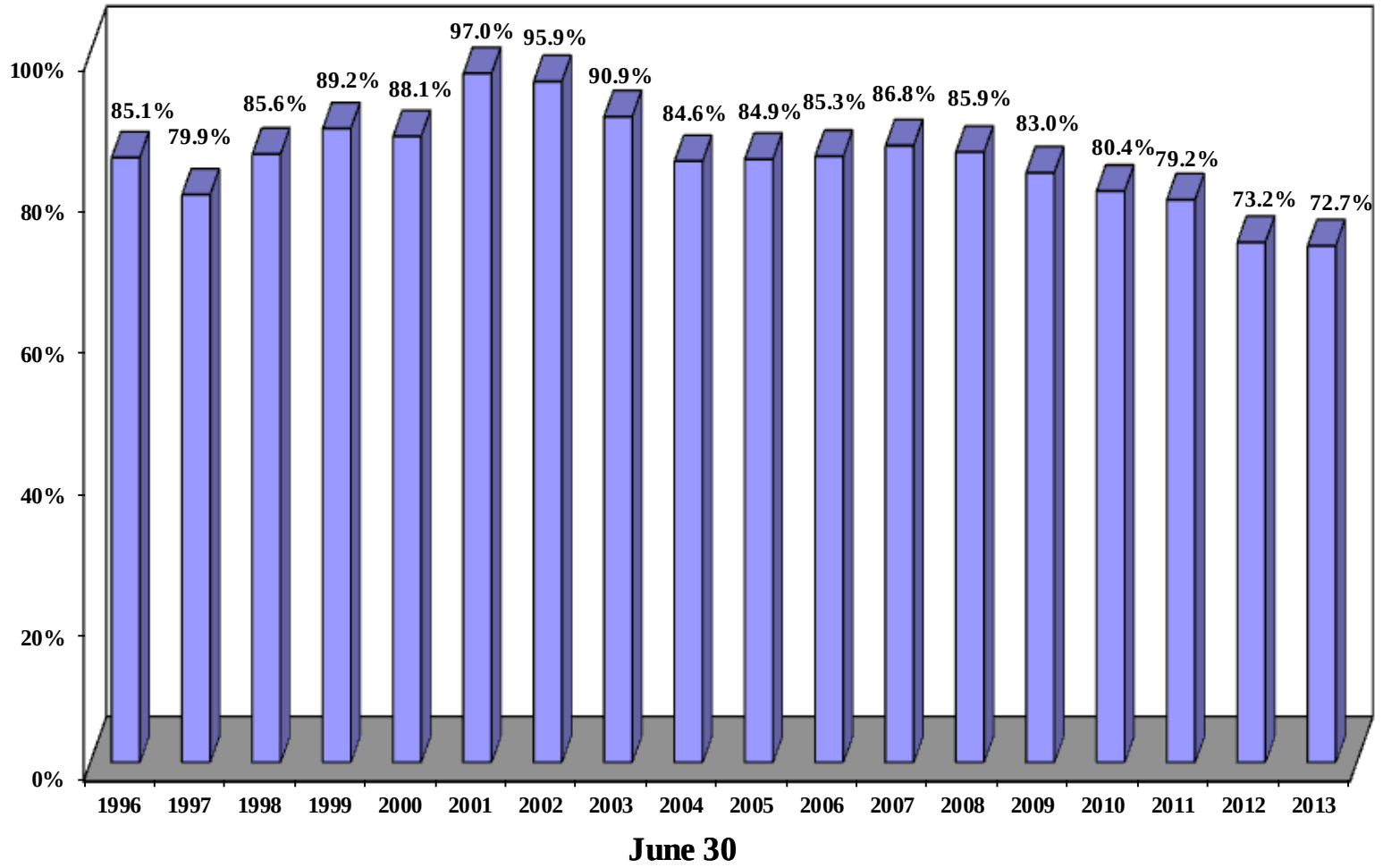


June 30

Actuarial Value of Assets and Actuarial Accrued Liabilities
($ in millions)



Actuarial Value of Assets as Percents of Accrued Liabilities (Funded Ratio)



Gain/Loss Analysis of Experience During Last Year

Comments

Purpose of Gain/Loss Analysis. Regular actuarial valuations provide valuable information about the composite change in unfunded actuarial accrued liabilities – whether or not the liabilities are increasing or decreasing, and by how much. However, valuations do not show the portion of the change attributable to each risk area within the retirement system financial mechanism: the rate of investment income on plan assets; the rates of withdrawal of active members who leave covered employment; the rates of mortality; the rates of disability; the rates of salary increases; and the assumed ages at actual retirement. In an actuarial valuation, assumptions are made as to what these rates will be for the next year and for decades in the future.

The objective of a gain and loss analysis is to determine the portion of the change in unfunded actuarial accrued liabilities attributable to each risk area.

The fact that actual experience differs from assumed experience is to be expected – the future cannot be predicted with precision. Changes in the valuation assumed experience for a risk area should be made when the differences between assumed and actual experience have been observed to be sizeable and persistent. One year's gain/loss analysis may or may not be indicative of ***long-term trends, which are the basis of financial assumptions.***

2012 and 2013 Data. For the 2012 and 2013 valuations, active and retired member data were reported as of May 31. It was brought forward to June 30 by adding one month of service for all active members, adding the June COLA for certain retirees, and otherwise making no other adjustments. It was assumed for valuation purposes that there was no turnover among members and no new entrants during the month of June. Financial information was reported as of June 30. It is believed that this procedure resulted in a slight overstatement of total liabilities as of June 30, 2012 and June 30, 2013.

The expected and actual numbers of retirements, deaths, and terminations found on pages 22 through 27 reflect experience over the 12 month period from May 31, 2012 through May 31, 2013.

Results from 2013 Plan Year. There was a net experience loss this year, with the largest single identifiable source being investment losses. The table below summarizes historical MOSERS economic experience:

Period	Inflation As Measured By: CPI	Inflation As Measured By: Increase in Average Salary@	Market Interest Credited to MOSERS Funds	Real Rate of Return: Relative to CPI	Real Rate of Return: Relative to Salaries
July 1, 2000 - June 30, 2001	3.2 %	5.1 %	(2.0) %*	(5.2) %	(7.1) %
July 1, 2001 - June 30, 2002	1.1	(2.1)	(6.4) *	(7.5)	(4.3)
July 1, 2002 - June 30, 2003	2.1	0.6	6.8 *	4.7	6.2
July 1, 2003 - June 30, 2004	3.3	4.2	17.2 *	13.9	13.0
July 1, 2004 - June 30, 2005	2.5	5.2	12.6 *	10.1	7.4
July 1, 2005 - June 30, 2006	4.3	2.1	11.5 *	7.2	9.4
July 1, 2006 - June 30, 2007	2.7	5.7	18.6 *	15.9	12.9
July 1, 2007 - June 30, 2008	5.0	5.3	1.4 *	(3.6)	(3.9)
July 1, 2008 - June 30, 2009	(1.4)	5.1	(19.3) *	(17.9)	(24.5)
July 1, 2009 - June 30, 2010	1.1	0.7	14.3 *	13.2	13.6
July 1, 2010 - June 30, 2011	3.5	1.0	21.3 *	17.8	20.4
July 1, 2011 - June 30, 2012	1.7	1.8	2.1 *	0.4	0.3
July 1, 2012 - June 30, 2013	1.7	3.2	10.5 *	8.8	7.3

** MOSERS' approximate rate of return based on market value.*
@ For members active both at beginning and end of year.

The dollar amount of unfunded actuarial accrued liabilities (UAAL) is large in absolute dollars. However, the size should be viewed in the light of MOSERS' overall financial program. ***The ratio of unfunded actuarial accrued liabilities divided by active member payroll is significant.*** UAAL represents plan debt, while active member payroll is indicative of the state's capacity to amortize the UAAL – ***the ratio thus provides an index of relative condition.*** The smaller the ratio, the stronger the financial condition.

	UAAL/Active Member Payroll
June 30, 1997 after changes in benefits, assumptions, methods	.66
June 30, 1998	.49
June 30, 1999 after MSEP 2000	.38
June 30, 2000 after changes in assumptions	.42
June 30, 2001 after changes in assumptions	.10
June 30, 2002 after changes in methods	.15
June 30, 2003 after changes in benefits, methods	.35
June 30, 2004 after changes in assumptions	.64
June 30, 2005 after changes in assumptions	.63
June 30, 2006	.66
June 30, 2007	.61
June 30, 2008	.67
June 30, 2009	.81
June 30, 2010	.99
June 30, 2011	1.12
June 30, 2012	1.55
June 30, 2013	1.62

Derivation of Experience Gain (Loss)
Year Ended June 30, 2013

Actual experience will never coincide exactly with assumed experience (except by coincidence). Gains and losses may offset each other over a period of years, but sizeable year-to-year variations from assumed experience are common. Detail on the derivation of the experience gain (loss) is shown below.

	$ Millions
(1) UAAL* at start of year	$2,896.5
(2) Normal cost from last valuation	160.6
(3) Actual contributions (Employer and Member)	290.3
(4) Interest accrual: (1) x .08 + [(2) - (3)] x (.08 / 2)	226.5
(5) Expected UAAL before changes: (1) + (2) - (3) + (4)	2,993.3
(6) Change from any changes in benefits, assumptions, or methods	(262.4)
(7) Expected UAAL after changes: (5) + (6)	2,730.9
(8) Actual UAAL at end of year	3,038.2
(9) Gain (loss): (7) - (8)	(307.3)
- Gains (losses) in economic experience	(256.4)
- Gains (losses) from decrement experience and other	(50.9)
(10) Gain (loss) as percent of actuarial accrued liabilities at start of year ($10,794)	(2.8) %

** Unfunded actuarial accrued liabilities.*

Valuation Date June 30	Actuarial Gain (Loss) as a % of Beginning Accrued Liabilities
2003	(6.4) %
2004	(6.0)
2005	(3.4)
2006	(0.1)
2007	1.0
2008	0.1
2009	(5.2)
2010	(4.0)
2011	(2.4)
2012	(4.7)
2013	**(2.8)**

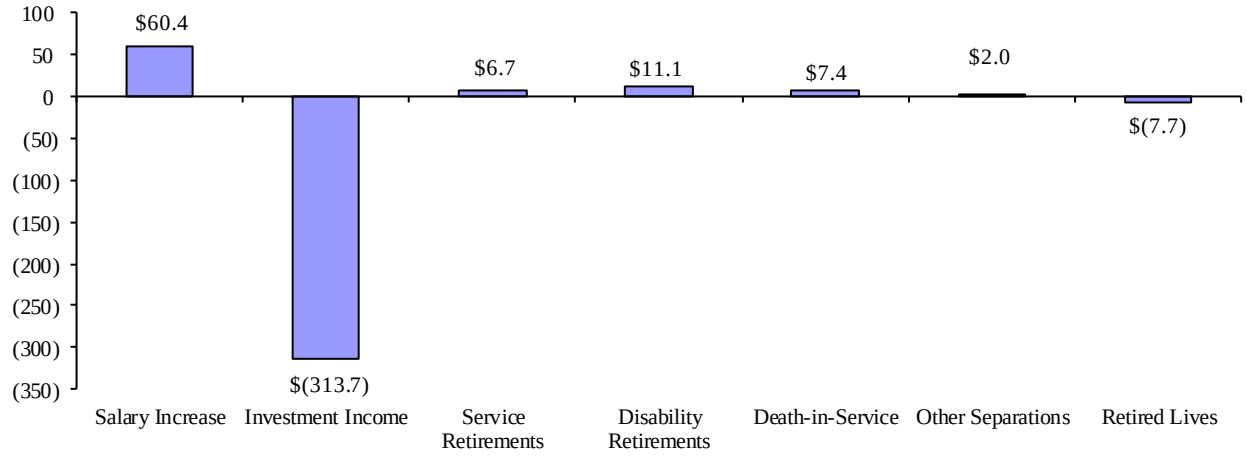
Gains & (Losses) in Actuarial Accrued Liabilities During Plan Year 2012 - 2013

Type of Activity	-- Gain (Loss) for Year -- $ in Millions	% of Accr. Liabilities*
Decrement Experience:		
Service Retirements. If members retire at older ages than assumed, there is a gain. If at younger ages, a loss.	$ 6.7	0.1 %
Disability Retirements. The occurrence of a gain or loss depends upon the age at disability and the incidence of disability.	11.1	0.1
Death-in-Service. If there are fewer survivor claims than assumed at younger ages, there is a gain. If there are fewer survivor claims than assumed at older ages, there can be a loss.	7.4	0.1
Other Separations. If more actuarial liabilities are released by other separations than assumed, there is a gain. If smaller releases, a loss.	2.0	0.0
Retired Lives. If more deaths than assumed, there is a gain. If fewer deaths, a loss.	(7.7)	(0.1)
Economic Experience:		
Salary Increases. If there are smaller salary increases than assumed, there is a gain. If greater increases, a loss. If long service members have greater salary increases than assumed, there can be a loss even if average salary increases are less than assumed.	60.4	0.6
Investment Income. If there is greater investment income than assumed, there is a gain. If less income, a loss.	(313.7)	(2.9)
COLAs.	(3.1)	0.0
Other:		
Service credit reinstatements, service transfers, service purchases, rehires, net of contributions.	(25.1)	(0.2)
Larger than expected average compensation for new retirees.	(10.3)	(0.1)
Change in group size, data adjustments, retroactive benefit payments, option elections, and miscellaneous unidentified changes in the UAAL.	(35.0)	(0.4)
Experience Gain or (Loss) During Year	**$ (307.3)**	**(2.8) %**

** Beginning of year accrued liabilities totaled $10,794 million.*

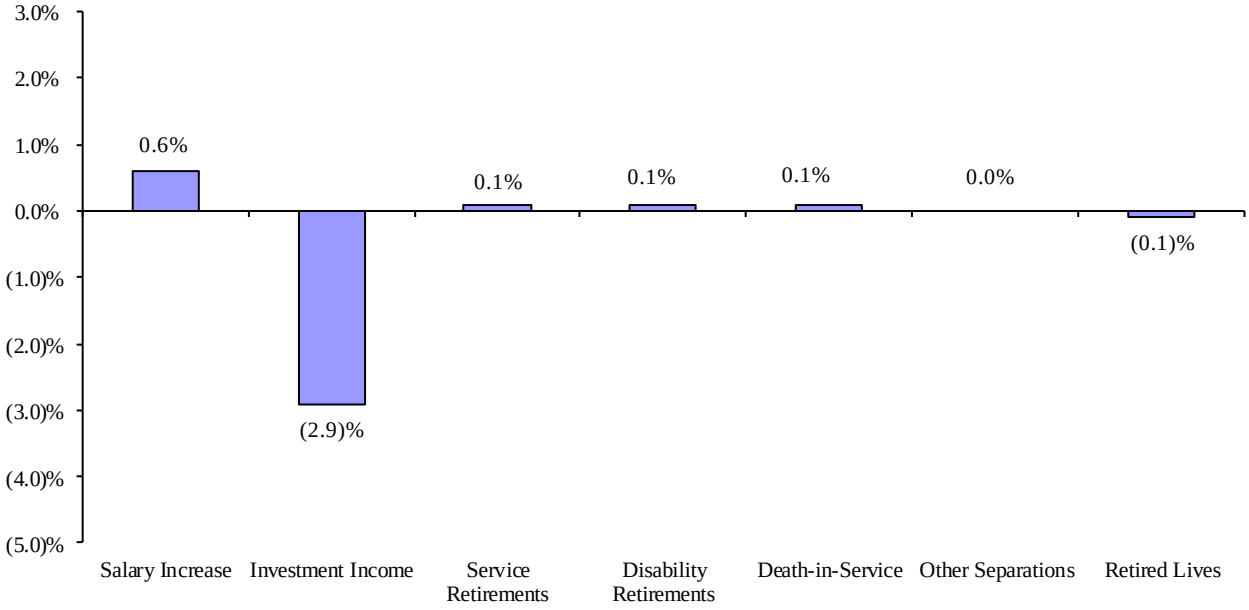
Gain (Loss) Analysis
2012-2013 Experience

Amount in $ Millions



Type of Risk Area

% of Actuarial Accrued Liabilities



Type of Risk Area

Experience Gains & Losses by Risk Area

Comparative Statement

-------$ in Millions-------

Year Ending June 30	Gain (Loss) By Risk Area									Total Exper. Gain (Loss)	Exper. Gain (Loss) as % of AAL	Accrued Liability Beginning of Year
	Salary Increases	Investments	Age & Service Retirement	Disability	Death-In-Service	Withdrawal	Retired Lives&	COLAs	Other			
1992 *	$ 79.8	$ 19.9	$ (1.8)	$0.6	$ 1.6	$ (5.5)	#		$ (8.0)	$ 86.6	4.0 %	$ 2,165
1993	66.8	54.0	(0.9)	0.8	2.4	(3.9)	#		(27.0)	92.2	4.0	2,292
1994	42.5	(18.1)	(1.0)	0.7	2.3	(7.0)	#		52.0	71.4	2.9	2,447
1995	16.7	12.0	(3.2)	0.5	2.5	(4.0)	#		(7.5)	17.0	0.6	2,919
1996	24.2	63.7	(2.1)	0.6	2.9	(10.2)	$7.40		(74.3) ^	12.2	0.4	3,151
1997 *	(26.3)	260.3	(3.1)	0.5	2.6	(7.1)	14.5		(50.6)	190.8	5.5	3,440
1998	(56.9)	325.9	9.6	0.2	(0.3)	(1.7)	16.3		(48.3)	244.8	5.5	4,484
1999	(21.9)	299.8	(1.3)	(0.3)	(0.9)	1.7	10.5		(58.1)	229.5	4.7	4,919
2000 *	(6.4)	162.0	1.7	(0.5)	(0.7)	8.9	18.5		(34.7)	148.8	2.7	5,506
2001 *	(23.2)	(67.9)	(59.8)	(1.0)	(0.2)	(28.2)	(13.1)		(66.1)	(259.5)	(4.4)	5,921
2002	115.0	(284.6)	(14.4)	(0.5)	(1.3)	(21.4)	37.1		(62.6)	(232.8)	(3.8)	6,065
2003	7.7	(314.1)	(27.2)	(0.6)	(2.6)	(14.6)	9.6		(63.1)	(404.9)	(6.5)	6,294
2004 *	(40.0)	(240.1)	(51.5)	(1.4)	(1.3)	(6.7)	(4.3)		(53.8)	(399.1)	(6.0)	6,662
2005	(3.4)	(196.6)	3.1	(2.0)	(1.7)	(0.9)	(11.7)		(35.5)	(248.7)	(3.4)	7,230
2006	(29.5)	38.0	(1.7)	(2.3)	(2.4)	15.5	(21.1)		(3.6)	(7.1)	(0.1)	7,578
2007	(11.5)	179.4	(17.3)	(2.1)	(2.4)	3.8	(29.7)		(43.0)	77.2	1.0	8,013
2008 *	(10.5)	78.3	(22.9)	(2.0)	(3.4)	6.6	8.7		(49.8)	5.0	0.1	8,500
2009 *	(15.9)	(354.3)	8.8	(1.5)	0.0	(31.3)	(39.8)		(37.6)	(471.6)	(5.2)	9,128
2010	23.2	(313.6)	(19.0)	8.4	8.0	(30.6)	4.7		(56.9)	(375.8)	(3.9)	9,495
2011	49.6	(204.0)	(52.8)	10.8	7.5	(21.0)	32.7		(60.4)	(237.6)	(2.4)	9,853
2012 *	12.3	(447.2)	(24.3)	8.3	8.9	8.1	10.3		(53.6)	(477.2)	(4.7)	10,124
2013 **	**60.4**	**(313.7)**	**6.7**	**11.1**	**7.4**	**2.0**	**(7.7)**	**(3.1)**	**(70.4)**	**(307.3)**	**(2.8)**	**10,794**

** Revision in assumptions.*

*** Revision in asset valuation method.*

 # Not identified as separate risk area. Included in "Other" category.

^ Includes ($23.0) for legal settlement.

& Prior to the 2013 valuation, this amount included COLAs.

Development of Gain (Loss) from Investment Income During Plan Year 2012 - 2013

	Market Value	Actuarial Value
	- - - - - - $ in millions - - - - - -	
1. Assets at June 30, 2012	$7,581.9	$ 7,897.2
2. Contributions and Transfers In	290.3	290.3
3. Investment Income	778.5	565.7
4. Benefit Payments	649.2	649.2
5. Administrative Expenses	7.6	7.6
6. Assets at June 30, 2013 = (1) + (2) + (3) – (4) – (5)	7,993.8	8,096.4
7. Actual Investment Increment/Mean Assets*	10.52 %	7.33 %
8. Expected Investment Increment		8.0 %
9. Investment Gain (Loss):		
a. As a % of mean assets: (7) – (8)		(0.67) %
b. $ in millions		$ (51.3)

* *Based on the approximation formula: I/[.5 x (A+B-I)], where*

I = Investment increment
A = Beginning of year asset value
B = End of year asset value

Salary Increases
to Members Active Both at Beginning & End of Year
During Plan Year 2012 - 2013

Age Groups		Salary Increases	
		Actual*	Expected
Below 20			
20- 24	784	8.6%	6.3%
25- 29	3,014	5.9%	5.6%
30- 34	4,424	4.5%	4.9%
35- 39	4,651	4.2%	4.4%
40- 44	5,797	3.4%	4.1%
45- 49	6,561	3.1%	3.8%
50- 54	7,529	2.7%	3.6%
55- 59	6,566	2.4%	3.5%
60-64	4,169	2.1%	3.4%
65 & Over	1,491	2.8%	3.3%
Total	**44,986**		
Average		**3.2%**	**4.0%**

** Excludes new entrants and terminations.*

Assumed Payroll Growth**	Actual Payroll Growth		
	2013	2012	2011
3.0%	0.9%	(0.6)%	(3.6)%

*** Prior to 2012, assumed payroll growth was 4.0%.*

Active Members Who Retired With SERVICE OR REDUCED SERVICE RETIREMENT BENEFITS During Plan Year 2012 - 2013

Ages	Men		Women		Total	
	Actual	Expected	Actual	Expected	Actual	Expected
Under 50	6	0.4	8	2.1	14	2.5
50	1	2.5	11	8.4	12	10.9
51	3	4.1	13	18.6	16	22.7
52	18	13.0	44	31.4	62	44.4
53	12	15.6	29	33.0	41	48.6
54	9	18.5	40	39.7	49	58.2
55	36	30.4	47	53.7	83	84.1
56	29	33.3	63	53.2	92	86.4
57	40	42.1	69	67.8	109	109.9
58	37	45.2	57	64.2	94	109.5
59	48	43.6	46	58.3	94	102.0
60	43	49.6	68	63.5	111	113.1
61	30	50.5	65	67.0	95	117.5
62	86	85.6	91	122.7	177	208.3
63	60	63.8	71	95.8	131	159.6
64	35	44.3	63	59.4	98	103.7
65	56	58.1	78	76.9	134	135.0
66	67	55.5	74	63.1	141	118.7
67	31	25.0	40	27.7	71	52.7
68	27	19.1	27	18.8	54	37.9
69	16	12.9	14	16.6	30	29.5
70 & Over	49	69.0	58	51.8	107	120.9
Totals	**739**	**782.3**	**1,076**	**1,093.8**	**1,815**	**1,876.1**

	Men	Women	Total
Average age at retirement	62.4 years	62.1 years	61.8 years
Average service at retirement	21.0 years	21.7 years	21.4 years

Active Members Who Retired with DISABILITY BENEFITS During Plan Year 2012 - 2013

Ages	Men		Women		Total	
	Actual	Expected	Actual	Expected	Actual	Expected
Under 25		0.7	3.0	2.1	3.0	2.8
25- 29		2.7	4	6.5	4	9.3
30- 34	3	3.8	1	9.3	4	13.1
35- 39	8	4.5	11	9.7	19	14.2
40- 44	7	7.1	17	13.7	24	20.8
45- 49	12	10.6	23	20.4	35	31.0
50- 54	18	18.5	27	30.1	45	48.7
55- 59	21	25.6	17	34.4	38	60.1
60 & Over	6	13.0	12	17.5	18	30.5
Totals	**75**	**86.5**	**115**	**143.8**	**190**	**230.3**

	Men	Women	Total
Average age at disability	50.6 years	48.6 years	49.4 years
Average service at disability	9.5 years	9.5 years	9.5 years

Active Members Who Died
During Plan Year 2012 - 2013

Ages	Men		Women		Total	
	Actual	Expected	Actual	Expected	Actual	Expected
Under 30	-	0	-	0	-	0
30- 34	-	0	1	0	1	1
35- 39	2	1	2	1	4	1
40- 44	2	1	5	1	7	3
45- 49	2	2	8	2	10	4
50- 54	13	4	8	4	21	8
55- 59	11	6	5	7	16	13
60- 64	3	9	7	9	10	17
65 & Over	6	9	4	7	10	16
Totals	**39**	**32.5**	**40**	**30.9**	**79**	**63.4**

	Men	Women	Total
Average age at death	56.0 years	52.5 years	54.3 years
Average service at death	14.2 years	11.9 years	13.0 years

Of the 79 active members who died in service during plan year 2012-2013, 33 members had a benefit payable to a survivor.

Active Members Who Left Active Status with a DEFERRED BENEFIT (Retirement with Monthly Payments Beginning at Later Age) During Plan Year 2012 - 2013

Ages	Men		Women		Total	
	Actual	Expected	Actual	Expected	Actual	Expected
Under 30	47	47.5	75	73.7	122	121.2
30- 34	85	109.4	186	179.4	271	288.8
35- 39	104	102.5	176	177.1	280	279.6
40- 44	98	97.9	174	171.2	272	269.1
45- 49	95	83.2	168	142.2	263	225.4
50- 54	76	74.0	170	114.9	246	188.9
55- 59	37	51.7	73	84.4	110	136.0
60 & Over	15	15.7	28	24.4	43	40.0
Totals	**557**	**581.8**	**1,050**	**967.3**	**1,607**	**1,549.2**

	Men	Women	Total
Average age at termination	42.6 years	42.8 years	42.7 years
Average service at termination	9.9 years	9.8 years	9.9 years

Active Members Who Left Active Status with NO BENEFIT PAYABLE (Other than Deaths) During Plan Year 2012 - 2013

Ages	Men		Women		Total	
	Actual	Expected	Actual	Expected	Actual	Expected
Under 20						
20- 24	136	83.7	216	142.1	352	225.8
25- 29	325	209.6	382	289.5	707	499.1
30- 34	171	143.5	290	213.7	461	357.2
35- 39	102	90.7	179	145.7	281	236.4
40- 44	102	83.9	162	140.1	264	224.0
45- 49	77	72.7	123	126.1	200	198.8
50- 54	56	63.3	116	121.5	172	184.8
55- 59	56	61.6	56	87.6	112	149.2
60- 64	33	40.2	39	45.7	72	85.9
65- 69	13	13.8	11	10.8	24	24.6
70 & Over	4	3.5	6	3.5	10	7.0
Totals	**1,075**	**866.5**	**1,580**	**1,326.3**	**2,655**	**2,192.8**

	Men	Women	Total
Average age at termination	36.1 years	36.1 years	36.1 years
Average service at termination	1.8 years	1.8 years	1.8 years

Service at Termination	Men		Women		Total	
	Actual	Expected	Actual	Expected	Actual	Expected
0	453	355.9	719	633.6	1,172	989.5
1	245	218.8	314	324.5	559	543.3
2	152	133.0	206	166.9	358	299.9
3	146	144.4	188	187.6	334	332.0
4	79	14.4	153	13.7	232	28.1
5 & Over	-	-	-	-	-	-
Totals	**1,075**	**866.5**	**1,580**	**1,326.3**	**2,655**	**2,192.8**

Comparison of Actual to Expected Deaths
Among Retired Lives
(Service Retirement Only)
As of June 30, 2013

	Male Deaths			Female Deaths			Total Deaths		
Age	**Actual**	**Expected**	**Exposure**	**Actual**	**Expected**	**Exposure**	**Actual**	**Expected**	**Exposure**
50-54			200	1		500	1		700
55-59	14	6	1,506	14	9	2,627	28	15	4,133
60-64	41	24	3,364	45	32	4,990	86	56	8,354
65-69	55	40	3,073	64	49	4,323	119	89	7,396
70-74	51	43	2,013	59	56	3,013	110	99	5,026
75-79	67	51	1,332	66	63	2,054	133	114	3,386
80-84	60	56	807	95	70	1,397	155	126	2,204
85-89	43	47	394	94	75	873	137	122	1,267
90-94	29	21	107	77	49	343	106	70	450
95-99	7	6	21	20	18	91	27	24	112
100 & Up		1	2	3	2	7	3	3	9
Totals	**367**	**295**	**12,819**	**538**	**423**	**20,218**	**905**	**718**	**33,037**
Average Ages	**75.9**	**77.4**	**67.9**	**79.1**	**78.9**	**68.4**	**77.8**	**78.3**	**68.2**

SECTION C
FUND ASSETS

Development of Actuarial Value of Assets
Old Method

Valuation Date:	2011	2012	2013	2014	2015	2016	2017
A. Actuarial Value Beginning of Year	$7,923,377,393	$8,022,481,408	$7,897,167,203				
B. Market Value End of Year	7,768,709,373	7,581,882,309	7,993,837,570				
C. Market Value Beginning of Year	6,727,623,355	7,768,709,373	7,581,882,309				
D. Cash Flow							
D1. Contributions (Employer and Member)	266,974,608	273,873,747	290,275,917				
D2. Benefit Payments	(615,170,782)	(612,234,340)	(649,242,314)				
D3. Administrative Expenses	(7,054,581)	(7,017,057)	(7,575,883)				
D4. Net	(355,250,755)	(345,377,650)	(366,542,280)				
E. Investment Income							
E1. Market Total: B - C - D4	1,396,336,773	158,550,586	778,497,541				
E2. Assumed Rate	8.5%	8.5%	8.0%				
E3. Amount for Immediate Recognition: E2*(A+D4*.5)	658,388,921	667,232,370	617,111,685				
E4. Amount for Phased-In Recognition: E1 - E3	737,947,852	(508,681,784)	161,385,856				
F. Phased-In Recognition of Investment Income							
F1. Current Year: 0.2 * E4	147,589,570	(101,736,357)	32,277,171				
F2. First Prior Year	40,730,349	147,589,570	(101,736,357)	$ 32,277,171			
F3. Second Prior Year	(432,568,879)	40,730,349	147,589,570	(101,736,357)	$ 32,277,171		
F4. Third Prior Year	(101,183,608)	(432,568,879)	40,730,349	147,589,570	(101,736,357)	$ 32,277,171	
F5. Fourth Prior Year	141,398,417	(101,183,608)	(432,568,879)	40,730,349	147,589,572	(101,736,352)	$ 32,277,170
F6. Total Recognized Investment Gain: Sum(F1:F5)	(204,034,151)	(447,168,925)	(313,708,146)	118,860,733	78,130,386	(69,459,181)	32,277,170
G. Adjustment	-	-	-				
H. Actuarial Value End of Year:							
H1. Preliminary Value: A + D4 + E3 + F6 + G	$8,022,481,408	$7,897,167,203	$7,834,028,462				
H2. Corridor Percent	20%	20%	20%				
H3. Upper Corridor Limit: (100% + H2) x B	9,322,451,248	9,098,258,771	9,592,605,084				
H4. Lower Corridor Limit: (100% - H2) x B	6,214,967,498	6,065,505,847	6,395,070,056				
H5. Corridor Adjustment	0	0	0				
H6. Funding Value End of Year: H1 + H5	8,022,481,408	7,897,167,203	7,834,028,462				
I. Difference Between Market & Actuarial Values: B-H6	(253,772,035)	(315,284,894)	159,809,108	40,948,375	(37,182,011)	32,277,170	-
J. Recognized Rate of Return	5.87%	2.80%	3.93%				
K. Market Value Rate of Return	21.32%	2.09%	10.52%				
L. Actuarial Value as a % of Market Value: H6 / B	103%	104%	98%				

The actuarial value of assets recognizes assumed investment income (line E3) fully each year. Differences between actual and assumed investment income (line E4) are phased-in over a closed 5-year period. During periods when investment performance exceeds the assumed rate, the actuarial value of assets will tend to be less than market value. During periods when investment performance is less than assumed, the actuarial value will tend to be greater than market value. If assumed rates are exactly realized on the actuarial value for four consecutive years, the actuarial value will become equal to market value.

Development of Actuarial Value of Assets
New Method

Valuation Date: June 30	2013
A. Actuarial value at beginning of year	$ 7,897,167,203
B. Market value at end of year	7,993,837,570
C. Market value at beginning of year	7,581,882,309
D. Cash flow	
D1. Contributions	290,275,917
D2. Benefit payments	(649,242,314)
D3. Administrative expenses	(7,575,883)
D4. Net	(366,542,280)
E. Investment income	
E1. Market total (B-C-D4)	778,497,541
E2. Assumed rate	8.00%
E3. Amount for immediate recognition (A + .5 * D4) * E2	617,111,685
E4. Amount for phased-in recognition (E1 - E3)	161,385,856
F. Unrecognized gains/(losses) from prior years	(315,284,894)
G. Phased in recognition of investment income (E4 + F) / 3	(51,299,679)
H. End of year adjustment	-
I. Actuarial value at end of year	
I1. Preliminary Value (A + D4 + E3 + F + G + H)	8,096,436,929
I2. Upper Corridor Limit: 125% x B	9,992,296,963
I3. Lower Corridor Limit: 80% x B	6,395,070,056
I4. Corridor Adjustment	-
I5. Funding Value End of Year: I1 + I4	**8,096,436,929**
J. Difference between market and actuarial values (B - I5)	(102,599,359)
K. Recognized rate of return	7.33%
L. Market value rate of return	10.52%
M. Actuarial value as a % of market value: I5 / B	101%

The actuarial value of assets recognizes assumed investment income (line E3) fully each year. Differences between actual and assumed investment income (line E4) are phased-in over an open 3-year period. During periods when investment performance exceeds the assumed rate, the actuarial value of assets will tend to be less than market value. During periods when investment performance is less than assumed, the actuarial value will tend to be greater than market value.

Asset Summary

June 30, 2013

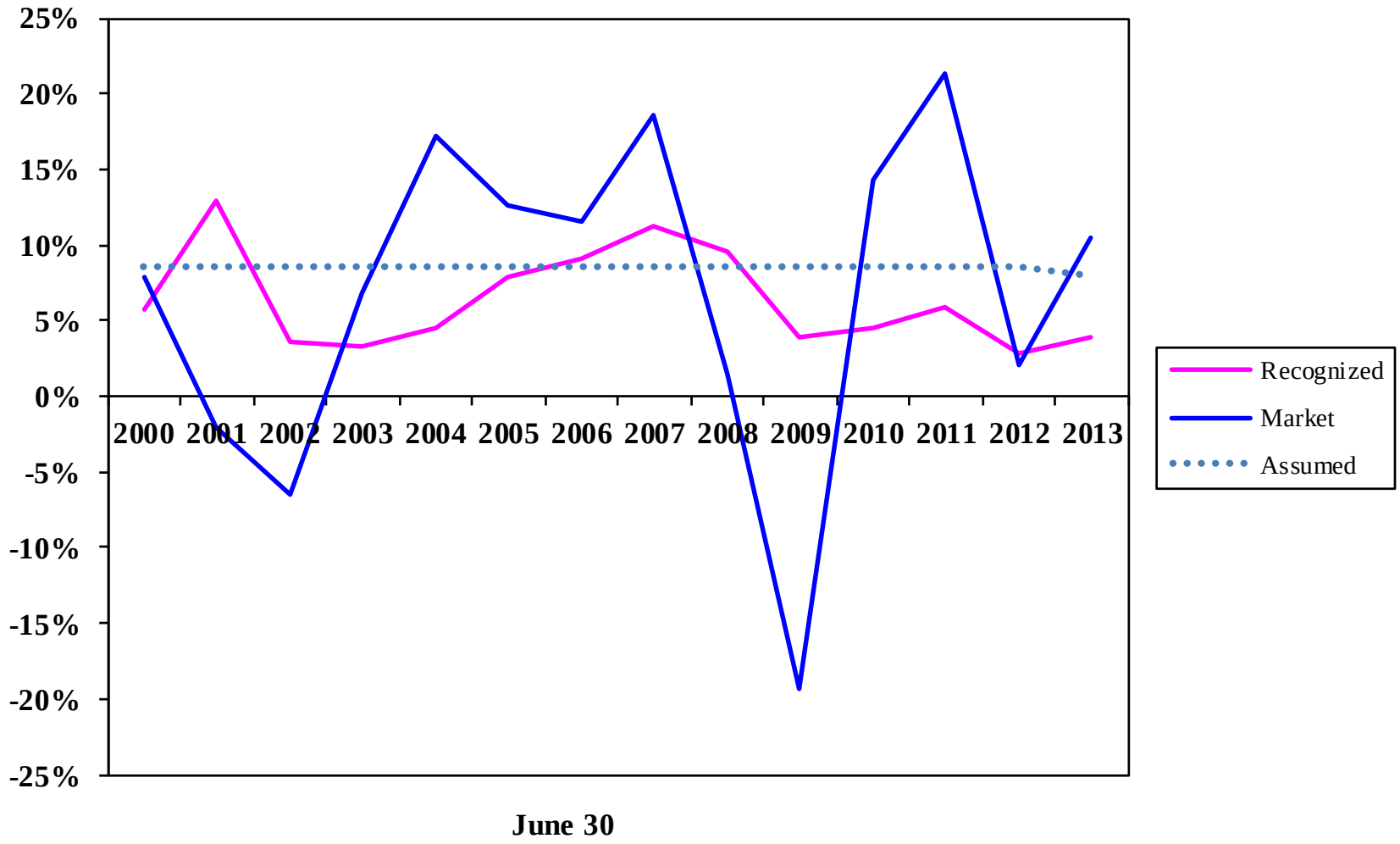
	Market Value	Actuarial Value
1. Assets at June 30, 2012	$7,581,882,309	$7,897,167,203
2. Contributions and Transfers In	290,275,917	290,275,917
3. Investment Increment*	778,497,541	565,812,006
4. Benefit Payments and Transfers Out	649,242,314	649,242,314
5. Administrative and Misc. Expenses	7,575,883	7,575,883
6. Assets at June 30, 2013 (1) + (2) + (3) - (4) - (5)	$7,993,837,570	8,096,436,929
7. Investment Increment/Mean Assets**	10.52%	7.33%

* *Net of investment expenses.*

** *Based on the approximation formula: I /[.5 x (A+B-I)], where*

I = Investment Increment
A = Beginning of year asset value
B = End of year asset value

Recognized vs. Market Returns



The period of asset smoothing was changed from 3 to 5 years effective June 30, 2001.

SECTION D
PROJECTIONS

The Nature of Actuarial Projections

Regular actuarial valuations measure the Retirement System's present financial position and contributions adequacy by calculating and financing the liabilities created by the present benefit program. This process involves discounting to present values the future benefit payments on behalf of present active and retired members and their survivors. However, valuations do not produce information regarding future changes in the makeup of the covered group or the amounts of benefits to be paid or investment income to be received--actuarial projections do.

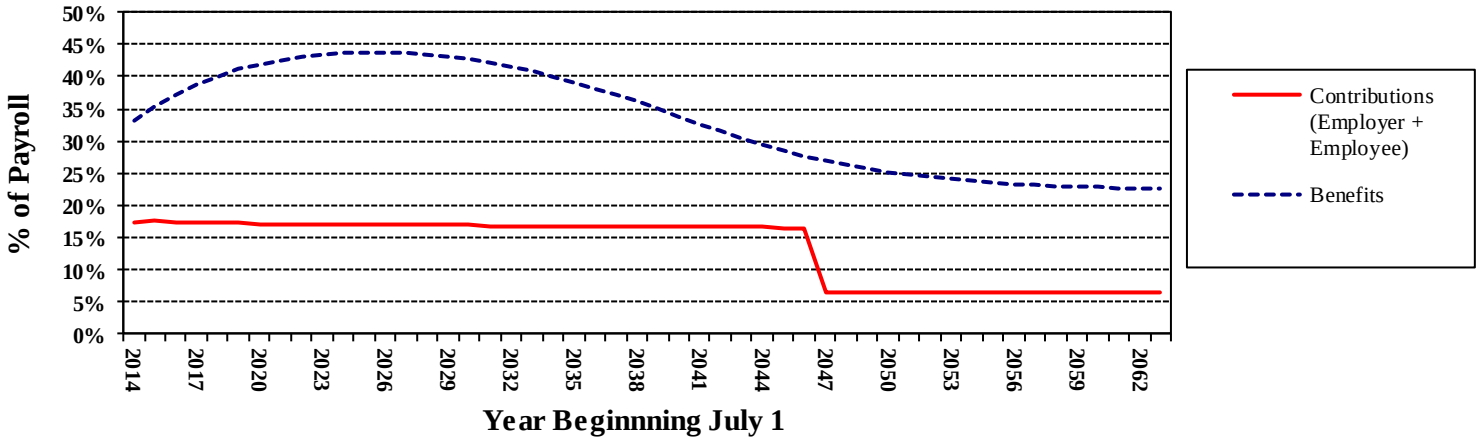
Whereas valuations provide a snapshot of the retirement system as of a given date, projections provide a moving picture. Projected active and retired groups are developed from year to year by the application of assumptions regarding pre-retirement withdrawal from service, retirements, deaths, disabilities, and the addition of new members. Projected information regarding the retired life group leads to assumed future benefit payout. Combining future benefit payments with assumed contributions and expected investment earnings produces the net cash flow of the System each year, and thus end of year asset levels.

Projections are used for many purposes. Among them are (i) developing cash flow patterns for investment policy and asset mix consideration, (ii) exploring the effect of alternative assumptions about future experience, (iii) analyzing the impact on system funding progress of changes in the workforce, and (iv) examining the potential effect of changes in benefits on system financial activity.

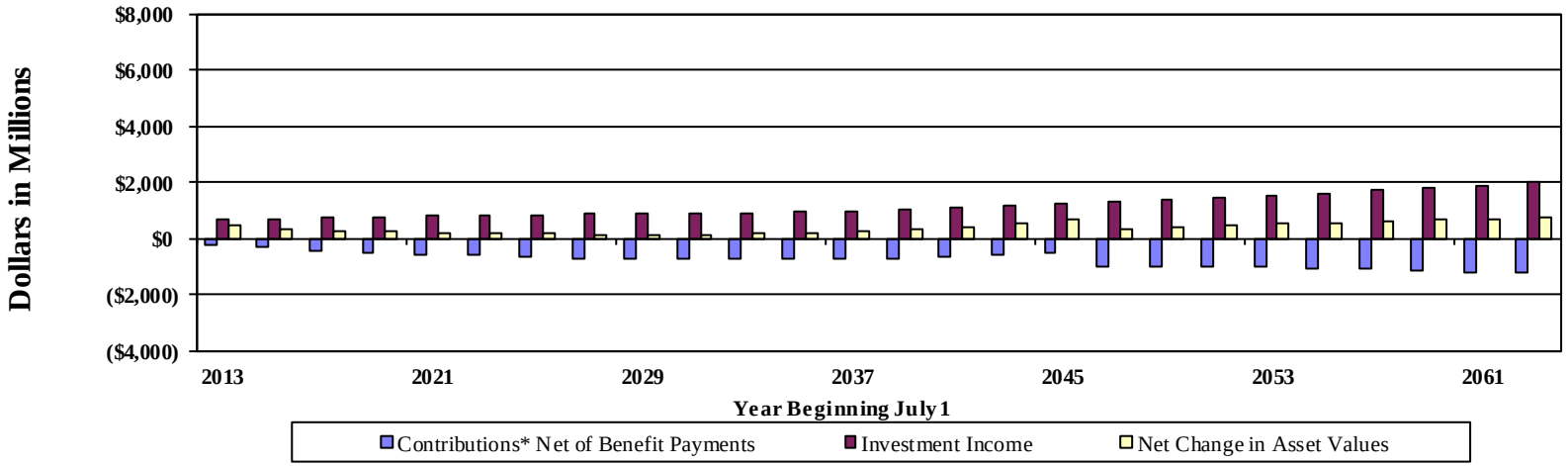
Projection results are useful in demonstrating changing relationships among key elements affecting system financial activity. For example: how benefits payable and system assets will grow in future decades. Projections are not predictions of specific future events and do not provide numeric precision in absolute terms. For instance, cash flow projected to occur 10 years in the future will not be exact (except by coincidence), but understanding the changed relationships between future benefit payout and future investment income can be very useful.

50-Year Cash Flow Projection Based on Valuation Assumptions

Projected Contributions* and Benefits Expressed as Percents of Active Member Payroll



Net Change in Asset Values



** Does not include contributions for administrative expenses. Includes member contributions.*

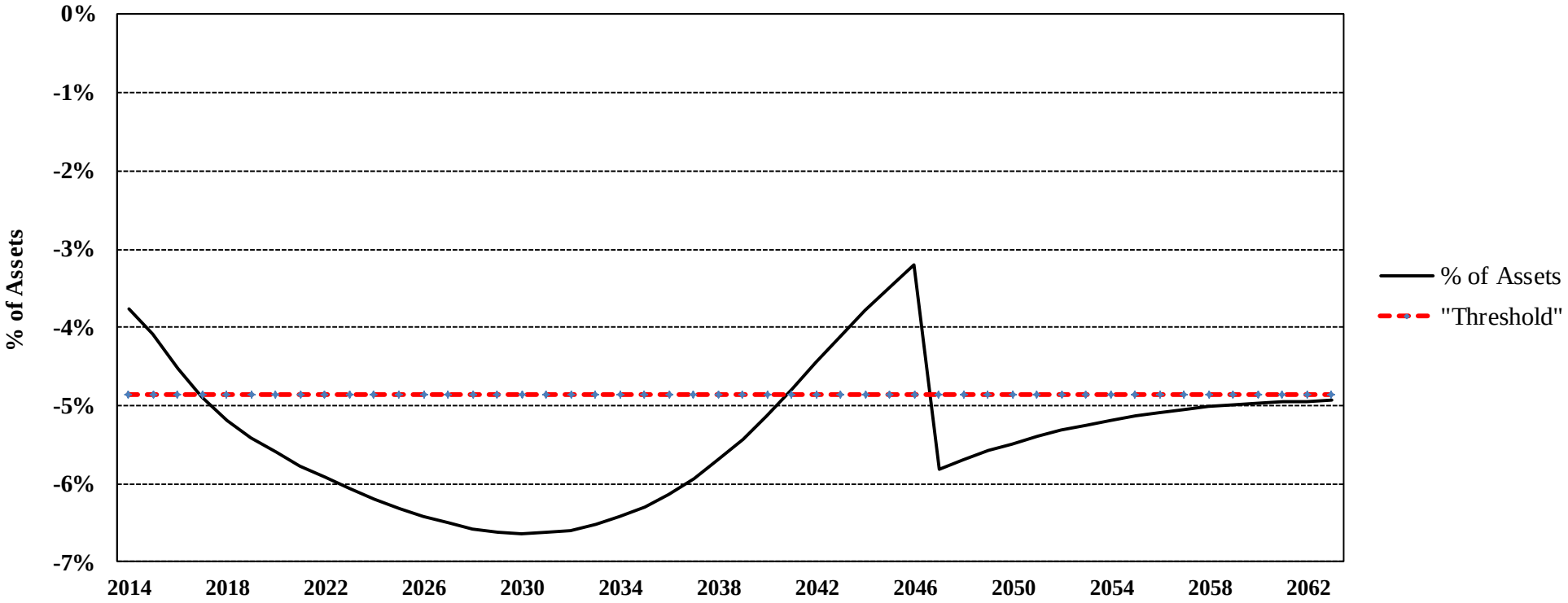
Fifty-Year Cash Flow Projection (in Thousands)

Year Ended June 30	Assets BOY	Contributions* Normal	Contributions* UAAL	Contributions* Total	Benefits	Investment Income	Assets EOY Inflated	Assets EOY 2014 $
2014	$ 8,096,437	$ 150,642	$ 184,324	$ 334,966	$ 639,846	$ 635,520	$ 8,427,077	$8,427,077
2015	8,427,077	151,231	195,839	347,070	690,921	660,411	8,743,637	8,488,968
2016	8,743,637	152,254	198,601	350,855	745,872	683,691	9,032,311	8,513,819
2017	9,032,311	153,652	201,402	355,054	797,210	704,899	9,295,054	8,506,291
2018	9,295,054	155,377	207,444	362,821	844,349	724,344	9,537,870	8,474,274
2019	9,537,870	157,355	213,668	371,023	888,051	742,348	9,763,190	8,421,814
2020	9,763,190	159,704	220,078	379,782	926,376	759,192	9,975,788	8,354,565
2021	9,975,788	162,313	226,680	388,993	964,362	775,049	10,175,468	8,273,587
2022	10,175,468	165,159	233,481	398,640	1,000,824	789,950	10,363,234	8,180,832
2023	10,363,234	168,275	240,485	408,760	1,037,039	803,927	10,538,882	8,077,176
2024	10,538,882	171,629	247,699	419,328	1,072,729	816,976	10,702,457	7,963,633
2025	10,702,457	175,174	255,130	430,304	1,107,207	829,121	10,854,675	7,841,648
2026	10,854,675	178,947	262,784	441,731	1,138,992	840,484	10,997,898	7,713,704
2027	10,997,898	182,963	270,668	453,631	1,169,018	851,216	11,133,727	7,581,527
2028	11,133,727	187,220	278,788	466,008	1,197,744	861,428	11,263,419	7,446,447
2029	11,263,419	191,725	287,152	478,877	1,223,573	871,287	11,390,010	7,310,814
2030	11,390,010	196,456	295,766	492,222	1,247,657	880,983	11,515,558	7,176,115
2031	11,515,558	201,450	304,639	506,089	1,269,120	890,724	11,643,251	7,044,358
2032	11,643,251	206,670	313,778	520,448	1,287,861	900,764	11,776,602	6,917,512
2033	11,776,602	212,134	323,192	535,326	1,303,686	911,393	11,919,635	6,797,601
2034	11,919,635	217,852	332,887	550,739	1,316,701	922,933	12,076,606	6,686,524
2035	12,076,606	223,809	342,874	566,683	1,326,733	935,727	12,252,283	6,586,206
2036	12,252,283	230,065	353,160	583,225	1,333,912	950,155	12,451,751	6,498,475
2037	12,451,751	236,588	363,755	600,343	1,339,400	966,577	12,679,271	6,424,482
2038	12,679,271	243,406	374,668	618,074	1,341,018	985,424	12,941,751	6,366,484
2039	12,941,751	250,511	385,908	636,419	1,339,372	1,007,222	13,246,020	6,326,373
2040	13,246,020	257,894	397,485	655,379	1,334,744	1,032,507	13,599,162	6,305,860
2041	13,599,162	265,538	409,410	674,948	1,327,458	1,061,832	14,008,484	6,306,466
2042	14,008,484	273,428	421,692	695,120	1,319,047	1,095,722	14,480,279	6,328,994
2043	14,480,279	281,553	434,343	715,896	1,311,301	1,134,606	15,019,480	6,373,462
2044	15,019,480	289,894	447,373	737,267	1,305,040	1,178,848	15,630,555	6,439,582
2045	15,630,555	298,457	460,794	759,251	1,302,305	1,228,722	16,316,223	6,526,280
2046	16,316,223	307,266	474,618	781,884	1,303,534	1,284,432	17,079,005	6,632,410
2047	17,079,005	316,340	0	316,340	1,308,381	1,326,639	17,413,603	6,565,386
2048	17,413,603	325,700	0	325,700	1,316,589	1,353,454	17,776,168	6,506,876
2049	17,776,168	335,345	0	335,345	1,327,596	1,382,403	18,166,320	6,456,008
2050	18,166,320	345,292	0	345,292	1,341,513	1,413,457	18,583,556	6,411,929
2051	18,583,556	355,552	0	355,552	1,358,115	1,446,582	19,027,575	6,373,913
2052	19,027,575	366,136	0	366,136	1,377,425	1,481,754	19,498,040	6,341,273
2053	19,498,040	377,052	0	377,052	1,399,635	1,518,940	19,994,397	6,313,302
2054	19,994,397	388,310	0	388,310	1,424,700	1,558,096	20,516,103	6,289,352
2055	20,516,103	399,918	0	399,918	1,452,608	1,599,181	21,062,594	6,268,818
2056	21,062,594	411,883	0	411,883	1,483,244	1,642,153	21,633,386	6,251,167
2057	21,633,386	424,216	0	424,216	1,516,575	1,686,978	22,228,005	6,235,910
2058	22,228,005	436,926	0	436,926	1,552,451	1,733,618	22,846,098	6,222,632
2059	22,846,098	450,021	0	450,021	1,590,659	1,782,063	23,487,523	6,211,008
2060	23,487,523	463,515	0	463,515	1,631,139	1,832,297	24,152,196	6,200,751
2061	24,152,196	477,417	0	477,417	1,673,893	1,884,317	24,840,037	6,191,597
2062	24,840,037	491,740	0	491,740	1,718,729	1,938,124	25,551,172	6,183,353
2063	25,551,172	506,496	0	506,496	1,765,610	1,993,729	26,285,787	6,175,853

** Does not include contributions for administrative expenses. Includes member contributions.*

50-Year Cash Flow Projection

Projected Net External Cash Flow Expressed as a Percent of Assets



Net External Cash Flow equals: i) Contributions to the plan, less ii) Benefits paid by the plan. A negative Net External Cash Flow means that benefits are being partly funded by investment income --- a natural consequence of advance funding.

Fifty-Year Cash Flow Projection
Analysis of Projected Net Cash Flow (In Thousands)

Year Ended	External Cash Flow		Net External Cash Flow		Year Ended	External Cash Flow		Net External Cash Flow	
June 30	Inflow*	Outflow	$	% of Assets	June 30	Inflow*	Outflow	$	% of Assets
2014	$ 334,966	$ 639,846	$ (304,880)	(3.77)%	2039	$ 636,419	$ 1,339,372	$ (702,953)	(5.43)%
2015	347,070	690,921	(343,851)	(4.08)%	2040	655,379	1,334,744	(679,365)	(5.13)%
2016	350,855	745,872	(395,017)	(4.52)%	2041	674,948	1,327,458	(652,510)	(4.80)%
2017	355,054	797,210	(442,156)	(4.90)%	2042	695,120	1,319,047	(623,927)	(4.45)%
2018	362,821	844,349	(481,528)	(5.18)%	2043	715,896	1,311,301	(595,405)	(4.11)%
2019	371,023	888,051	(517,028)	(5.42)%	2044	737,267	1,305,040	(567,773)	(3.78)%
2020	379,782	926,376	(546,594)	(5.60)%	2045	759,251	1,302,305	(543,054)	(3.47)%
2021	388,993	964,362	(575,369)	(5.77)%	2046	781,884	1,303,534	(521,650)	(3.20)%
2022	398,640	1,000,824	(602,184)	(5.92)%	2047	316,340	1,308,381	(992,041)	(5.81)%
2023	408,760	1,037,039	(628,279)	(6.06)%	2048	325,700	1,316,589	(990,889)	(5.69)%
2024	419,328	1,072,729	(653,401)	(6.20)%	2049	335,345	1,327,596	(992,251)	(5.58)%
2025	430,304	1,107,207	(676,903)	(6.32)%	2050	345,292	1,341,513	(996,221)	(5.48)%
2026	441,731	1,138,992	(697,261)	(6.42)%	2051	355,552	1,358,115	(1,002,563)	(5.39)%
2027	453,631	1,169,018	(715,387)	(6.50)%	2052	366,136	1,377,425	(1,011,289)	(5.31)%
2028	466,008	1,197,744	(731,736)	(6.57)%	2053	377,052	1,399,635	(1,022,583)	(5.24)%
2029	478,877	1,223,573	(744,696)	(6.61)%	2054	388,310	1,424,700	(1,036,390)	(5.18)%
2030	492,222	1,247,657	(755,435)	(6.63)%	2055	399,918	1,452,608	(1,052,690)	(5.13)%
2031	506,089	1,269,120	(763,031)	(6.63)%	2056	411,883	1,483,244	(1,071,361)	(5.09)%
2032	520,448	1,287,861	(767,413)	(6.59)%	2057	424,216	1,516,575	(1,092,359)	(5.05)%
2033	535,326	1,303,686	(768,360)	(6.52)%	2058	436,926	1,552,451	(1,115,525)	(5.02)%
2034	550,739	1,316,701	(765,962)	(6.43)%	2059	450,021	1,590,659	(1,140,638)	(4.99)%
2035	566,683	1,326,733	(760,050)	(6.29)%	2060	463,515	1,631,139	(1,167,624)	(4.97)%
2036	583,225	1,333,912	(750,687)	(6.13)%	2061	477,417	1,673,893	(1,196,476)	(4.95)%
2037	600,343	1,339,400	(739,057)	(5.94)%	2062	491,740	1,718,729	(1,226,989)	(4.94)%
2038	618,074	1,341,018	(722,944)	(5.70)%	2063	506,496	1,765,610	(1,259,114)	(4.93)%

** Does not include contributions for administrative expenses.*

The portion of investment income needed to pay benefits (the negative external cash flow) increases gradually and begins to level off at the end of the amortization of the unfunded accrued liabilities. After this period, it then approaches the assumed rate of 4.85% (1.08/1.03, minus 1). The remainder of the expected investment income is needed to preserve the purchasing power of the trust fund.

SECTION E
ACCOUNTING DISCLOSURES

This information is presented in draft form for review by the System's auditor. Please let us know if there are any items the auditor changes so that we may maintain consistency with the System's financial statements.

Schedule of Funding Progress

Plan Year Ended	(1) Actuarial Value of Assets	(2) Actuarial Accrued Liability (AAL) Entry Age	(3) Percent Funded (1) / (2)	(4) Unfunded AAL (2) - (1)	(5) Annual Covered Payroll	(6) Unfunded AAL as a Percentage of Covered Payroll (4) / (5)
6/30/1998	$ 4,210,635,094	$ 4,918,887,183	85.6 %	$ 708,252,089	$ 1,459,712,203	48.5 %
6/30/1999 #	4,908,820,033	5,505,968,629	89.2	597,148,596	1,564,551,532	38.2
6/30/2000 *	5,216,897,196	5,920,684,192	88.1	703,786,996	1,683,697,080	41.8
6/30/2001 *@	5,881,232,850	6,065,166,716	97.0	183,933,866	1,758,190,269	10.5
6/30/2002 &	6,033,133,598	6,294,272,275	95.9	261,138,677	1,773,283,484	14.7
6/30/2003 # &	6,057,329,072	6,662,291,406	90.9	604,962,334	1,739,895,364	34.8
6/30/2004 *	6,118,214,495	7,230,010,928	84.6	1,111,796,433	1,737,454,454	64.0
6/30/2005 &@	6,435,344,102	7,578,028,017	84.9	1,142,683,915	1,806,600,560	63.3
6/30/2006	6,836,567,188	8,013,205,414	85.3	1,176,638,226	1,777,277,138	66.2
6/30/2007	7,377,289,283	8,500,428,641	86.8	1,123,139,358	1,846,643,330	60.8
6/30/2008 *	7,838,495,768	9,128,347,470	85.9	1,289,851,702	1,916,527,398	67.3
6/30/2009 *@	7,876,079,342	9,494,806,715	83.0	1,618,727,373	2,002,402,087	80.8
6/30/2010 *#	7,923,377,393	9,853,155,445	80.4	1,929,778,052	1,945,095,321	99.2
6/30/2011 *	8,022,481,408	10,123,544,043	79.2	2,101,062,635	1,875,569,816	112.0
6/30/2012 *	7,897,167,203	10,793,651,577	73.2	2,896,484,374	1,864,069,493	155.4
6/30/2013	**7,834,028,463**	**11,134,637,484**	**70.4**	**3,300,609,021**	**1,880,212,950**	**175.5**
6/30/2013 @	**8,096,436,929**	**11,134,637,484**	**72.7**	**3,038,200,555**	**1,880,212,950**	**161.6**

 # After changes in benefit provisions.

** After a change in assumptions.*

@ After a change in asset method.

& After changes in methods other than the asset method.

Analysis of the dollar amounts of the actuarial value of assets, actuarial accrued liability, or unfunded actuarial accrued liability in isolation can be misleading. Expressing the actuarial value of assets as a percentage of the actuarial accrued liability provides one indication of the plan's funded status on a going-concern basis. Analysis of this percentage over time indicates whether the plan is becoming financially stronger or weaker. Generally, the greater this percentage, the stronger the plan. The unfunded actuarial accrued liability and annual covered payroll are both affected by inflation. Usually expressing the unfunded actuarial accrued liability as a percentage of annual covered payroll approximately adjusts for the effects of inflation and aids analysis of the progress being made in accumulating sufficient assets to pay benefits when due. Generally, the smaller this percentage, the stronger the plan.

Contributions Required and Contributions Made

The System's funding policy provides for periodic employer contributions at actuarially determined rates that, expressed as percentages of annual covered payroll, are designed to accumulate sufficient assets to pay benefits when due. In developing the annual required contribution shown below, the normal cost and actuarial accrued liability are determined using the entry age actuarial cost method. The unfunded actuarial accrued liability is being amortized on a closed basis as a level percent of payroll over a period of 30 years. The corresponding amortization factor is 15.77495.

During the year ended June 30, 2013, contributions totaling $274,655,284 were made by the employer.

Schedule of Employer Contributions

Fiscal Year 7-1/6-30	Valuation Date 6/30	Annual Required Contribution		
		Percent	Employer Dollar Amount	Percentage Contributed
1991-92	1990	9.65 %	$ 100,672,145	100 %
1992-93	1991	9.68	102,988,219	100
1993-94	1992	9.49	106,681,308	100
1994-95	1993	9.04	108,902,372	100
1995-96	1994	10.69	137,007,112	100
1996-97	1995	10.66	146,383,371	100
1997-98	1996	10.40	152,090,687	100
1998-99	1997	12.58	197,909,834	100
1999-00	1998	11.91	202,330,547	100
2000-01	1999	11.59	215,750,128	100
2001-02	2000	11.59	209,515,026	100
2002-03	2001	8.81	156,576,150	100
2003-04	2002	9.35	164,691,836	100
2004-05	2003	10.64	195,648,983	100
2005-06	2004	12.59	227,233,195	100
2006-07	2005	12.78	239,488,751	100
2007-08	2006	12.84	249,770,156	100
2008-09	2007	12.53	252,105,008	100
2009-10	2008	12.75	251,226,187	100
2010-11	2009	13.81	263,418,048	100
2011-12	2010	13.97	263,373,924	100
2012-13	2011	14.45	274,655,284	100
2013-14	2012	16.98		
2014-15	**2013**	**16.97**		

Notes to Required Supplementary Information (As Required by GASB Statement No. 25)

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

Valuation Date	June 30, 2013
Actuarial Cost Method	Entry Age Normal
Amortization Method	Level Percentage of Payroll, Closed
Equivalent Single Amortization Period	30 Years
Valuation Asset Method	3-Year Rolling Smoothed Market
Actuarial Assumptions:	
Investment Rate of Return *	8.00%
Projected Salary Increase *	3.0% to 6.9%
* *Includes Price Inflation at*	2.5%
Rate of Payroll Growth	3.00%
Cost-of-Living Adjustments	2.0% to 4.0% (see page 55 for details)

Actuarial Accrued Liability

The actuarial accrued liability is a measure intended to (i) help users assess the plan's funding status on a going-concern basis, and (ii) assess progress being made in accumulating sufficient assets to pay benefits when due. The actuarial value of assets is based on a method that fully recognizes expected investment return and averages unanticipated market return over a three-year period. Allocation of the actuarial present value of projected benefits between past and future service was based on service using the entry age actuarial cost method. Assumptions, including projected pay increases, were the same as used to determine the System's annual required contribution between entry age and assumed exit age. Entry age was established by subtracting credited service from current age on the valuation date.

The entry age actuarial accrued liability was determined as part of an actuarial valuation of the System as of June 30, 2013. Significant actuarial assumptions used in determining the entry age actuarial accrued liability include (a) a rate of return on the investment of present and future assets of 8.0% per year compounded annually, (b) projected salary increases of 3.0% per year compounded annually, attributable to inflation, (c) additional projected salary increases ranging from 0% to 3.9% per year, depending on age, attributable to seniority/merit, and (d) the assumption that benefits will increase after retirement (i) at 4.00% per year for approximately the first 12 years, 3.06% for the 13th year and 2.0% per year thereafter, or (ii) at 2.0% per year, depending upon date of hire and benefit election.

At June 30, 2013, the unfunded actuarial accrued liability of the System was determined as follows:

Actuarial Accrued Liability of System:	**$ in Thousands**
Active members (35,501 vested, 15,332 non-vested)	$ 4,448,972
Retirees and beneficiaries currently receiving benefits (39,139 vested)	6,061,942
Terminated members not yet receiving benefits (18,550 vested)	528,918
Members on Leave of Absence & LTD	94,093
Future BackDROP Payments	712
Total Actuarial Accrued Liability	11,134,637
Actuarial Value of Assets	8,096,437
Unfunded Actuarial Accrued Liability	$ 3,038,201

During the year ended June 30, 2013, the System experienced a net change of $340,985,906 in the actuarial accrued liability. Of this change, ($262,408,466) was due to changes in asset methods. There were no changes in benefit provisions or actuarial assumptions.

SECTION F
PARTICIPANT DATA

Retirants & Beneficiaries as of June 30, 2013
Tabulated by Plan Year of Retirement

Calendar Year Ended 12/31	No.	Total Annual Benefits	Average Monthly Benefit
2013 *	1,248	$ 18,010,646	$1,203
2012	3,026	40,800,300	1,124
2011	2,840	38,955,804	1,143
2010	2,919	43,853,304	1,252
2009	2,346	33,846,156	1,202
2008	2,304	33,575,640	1,214
2007	2,195	30,974,856	1,176
2006	2,072	30,501,300	1,227
2005	1,871	27,658,260	1,232
2004	1,376	19,785,804	1,198
2003	2,583	42,293,052	1,364
2002	1,870	29,683,356	1,323
2001	1,573	25,940,628	1,374
2000	2,068	35,437,668	1,428
1999	1,106	18,730,020	1,411
1998	1,046	18,698,292	1,490
1997	905	15,806,388	1,455
1996	775	12,601,944	1,355
1995	831	14,338,656	1,438
1994	584	8,827,260	1,260
1993	614	9,855,240	1,338
1992	501	7,484,784	1,245
1991	477	7,775,928	1,358
1990	338	5,142,252	1,268
1989	323	4,619,280	1,192
1988	308	4,364,592	1,181
1987	227	2,567,604	943
1986	194	1,966,260	845
1985	134	1,318,908	820
1984	106	1,086,744	854
1983	90	913,488	846
1982	81	722,172	743
1981	69	639,564	772
1980	36	387,684	897
1979	26	169,092	542
1978	20	135,684	565
1977	22	164,580	623
1976	19	149,616	656
1975	5	19,656	328
1974	5	34,284	571
1973	6	34,236	476
1972 & PRIOR	0	0	0
Totals	**39,139**	**$589,870,982**	**$1,256**

** Five months ended May 31, 2013.*

Benefits Payable June 30, 2013
Tabulated by Option and Type of Benefit

MSEP Benefits

Type of Benefit	No.	Annual Benefits
Service Retirement		
Life Annuity	5,149	$ 66,373,044
50% Joint and Survivor	5,418	90,180,757
75% Joint and Survivor	0	0
100% Joint and Survivor	2,747	53,525,512
5 Year Certain and Life	131	1,424,628
10 Year Certain and Life	142	1,344,087
Survivor Beneficiary	2,300	26,936,597
Total	15,887	239,784,625
Disability Retirement	7	26,544
Death-in-Service	1,411	15,019,911
Total	**17,305**	**$ 254,831,080**

MSEP 2000 Benefits

Type of Benefit	No.	Annual Benefits
Service Retirement		
Life Annuity	13,344	$ 193,656,491
50% Joint and Survivor	3,246	65,334,958
100% Joint and Survivor	3,508	59,728,927
5 Year Certain and Life	31	457,437
10 Year Certain and Life	566	6,024,789
15 Year Certain and Life	440	3,994,142
Survivor Beneficiary	593	5,478,804
Total	21,728	334,675,548
Disability Retirement	0	0
Death-in-Service	106	364,354
Total	**21,834**	**$ 335,039,902**

Total Benefits Payable June 30, 2013

Tabulated by Attained Ages of Benefit Recipients

Attained Ages	Service Retirement		Disability Retirement		Survivors and Beneficiaries		Totals	
	No.	Annual Benefits	No.	Annual Benefits	No.	Annual Benefits	No.	Annual Benefits
Under 20					73	$ 261,620	73	$ 261,620
20-24					19	120,300	19	120,300
25-29					5	12,240	5	12,240
30-34					20	100,031	20	100,031
35-39					38	270,302	38	270,302
40-44					78	499,098	78	499,098
45-49	1	$ 30,660			112	917,176	113	947,836
50-54	535	15,459,291			185	1,608,629	720	17,067,920
55-59	3,631	78,014,608	1	$ 2,124	321	3,297,713	3,953	81,314,445
60-64	8,174	125,148,995	6	24,420	519	5,283,307	8,699	130,456,722
65-69	8,541	112,484,127			539	6,494,194	9,080	118,978,321
70-74	5,717	84,443,965			609	7,945,571	6,326	92,389,536
75-79	3,652	59,291,365			662	7,909,012	4,314	67,200,377
80-84	2,370	38,992,560			591	6,762,716	2,961	45,755,276
85-89	1,448	20,388,033			438	4,251,149	1,886	24,639,182
90-94	509	6,234,719			153	1,619,520	662	7,854,239
95	39	490,653			15	191,952	54	682,605
96	32	344,198			8	82,536	40	426,734
97	27	308,636			9	42,624	36	351,260
98	16	148,056			9	68,904	25	216,960
99	12	123,298			2	5,304	14	128,602
100	7	63,390			3	48,528	10	111,918
101	8	52,500			1	4,572	9	57,072
102	2	19,082					2	19,082
105	1	6,636			1	2,668	2	9,304
Totals	**34,722**	**$ 542,044,772**	**7**	**$ 26,544**	**4,410**	**$ 47,799,666**	**39,139**	**$ 589,870,982**

Average age at Retirement: 60.3 years.

Average age now: 69.4 years.

Summary of Member Data Included in Valuation

June 30, 2013

Active Members

Valuation Group	Number	Payroll	Group Averages		
			Salary	Age(yrs.)	Service(yrs.)
Regular State Employees	47,688	$ 1,706,683,663	$ 35,789	45.5	11.0
Elected Officials	6	659,969	109,995	48.3	6.4
Legislative Clerks	22	749,722	34,078	59.2	21.3
Legislators	197	7,081,591	35,947	50.5	3.7
Uniformed Water Patrol	16	967,817	60,489	40.6	15.3
Conservation Department	1,399	58,789,537	42,023	44.6	14.3
School-Term Salaried Employees	1,477	102,392,802	69,325	56.2	20.4
Administrative Law Judges	28	2,887,849	103,137	56.6	19.1
Total MOSERS*	**50,833**	**$ 1,880,212,950**	**$ 36,988**	**45.8**	**11.3**
Judges*	400	$ 48,697,726	$ 121,744	56.7	12.5

The total number of MOSERS active members includes 41,684 MSEP/MSEP 2000 members and 9,149 MSEP 2011 members.

Retired Lives

Type of Benefit Payment	No.	Annual Benefit	Group Averages	
			Benefit	Age(yrs.)
Retirement	34,722	$ 542,044,772	$ 15,611	69.3
Disability	7	26,544	3,792	61.3
Survivor of Active Member	1,517	15,384,265	10,141	61.8
Survivor of Retired Member	2,893	32,415,401	11,205	75.0
Total MOSERS*	**39,139**	**$ 589,870,982**	**$ 15,071**	**69.4**
Judges*	497	$ 28,387,811	$ 57,118	75.4

This valuation also includes 18,550 terminated vested members, 209 members on leave and 1,077 members on long-term disability.

** Total covered by MOSERS excluding Judges. Judges assets, liabilities, contribution rates and other valuation results are included in a separate report covering only Judges.*

Active Members as of June 30, 2013

By Age and Years of Service#*

Near Age	Years of Service to Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 plus	No.	Valuation Payroll
15-19	38							38	$ 823,118
20-24	1,478	19						1,497	38,603,844
25-29	3,373	686	13					4,072	123,274,292
30-34	2,595	2,049	570	11				5,225	172,796,554
35-39	1,690	1,562	1,528	454	3			5,237	185,046,291
40-44	1,556	1,346	1,512	1,474	342	26		6,256	230,830,630
45-49	1,429	1,199	1,309	1,289	1,114	519	33	6,892	264,215,718
50-54	1,315	1,280	1,474	1,294	1,075	1,099	479	8,016	313,766,863
55-59	1,023	1,183	1,280	1,237	994	784	558	7,059	279,132,065
60	172	181	226	236	161	103	77	1,156	46,500,580
61	133	192	245	207	152	100	98	1,127	45,532,797
62	151	155	215	153	136	90	90	990	39,567,748
63	99	123	165	128	112	76	66	769	31,159,546
64	75	126	139	119	108	43	61	671	28,741,562
65	60	102	108	72	70	35	41	488	19,991,940
66	41	80	97	72	40	31	38	399	17,751,707
67	37	45	65	47	26	27	34	281	12,770,990
68	13	27	37	34	18	13	17	159	7,578,212
69	14	16	30	22	16	10	18	126	5,524,793
70 & Over	35	58	93	62	39	26	62	375	16,603,700
Totals	**15,327**	**10,429**	**9,106**	**6,911**	**4,406**	**2,982**	**1,672**	**50,833**	**$ 1,880,212,950**

While not used in the financial computations, the following group averages are computed and shown because of their general interest.

Age: 45.8 years

Service: 11.3 years

Annual Pay: $36,988

 # Includes 28 ALJ members.
** A breakdown by gender is included on pages 51 and 52.*

Active Members as of June 30, 2013
By Age and Years of Service

Male

Near Age	Years of Service to Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 plus	No.	Valuation Payroll
Under 20	14							14	$ 287,564
20-24	613	1						614	16,182,537
25-29	1,445	279	7					1,731	53,447,899
30-34	1,098	832	198	1				2,129	72,522,185
35-39	709	605	562	143	1			2,020	74,124,279
40-44	614	497	614	540	89	3		2,357	93,226,685
45-49	550	436	491	492	433	147	5	2,554	106,465,170
50-54	478	481	568	487	458	430	111	3,013	130,440,415
55-59	407	445	482	477	400	356	172	2,739	120,103,870
60	70	78	78	87	68	48	30	459	20,497,058
61	61	83	105	79	70	59	41	498	22,274,956
62	78	62	99	46	53	45	43	426	18,485,335
63	43	48	54	46	41	28	32	292	14,056,943
64	37	67	56	49	39	15	31	294	14,519,545
65	30	54	34	26	28	17	26	215	10,132,179
66	25	36	43	34	12	14	19	183	9,584,144
67	25	23	31	22	12	10	22	145	7,647,418
68	6	12	16	12	9	7	11	73	4,333,513
69	9	6	13	7	10	5	12	62	3,281,491
70 & Over	20	34	50	34	16	10	40	204	10,433,940
Totals	**6,332**	**4,079**	**3,501**	**2,582**	**1,739**	**1,194**	**595**	**20,022**	**$802,047,126**

While not used in the financial computations, the following group averages are computed and shown because of their general interest.

Age: 45.8 years

Service: 11.1 years

Annual Pay: $40,058

Active Members as of June 30, 2013
By Age and Years of Service

Female

Near Age	Years of Service to Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 plus	No.	Valuation Payroll
Under 20	24							24	$ 535,554
20-24	865	18						883	22,421,307
25-29	1,928	407	6					2,341	69,826,393
30-34	1,497	1,217	372	10				3,096	100,274,369
35-39	981	957	966	311	2			3,217	110,922,012
40-44	942	849	898	934	253	23		3,899	137,603,945
45-49	879	763	818	797	681	372	28	4,338	157,750,548
50-54	837	799	906	807	617	669	368	5,003	183,326,448
55-59	616	738	798	760	594	428	386	4,320	159,028,195
60	102	103	148	149	93	55	47	697	26,003,522
61	72	109	140	128	82	41	57	629	23,257,841
62	73	93	116	107	83	45	47	564	21,082,413
63	56	75	111	82	71	48	34	477	17,102,603
64	38	59	83	70	69	28	30	377	14,222,017
65	30	48	74	46	42	18	15	273	9,859,761
66	16	44	54	38	28	17	19	216	8,167,563
67	12	22	34	25	14	17	12	136	5,123,572
68	7	15	21	22	9	6	6	86	3,244,699
69	5	10	17	15	6	5	6	64	2,243,302
70 & Over	15	24	43	28	23	16	22	171	6,169,760
Totals	**8,995**	**6,350**	**5,605**	**4,329**	**2,667**	**1,788**	**1,077**	**30,811**	**$1,078,165,824**

While not used in the financial computations, the following group averages are computed and shown because of their general interest.

Age: 45.7 years

Service: 11.5 years

Annual Pay: $34,993

SECTION G
METHODS & ASSUMPTIONS

The Actuarial Valuation Process

An ***actuarial valuation*** is the mathematical process by which actuarial present values and contribution rates are determined. The flow of activity constituting the valuation may be summarized as follows:

A. ***Census Data***, furnished by the system administrative staff, including:

Retired lives now receiving benefits

Former members with vested benefits not yet payable

Active members

\+ B. ***Benefit Provisions*** governing future payments from the retirement system.

\+ C. ***Asset data*** (cash & investments), furnished by the system administrative staff.

\+ D. ***Assumptions concerning future experiences*** in various risk areas, which assumptions are established by the Board of Trustees after consulting with the actuary.

\+ E. ***The funding method*** for employer contributions (the long-term planned pattern for employer contributions).

\+ F. ***Mathematically combining the assumptions, the funding method, and the data***.

= G. ***Determination of:***

Plan financial position and

The employer contribution rate.

Meaning of "Unfunded Actuarial Accrued Liabilities"

"***Actuarial accrued liabilities***" are ***the portion of the present value of plan promises to pay benefits in the future which are not covered by future normal cost contributions*** --- a liability has been established ("accrued") because the service has been rendered but the resulting monthly cash benefit may not be payable until years in the future. Actuarial accrued liabilities are the result of complex mathematical calculations, which are made annually by the plan's actuary.

If "actuarial accrued liabilities" at any time exceed the actuarial value of the plan's accrued assets, the difference is "***unfunded actuarial accrued liabilities***." This is the common condition. If the plan's assets equaled the plan's "actuarial accrued liabilities," the plan would be termed "fully funded."

Each time a plan adds a new benefit which applies to service already rendered, an "actuarial accrued liability" is created, which is also an "unfunded actuarial accrued liability" because the plan can't print instant cash to cover the value of the new benefit promises. Payment for such unfunded actuarial accrued liabilities is spread over a period of years.

Unfunded actuarial accrued liabilities can occur in another way: If actual financial experience is less favorable than assumed financial experience, the difference is added to unfunded actuarial accrued liabilities. In plans where benefits are directly related to an employee's pay near time of retirement, unfunded actuarial accrued liabilities increase when unexpected rates of pay increase create additional actuarial accrued liabilities which are not offset by favorable experience in other areas.

The existence of unfunded actuarial accrued liabilities is not bad, but the changes from year to year in the amount of unfunded actuarial accrued liabilities are important and should be monitored.

Unfunded actuarial accrued liabilities are not a bill payable immediately but it is important that policy-makers prevent the amount from becoming unreasonably high and ***it is vital for plans to have a sound method for making payments toward them*** so that they will be controlled.

Summary of Assumptions Used
for the June 30, 2013 Actuarial Valuation

- - - - - - - - - - -Economic Assumptions - - - - - - - - - -

The investment return rate used in the valuations was 8.0% per year, compounded annually (net after investment expenses). This assumption is used to account for the fact that equal amounts of money payable at different points in time in the future do not have the same value presently.

Pay increase assumptions for individual active members are shown for sample ages on page 57. Part of the assumption for each age is for merit and/or seniority increase, and the other 3.0% recognizes wage inflation. This assumption is used to project a member's current salary to the salaries upon which benefits will be based.

The active member payroll is assumed to increase 3.0% annually, which is the portion of the individual pay increase assumptions attributable to wage inflation.

The annual cost-of-living adjustment (COLA) is assumed to be 4.00%, on a compounded basis, when a minimum COLA of 4% is in effect (4.0% for 12 years, 3.06% the next year to reach a cumulative 65% followed by 2.0%). When no minimum COLA is in effect, price inflation is assumed to be 2.5% and the annual COLA is assumed to be 2.0% (80% of 2.5%), on a compounded basis.

- - - - - - - - - - Non-Economic Assumptions - - - - - - - - - -

The mortality table, for post-retirement mortality, used in evaluating allowances to be paid was the RP 2000 combined healthy mortality table, projected to 2016 with Scale AA. Related values are shown on page 58. This assumption is used to measure the probabilities of each benefit payment being made after retirement. The pre-retirement mortality rates used were 100% of the post-retirement mortality rates for males and 80% of the post-retirement mortality for females.

The mortality tables include a margin of 15% for men and 17% for women for mortality improvements based on the four year experience study from June 30, 2007 to June 30, 2011. The mortality assumption was first used in the June 30, 2012 valuation.

Summary of Assumptions Used for the June 30, 2013 Actuarial Valuation

The probabilities of age and service retirement are shown on page 62. It was assumed that each member will be granted one half year (4 months for 2011 plan members) of service credit for unused leave upon retirement and military service purchases.

The probabilities of withdrawal from service, disability and death-in-service are shown for sample ages on page 60. For disability retirement, impaired longevity was recognized by use of special mortality tables.

The entry age normal actuarial cost method of valuation was used in determining liabilities and normal cost. Each member's normal cost was based on the benefit provisions applicable to that member. The normal cost is projected to the applicable fiscal year. Differences in the past between assumed experience and actuarial experience ("actuarial gains and losses") become part of actuarial accrued liabilities. Unfunded actuarial accrued liabilities are amortized to produce payments, (principal & interest) which are level percents of payroll contributions.

The amortization of the unfunded actuarial accrued liability is based on a 30-year amortization period, level percent of payroll amortization. The amortization is based on the projected unfunded actuarial accrued liability at the beginning of the fiscal year. This method was first used in the June 30, 2010 valuation.

Employer contribution dollars were assumed to be ***paid in equal installments*** throughout the employer's fiscal year.

Actuarial value of assets. Valuation assets recognize assumed investment return fully each year. Differences between actual and assumed investment return are phased-in over an open three-year period. Valuation assets are not permitted to deviate from the market value by less than 80% or more than 125%.

The data about persons now covered and about present assets were furnished by the System's administrative staff. Although examined for general reasonableness, the data was not audited by the Actuary.

The liabilities for active members hired on or after January 1, 2011 were based on MSEP 2011 benefits. The liabilities for active members hired on or after July 1, 2000 (April 26, 2005 for administrative law judges) were based on MSEP 2000 benefits. The liabilities for active members hired before July 1, 2000 for elected officials, General Assembly, and uniformed water patrol were based on MSEP benefits. The liabilities for all other active members hired before July 1, 2000 were based on the assumption that members would elect MSEP 2000 prior to age 62 and MSEP on or after age 62.

For member on long-term disability, the actuarial accrued liability is the present value of benefit under active assumptions plus the difference of the present value of benefit with and without future pay growth to reflect indexing of pay in ultimate retirement benefits.

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The actuarial valuation computations were made by or under the supervision of a Member of the American Academy of Actuaries (M.A.A.A.).

Separations From Active Employment Before Service Retirement & Individual Pay Increase Assumptions June 30, 2013

Sample Ages	Years of Service	Percent of Active Members - - - - - - Separating within the Next Year - - - - - Withdrawal *** Men	Withdrawal *** Women	Death* Men	Death* Women	Disability Men	Disability Women	Pay Increase Assumptions - - For An Individual Employee - - Merit & Seniority**	Base (Economy)	Increase Next Year
	0	23.0 %	26.9 %							
	1	18.0	20.5							
	2	15.0	15.4							
	3	13.0	12.5							
	4	11.0	10.9							
25	5+	13.0	13.3	0.03 %	0.01 %	0.17 %	0.30 %	2.9 %	3.0 %	5.9 %
30		10.2	10.5	0.04	0.02	0.17	0.30	2.2	3.0	5.2
35		7.9	8.1	0.07	0.03	0.21	0.30	1.6	3.0	4.6
40		5.6	5.7	0.09	0.04	0.26	0.32	1.2	3.0	4.2
45		4.2	4.3	0.12	0.07	0.34	0.38	0.9	3.0	3.9
50		2.8	2.9	0.16	0.10	0.49	0.57	0.7	3.0	3.7
55		2.8	2.9	0.27	0.19	1.07	0.89	0.5	3.0	3.5
60		2.8	2.9	0.52	0.37	1.50	1.50	0.4	3.0	3.4
65		2.8	2.9	1.02	0.72	1.60	1.70	0.3	3.0	3.3
70		2.8	2.9	1.74	1.24	1.60	1.70	0.2	3.0	3.2

* *2% of the deaths in active service are assumed to be duty related.*
** *Does not apply to members of the General Assembly.*
*** *Does not apply to Elected Officials and Legislators.*

Elected Officials and Legislators

Years of Service	Percent of Active Members Separating within the Next Year Withdrawal Male/Female
1	8.0 %
2	8.0
3	8.0
4	8.0
5	12.0
6	12.0
7	12.0
8+	35.0

Post-Retirement Mortality Rates

The mortality tables were the RP 2000 mortality table, projected to 2016 with Scale AA, including a margin of 15% for men and 17% for women for mortality improvements. Disabled mortality tables are the healthy mortality tables set forward 10 years. The pre-retirement mortality rates used were 100% of the post-retirement mortality rates for males and 80% of the post-retirement mortality for females.

Age	Service		Disability	
	Men	Women	Men	Women
45	0.0012	0.0009	0.0027	0.0024
50	0.0016	0.0013	0.0052	0.0047
55	0.0027	0.0024	0.0102	0.0090
60	0.0052	0.0047	0.0174	0.0155
65	0.0102	0.0090	0.0302	0.0247
70	0.0174	0.0155	0.0548	0.0410
75	0.0302	0.0247	0.0990	0.0703
80	0.0548	0.0410	0.1720	0.1255
85	0.0990	0.0703	0.2591	0.1884

Retirement Values
June 30, 2013

Sample Attained Ages	Present Value of $1/Month the First Year (with 50% Joint & Survivor) Increasing 4.0% / 2.0% Yearly				Present Value of $1/Month the First Year Increasing 2.0% Yearly			
	Service		Disability		Service		Disability	
	Men	Women	Men	Women	Men	Women	Men	Women
40	$224.11	$224.12	$212.76	$211.89	$184.40	$186.75	$169.01	$172.32
45	217.22	217.01	202.65	201.39	177.68	180.43	157.94	162.08
50	208.28	207.81	190.14	188.39	169.01	172.32	144.49	149.76
55	196.76	196.07	175.18	172.83	157.94	162.08	128.94	135.56
60	182.48	181.61	157.88	154.80	144.49	149.76	111.76	119.87
65	165.46	164.49	138.11	134.44	128.94	135.56	92.72	102.82
70	145.94	144.91	116.94	112.03	111.76	119.87	73.10	84.62
75	123.90	123.17	96.04	88.83	92.72	102.82	55.15	66.19
80	100.55	100.10	76.52	68.15	73.10	84.62	40.28	50.49
85	78.09	77.41	59.89	52.82	55.15	66.19	30.32	40.10

Sample Attained Ages	Future Life Expectancy (Years)			
	Service		Disability	
	Men	Women	Men	Women
40	41.95	44.10	32.39	34.43
45	37.15	39.24	27.68	29.69
50	32.39	34.43	23.13	25.13
55	27.68	29.69	18.87	20.84
60	23.13	25.13	14.96	16.90
65	18.87	20.84	11.39	13.32
70	14.96	16.90	8.29	10.12
75	11.39	13.32	5.83	7.37
80	8.29	10.12	4.03	5.31
85	5.83	7.37	2.91	4.05

Percent of Eligible Active Members Retiring Next Year

Normal Retirement Pattern					Early Retirement Pattern		
	MSEP and MSEP 2000			MSEP 2011		MSEP and MSEP 2000	MSEP 2011
Retirement	Percent Eligible			Percent	Retirement	Percent	Percent
Age	1st Year	2nd Year	3rd Year	Eligible	Age	Eligible	Eligible
48	22%						
49	22	10%					
50	22	10	21%				
51	22	10	21				
52	22	10	21				
53	22	10	18				
54	22	10	18				
55	22	12	26	45%			
56	22	12	25	45			
57	22	12	22	35	57	2.5%	
58	22	12	22	35	58	3.5	
59	22	12	20	30	59	3.5	
60	21	12	22	35	60	5.0	
61	20	12	20	25	61	6.0	
62	19	22	30	40	62	6.0	10%
63	15	18	25	30	63	6.0	10
64	15	20	17	20	64	6.0	10
65	20	20	27	30	65	6.0	50
66	22	20	26	25	66	6.0	50
67	15	25	22	20	67	6.0	
68	15	20	22	20	68	6.0	
69	15	20	22	20	69	6.0	
70	25	20	22	20	70	6.0	
71	25	20	22	20	71	6.0	
72	25	20	22	20	72	6.0	
73	25	20	22	20	73	6.0	
74	25	20	22	20	74	6.0	
75	50	50	22	50	75	6.0	
76	50	50	22	50	76	6.0	
77	75	75	22	75	77	6.0	
78	100	100	100	100	78	100.0	

* *For members hired prior to January 1, 2011.*
** *For members hired on or after January 1, 2011.*

Summary of Assumptions Used
June 30, 2013
Miscellaneous and Technical Assumptions

Pay Increase Timing: Beginning of (Fiscal) year.

Decrement Timing: Decrements of all types are assumed to occur mid-year.

Eligibility Testing: Eligibility for benefits is determined based upon the age nearest birthday and service nearest whole year on the date the decrement is assumed to occur.

Benefit Service: Exact fractional service is used to determine the amount of the benefit payable.

Decrement Relativity: Decrement rates are used directly from the experience study, without adjustment for multiple decrement table effects.

Decrement Operation: Disability and withdrawal do not operate during normal retirement eligibility.

Normal Form of Benefit: The assumed normal form of benefit is the straight life form for MSEP 2000 with 50% continuing to an eligible surviving spouse for MSEP. No adjustment has been made for post-retirement option election changes.

Other Liability Adjustments:

MSEP 2000 Benefits for Active Employees

Option elections were studied for MSEP 2000 retirees and we believe that the normal and early retirement alternate forms of payment assumption are slightly negatively subsidized. We have adjusted the actuarial accrued liability and normal cost by a factor of 0.99 for MSEP 2000 and MSEP 2011 retirements and by .995 for MSEP retirements based on the current rate of form of payment elections.

Pre-Retirement Survivor Benefits for Spouse of Terminated Vested Member

Age	Male/Female
<30	1.97/1.68
30-39	1.40/1.29
40-49	1.15/1.11
>50	1.04/1.03

These factors are used to estimate the cost of immediate unreduced survivor annuities upon the death of a vested member.

Summary of Assumptions Used
June 30, 2013
Miscellaneous and Technical Assumptions
(Continued)

Incidence of Contributions: Contributions are assumed to be received continuously throughout the year based upon the computed percent of payroll shown in this report, and the actual payroll payable at the time contributions are made. New entrant normal cost contributions are applied to the funding of new entrant benefits.

MSEP 2000 Election: All regular state employees hired on or before June 30, 2000 are assumed to elect MSEP 2000 prior to age 62 and MSEP on or after age 62. Elected Officials, General Assembly, and Uniformed Water Patrol Members hired before July 1, 2000 and Administrative Law Judges hired before April 26, 2005 are assumed to elect MSEP at retirement.

Service Adjustment: It is assumed that each member will be granted one half year of service credit, 3 months for unused leave upon retirement and 3 months for military service purchases. For members hired on or after January 1, 2011 it is assumed that each member will be granted 4 months for unused leave.

Marriage Assumption: It is assumed that among active members 75% are married at retirement, 70% of those dying in active service are married, and men are three years older than their spouses.

Forfeitures: For those hired on or after January 1, 2011, 50% of state employees terminating at first vesting eligibility are assumed to take a refund and forfeit their deferred pension. This percentage decreases to 0% at first retirement eligibility.

Salary and Benefit Limits: For purposes of the valuation, no limits were applied to member compensation or benefits.

The number of active members is assumed to remain constant although certain new hires on or after July 1, 2002 will participate in the Colleges and Universities Retirement Plan. Active and retired member data is reported as of May 31. It is assumed for valuation purposes that there is no turnover among members and no new entrants during the month of June. New entrant assumed demographic patterns are based on the demographics of active members hired within the last five years.

Summary of Assumptions Used
June 30, 2013
Miscellaneous and Technical Assumptions
(Concluded)

Data Adjustments:

Active and retired member data was reported as of May 31, 2013. It was brought forward to June 30, 2013 by adding one month of service for all active members and the June COLA for certain retired members. It is expected that this procedure resulted in a slight overstatement of total liabilities as of June 30, 2013. Financial information continues to be reported as of June 30. This procedure was instituted to provide sufficient time for the Board of Trustees to certify the appropriate contribution rate prior to the October 1 statutory deadline.

Active members reported with less than a $100 annualized salary were assumed to receive the average active member pay, which is $36,952 ($103,137 for Administrative Law Judges) as of June 30, 2013. There were 16 members affected by this assumption.

When the option of choosing plans is available, terminated vested members are reported with two records, one with benefits under the MSEP plan and one with benefits under the MSEP 2000 plan. Because it is unknown what the member will elect at retirement, both records are valued and the plan that produces the higher present value of future benefits is used for valuation purposes.

For any retired member who has elected a joint and survivor benefit yet has no beneficiary date of birth provided, it was assumed that the beneficiary is 3 years younger for male retirees and 3 years older for female retirees.

For the terminated vested members, GRS staff found one member less than what was initially reported. This was confirmed with MOSERS Staff.

For members reported with no gender, the member is assumed to be male.

Due to limitations in our valuation program, members who are not eligible for normal retirement prior to age 85 had their date of birth adjusted.

SECTION H
PLAN PROVISIONS

Summary of Benefit Provisions Evaluated
June 30, 2013 Actuarial Valuation

MSEP (Missouri State Employees' Plan)	MSEP 2000 (Missouri State Employees' Plan 2000)	MSEP 2011 (Missouri State Employees' Plan 2011)
PARTICIPATION Participants include: All MOSERS members, vested former members, retirees and survivors who first became members prior to July 1, 2000 and who do **not** elect to transfer to the MSEP 2000 plan. Election is made at the time benefits commence.	**PARTICIPATION** Participants include: (1) All new employees who first become members on or after July 1, 2000, except full-time teaching and senior administrative personnel of the regional colleges and universities hired on or after July 1, 2002 who will be participants in the Colleges and Universities Retirement Plan. (2) MSEP active members and vested former members who elect to transfer to the MSEP 2000 plan prior to retirement. (3) MSEP retirees who elect to transfer to the MSEP 2000 plan during the election window from July 1, 2000 through June 30, 2001, and their survivors. (4) MSEP non-vested terminations rehired on or after July 1, 2000.	**PARTICIPATION** Participants include: All new employees who first become employees on or after January 1, 2011.
AVERAGE COMPENSATION USED FOR BENEFIT DETERMINATION The average annual compensation of a member for the three consecutive years of service during which pay was highest (overtime pay is included for purposes of determining Average Compensation). Non-recurring lump sum payments are excluded. Unused sick leave may be converted to additional credited service (usable only for benefit computation, not eligibility).	The average annual compensation of a member for the three consecutive years of service during which pay was highest (overtime pay is included for purposes of determining Average compensation). Non-recurring lump sum payments are excluded. Unused sick leave may be converted to additional credited service (usable only for benefit computation, not eligibility).	The average annual compensation of a member for the three consecutive years of service during which pay was highest (overtime pay is included for purposes of determining Average compensation). Non-recurring lump sum payments are excluded. Unused sick leave may be converted to additional credited service (usable only for benefit computation, not eligibility).

MSEP (Missouri State Employees' Plan)	MSEP 2000 (Missouri State Employees' Plan 2000)	MSEP 2011 (Missouri State Employees' Plan 2011)
NORMAL RETIREMENT ELIGIBILITY (UNREDUCED BENEFITS) ***Members of the General Assembly:*** Age 55 with completion of at least 3 full biennial assemblies. ***Statewide Elected Officials:*** The earliest of attaining: (1) Age 65 with at least 4 years of credited service. (2) Age 60 with at least 15 years of credited service. (3) Age 50 with age plus credited service equal to 80 or more. ***General Employees:*** The earliest of attaining: (1) Age 65 and active with at least 4 years of credited service. (2) Age 65 with at least 5 years of credited service. (3) Age 60 with at least 15 years of credited service. (4) Age 48 with age plus credited service equal to 80 or more. ***Uniformed Water Patrol Employees:*** The earliest of attaining: (1) Age 55 and active with at least 4 years of credited service. (2) Age 55 with at least 5 years of credited service. (3) Age 48 with age plus credited service equal to 80 or more. ***Administrative Law Judges:*** The earliest of attaining: (1) Age 62 and active with at least 12 years of credited service. (2) Age 60 with at least 15 years of credited service. (3) Age 55 with at least 20 years of credited service.	***Members of the General Assembly:*** The earliest of attaining: (1) Age 55 with completion of at least 3 full biennial assemblies. (2) Age 50 with completion of at least 3 full biennial assemblies and with age plus credited service equal to 80 or more. ***Statewide Elected Officials:*** The earliest of attaining: (1) Age 55 with at least 4 years of credited service as a statewide elected official. (2) Age 50 with age plus credited service equal to 80 or more. ***General Employees:*** The earliest of attaining: (1) Age 62 with at least 5 years of credited service. (2) Age 48 with age plus credited service equal to 80 or more.	***Members of the General Assembly:*** The earliest of attaining: (1) Age 62 with completion of at least 3 full biennial assemblies. (2) Age 55 with completion of at least 3 full biennial assemblies and with age plus credited service equal to 90 or more. ***Statewide Elected Officials:*** The earliest of attaining: (1) Age 62 with at least 4 years of credited service as a statewide elected official. (2) Age 55 with age plus credited service equal to 90 or more. ***General Employees:*** The earliest of attaining: (1) Age 67 with at least 10 years of credited service. (2) Age 55 with age plus credited service equal to 90 or more.

MSEP (Missouri State Employees' Plan)	MSEP 2000 (Missouri State Employees' Plan 2000)	MSEP 2011 (Missouri State Employees' Plan 2011)
BENEFIT AMOUNT ***Members of the General Assembly:*** $150 per month per biennial assembly served. ***Statewide Elected Officials:*** 1) Less than 12 years of credited service: 1.6% of Average Compensation times years of credited service. 2) 12 or more years of credited service: 50% of pay of the highest elected position held prior to retirement. ***General Employees:*** 1.6% of Average Compensation times years of credited service. 2.1% of Average Compensation times years of credited service for any period of non-social security covered employment transferred from the Public School Retirement System. ***Uniformed Water Patrol:*** 2.13% of Average Compensation times years of credited service. ***Administrative Law Judges:*** 50% of Compensation.	***Members of the General Assembly:*** 1/24 of pay times first 24 years of credited service as a member of the General Assembly. ***Statewide Elected Officials:*** 1/24 of pay (of the highest elected position held prior to retirement) times the first 12 years of credited service as a statewide elected official. ***General Employees:*** 1.7% of Average Compensation times years of credited service. Temporary Benefit: If member retires between ages 48 and 62 with age plus credited service equal to 80 or more, a temporary benefit is payable until the attainment of the minimum age at which reduced social security benefits are payable, in the amount of 0.8% of Average Compensation times years of credited service. Non- Social Security Covered Service: 2.5% of Average Compensation times years of credited service for any period of non-social security covered employment transferred from the Public School Retirement System.	***Members of the General Assembly:*** 1/24 of pay times first 24 years of credited service as a member of the General Assembly. ***Statewide Elected Officials:*** 1/24 of pay (of the highest elected position held prior to retirement) times the first 12 years of credited service as a statewide elected official. ***General Employees:*** 1.7% of Average Compensation times years of credited service. Temporary Benefit: If member retires between ages 55 and 62 with age plus credited service equal to 90 or more, a temporary benefit is payable until the attainment of the minimum age at which reduced social security benefits are payable, in the amount of 0.8% of Average Compensation times years of credited service. Non- Social Security Covered Service: 2.5% of Average Compensation times years of credited service for any period of non-social security covered employment transferred from the Public School Retirement System.

MSEP (Missouri State Employees' Plan)	MSEP 2000 (Missouri State Employees' Plan 2000)	MSEP 2011 (Missouri State Employees' Plan 2011)

EARLY RETIREMENT FOR GENERAL EMPLOYEES

Eligibility:
Age 55 with at least 10 years of credited service.

Amount:
Normal retirement amount reduced by ½% for each month that retirement precedes eligibility for normal retirement.

1) Less than 15 years of service: Normal retirement amount actuarially reduced for years younger than age 65.
2) 15 years but less than 20 years of service, and less than the number of years of service necessary for age and service to total 80: Normal retirement amount actuarially reduced for years younger than age 60.
3) 20 or more years of service, but less than the number of years of service necessary for age and service to total 80: Normal retirement amount reduced for years younger than the 80 and out eligibility date.

Vested Deferred Benefits

Benefits for employees who terminate prior to eligibility for an immediate benefit are considered to be vested in accordance with the following schedule (benefits commence at the age the individual would have been eligible for early or normal retirement, considering years of credited service). Unused sick leave is not converted.

Years of Service	General Assembly	Elected Officials	General Employees
4		100%	
5			100%
6 (3 Assemblies)	100%		

Eligibility:
Age 57 with at least 5 years of credited service.

Amount:
Normal retirement amount reduced by ½% for each month that retirement precedes eligibility for normal retirement. Normal retirement is age 62.

Benefits for employees who terminate prior to eligibility for an immediate benefit are considered to be vested in accordance with the following schedule (benefits commence at age 57 for early retirement or 62 for normal retirement). Unused sick leave is not converted.

Years of Service	General Assembly	Elected Officials	General Employees
4		100%	
5			100%
6 (3 Assemblies) HB1455 prospectively	100%		

Eligibility:
Age 62 with at least 10 years of credited service.

Amount:
Normal retirement amount reduced by ½% for each month that retirement precedes eligibility for normal retirement. Normal retirement is age 67.

Benefits for employees who terminate prior to eligibility for an immediate benefit are considered to be vested in accordance with the following schedule (benefits commence at age 67 normal retirement). Unused sick leave is not converted.

Years of Service	General Assembly	Elected Officials	General Employees
4		100%	
6 (3 Assemblies) HB1455 prospectively	100%		
10			100%

MSEP (Missouri State Employees' Plan)	MSEP 2000 (Missouri State Employees' Plan 2000)	MSEP 2011 (Missouri State Employees' Plan 2011)
DEATH PRIOR TO RETIREMENT The surviving spouse benefit is computed as if the member had been normal age on the date of death and elected the joint and 100% survivor optional form of payment, provided the member had at least 5 years of credited service and was married on the date of death. If no eligible spouse survives, 80% of the member's life income annuity is paid to eligible children until age 21. If the death is duty related, the service requirement is waived and the minimum spouse benefit is 50% of Average Compensation (rate of compensation for members of the General Assembly).	The surviving spouse benefit is computed as if the member had been normal age on the date of death and elected the joint and 100% survivor optional form of payment, provided the member had at least 5 years of credited service (3 full assemblies for a member of the General Assembly, 4 years of credited service for a statewide elected official). If no eligible spouse survives, 80% of the member's life income annuity is paid to eligible children until age 21. If the death is duty related, the service requirement is waived and the minimum spouse benefit is 50% of Average Compensation (rate of compensation for members of the General Assembly).	The surviving spouse benefit is computed as if the member had been normal age on the date of death and elected the joint and 100% survivor optional form of payment, provided the member had at least 5 years of credited service (2 full assemblies for a member of the General Assembly, 4 years of credited service for a statewide elected official). If no eligible spouse survives, 80% of the member's life income annuity is paid to eligible children until age 21. If the death is duty related, the service requirement is waived and the minimum spouse benefit is 50% of Average Compensation (rate of compensation for members of the General Assembly).

MSEP (Missouri State Employees' Plan)	MSEP 2000 (Missouri State Employees' Plan 2000)	MSEP 2011 (Missouri State Employees' Plan 2011)
DEATH AFTER RETIREMENT		
50% of the benefit the retired member was receiving on the date of death (the normal form of payment), or the benefit payable under the joint and survivor or period certain form of payment, if the member elected an optional form of payment at time of retirement and provided the member was married on their date of retirement. Effective July 1, 2000, a member who is not married at retirement but marries thereafter may designate a spouse as beneficiary within one year of marriage. Additionally, a member may designate a new spouse as beneficiary within one year of marriage in the event of the death of the spouse the member was married to at the date of retirement (this provision does not apply to period certain annuities).	The benefit payable under the joint and survivor or period certain form of payment, if the member elected an optional form of payment at time of retirement. A member who is not married at retirement but marries thereafter may designate a spouse as beneficiary within one year of marriage. Additionally, a member may designate a new spouse as beneficiary within one year of marriage in the event of the death of the spouse the member was married to at the date of retirement (this provision does not apply to period certain annuities).	The benefit payable under the joint and survivor or period certain form of payment, if the member elected an optional form of payment at time of retirement. A member who is not married at retirement but marries thereafter may designate a spouse as beneficiary upon completion of one year of marriage. Additionally, a member may designate a new spouse as beneficiary upon completion of one year of marriage in the event of the death of the spouse the member was married to at the date of retirement (this provision does not apply to period certain annuities).
DISABILITY (RECIPIENTS OF LTD BENEFITS)		
Normal retirement benefits become payable at the time the member is eligible for normal retirement, and are computed based on: i) the service that would have accrued to the member if active employment had continued; and ii) the member's rate of pay at the time of disability (if the member retires on or after August 28, 1999, the member's rate of pay is based on the rate of pay at the time of disability indexed to the time of benefit commencement). An exception is Uniformed Water Patrol employees who are eligible for an immediate occupational disability benefit equal to 50% of pay at time of disability.	Normal retirement benefits become payable at the time the member is eligible for normal retirement, and are computed based on: i) the service that would have accrued to the member if active employment had continued; and ii) the member's rate of pay at the time of disability indexed to the time of benefit commencement. The annual percentage increase in the pay used to compute benefits is the lesser of: i) 80% of the CPI increase and ii) 5%.	Normal retirement benefits become payable at the time the member is eligible for normal retirement, and are computed based on: i) the service that would have accrued to the member if active employment had continued; and ii) the member's rate of pay at the time of disability indexed to the time of benefit commencement. The annual percentage increase in the pay used to compute benefits is the lesser of: i) 80% of the CPI increase and ii) 5%.

<table>
<tr><th>MSEP
(Missouri State Employees' Plan)</th><th>MSEP 2000
(Missouri State Employees' Plan 2000)</th><th>MSEP 2011
(Missouri State Employees' Plan 2011)</th></tr>
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<td>

POST-RETIREMENT BENEFIT ADJUSTMENTS

Benefits are increased to retired members (including survivors) annually in accordance with the following formulas:

Increase in CPI	Formula 1 Benefit Increase	Formula 2 Benefit Increase
5.00% or less	4%	80% of CPI increase
5.01% - 6.24%	80% of CPI increase	80% of CPI increase
6.25% or more	5%	5%

Members first hired prior to August 28, 1997 receive COLAs based on Formula 1 until an aggregate increase of 65% is reached. At that point subsequent COLAs based on Formula 2 are granted.

Members first hired on or after August 28, 1997 receive COLAs based solely on Formula 2.

Statewide Elected Officials with 12 or more years of service have their benefit adjusted annually based on the increase in the pay for an active statewide elected official in the member's highest elected position.

Members who are fully vested and work beyond age 65 will have their monthly benefit increased upon retirement. The percentage increase in benefit is equal to all COLAs for the years between age 65 and date of retirement, not to exceed 65% and counts toward the Formula 1 65% maximum.
</td>
<td>

Benefits are increased to retired members (including survivors) annually in accordance with the following:

Members of the General Assembly: Benefit is adjusted annually based on the increase in the pay for an active member of the General Assembly.

Statewide Elected Officials: Benefit is adjusted annually based on the increase in the pay for an active statewide elected official in the retired member's highest elected position.

General Employees: Annual benefit percentage increase equal to the lesser of: i) 80% of the CPI increase, and 5%.

CPI: For the basis of determining CPI, the average monthly reported CPI for the prior calendar year is divided by the average monthly reported CPI for the second prior calendar year to determine the current year increases, if any. If this amount is less than one, benefits are not reduced, nor is there any cumulative effect on future years determination of CPI.

Timing of Increase: Benefits are adjusted on the anniversary of the effective date of retirement for most members. Members retiring under the BackDROP provisions have an anniversary based on the retroactive starting date for the BackDROP.
</td>
<td>

Benefits are increased to retired members (including survivors) annually in accordance with the following:

Members of the General Assembly: Benefit is adjusted annually based on the increase in the pay for an active member of the General Assembly.

Statewide Elected Officials: Benefit is adjusted annually based on the increase in the pay for an active statewide elected official in the retired member's highest elected position.

General Employees: Annual benefit percentage increase equal to the lesser of: i) 80% of the CPI increase, and 5%.

CPI: For the basis of determining CPI, the average monthly reported CPI for the prior calendar year is divided by the average monthly reported CPI for the second prior calendar year to determine the current year increases, if any. If this amount is less than one, benefits are not reduced, nor is there any cumulative effect on future years determination of CPI.

Timing of Increase: Benefits are adjusted on the anniversary of the effective date of retirement.
</td>
</tr>
</table>

MSEP (Missouri State Employees' Plan)	MSEP 2000 (Missouri State Employees' Plan 2000)	MSEP 2011 (Missouri State Employees' Plan 2011)
POP-UP PROVISION Benefits to members who choose a survivor form of payment and whose spouse precedes the member in death, will "pop-up" or revert to the amount the member would have received had he/she not elected a survivor option.	Same.	Same.
PORTABILITY Purchase/Transfer Provisions (in addition to military). Effective August 28, 1999, a member may purchase up to four years of non-federal full-time Missouri public service, provided the member is not vested in another retirement system for that same service.	Purchase/Transfer Provisions (in addition to military). A member may purchase up to four years of non-federal full-time Missouri public service, provided the member is not vested in another retirement system for that same service. Local vested service credit granted after 10 years of state service if the other retirement plan agrees to transfer assets equal to the accrued liability to MOSERS.	May purchase qualifying public sector service at full actuarial cost.
MEMBER CONTRIBUTIONS. None.	Same as MSEP.	4.0% of salary, with 4.0% interest credited to member contributions.
BACKDROP. See following page.	Same as MSEP.	Not eligible for the BackDROP.

MSEP (Missouri State Employees' Plan)	MSEP 2000 (Missouri State Employees' Plan 2000)	MSEP 2011 (Missouri State Employees' Plan 2011)
BACKDROP To be eligible to participate in the BackDROP, a member must have been eligible to retire under normal age and/or service conditions for at least two years. A retroactive starting date is established for BackDROP purposes which is the later of: 1) the member's normal retirement date or 2) five years prior to the annuity starting date under the retirement plan selected by the member. A member may elect the back DROP period for the accumulation of the BackDROP account in 12 month increments prior to their actual retirement date or back to the earliest possible date. This results in a BackDROP period of one to five years depending upon the individual situation. A theoretical BackDROP account is accumulated that includes 90% of the value of the benefit payments that would have been paid during the BackDROP period had the member retired at the retroactive starting date with their respective option election. These payments include applicable post-retirement benefit increases. The member is paid the resulting lump sum value of the BackDROP account as of the annuity starting date or as three equal annual installments beginning at the annuity starting date. The annuity benefit payable from the actual retirement date is computed with years of service and average pay as of the retroactive starting date for the BackDROP. Post-retirement benefit increases that occurred during the BackDROP period are applied in the calculation of the monthly annuity.	Same as MSEP.	Not eligible for the BackDROP.

SECTION I
GLOSSARY

June 30, 2013 Actuarial Valuation
Glossary

Actuarial Accrued Liability. The difference between (i) the actuarial present value of future plan benefits, and (ii) the actuarial present value of future normal cost. Sometimes referred to as "accrued liability" or "past service liability."

Accrued Service. The service credited under the plan which was rendered before the date of the actuarial valuation.

Actuarial Assumptions. Estimates of future plan experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income and salary increases. Decrement assumptions (rates of mortality, disability, turnover and retirement) are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (salary increases and investment income) consist of an underlying rate in an inflation-free environment plus a provision for a long-term average rate of inflation.

Actuarial Cost Method. A mathematical budgeting procedure for allocating the dollar amount of the "actuarial present value of future plan benefits" between the actuarial present value of future normal cost and the actuarial accrued liability. Sometimes referred to as the "actuarial funding method."

Actuarial Equivalent. A series of payments is called an actuarial equivalent of another series of payments if the two series have the same actuarial present value.

Actuarial Present Value. The amount of funds presently required to provide a payment or series of payments in the future. It is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Actuarial Value of Assets. Also referred to as funding value of assets, smoothed market value of assets, or valuation assets.

Valuation assets recognize assumed investment return fully each year. Differences between actual and assumed investment return are phased-in over an open 3-year period. Valuation assets are not permitted to deviate from the market value by less than 80% or more than 125%. This treatment helps remove the timing of investment activities from the valuation process. During periods when investment performance exceeds the assumed rate, valuation assets will tend to be less than market value. During periods when investment performance is less than the assumed rate, valuation assets will tend to be greater than market value.

Amortization. Paying off an interest-bearing liability by means of periodic payments of interest and principal, as opposed to paying it off with a lump sum payment.

Experience 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, in accordance with the actuarial cost method being used.

Normal Cost. The annual cost assigned, under the actuarial funding method, to current and subsequent plan years. Sometimes referred to as "current service cost." Any payment toward the unfunded actuarial accrued liability is not part of the normal cost.

(continued on following page)

June 30, 2013 Actuarial Valuation

Glossary

(concluded)

Plan Termination Liability. The actuarial present value of future plan benefits based on the assumption that there will be no further accruals for future service and salary. The termination liability will generally be less than the liabilities computed on a "going concern" basis and is not normally determined in a routine actuarial valuation.

Reserve Account. An account used to indicate that funds have been set aside for a specific purpose and are not generally available for other uses.

Unfunded Actuarial Accrued Liability. The difference between the actuarial accrued liability and actuarial value of assets. Sometimes referred to as "unfunded accrued liability."

The existence of unfunded actuarial accrued liabilities is not in itself bad, any more than a mortgage on a house is bad. Unfunded actuarial accrued liabilities do not represent a debt that is payable today. What is important is the ability to amortize the unfunded actuarial accrued liabilities and the trend in their amount (after due allowance for devaluation of the dollar).

Valuation Payroll. Active member payroll that is intended to reflect the annual salary considered as covered compensation for Retirement System benefits.

SECTION J
OTHER SPECIAL REQUIREMENTS

Basic Series Year-by-Year Total Returns (1926 – 2012)

For Stocks, Bonds, and Bills, RED means a Real Return of less than 3% [(Total Return - Inflation) < 3%]

For Inflation, RED means a loss of purchasing power

Year	Large Company Stocks	Small Company Stocks	Long-Term Corporate Bonds	Long-Term Government Bonds	Intermed.-Term Government Bonds	U.S. Treasury Bills	Inflation *
1926	11.62	0.28	7.37	7.77	5.38	3.27	-1.49
1927	37.49	22.10	7.44	8.93	4.52	3.12	-2.08
1928	43.61	39.69	2.84	0.10	0.92	3.56	-0.97
1929	-8.42	-51.36	3.27	1.17	6.01	4.75	0.20
1930	-24.90	-38.15	7.98	4.66	6.72	2.41	-6.03
1931	-43.34	-49.75	-1.85	-5.31	-2.32	1.07	-9.52
1932	-8.19	-5.39	10.32	16.84	8.81	0.96	-10.30
1933	53.99	142.87	10.38	-0.07	1.83	0.30	0.51
1934	-1.44	24.22	13.84	10.03	9.00	0.16	2.03
1935	47.67	40.19	9.61	4.98	7.01	0.17	2.99
1936	33.92	64.80	6.74	7.52	3.06	0.18	1.21
1937	-35.03	-58.01	2.75	0.23	1.56	0.31	3.10
1938	31.12	32.80	6.13	5.53	6.23	-0.02	-2.78
1939	-0.41	0.35	3.97	5.94	4.52	0.02	-0.48
1940	-9.78	-5.16	3.39	6.09	2.96	0.00	0.96
1941	-11.59	-9.00	2.73	0.93	0.50	0.06	9.72
1942	20.34	44.51	2.60	3.22	1.94	0.27	9.29
1943	25.90	88.37	2.83	2.08	2.81	0.35	3.16
1944	19.75	53.72	4.73	2.81	1.80	0.33	2.11
1945	36.44	73.61	4.08	10.73	2.22	0.33	2.25
1946	-8.07	-11.63	1.72	-0.10	1.00	0.35	18.16
1947	5.71	0.92	-2.34	-2.62	0.91	0.50	9.01
1948	5.50	-2.11	4.14	3.40	1.85	0.81	2.71
1949	18.79	19.75	3.31	6.45	2.32	1.10	-1.80
1950	31.71	38.75	2.12	0.06	0.70	1.20	5.79
1951	24.02	7.80	-2.69	-3.93	0.36	1.49	5.87
1952	18.37	3.03	3.52	1.16	1.63	1.66	0.88
1953	-0.99	-6.49	3.41	3.64	3.23	1.82	0.62
1954	52.62	60.58	5.39	7.19	2.68	0.86	-0.50
1955	31.56	20.44	0.48	-1.29	-0.65	1.57	0.37
1956	6.56	4.28	-6.81	-5.59	-0.42	2.46	2.86
1957	-10.78	-14.57	8.71	7.46	7.84	3.14	3.02
1958	43.36	64.89	-2.22	-6.09	-1.29	1.54	1.76
1959	11.96	16.40	-0.97	-2.26	-0.39	2.95	1.50
1960	0.47	-3.29	9.07	13.76	11.76	2.66	1.48
1961	26.89	32.09	4.82	0.97	1.85	2.13	0.67
1962	-8.73	-11.90	7.95	6.89	5.56	2.73	1.22
1963	22.80	23.57	2.19	1.21	1.64	3.12	1.65
1964	16.48	23.52	4.77	3.51	4.04	3.54	1.19
1965	12.45	41.75	-0.46	0.71	1.02	3.93	1.92
1966	-10.06	-7.01	0.20	3.65	4.69	4.76	3.35
1967	23.98	83.57	-4.95	-9.18	1.01	4.21	3.04
1968	11.06	35.97	2.57	-0.26	4.54	5.21	4.72
1969	-8.50	-25.05	-8.09	-5.07	-0.74	6.58	6.11
1970	4.01	-17.43	18.37	12.11	16.86	6.52	5.49
1971	14.31	16.50	11.01	13.23	8.72	4.39	3.36
1972	18.98	4.43	7.26	5.69	5.16	3.84	3.41
1973	-14.66	-30.90	1.14	-1.11	4.61	6.93	8.80
1974	-26.47	-19.95	-3.06	4.35	5.69	8.00	12.20
1975	37.20	52.82	14.64	9.20	7.83	5.80	7.01
1976	23.84	57.38	18.65	16.75	12.87	5.08	4.81
1977	-7.18	25.38	1.71	-0.69	1.41	5.12	6.77
1978	6.56	23.46	-0.07	-1.18	3.49	7.18	9.03
1979	18.44	43.46	-4.18	-1.23	4.09	10.38	13.31
1980	32.42	39.88	-2.62	-3.95	3.91	11.24	12.40
1981	-4.91	13.88	-0.96	1.86	9.45	14.71	8.94
1982	21.41	28.01	43.79	40.36	29.10	10.54	3.87
1983	22.51	39.67	4.70	0.65	7.41	8.80	3.80
1984	6.27	-6.67	16.39	15.48	14.02	9.85	3.95
1985	32.16	24.66	30.09	30.97	20.33	7.72	3.77
1986	18.47	6.85	19.85	24.53	15.14	6.16	1.13
1987	5.23	-9.30	-0.27	-2.71	2.90	5.47	4.41
1988	16.81	22.87	10.70	9.67	6.10	6.35	4.42
1989	31.49	10.18	16.23	18.11	13.29	8.37	4.65
1990	-3.17	-21.56	6.78	6.18	9.73	7.81	6.11
1991	30.55	44.63	19.89	19.30	15.46	5.60	3.06
1992	7.67	23.35	9.39	8.05	7.19	3.51	2.90
1993	9.99	20.98	13.19	18.24	11.24	2.90	2.75
1994	1.31	3.11	-5.76	-7.77	-5.14	3.90	2.67
1995	37.43	34.46	27.20	31.67	16.80	5.60	2.54
1996	23.07	17.62	1.40	-0.93	2.10	5.21	3.32
1997	33.36	22.78	12.95	15.85	8.38	5.26	1.70
1998	28.58	-7.31	10.76	13.06	10.21	4.86	1.61
1999	21.04	29.79	-7.45	-8.96	-1.77	4.68	2.68
2000	-9.11	-3.59	12.87	21.48	12.59	5.89	3.39
2001	-11.88	22.77	10.65	3.70	7.62	3.83	1.55
2002	-22.10	-13.28	16.33	17.84	12.93	1.65	2.38
2003	28.70	60.70	5.27	1.45	2.40	1.02	1.88
2004	10.87	18.39	8.72	8.51	2.25	1.20	3.26
2005	4.91	5.69	5.87	7.81	1.36	2.98	3.42
2006	15.80	16.17	3.24	1.19	3.14	4.80	2.54
2007	5.49	-5.22	2.60	9.88	10.05	4.66	4.08
2008	-37.00	-36.72	8.78	25.87	13.11	1.60	0.09
2009	26.46	28.09	3.02	-14.90	-2.40	0.10	2.72
2010	15.06	31.36	12.44	10.14	7.12	0.12	1.50
2011	2.11	-3.26	17.95	28.23	9.46	0.04	2.96
2012	16.00	18.24	10.68	3.31	2.07	0.06	1.74

GABRIEL, ROEDER, SMITH & COMPANY from SBBI Yearbook * *Calculated using December to December CPI-U (1982-84=100, when available), not seasonally adjusted.*

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October 1, 2013

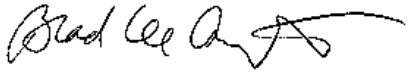
Mr. Gary W. Findlay
Executive Director
Missouri State Employees'
Retirement System
907 Wildwood
P.O. Box 209
Jefferson City, Missouri 65109

Re: MOSERS – Valuation Report

Dear Gary:

Enclosed are 20 copies of the June 30, 2013 actuarial valuation report of the Missouri State Employees' Retirement System.

Sincerely,



Brad Lee Armstrong

BLA:sc
Enclosures

cc: Amanda Gaither
Williams-Keepers, LLC (+1 report copy)