

MISSOURI STATE EMPLOYEES' RETIREMENT SYSTEM
ANNUAL ACTUARIAL VALUATION- REVISED
JUNE 30, 2012

Missouri State Employees' Retirement System

Annual Actuarial Valuation as of June 30, 2012

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October 24, 2012

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

Re: Annual Actuarial Valuation as of June 30, 2012 - Revised

Dear Board Members:

Presented in this report are the results of the **annual actuarial valuation** of the Missouri State Employees' Retirement System. The purpose of the valuation was to measure the System's funding progress and to determine the level cost employer contribution rate for the fiscal year beginning July 1, 2013.

The date of the valuation was **June 30, 2012**.

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 the actuary's assignment, the actuary did not perform an analysis of the potential range of such future measurements.

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.

Your attention is directed particularly to the presentation of contribution rates on page 3 and the comments on page 8.

The financial assumptions used in making the valuations are shown in the Appendix 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.

Board of Trustees

October 24, 2012

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The actuaries submitting this report 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



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Consultant & Actuary

BLA:DTK/sc

VALUATION RESULTS

Computed Employer Contribution Rate
Expressed as Percents of Active Member Payroll
for the Fiscal Year Ending June 30, 2014
Actuarial Valuation Results as of June 30, 2012

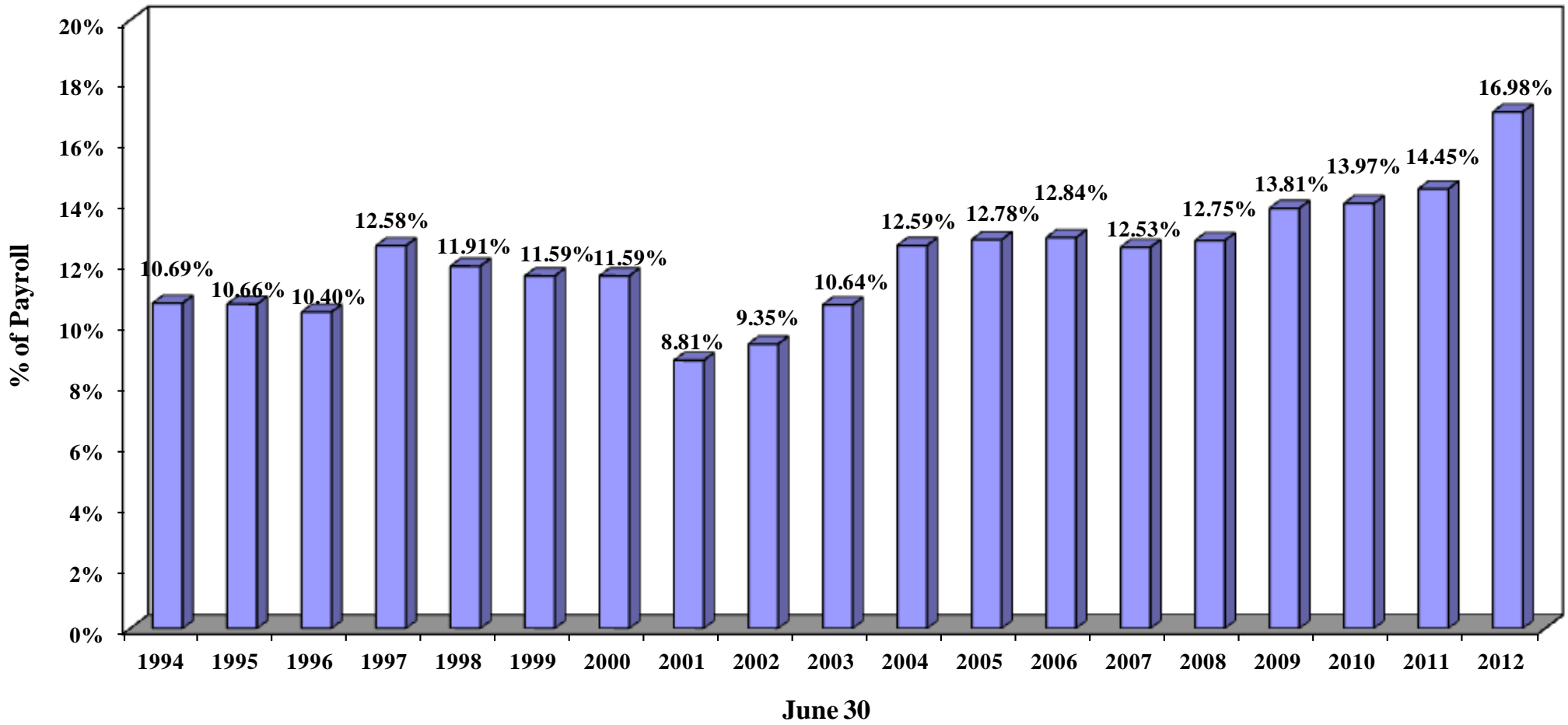
	Contribution Expressed as Percents of Payroll for the Fiscal Year		
	2013/14		
	Pre-2011 Hires	Post-2010 Hires@	Weighted Average
A. Normal Cost			
(1) Service retirement benefits	7.47 %	4.46 %	6.75 %
(2) Disability benefits	0.72	0.80	0.74
(3) Survivor benefits	0.18	0.22	0.19
(4) Administrative expenses	0.36	0.36	0.36
(5) Total [(1) + (2) + (3) + (4)]	<u>8.73</u>	<u>5.84</u>	<u>8.04</u>
B. Less Member Contributions			
(1) Member Contribution Rate	0.00	4.00	0.96
(2) Refunds	0.00	(1.24)	(0.30)
(3) Total [(1) + (2)]	<u>0.00</u>	<u>2.76</u>	<u>0.66</u>
C. Employer Normal Cost [A(5) - B(3)]	8.73	3.08	7.38
D. Unfunded Actuarial Accrued Liabilities (UAAL) (30-year level percent-of-payroll amortization*)			<u>9.60</u>
E. TOTAL COMPUTED EMPLOYER CONTRIBUTION RATE [C. + D.]			16.98 %
ESTIMATED EMPLOYER CONTRIBUTION (\$Millions)#			\$335.8

@ 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.

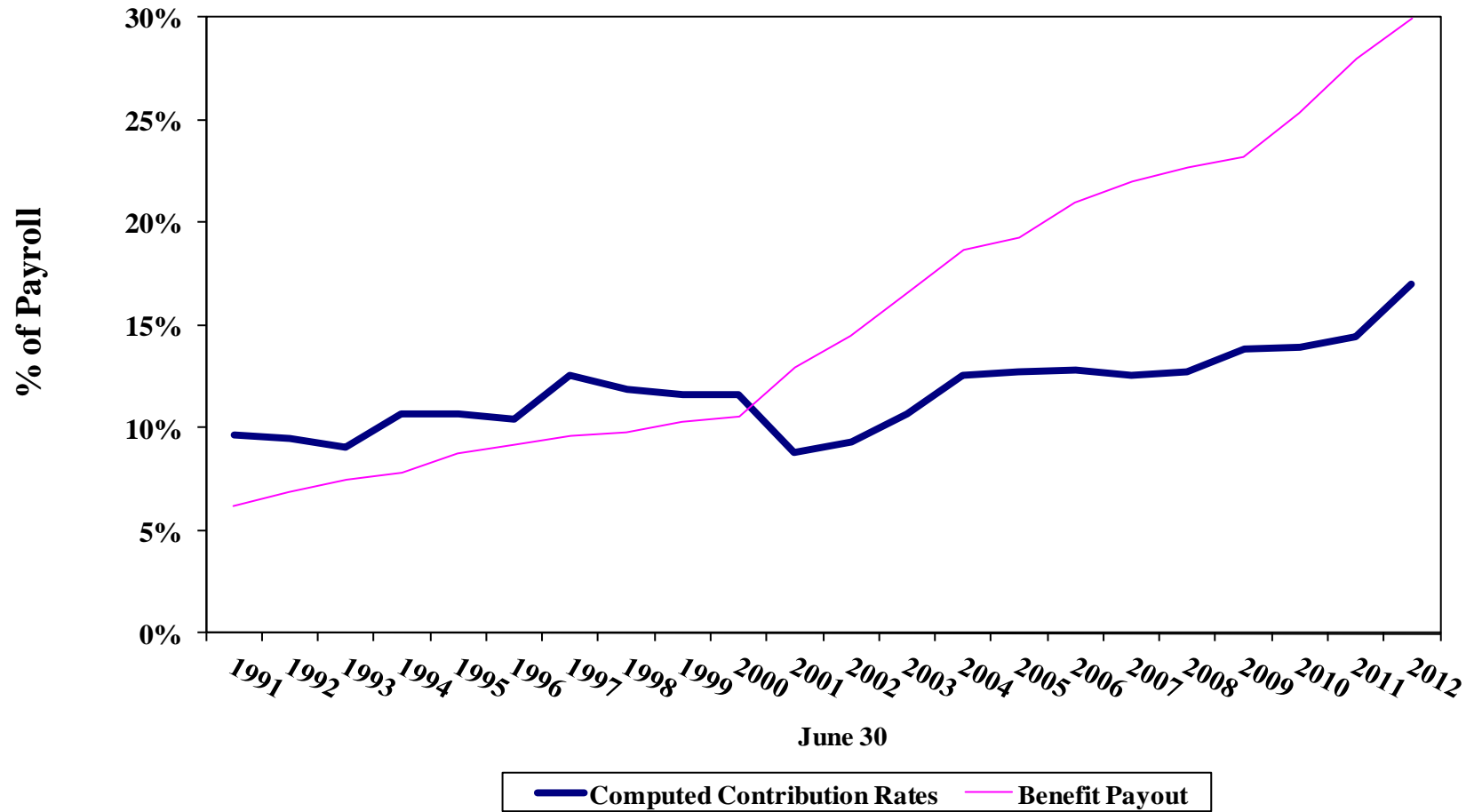
* This corresponds to an amortization factor of 15.77495 applied to the unfunded actuarial accrued liability at the beginning of the applicable fiscal year assuming payroll growth of 3% per year.

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 \$281.9 million.

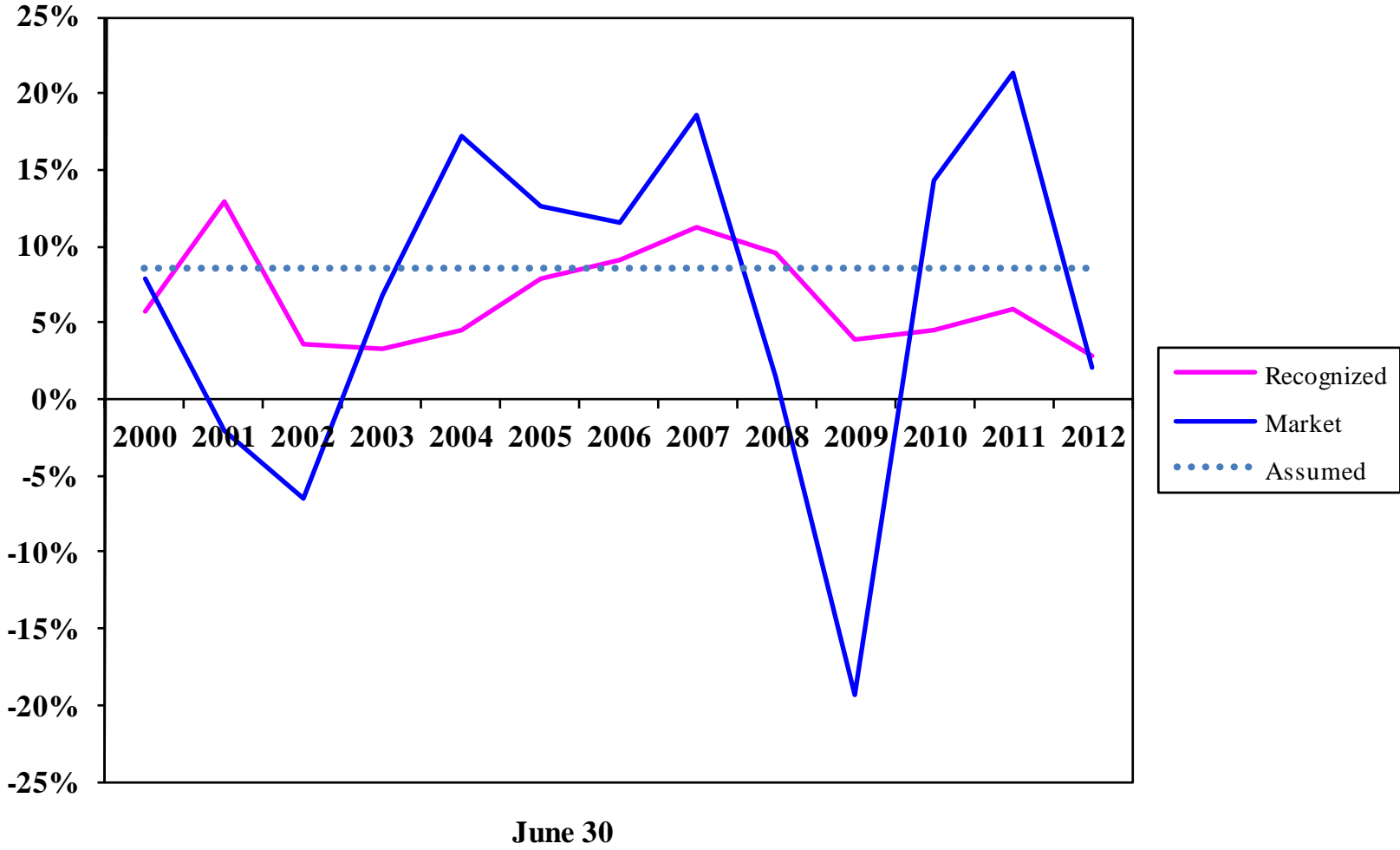
Computed Employer Contribution Rates



Contribution Rates vs. Benefit Payout



Recognized vs. Market Returns



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

Actuarial Present Values June 30, 2012

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	\$4,723,202,252	\$ 657,426,610	\$ 4,065,775,642
Disability benefits likely to be paid to present active members who become totally and permanently disabled	139,757,505	86,609,170	53,148,335
Survivor benefits likely to be paid to widows and children of present active members who die before retiring	93,690,228	21,815,025	71,875,203
Separation benefits likely to be paid to present active members	422,810,397	199,410,351	223,400,046
Refunds likely to be paid to present active members	<u>13,763,945</u>	<u>13,057,523</u>	<u>706,422</u>
Active Member Totals	\$5,393,224,327	\$978,318,679	\$ 4,414,905,648
Members on Leave of Absence & LTD			
Service retirement benefits based on service rendered before the valuation date			130,424,203
Terminated Vested Members			
Service retirement benefits based on service rendered before the valuation date			498,910,658
Retired Lives			
			5,748,985,566
BackDROP Installment Payments Incurred, but not yet paid			
			<u>425,502</u>
TOTAL ACTUARIAL ACCRUED LIABILITY			\$10,793,651,577
ACTUARIAL VALUE OF ASSETS			<u>7,897,167,203</u>
UNFUNDED ACTUARIAL ACCRUED LIABILITY			<u><u>\$ 2,896,484,374</u></u>
FUNDED RATIO			73.2%

Actuarial Valuation as of June 30, 2012

Comments

Computed Contribution Rate. The employer contribution rate for the fiscal year beginning July 1, 2013 was computed to be 16.98% of payroll, based upon an amortization period for the unfunded actuarial accrued liabilities (UAAL) of 30 years. This represents an increase of 2.53% of payroll compared to the rate computed for the fiscal year beginning July 1, 2012. The contribution rate increased by 1.37% of payroll due to experience losses, the largest of which was the recognized loss on valuation assets. The rate also increased by 1.16% of payroll due assumption changes adopted as a result of the July 1, 2007 – June 30, 2011 experience study as reflected at June 30, 2012. The computed employer contribution rate is dependent upon timely receipt of both member and employer contributions.

Experience and Funded Ratio. 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. The funded ratio, prior to assumption changes, as of June 30, 2012 is 75.0% (actuarial value of assets as a percentage of actuarial accrued liability), down from 79.2% as of June 30, 2011. (On a market value basis, the funded ratio is 72.0%). After implementing the experience study changes, the funding ratio decreased to 73.2% on a funding value basis and 70.2% on a market value basis.

Additional information concerning 2012 experience is presented in the gain/loss section of this report beginning on page 14.

Asset Valuation Method. Market experience during the year ended June 30, 2012 was below expectations, in addition to past losses that are still being smoothed into the recognized valuation assets. The asset valuation method currently in use by MOSERS smoothes investment gains and losses over 5 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 20%. In the absence of offsetting gains, the employer contribution rate is expected to continue increasing to a level approaching 18% of payroll.

Conclusion. **Based on the results of the June 30, 2012 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.**

Comparative Schedule

Valuation Date June 30	Active Members				Retired Lives				Accrued Liability	Valuation Assets	UAAL
	Number	Payroll \$ Millions	Average Salary		Number		Annual Benefits				
			\$	% Incr.	Retired	Active/ Retired	\$ Million	% of Payroll			
										-----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	51,332	1,864	36,314	0.0	37,308	1.4	558.6	30.0	10,534	7,897	2,637
2012 (1)	51,332	1,864	36,314	0.0	37,308	1.4	558.6	30.0	10,794	7,897	2,897

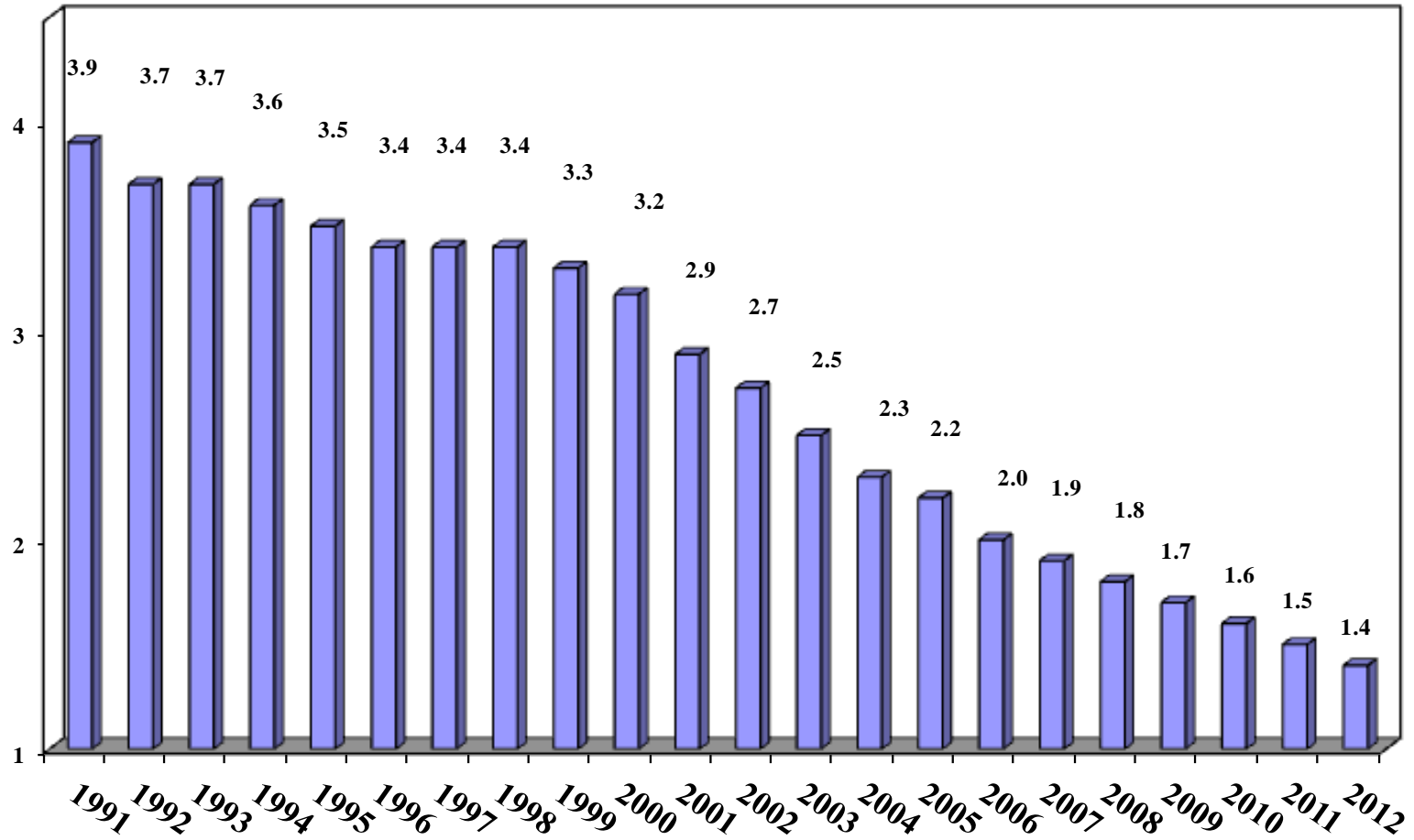
(1) After changes in assumptions.

(2) After changes in benefit provisions.

(3) After changes in methods.

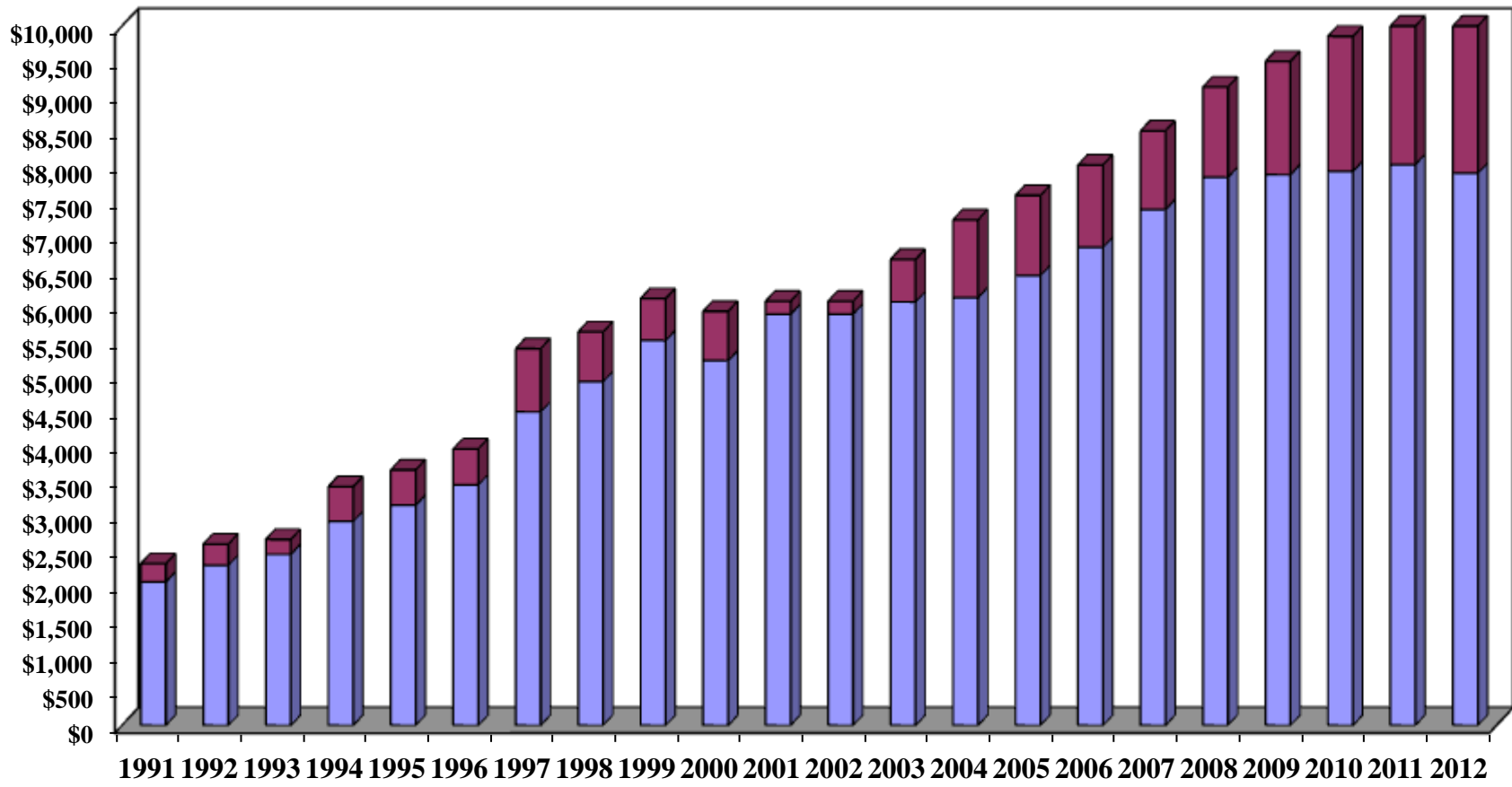
(4) Reflects the addition of the assets, liabilities, and members of the Administrative Law Judges Retirement System.

Number of Active Members Per Benefit Recipient

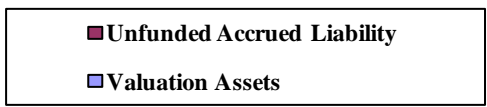


June 30

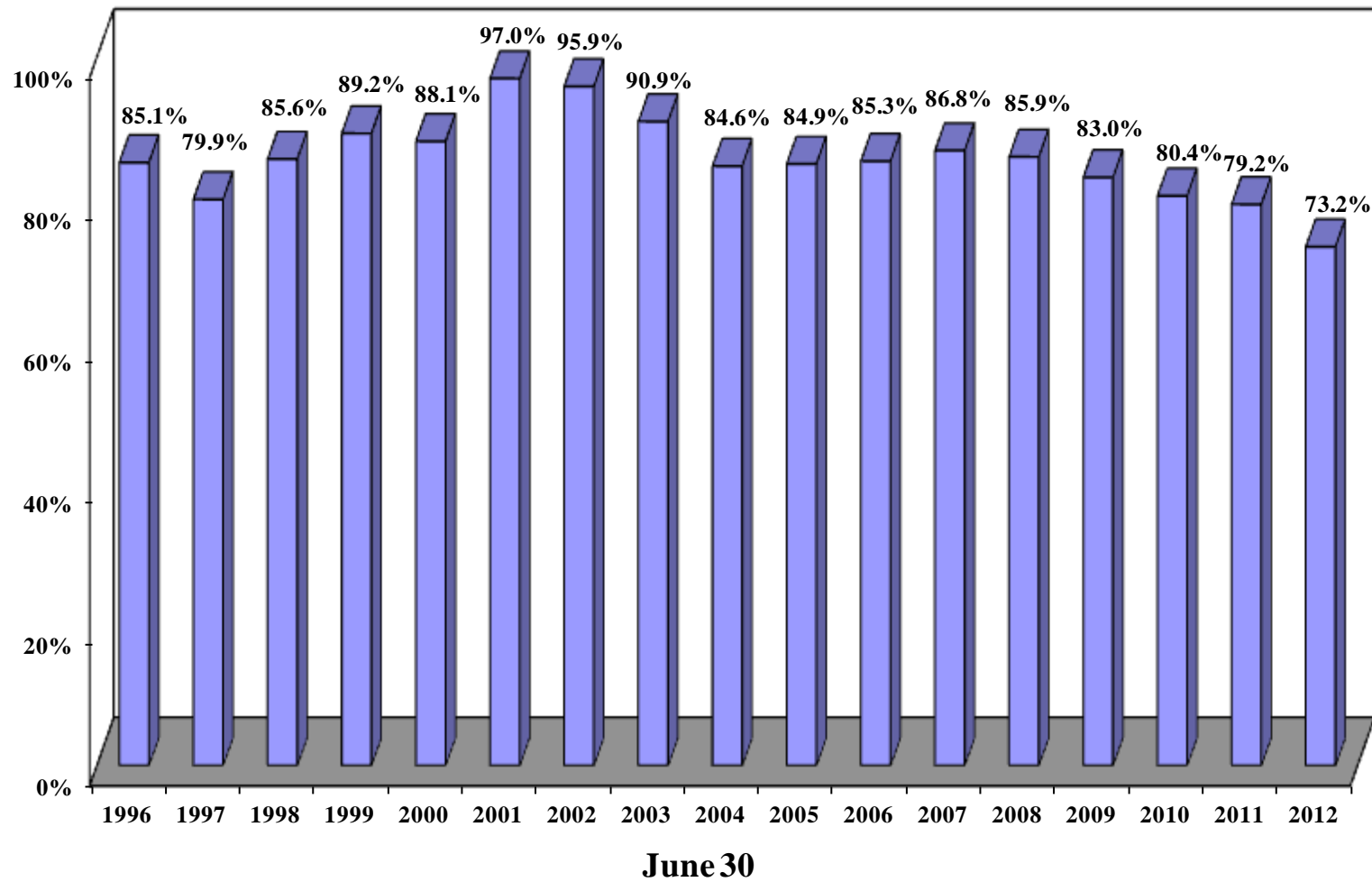
**Actuarial Value of Assets and Actuarial Accrued Liabilities
(\$ in millions)**



June 30



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



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)

<u>Investment Return Assumption</u>	<u>7.0%</u>	<u>8.0%</u>	<u>9.0%</u>
Employer Normal Cost	9.45 %	7.38 %	5.78 %
UAAL Rate	<u>12.42</u>	<u>9.60</u>	<u>6.81</u>
Employer Contribution Rate	21.87 %	16.98 %	12.59 %
Projected \$ Contribution (ER)	\$ 428.3	\$ 335.8	\$ 246.6
Actuarial Accrued Liability	\$ 12,025	\$ 10,794	\$ 9,760
Actuarial Value of Assets	\$ 7,897	\$ 7,897	\$ 7,897
Unfunded Actuarial Accrued Liability	\$ 4,128	\$ 2,896	\$ 1,862
Funded Ratio	65.7 %	73.2 %	80.9 %

GAIN/LOSS ANALYSIS

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.***

2011 and 2012 Data. For the 2011 and 2012 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, 2011 and June 30, 2012.

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, 2011 through May 31, 2012.

Results from 2012 Plan Year. There was a net experience loss this year, with the largest single identifiable source being pay increases that were on average higher than expected. The table below summarizes historical MOSERS economic experience:

Period	Inflation As Measured By		Market Interest Credited to MOSERS Funds	Real Rate of Return	
	CPI	Increase in Average Salary@		Relative to CPI	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	0.0 *	(2.1)	(0.6)
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

* 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 represent 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.

	<u>UAAL/Active Member Payroll</u>
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

Derivation of Experience Gain (Loss)

Year Ended June 30, 2012

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	\$2,101.1
(2) Normal cost from last valuation	159.2
(3) Actual contributions (Employer and Member)	273.9
(4) Interest accrual: $(1) \times .085 + [(2) - (3)] \times (.085 / 2)$	173.7
(5) Expected UAAL before changes: $(1) + (2) - (3) + (4)$	2,160.1
(6) Change from any changes in benefits, assumptions, or methods	259.1
(7) Expected UAAL after changes: $(5) + (6)$	2,419.2
(8) Actual UAAL at end of year	2,896.5
(9) Gain (loss): $(7) - (8)$	(477.3)
- Gains (losses) in economic risk areas	(414.3)
- Gains (losses) from decrement experience	(62.9)
(10) Gain (loss) as percent of actuarial accrued liabilities at start of year (\$10,124)	(4.7) %

* *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)

Gains & (Losses) in Actuarial Accrued Liabilities During Plan Year 2011 - 2012

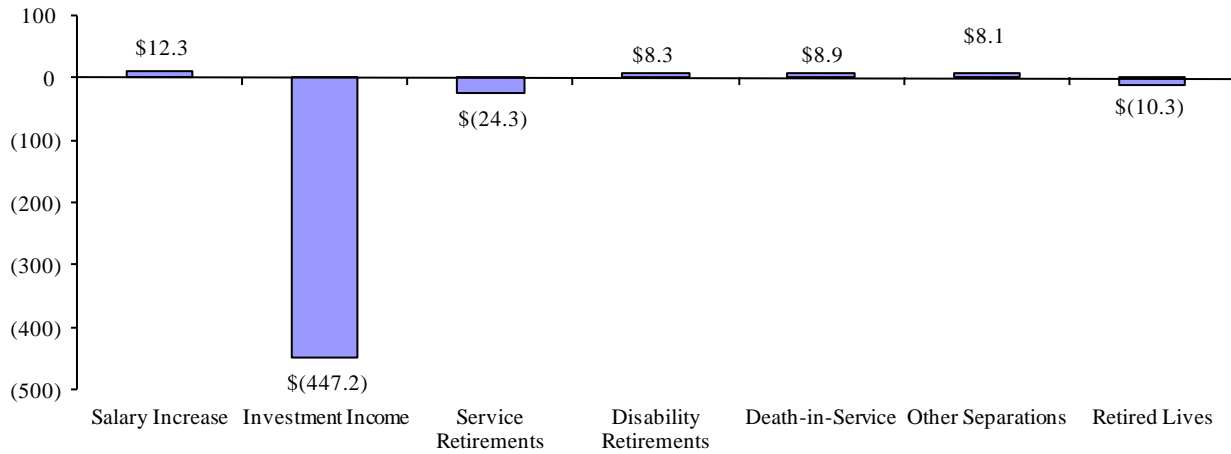
Type of Activity	-- Gain (Loss) for Year - -	
	\$ in Millions	% of Accr. Liabilities*
<u>Decrement Experience:</u>		
<i>Service Retirements.</i> If members retire at older ages than assumed, there is a gain. If at younger ages, a loss.	\$ (24.3)	(0.2) %
<i>Disability Retirements.</i> The occurrence of a gain or loss depends upon the age at disability and the incidence of disability.	8.3	0.1
<i>Death-in-Service.</i> 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.	8.9	0.1
<i>Other Separations.</i> If more actuarial liabilities are released by other separations than assumed, there is a gain. If smaller releases, a loss.	8.1	0.1
<i>Retired Lives.</i> If more deaths than assumed, there is a gain. If fewer deaths, a loss.	(10.3)	(0.1)
<u>Economic Experience:</u>		
<i>Salary Increases.</i> 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.	12.3	0.1
<i>Investment Income.</i> If there is greater investment income than assumed, there is a gain. If less income, a loss.	(447.2)	(4.4)
<i>COLAs.</i>	20.6	0.2
<u>Other:</u>		
Service credit reinstatements, service transfers, service purchases, rehires, net of contributions.	(26.1)	(0.3)
Larger than expected average compensation for new retirees.	(14.7)	(0.1)
Change in group size, data adjustments, retroactive benefit payments, option elections, and miscellaneous unidentified changes in the UAAL.	(12.8)	(0.2)
<i>Experience Gain or (Loss) During Year</i>	\$ (477.2)	(4.7) %

* Beginning of year accrued liabilities totaled \$10,124 million.

MOSERS

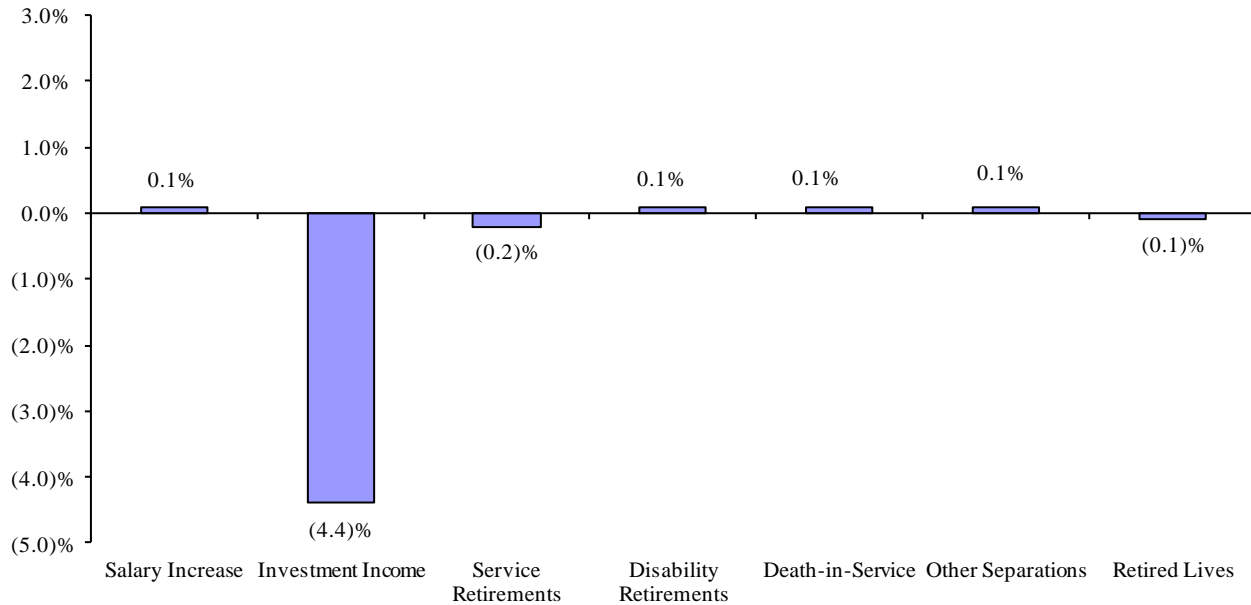
Gain (Loss) Analysis 2011-2012 Experience

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	COLAs & Retired Lives	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)	\$ 7.4	(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

* Revision in assumptions.

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

^ Includes (\$23.0) for legal settlement.

**Development of Gain (Loss)
from Investment Income
During Plan Year 2011 - 2012**

	Market Value ----- \$ in millions -----	Actuarial Value ----- \$ in millions -----
1. Assets at June 30, 2011	\$7,768.7	\$ 8,022.5
2. Contributions and Transfers In	273.9	273.9
3. Investment Income	158.6	220.0
4. Benefit Payments	612.2	612.2
5. Administrative Expenses	7.0	7.0
6. Assets at June 30, 2012 = (1) + (2) + (3) – (4) – (5)	7,581.9	7,897.2
7. Actual Investment Increment/Mean Assets*	2.09 %	2.80 %
8. Expected Investment Increment		8.50 %
9. Investment Gain (Loss):		
a. As a % of mean assets: (7) – (8)		(5.70) %
b. \$ in millions		<u>\$ (447.2)</u>

* 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 2011 - 2012**

Age Groups		Salary Increases	
		Actual*	Expected
Below 20			
20- 24	667	7.4%	3.3%
25- 29	3,061	4.5%	2.6%
30- 34	4,352	3.1%	1.9%
35- 39	4,760	2.2%	1.4%
40- 44	5,953	2.0%	1.1%
45- 49	6,904	1.5%	0.8%
50- 54	7,612	1.2%	0.6%
55- 59	6,581	1.2%	0.5%
60-64	4,145	1.0%	0.4%
65 & Over	1,469	0.5%	0.3%
Total	45,504		
Average		1.8%	1.0%

* Excludes new entrants and terminations.

Assumed Payroll Growth	Actual Payroll Growth		
	2012	2011	2010
4.0%	(0.6)%	(3.6)%	(2.9)%

**Active Members Who Retired With
SERVICE OR REDUCED SERVICE RETIREMENT BENEFITS
During Plan Year 2011 - 2012**

Ages	Men		Women		Total	
	Actual	Expected	Actual	Expected	Actual	Expected
Under 50	5	-	8	5.7	13	5.7
50	5	2.6	6	16.7	11	19.2
51	4	9.6	23	21.5	27	31.0
52	10	14.6	31	36.8	41	51.4
53	15	15.8	40	41.7	55	57.4
54	15	20.4	37	42.8	52	63.2
55	33	33.1	45	52.8	78	85.9
56	31	33.5	49	56.4	80	89.9
57	37	44.1	67	60.9	104	105.0
58	43	47.0	66	64.7	109	111.7
59	30	46.7	62	58.4	92	105.0
60	45	59.1	76	74.9	121	133.9
61	51	51.1	73	72.1	124	123.2
62	90	99.1	107	137.5	197	236.5
63	51	64.7	96	99.4	147	164.0
64	39	50.2	56	67.4	95	117.6
65	57	76.8	94	98.1	151	174.9
66	41	38.3	51	42.9	92	81.1
67	27	22.8	35	23.9	62	46.7
68	28	17.2	26	19.8	54	37.0
69	19	14.4	18	12.6	37	27.0
70 & Over	50	66.4	47	53.8	97	120.3
Totals	726	827.3	1,113	1,160.5	1,839	1,987.6

	Men	Women	Total
Average age at retirement	62.3 years	61.3 years	61.7 years
Average service at retirement	22.6 years	22.5 years	22.5 years

**Active Members Who Retired with DISABILITY BENEFITS
During Plan Year 2011 - 2012**

Ages	Men		Women		Total	
	Actual	Expected	Actual	Expected	Actual	Expected
Under 25		0.0		0.0	-	0.1
25- 29	2	0.5	2	1.4	4	1.9
30- 34	2	1.9	7	5.1	9	7.0
35- 39	3	3.2	10	6.9	13	10.1
40- 44	16	5.5	7	10.9	23	16.3
45- 49	19	9.1	15	17.2	34	26.2
50- 54	15	15.4	28	24.7	43	40.1
55- 59	25	21.1	16	28.5	41	49.6
60 & Over	8	7.2	7	11.7	15	18.9
Totals	90	63.8	92	106.4	182	170.2

	Men	Women	Total
Average age at disability	50.6 years	49.3 years	49.8 years
Average service at disability	9.6 years	10.3 years	9.9 years

**Active Members Who Died
During Plan Year 2011 - 2012**

Ages	Men		Women		Total	
	Actual	Expected	Actual	Expected	Actual	Expected
Under 30		0	1	0	1	0
30- 34		0	1	1	1	1
35- 39	3	1		1	3	2
40- 44	5	2	2	2	7	3
45- 49	3	3	6	3	9	6
50- 54	9	7	11	5	20	12
55- 59	13	11	5	8	18	19
60- 64	8	12	6	9	14	21
65 & Over	7	11	1	6	8	16
Totals	48	47.0	33	34.0	81	81.0

	Men	Women	Total
Average age at death	55.8 years	53.2 years	54.7 years
Average service at death	14.6 years	12.9 years	13.9 years

Of the 81 active members who died in service during plan year 2011-2012, 38 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 2011 - 2012**

Ages	Men		Women		Total	
	Actual	Expected	Actual	Expected	Actual	Expected
Under 30	36	48.2	82	69.5	118	117.7
30- 34	94	102.6	190	176.8	284	279.4
35- 39	93	100.4	156	166.3	249	266.7
40- 44	95	98.6	164	172.6	259	271.2
45- 49	88	93.4	150	163.8	238	257.2
50- 54	75	78.9	137	143.7	212	222.6
55- 59	47	55.3	86	92.0	133	147.3
60 & Over	17	14.4	18	24.8	35	39.2
Totals	545	591.7	983	1,009.6	1,528	1,601.2

	Men	Women	Total
Average age at termination	43.1 years	42.3 years	42.6 years
Average service at termination	10.3 years	10.5 years	10.4 years

**Active Members Who Left Active Status with NO BENEFIT PAYABLE
(Other than Deaths)
During Plan Year 2011 - 2012**

Ages	Men		Women		Total	
	Actual	Expected	Actual	Expected	Actual	Expected
Under 20						
20- 24	100	66.6	194	113.6	294	180.2
25- 29	294	202.3	389	269.7	683	472.0
30- 34	192	138.3	265	201.2	457	339.5
35- 39	119	95.0	159	134.7	278	229.7
40- 44	87	88.6	150	127.1	237	215.7
45- 49	78	81.4	126	123.2	204	204.6
50- 54	77	72.9	86	112.1	163	185.0
55- 59	44	62.3	64	81.7	108	144.0
60- 64	34	47.9	36	48.1	70	96.1
65- 69	12	12.7	11	10.8	23	23.5
70 & Over	3	4.4	4	3.0	7	7.5
Totals	1,040	872.4	1,484	1,225.2	2,524	2,097.7

	Men	Women	Total
Average age at termination	36.7 years	36.0 years	36.3 years
Average service at termination	3.1 years	2.0 years	2.5 years

Service at Termination	Men		Women		Total	
	Actual	Expected	Actual	Expected	Actual	Expected
0	319	309.6	558	473.5	877	783.1
1	231	194.2	285	250.6	516	444.8
2	193	192.0	285	251.4	478	443.4
3	152	154.9	222	234.5	374	389.4
4	145	21.8	134	15.2	279	37.0
5 & Over	-	-	-	-	-	-
Totals	1,040	872.4	1,484	1,225.2	2,524	2,097.7

**Comparison of Actual to Expected Deaths
Among Retired Lives
(Service Retirement Only)
As of June 30, 2012**

Age	Male Deaths			Female Deaths			Total Deaths		
	Actual	Expected	Exposure	Actual	Expected	Exposure	Actual	Expected	Exposure
50-54	1		216	1		527	1	1	743
55-59	20	11	1,547	23	14	2,603	43	25	4,150
60-64	35	36	3,218	31	37	4,672	66	73	7,890
65-69	37	49	2,732	47	46	3,907	84	95	6,639
70-74	41	57	1,865	57	55	2,805	98	112	4,670
75-79	50	62	1,276	65	65	1,950	115	127	3,226
80-84	60	60	768	78	75	1,429	138	135	2,197
85-89	47	42	367	85	68	801	132	110	1,168
90-94	12	16	97	58	44	346	70	60	443
95-99	3	3	16	17	15	80	20	18	96
100 & Up	1	1	3	4	2	7	5	3	10
Totals	307	337	12,105	465	422	19,127	772	759	31,232
Average Ages	75.4	75.6	67.8	78.9	78.1	68.3	77.5	77.0	68.1

DATA USED IN VALUATIONS

**Missouri State Employees' Retirement System
Summary of Benefit Provisions Evaluated
June 30, 2012 Actuarial Valuation**

MSEP (Missouri State Employees' Plan)	MSEP 2000 (Missouri State Employees' Plan 2000)	MSEP 2011 (Missouri State Employees' Plan 2011)
<p>PARTICIPATION</p> <p>Participants include:</p> <p>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.</p> <p>AVERAGE COMPENSATION USED FOR BENEFIT DETERMINATION</p> <p>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).</p>	<p>PARTICIPATION</p> <p>Participants include:</p> <ol style="list-style-type: none"> (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. <p>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).</p>	<p>PARTICIPATION</p> <p>Participants include:</p> <p>All new employees who first become employees on or after January 1, 2011.</p> <p>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).</p>

<p style="text-align: center;">MSEP (Missouri State Employees' Plan)</p>	<p style="text-align: center;">MSEP 2000 (Missouri State Employees' Plan 2000)</p>	<p style="text-align: center;">MSEP 2011 (Missouri State Employees' Plan 2011)</p>
<p>NORMAL RETIREMENT ELIGIBILITY (UNREDUCED BENEFITS)</p> <p><i>Members of the General Assembly:</i> Age 55 with completion of at least 3 full biennial assemblies.</p> <p><i>Statewide Elected Officials:</i> The earliest of attaining:</p> <ol style="list-style-type: none"> (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. <p><i>General Employees:</i> The earliest of attaining:</p> <ol style="list-style-type: none"> (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. <p><i>Uniformed Water Patrol Employees:</i> The earliest of attaining:</p> <ol style="list-style-type: none"> (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. 	<p><i>Members of the General Assembly:</i> The earliest of attaining:</p> <ol style="list-style-type: none"> (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. <p><i>Statewide Elected Officials:</i> The earliest of attaining:</p> <ol style="list-style-type: none"> (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. <p><i>General Employees:</i> The earliest of attaining:</p> <ol style="list-style-type: none"> (1) Age 62 with at least 5 years of credited service. (2) Age 48 with age plus credited service equal to 80 or more. 	<p><i>Members of the General Assembly:</i> The earliest of attaining:</p> <ol style="list-style-type: none"> (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. <p><i>Statewide Elected Officials:</i> The earliest of attaining:</p> <ol style="list-style-type: none"> (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. <p><i>General Employees:</i> The earliest of attaining:</p> <ol style="list-style-type: none"> (1) Age 67 with at least 10 years of credited service. (2) Age 55 with age plus credited service equal to 90 or more.

<p align="center">MSEP (Missouri State Employees' Plan)</p>	<p align="center">MSEP 2000 (Missouri State Employees' Plan 2000)</p>	<p align="center">MSEP 2011 (Missouri State Employees' Plan 2011)</p>
<p>BENEFIT AMOUNT</p> <p><i>Members of the General Assembly:</i> \$150 per month per biennial assembly served.</p> <p><i>Statewide Elected Officials:</i></p> <ol style="list-style-type: none"> 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. <p><i>General Employees:</i> 1.6% of Average Compensation times years of credited service.</p> <p>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.</p> <p><i>Uniformed Water Patrol:</i> 2.13% of Average Compensation times years of credited service.</p>	<p><i>Members of the General Assembly:</i> 1/24 of pay times first 24 years of credited service as a member of the General Assembly.</p> <p><i>Statewide Elected Officials:</i> 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.</p> <p><i>General Employees:</i> 1.7% of Average Compensation times years of credited service.</p> <p>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.</p> <p>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.</p>	<p><i>Members of the General Assembly:</i> 1/24 of pay times first 24 years of credited service as a member of the General Assembly.</p> <p><i>Statewide Elected Officials:</i> 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.</p> <p><i>General Employees:</i> 1.7% of Average Compensation times years of credited service.</p> <p>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.</p> <p>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.</p>

MSEP (Missouri State Employees' Plan)	MSEP 2000 (Missouri State Employees' Plan 2000)	MSEP 2011 (Missouri State Employees' Plan 2011)																																																
<p>EARLY RETIREMENT FOR GENERAL EMPLOYEES</p> <p>Eligibility: Age 55 with at least 10 years of credited service.</p> <p>Amount: Normal retirement amount reduced by ½% for each month that retirement precedes eligibility for normal retirement.</p> <ol style="list-style-type: none"> 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. <p>Vested Deferred Benefits</p> <p>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.</p> <table border="1" data-bbox="65 1258 693 1421"> <thead> <tr> <th>Years of Service</th> <th>General Assembly</th> <th>Elected Officials</th> <th>General Employees</th> </tr> </thead> <tbody> <tr> <td>4</td> <td></td> <td>100%</td> <td></td> </tr> <tr> <td>5</td> <td></td> <td></td> <td>100%</td> </tr> <tr> <td>6 (3 Assemblies)</td> <td>100%</td> <td></td> <td></td> </tr> </tbody> </table>	Years of Service	General Assembly	Elected Officials	General Employees	4		100%		5			100%	6 (3 Assemblies)	100%			<p>Eligibility: Age 57 with at least 5 years of credited service.</p> <p>Amount: Normal retirement amount reduced by ½% for each month that retirement precedes eligibility for normal retirement. Normal retirement is age 62.</p> <p>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.</p> <table border="1" data-bbox="726 1198 1371 1425"> <thead> <tr> <th>Years of Service</th> <th>General Assembly</th> <th>Elected Officials</th> <th>General Employees</th> </tr> </thead> <tbody> <tr> <td>4</td> <td></td> <td>100%</td> <td></td> </tr> <tr> <td>5</td> <td></td> <td></td> <td>100%</td> </tr> <tr> <td>6 (3 Assemblies) HB1455 prospectively</td> <td>100%</td> <td></td> <td></td> </tr> </tbody> </table>	Years of Service	General Assembly	Elected Officials	General Employees	4		100%		5			100%	6 (3 Assemblies) HB1455 prospectively	100%			<p>Eligibility: Age 62 with at least 10 years of credited service.</p> <p>Amount: Normal retirement amount reduced by ½% for each month that retirement precedes eligibility for normal retirement. Normal retirement is age 67.</p> <p>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.</p> <table border="1" data-bbox="1396 1179 2041 1422"> <thead> <tr> <th>Years of Service</th> <th>General Assembly</th> <th>Elected Officials</th> <th>General Employees</th> </tr> </thead> <tbody> <tr> <td>4</td> <td></td> <td>100%</td> <td></td> </tr> <tr> <td>6 (3 Assemblies) HB1455 prospectively</td> <td>100%</td> <td></td> <td></td> </tr> <tr> <td>10</td> <td></td> <td></td> <td>100%</td> </tr> </tbody> </table>	Years of Service	General Assembly	Elected Officials	General Employees	4		100%		6 (3 Assemblies) HB1455 prospectively	100%			10			100%
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<p align="center">MSEP (Missouri State Employees' Plan)</p>	<p align="center">MSEP 2000 (Missouri State Employees' Plan 2000)</p>	<p align="center">MSEP 2011 (Missouri State Employees' Plan 2011)</p>
<p>DEATH PRIOR TO RETIREMENT</p> <p>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).</p>	<p>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).</p>	<p>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).</p>

<p align="center">MSEP (Missouri State Employees' Plan)</p>	<p align="center">MSEP 2000 (Missouri State Employees' Plan 2000)</p>	<p align="center">MSEP 2011 (Missouri State Employees' Plan 2011)</p>
<p>DEATH AFTER RETIREMENT</p> <p>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).</p> <p>DISABILITY (RECIPIENTS OF LTD BENEFITS)</p> <p>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.</p>	<p>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).</p> <p>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%.</p>	<p>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).</p> <p>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%.</p>

**MSEP
(Missouri State Employees' Plan)**

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.

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

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.

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

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.

MSEP (Missouri State Employees' Plan)	MSEP 2000 (Missouri State Employees' Plan 2000)	MSEP 2011 (Missouri State Employees' Plan 2011)
<p>POP-UP PROVISION</p> <p>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.</p> <p>PORTABILITY</p> <p>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.</p> <p>MEMBER CONTRIBUTIONS. None.</p> <p>BACKDROP. See following page.</p>	<p>Same.</p> <p>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.</p> <p>Same as MSEP.</p> <p>Same as MSEP.</p>	<p>Same.</p> <p>May purchase qualifying public sector service at full actuarial cost.</p> <p>4.0% of salary, with 4.0% interest credited to member contributions.</p> <p>Not eligible for the BackDROP.</p>

<p align="center">MSEP (Missouri State Employees' Plan)</p>	<p align="center">MSEP 2000 (Missouri State Employees' Plan 2000)</p>	<p align="center">MSEP 2011 (Missouri State Employees' Plan 2011)</p>
<p>BACKDROP</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p>	<p>Same as MSEP.</p>	<p>Not eligible for the BackDROP.</p>

**Retirants & Beneficiaries as of June 30, 2012
Tabulated by Plan Year of Retirement**

Calendar Year Ended 12/31	No.	Total Annual Benefits	Average Monthly Benefit
2012 *	1,304	\$ 19,214,407	\$1,228
2011	2,879	38,900,700	1,126
2010	2,963	43,863,660	1,234
2009	2,383	34,005,492	1,189
2008	2,349	33,935,352	1,204
2007	2,229	31,221,348	1,167
2006	2,113	30,677,412	1,210
2005	1,912	28,055,988	1,223
2004	1,405	20,062,188	1,190
2003	2,638	43,043,292	1,360
2002	1,913	30,091,800	1,311
2001	1,606	26,312,136	1,365
2000	2,117	35,353,332	1,392
1999	1,148	18,814,104	1,366
1998	1,091	18,820,008	1,438
1997	928	15,779,460	1,417
1996	807	12,769,356	1,319
1995	876	14,666,700	1,395
1994	611	8,894,328	1,213
1993	656	10,366,836	1,317
1992	547	8,086,596	1,232
1991	519	8,264,700	1,327
1990	373	5,560,848	1,242
1989	350	4,948,920	1,178
1988	352	4,885,560	1,157
1987	259	2,836,836	913
1986	223	2,192,412	819
1985	157	1,539,024	817
1984	121	1,235,796	851
1983	117	1,213,200	864
1982	100	870,300	725
1981	84	749,616	744
1980	43	449,892	872
1979	31	211,896	570
1978	28	197,748	589
1977	25	170,304	568
1976	25	181,212	604
1975	11	76,116	577
1974	8	49,656	517
1973	7	42,492	506
1972	0	0	0
1971	0	0	0
1966	0	0	0
1964 & PRIOR	0	0	0
Totals	37,308	\$558,611,023	\$1,248

* Five months ended May 31, 2012.

**Benefits Payable June 30, 2012
Tabulated by Option and Type of Benefit**

MSEP Benefits

Type of Benefit	No.	Annual Benefits
Service Retirement		
Life Annuity	5,079	\$ 63,429,949
50% Joint and Survivor	5,390	87,717,538
75% Joint and Survivor	0	0
100% Joint and Survivor	2,688	51,312,740
5 Year Certain and Life	125	1,336,221
10 Year Certain and Life	135	1,294,811
Survivor Beneficiary	2,205	24,639,020
Total	<u>15,622</u>	<u>229,730,279</u>
Disability Retirement	8	29,712
Death-in-Service	1,393	14,330,683
Total	17,023	\$ 244,090,674

MSEP 2000 Benefits

Type of Benefit	No.	Annual Benefits
Service Retirement		
Life Annuity	12,536	\$ 182,602,844
50% Joint and Survivor	3,033	61,734,134
100% Joint and Survivor	3,198	55,370,367
5 Year Certain and Life	34	512,071
10 Year Certain and Life	519	5,809,321
15 Year Certain and Life	387	3,519,945
Survivor Beneficiary	497	4,707,462
Total	<u>20,204</u>	<u>314,256,144</u>
Disability Retirement	0	0
Death-in-Service	81	264,205
Total	20,285	\$ 314,520,349

Total Benefits Payable June 30, 2012
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					60	\$ 207,099	60	\$ 207,099
20-24					29	131,812	29	131,812
25-29					4	9,180	4	9,180
30-34					21	125,425	21	125,425
35-39					35	247,981	35	247,981
40-44					74	518,995	74	518,995
45-49	3	\$ 88,716			97	711,809	100	800,525
50-54	557	15,875,773			192	1,623,532	749	17,499,305
55-59	3,724	79,864,356	2	6,660	317	3,267,989	4,043	83,139,005
60-64	7,988	121,789,383	6	23,052	489	5,088,065	8,483	126,900,500
65-69	7,770	101,472,687			509	5,968,964	8,279	107,441,651
70-74	5,254	78,479,426			567	7,536,104	5,821	86,015,530
75-79	3,488	54,946,764			634	6,900,159	4,122	61,846,923
80-84	2,309	36,100,809			584	6,091,503	2,893	42,192,312
85-89	1,380	18,525,426			384	3,788,734	1,764	22,314,160
90-94	511	6,098,939			144	1,450,139	655	7,549,078
95	38	393,594			8	80,664	46	474,258
96	35	387,604			9	41,711	44	429,315
97	23	226,033			11	86,640	34	312,673
98	18	168,437			3	10,440	21	178,877
99	9	94,123			3	47,328	12	141,451
100	10	68,712			1	4,488	11	73,200
101	4	32,771					4	32,771
102	2	22,392					2	22,392
103	1	3,996					1	3,996
104					1	2,609	1	2,609
Totals	33,124	\$ 514,639,941	8	\$ 29,712	4,176	\$ 43,941,370	37,308	\$ 558,611,023

Average age at Retirement: 60.2 years.

Average age now: 69.3 years.

Summary of Member Data Included in Valuation

June 30, 2012

Active Members

Valuation Group	Number	Payroll	Group Averages		
			Salary	Age(yrs.)	Service(yrs.)
Regular State Employees	48,084	\$ 1,687,755,845	\$ 35,100	45.6	11.0
Elected Officials	6	659,978	109,996	50.6	6.8
Legislative Clerks	29	917,553	31,640	59.2	20.8
Legislators	197	7,087,518	35,977	51.3	4.5
Uniformed Water Patrol	16	935,899	58,494	39.6	14.3
Conservation Department	1,419	58,295,925	41,082	44.2	13.8
School-Term Salaried Employees	1,551	105,475,392	68,005	55.6	19.9
Administrative Law Judges	30	2,941,383	98,046	56.4	18.3
Total MOSERS*	51,332	\$ 1,864,069,493	\$ 36,314	45.9	11.3
Judges*	398	\$ 45,835,501	\$ 115,165	56.5	12.5

Retired Lives

Type of Benefit Payment	No.	Annual Benefit	Group Averages	
			Benefit	Age(yrs.)
Retirement	33,124	\$ 514,639,941	\$ 15,537	69.2
Disability	8	29,712	3,714	60.8
Survivor of Active Member	1,474	14,594,888	9,902	61.6
Survivor of Retired Member	2,702	29,346,482	10,861	75.1
Total MOSERS*	37,308	\$ 558,611,023	\$ 14,973	69.3
Judges*	488	\$ 26,964,555	\$ 55,255	75.5

This valuation also includes 18,034 terminated vested members, 241 members on leave and 1,085 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, 2012
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	35							35	\$ 705,204
20-24	1,377	13						1,390	34,426,087
25-29	3,339	726	13					4,078	120,841,818
30-34	2,545	1,985	582	7				5,119	165,890,661
35-39	1,759	1,529	1,599	399	8			5,294	183,157,259
40-44	1,614	1,313	1,704	1,460	347	24		6,462	232,733,876
45-49	1,481	1,296	1,479	1,271	1,110	576	29	7,242	272,967,723
50-54	1,394	1,281	1,586	1,202	1,103	1,080	517	8,163	313,620,415
55-59	1,071	1,128	1,411	1,139	1,060	733	552	7,094	278,098,454
60	151	211	282	198	171	93	110	1,216	48,040,182
61	170	190	231	164	148	110	86	1,099	42,651,555
62	130	149	219	157	140	80	83	958	37,501,128
63	103	135	166	136	113	61	57	771	31,822,724
64	82	116	140	93	85	39	39	594	23,437,418
65	66	111	128	89	60	38	45	537	22,849,433
66	45	76	94	57	45	36	45	398	17,625,156
67	17	41	49	43	31	16	18	215	9,710,853
68	17	24	43	30	18	15	19	166	7,023,666
69	10	15	42	24	6	8	18	123	5,285,080
70 & Over	43	71	86	60	43	20	55	378	15,680,801
Totals	15,449	10,410	9,854	6,529	4,488	2,929	1,673	51,332	\$ 1,864,069,493

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

Age: 45.9 years.

Service: 11.3 years.

Annual Pay: \$36,314

Includes 30 ALJ members.

* A breakdown by gender is included on pages 74 and 75.

Development of Actuarial Value of Assets

Valuation Date:	2011	2012	2013	2014	2015	2016
A. Actuarial Value Beginning of Year	\$7,923,377,393	\$8,022,481,408				
B. Market Value End of Year	7,768,709,373	7,581,882,309				
C. Market Value Beginning of Year	6,727,623,355	7,768,709,373				
D. Cash Flow						
D1. Contributions (Employer and Member)	266,974,608	273,873,747				
D2. Benefit Payments	(615,170,782)	(612,234,340)				
D3. Administrative Expenses	(7,054,581)	(7,017,057)				
D4. Net	(355,250,755)	(345,377,650)				
E. Investment Income						
E1. Market Total: B - C - D4	1,396,336,773	158,550,586				
E2. Assumed Rate	8.5%	8.5%				
E3. Amount for Immediate Recognition: E2*(A+D4*.5)	658,388,921	667,232,370				
E4. Amount for Phased-In Recognition: E1 - E3	737,947,852	(508,681,784)				
F. Phased-In Recognition of Investment Income						
F1. Current Year: 0.2 * E4	147,589,570	(101,736,357)				
F2. First Prior Year	40,730,349	147,589,570	\$ (101,736,357)			
F3. Second Prior Year	(432,568,879)	40,730,349	147,589,570	\$ (101,736,357)		
F4. Third Prior Year	(101,183,608)	(432,568,879)	40,730,349	147,589,570	\$ (101,736,357)	
F5. Fourth Prior Year	141,398,417	(101,183,608)	(432,568,879)	40,730,349	147,589,570	\$ (101,736,352)
F6. Total Recognized Investment Gain: Sum(F1:F5)	(204,034,151)	(447,168,925)	(345,985,317)	86,583,562	45,853,213	(101,736,352)
G. Adjustment	-	-				
H. Actuarial Value End of Year:						
H1. Preliminary Value: A + D4 + E3 + F6 + G	\$8,022,481,408	\$7,897,167,203				
H2. Corridor Percent	20%	20%				
H3. Upper Corridor Limit: (100% + H2) x B	9,322,451,248	9,098,258,771				
H4. Lower Corridor Limit: (100% - H2) x B	6,214,967,498	6,065,505,847				
H5. Corridor Adjustment	0	0				
H6. Funding Value End of Year: H1 + H5	8,022,481,408	7,897,167,203				
I. Difference Between Market & Actuarial						
Values: B-H6	(253,772,035)	(315,284,894)	30,700,423	(55,883,139)	(101,736,352)	-
J. Recognized Rate of Return	5.87%	2.80%				
K. Market Value Rate of Return	21.32%	2.09%				
L. Actuarial Value as a % of Market Value: H6 / B	103%	104%				

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 for four consecutive years, the actuarial value will become equal to market value.

Asset Summary

June 30, 2012

	Market Value	Actuarial Value
1. Assets at June 30, 2011	\$7,768,709,373	\$8,022,481,408
2. Contributions and Transfers In	273,873,747	273,873,747
3. Investment Increment*	158,550,586	220,063,445
4. Benefit Payments and Transfers Out	612,234,340	612,234,340
5. Administrative and Misc. Expenses	7,017,057	7,017,057
6. Assets at June 30, 2012 (1) + (2) + (3) - (4) - (5)	\$7,581,882,309	\$7,897,167,203
7. Investment Increment/Mean Assets**	2.09%	2.80%

* *Net of investment expenses.*

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

I = Investment Increment

A = Beginning of year asset value

B = End of year asset value

CASH FLOW PROJECTION

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.

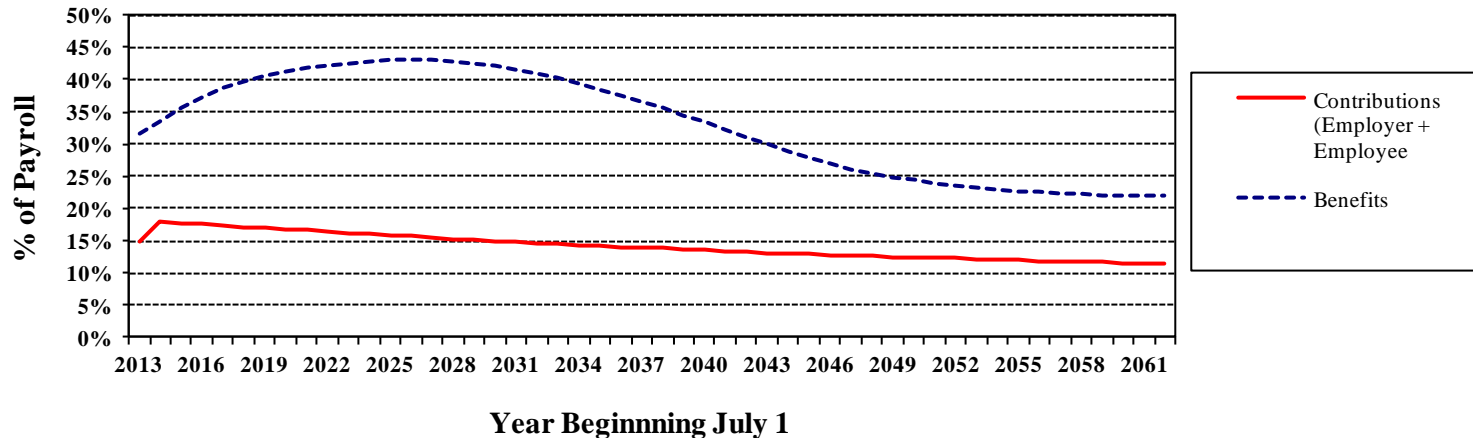
Whereas valuations provide a snapshot of the retirement system as of a given date, projections provide a moving picture. Projected active and retired groups are developed from year to year by the application of assumptions regarding pre-retirement withdrawal from service, retirements, deaths, disabilities, 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.

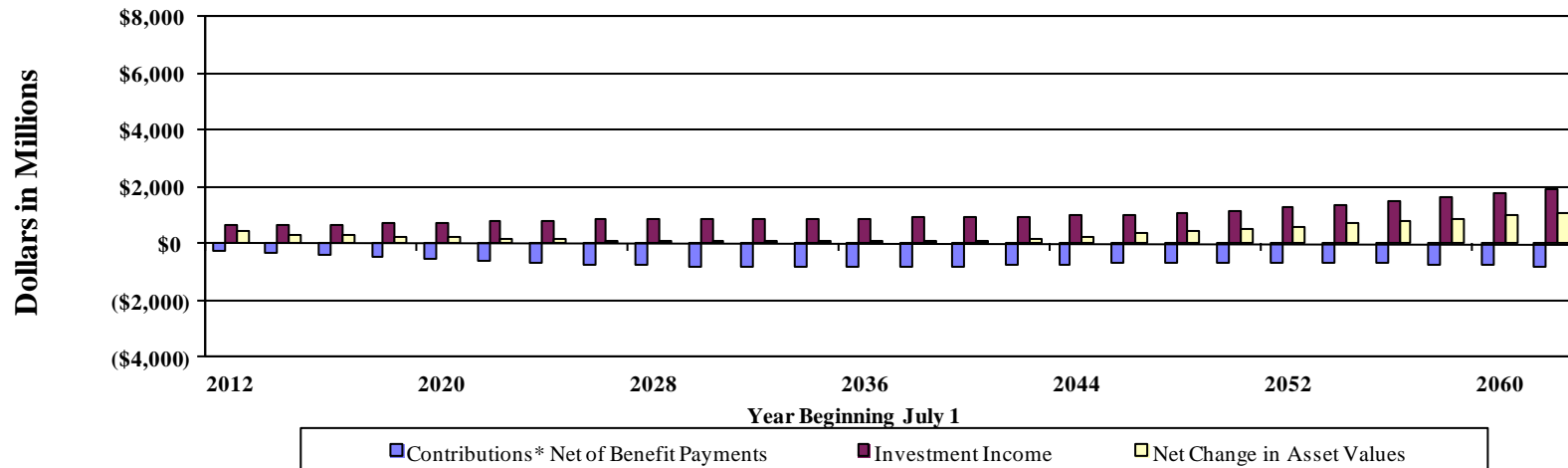
Projection results are useful in demonstrating changing relationships among key elements affecting system financial activity. For example: how benefits payable and system assets will grow in future decades. Projections are not predictions of specific future events and do not provide numeric precision 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.

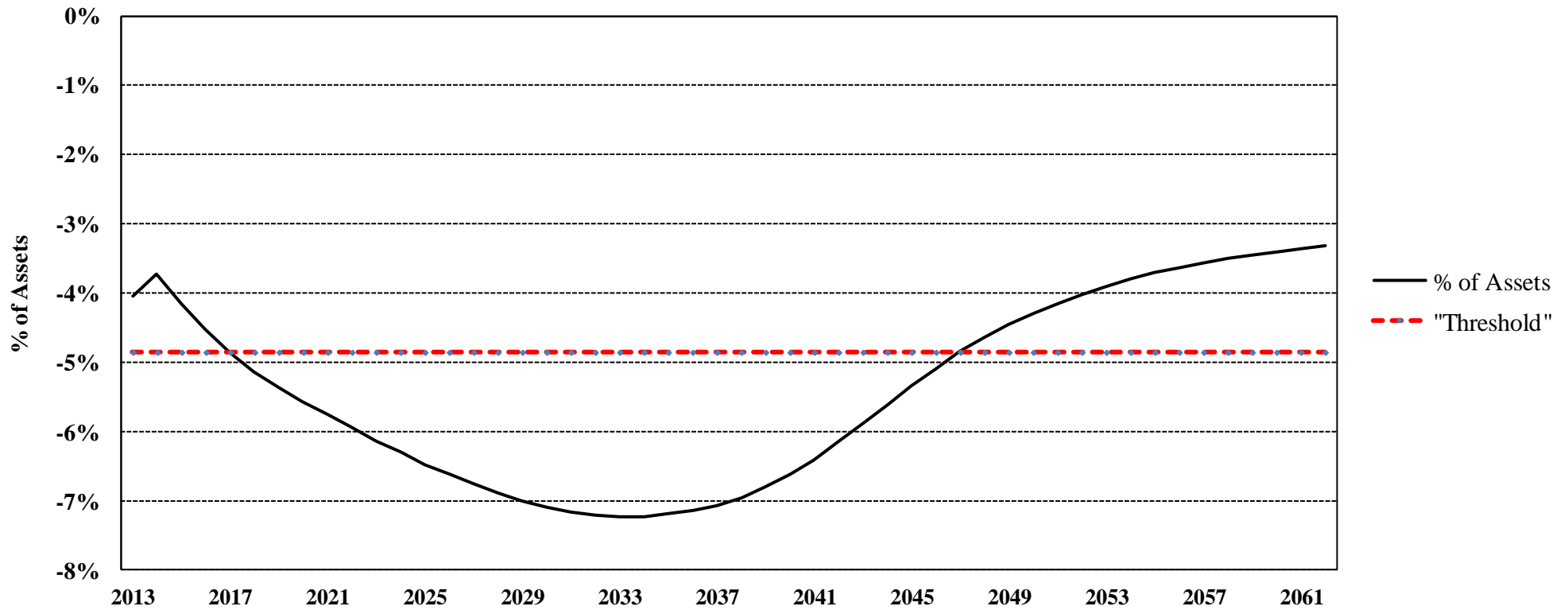
Fifty-Year Cash Flow Projection (in Thousands)

Year Ended June 30	Assets BOY	Contributions*			Benefits	Investment Income	Assets EOY	
		Normal	UAAL	Total			Inflated	2013 \$
2013	\$ 7,897,167	\$ 158,395	\$ 126,671	\$ 285,066	\$ 604,326	\$ 619,003	\$ 8,196,910	\$8,196,910
2014	8,196,910	159,215	189,955	349,170	654,579	643,536	8,535,037	8,286,443
2015	8,535,037	160,385	192,634	353,019	707,610	668,620	8,849,066	8,341,093
2016	8,849,066	161,851	195,352	357,203	758,571	691,870	9,139,568	8,363,999
2017	9,139,568	163,560	198,107	361,667	806,443	713,375	9,408,167	8,359,034
2018	9,408,167	165,542	200,901	366,443	850,572	733,287	9,657,325	8,330,494
2019	9,657,325	167,792	203,735	371,527	889,530	751,867	9,891,189	8,283,715
2020	9,891,189	170,323	206,609	376,932	927,808	769,260	10,109,573	8,220,008
2021	10,109,573	173,124	209,523	382,647	965,519	785,451	10,312,152	8,140,508
2022	10,312,152	176,143	212,478	388,621	1,001,963	800,438	10,499,248	8,046,799
2023	10,499,248	179,335	215,476	394,811	1,038,451	814,194	10,669,802	7,939,335
2024	10,669,802	182,710	218,515	401,225	1,074,403	826,658	10,823,282	7,818,969
2025	10,823,282	186,289	221,597	407,886	1,109,121	837,812	10,959,859	7,687,025
2026	10,959,859	190,103	224,723	414,826	1,141,502	847,722	11,080,905	7,545,557
2027	11,080,905	194,163	227,892	422,055	1,171,956	856,476	11,187,480	7,396,242
2028	11,187,480	198,453	231,107	429,560	1,200,779	864,149	11,280,410	7,240,466
2029	11,280,410	202,998	234,367	437,365	1,226,719	870,858	11,361,914	7,080,369
2030	11,361,914	207,780	237,673	445,453	1,250,740	876,741	11,433,368	6,917,376
2031	11,433,368	212,812	241,025	453,837	1,271,915	881,947	11,497,237	6,753,415
2032	11,497,237	218,077	244,425	462,502	1,290,621	886,654	11,555,772	6,590,096
2033	11,555,772	223,599	247,872	471,471	1,306,603	891,057	11,611,697	6,429,115
2034	11,611,697	229,374	251,369	480,743	1,319,783	895,375	11,668,032	6,272,142
2035	11,668,032	235,404	254,914	490,318	1,330,149	899,849	11,728,050	6,120,781
2036	11,728,050	241,720	258,510	500,230	1,338,101	904,728	11,794,907	5,976,382
2037	11,794,907	248,308	262,156	510,464	1,344,439	910,234	11,871,166	5,839,827
2038	11,871,166	255,198	265,854	521,052	1,347,069	916,652	11,961,801	5,713,023
2039	11,961,801	262,383	269,604	531,987	1,346,638	924,358	12,071,508	5,597,495
2040	12,071,508	269,876	273,407	543,283	1,343,199	933,723	12,205,315	5,494,699
2041	12,205,315	277,668	277,263	554,931	1,336,563	945,159	12,368,842	5,406,133
2042	12,368,842	285,757	281,174	566,931	1,327,968	959,067	12,566,872	5,332,706
2043	12,566,872	294,132	285,140	579,272	1,318,778	975,770	12,803,136	5,274,722
2044	12,803,136	302,786	289,162	591,948	1,310,144	995,523	13,080,463	5,232,017
2045	13,080,463	311,719	293,241	604,960	1,303,623	1,018,490	13,400,290	5,203,829
2046	13,400,290	320,924	297,377	618,301	1,300,141	1,044,750	13,763,200	5,189,087
2047	13,763,200	330,412	301,571	631,983	1,300,202	1,074,327	14,169,308	5,186,603
2048	14,169,308	340,193	305,825	646,018	1,304,562	1,107,203	14,617,967	5,194,983
2049	14,617,967	350,282	310,139	660,421	1,312,677	1,143,346	15,109,057	5,213,115
2050	15,109,057	360,689	314,513	675,202	1,324,482	1,182,754	15,642,531	5,239,981
2051	15,642,531	371,424	318,950	690,374	1,339,656	1,225,431	16,218,680	5,274,739
2052	16,218,680	382,498	323,448	705,946	1,358,030	1,271,412	16,838,008	5,316,661
2053	16,838,008	393,920	328,011	721,931	1,379,610	1,320,733	17,501,062	5,365,070
2054	17,501,062	405,698	332,637	738,335	1,404,235	1,373,450	18,208,612	5,419,393
2055	18,208,612	417,842	337,329	755,171	1,431,934	1,429,618	18,961,467	5,479,091
2056	18,961,467	430,362	342,087	772,449	1,462,590	1,489,313	19,760,639	5,543,708
2057	19,760,639	443,264	346,913	790,177	1,496,041	1,552,617	20,607,392	5,612,872
2058	20,607,392	456,560	351,806	808,366	1,532,204	1,619,637	21,503,191	5,686,274
2059	21,503,191	470,258	356,768	827,026	1,570,894	1,690,502	22,449,825	5,763,690
2060	22,449,825	484,372	361,800	846,172	1,611,969	1,765,354	23,449,382	5,844,964
2061	23,449,382	498,911	366,904	865,815	1,655,332	1,844,370	24,504,235	5,929,995
2062	24,504,235	513,890	372,079	885,969	1,700,828	1,927,743	25,617,119	6,018,750

* 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)

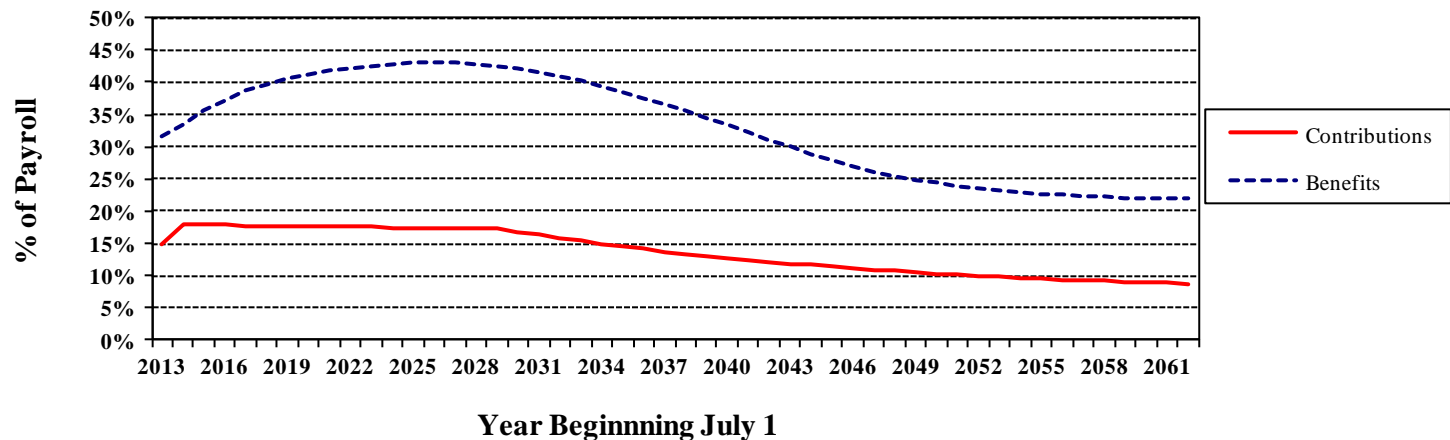
Year Ended June 30	External Cash Flow		Net External Cash Flow		Year Ended June 30	External Cash Flow		Net External Cash Flow	
	Inflow*	Outflow	\$	% of Assets		Inflow*	Outflow	\$	% of Assets
2013	\$ 285,066	\$ 604,326	\$ (319,260)	(4.04)%	2038	\$ 521,052	\$ 1,347,069	\$ (826,017)	(6.96)%
2014	349,170	654,579	(305,409)	(3.73)%	2039	531,987	1,346,638	(814,651)	(6.81)%
2015	353,019	707,610	(354,591)	(4.15)%	2040	543,283	1,343,199	(799,916)	(6.63)%
2016	357,203	758,571	(401,368)	(4.54)%	2041	554,931	1,336,563	(781,632)	(6.40)%
2017	361,667	806,443	(444,776)	(4.87)%	2042	566,931	1,327,968	(761,037)	(6.15)%
2018	366,443	850,572	(484,129)	(5.15)%	2043	579,272	1,318,778	(739,506)	(5.88)%
2019	371,527	889,530	(518,003)	(5.36)%	2044	591,948	1,310,144	(718,196)	(5.61)%
2020	376,932	927,808	(550,876)	(5.57)%	2045	604,960	1,303,623	(698,663)	(5.34)%
2021	382,647	965,519	(582,872)	(5.77)%	2046	618,301	1,300,141	(681,840)	(5.09)%
2022	388,621	1,001,963	(613,342)	(5.95)%	2047	631,983	1,300,202	(668,219)	(4.86)%
2023	394,811	1,038,451	(643,640)	(6.13)%	2048	646,018	1,304,562	(658,544)	(4.65)%
2024	401,225	1,074,403	(673,178)	(6.31)%	2049	660,421	1,312,677	(652,256)	(4.46)%
2025	407,886	1,109,121	(701,235)	(6.48)%	2050	675,202	1,324,482	(649,280)	(4.30)%
2026	414,826	1,141,502	(726,676)	(6.63)%	2051	690,374	1,339,656	(649,282)	(4.15)%
2027	422,055	1,171,956	(749,901)	(6.77)%	2052	705,946	1,358,030	(652,084)	(4.02)%
2028	429,560	1,200,779	(771,219)	(6.89)%	2053	721,931	1,379,610	(657,679)	(3.91)%
2029	437,365	1,226,719	(789,354)	(7.00)%	2054	738,335	1,404,235	(665,900)	(3.80)%
2030	445,453	1,250,740	(805,287)	(7.09)%	2055	755,171	1,431,934	(676,763)	(3.72)%
2031	453,837	1,271,915	(818,078)	(7.16)%	2056	772,449	1,462,590	(690,141)	(3.64)%
2032	462,502	1,290,621	(828,119)	(7.20)%	2057	790,177	1,496,041	(705,864)	(3.57)%
2033	471,471	1,306,603	(835,132)	(7.23)%	2058	808,366	1,532,204	(723,838)	(3.51)%
2034	480,743	1,319,783	(839,040)	(7.23)%	2059	827,026	1,570,894	(743,868)	(3.46)%
2035	490,318	1,330,149	(839,831)	(7.20)%	2060	846,172	1,611,969	(765,797)	(3.41)%
2036	500,230	1,338,101	(837,871)	(7.14)%	2061	865,815	1,655,332	(789,517)	(3.37)%
2037	510,464	1,344,439	(833,975)	(7.07)%	2062	885,969	1,700,828	(814,859)	(3.33)%

* Does not include contributions for administrative expenses.

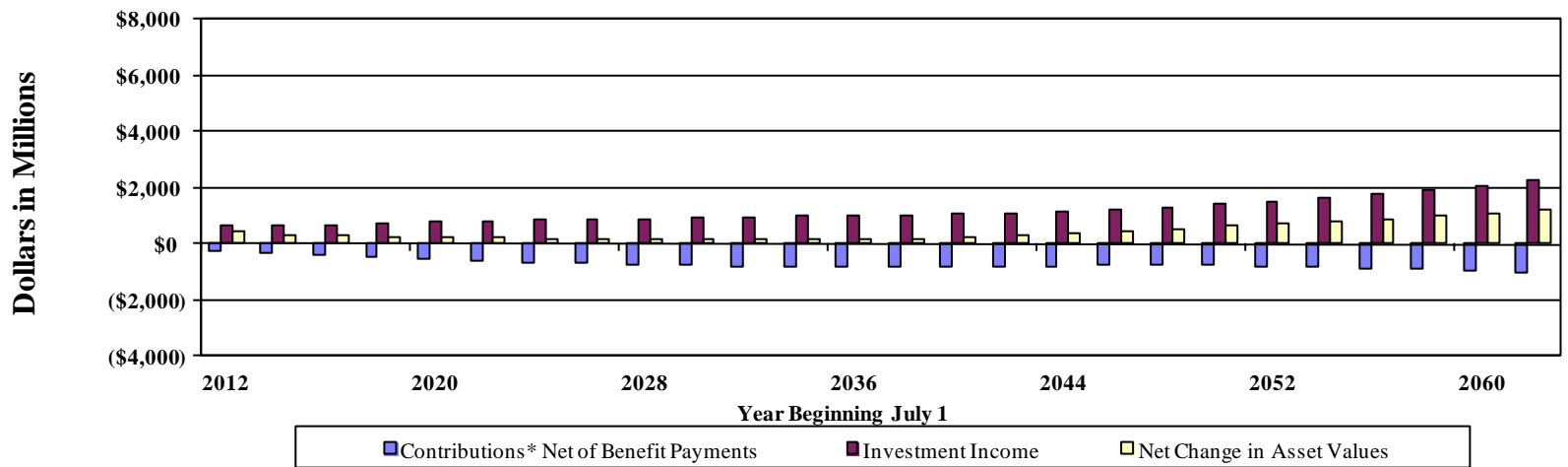
The portion of investment income needed to pay benefits (the negative external cash flow) increases gradually and begins to level off at the end of the amortization of the unfunded accrued liabilities. After this period, it then approaches the assumed rate of 4.85% (1.08/1.030, minus 1). The remainder of the expected investment income is needed to preserve the purchasing power of the trust fund.

Alternate 50-Year Cash Flow Projection Based on a 30 down to 15-Year Amortization

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.

Alternate Fifty-Year Cash Flow Projection (in Thousands)

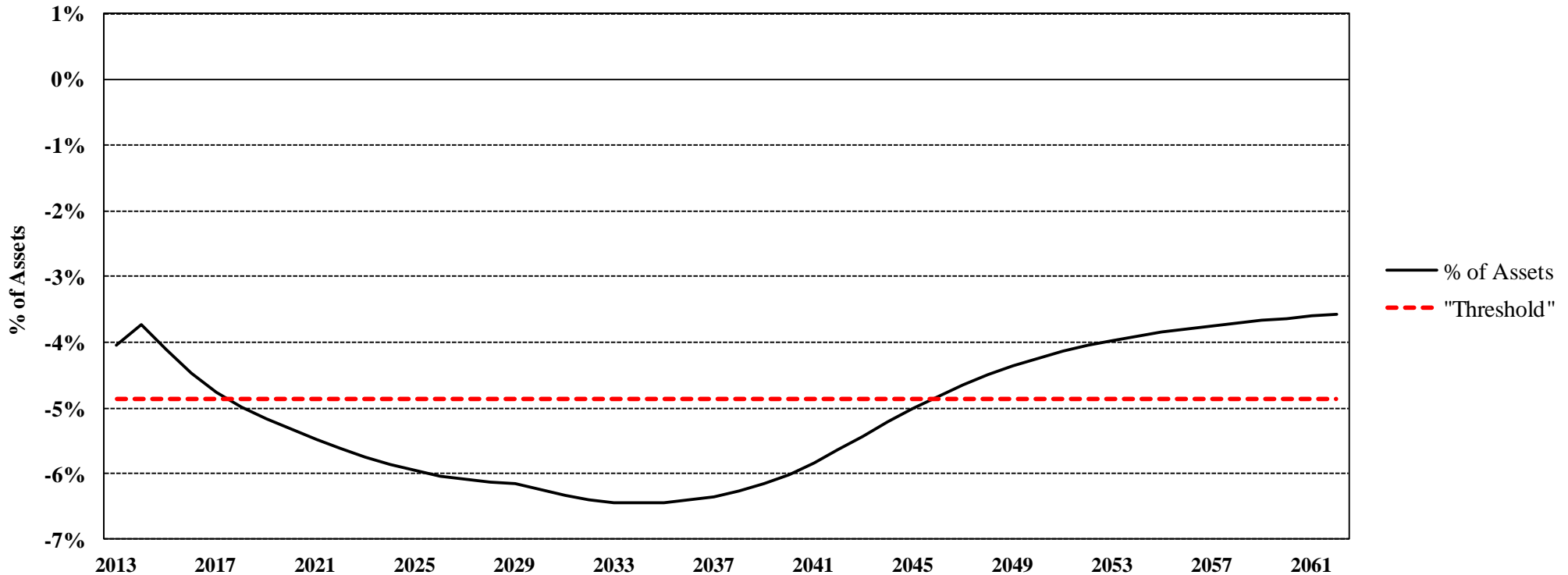
Based on a 30 down to 15-Year Amortization

Year Ended June 30	Assets BOY	Contributions*			Benefits	Investment Income	Assets EOY	
		Normal	UAAL	Total			Inflated	2013 \$
2013	\$ 7,897,167	\$ 158,395	\$ 126,671	\$ 285,066	\$ 604,326	\$ 619,003	\$ 8,196,910	\$8,196,910
2014	8,196,910	159,215	189,955	349,170	654,579	643,536	8,535,037	8,286,443
2015	8,535,037	160,385	195,654	356,039	707,610	668,740	8,852,206	8,344,053
2016	8,852,206	161,851	201,523	363,374	758,571	692,369	9,149,378	8,372,977
2017	9,149,378	163,560	207,569	371,129	806,443	714,538	9,428,602	8,377,191
2018	9,428,602	165,542	213,796	379,338	850,572	735,438	9,692,806	8,361,099
2019	9,692,806	167,792	220,210	388,002	889,530	755,363	9,946,641	8,330,156
2020	9,946,641	170,323	226,816	397,139	927,808	774,506	10,190,478	8,285,791
2021	10,190,478	173,124	233,621	406,745	965,519	792,886	10,424,590	8,229,268
2022	10,424,590	176,143	240,629	416,772	1,001,963	810,560	10,649,959	8,162,307
2023	10,649,959	179,335	247,848	427,183	1,038,451	827,547	10,866,238	8,085,501
2024	10,866,238	182,710	255,284	437,994	1,074,403	843,842	11,073,671	7,999,856
2025	11,073,671	186,289	262,942	449,231	1,109,121	859,498	11,273,279	7,906,851
2026	11,273,279	190,103	270,830	460,933	1,141,502	874,640	11,467,350	7,808,708
2027	11,467,350	194,163	278,955	473,118	1,171,956	889,435	11,657,947	7,707,276
2028	11,657,947	198,453	287,324	485,777	1,200,779	904,035	11,846,980	7,604,126
2029	11,846,980	202,998	295,944	498,942	1,226,719	918,647	12,037,850	7,501,590
2030	12,037,850	207,780	299,540	498,320	1,250,740	932,931	12,218,361	7,392,310
2031	12,218,361	212,812	285,236	498,048	1,271,915	946,515	12,391,009	7,278,412
2032	12,391,009	218,077	280,028	498,105	1,290,621	959,580	12,558,073	7,161,694
2033	12,558,073	223,599	274,915	498,514	1,306,603	972,323	12,722,307	7,044,033
2034	12,722,307	229,374	269,896	499,270	1,319,783	984,964	12,886,758	6,927,267
2035	12,886,758	235,404	264,968	500,372	1,330,149	997,748	13,054,729	6,813,165
2036	13,054,729	241,720	260,130	501,850	1,338,101	1,010,928	13,229,406	6,703,231
2037	13,229,406	248,308	255,380	503,688	1,344,439	1,024,723	13,413,378	6,598,493
2038	13,413,378	255,198	250,718	505,916	1,347,069	1,039,424	13,611,649	6,500,999
2039	13,611,649	262,383	246,140	508,523	1,346,638	1,055,407	13,828,941	6,412,407
2040	13,828,941	269,876	241,646	511,522	1,343,199	1,073,048	14,070,312	6,334,301
2041	14,070,312	277,668	237,234	514,902	1,336,563	1,092,758	14,341,409	6,268,297
2042	14,341,409	285,757	232,903	518,660	1,327,968	1,114,940	14,647,041	6,215,419
2043	14,647,041	294,132	228,650	522,782	1,318,778	1,139,925	14,990,970	6,176,081
2044	14,990,970	302,786	224,475	527,261	1,310,144	1,167,962	15,376,049	6,150,222
2045	15,376,049	311,719	220,377	532,096	1,303,623	1,199,223	15,803,745	6,137,180
2046	15,803,745	320,924	216,353	537,277	1,300,141	1,233,786	16,274,667	6,135,977
2047	16,274,667	330,412	212,403	542,815	1,300,202	1,271,678	16,788,958	6,145,512
2048	16,788,958	340,193	208,525	548,718	1,304,562	1,312,883	17,345,997	6,164,479
2049	17,345,997	350,282	204,718	555,000	1,312,677	1,357,372	17,945,692	6,191,846
2050	17,945,692	360,689	200,980	561,669	1,324,482	1,405,143	18,588,022	6,226,670
2051	18,588,022	371,424	197,310	568,734	1,339,656	1,456,205	19,273,305	6,268,183
2052	19,273,305	382,498	193,708	576,206	1,358,030	1,510,592	20,002,073	6,315,725
2053	20,002,073	393,920	190,171	584,091	1,379,610	1,568,345	20,774,899	6,368,687
2054	20,774,899	405,698	186,699	592,397	1,404,235	1,629,518	21,592,579	6,426,556
2055	21,592,579	417,842	183,290	601,132	1,431,934	1,694,175	22,455,952	6,488,854
2056	22,455,952	430,362	179,944	610,306	1,462,590	1,762,384	23,366,052	6,555,181
2057	23,366,052	443,264	176,658	619,922	1,496,041	1,834,241	24,324,174	6,625,219
2058	24,324,174	456,560	173,433	629,993	1,532,204	1,909,845	25,331,808	6,698,708
2059	25,331,808	470,258	170,266	640,524	1,570,894	1,989,331	26,390,769	6,775,474
2060	26,390,769	484,372	167,157	651,529	1,611,969	2,072,844	27,503,173	6,855,407
2061	27,503,173	498,911	164,105	663,016	1,655,332	2,160,562	28,671,419	6,938,449
2062	28,671,419	513,890	161,109	674,999	1,700,828	2,252,679	29,898,269	7,024,607

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

**Alternate 50-Year Cash Flow Projection
Based on a 30 down to 15-Year Amortization**

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.

**Alternate Fifty-Year Cash Flow Projection
Based on a 30 down to 15-Year Amortization**

Analysis of Projected Net Cash Flow (In Thousands)

Year Ended June 30	External Cash Flow		Net External Cash Flow		Year Ended June 30	External Cash Flow		Net External Cash Flow	
	Inflow*	Outflow	\$	% of Assets		Inflow*	Outflow	\$	% of Assets
2013	\$ 285,066	\$ 604,326	\$ (319,260)	(4.04)%	2038	\$ 505,916	\$ 1,347,069	\$ (841,153)	(6.27)%
2014	349,170	654,579	(305,409)	(3.73)%	2039	508,523	1,346,638	(838,115)	(6.16)%
2015	356,039	707,610	(351,571)	(4.12)%	2040	511,522	1,343,199	(831,677)	(6.01)%
2016	363,374	758,571	(395,197)	(4.46)%	2041	514,902	1,336,563	(821,661)	(5.84)%
2017	371,129	806,443	(435,314)	(4.76)%	2042	518,660	1,327,968	(809,308)	(5.64)%
2018	379,338	850,572	(471,234)	(5.00)%	2043	522,782	1,318,778	(795,996)	(5.43)%
2019	388,002	889,530	(501,528)	(5.17)%	2044	527,261	1,310,144	(782,883)	(5.22)%
2020	397,139	927,808	(530,669)	(5.34)%	2045	532,096	1,303,623	(771,527)	(5.02)%
2021	406,745	965,519	(558,774)	(5.48)%	2046	537,277	1,300,141	(762,864)	(4.83)%
2022	416,772	1,001,963	(585,191)	(5.61)%	2047	542,815	1,300,202	(757,387)	(4.65)%
2023	427,183	1,038,451	(611,268)	(5.74)%	2048	548,718	1,304,562	(755,844)	(4.50)%
2024	437,994	1,074,403	(636,409)	(5.86)%	2049	555,000	1,312,677	(757,677)	(4.37)%
2025	449,231	1,109,121	(659,890)	(5.96)%	2050	561,669	1,324,482	(762,813)	(4.25)%
2026	460,933	1,141,502	(680,569)	(6.04)%	2051	568,734	1,339,656	(770,922)	(4.15)%
2027	473,118	1,171,956	(698,838)	(6.09)%	2052	576,206	1,358,030	(781,824)	(4.06)%
2028	485,777	1,200,779	(715,002)	(6.13)%	2053	584,091	1,379,610	(795,519)	(3.98)%
2029	498,942	1,226,719	(727,777)	(6.14)%	2054	592,397	1,404,235	(811,838)	(3.91)%
2030	498,320	1,250,740	(752,420)	(6.25)%	2055	601,132	1,431,934	(830,802)	(3.85)%
2031	498,048	1,271,915	(773,867)	(6.33)%	2056	610,306	1,462,590	(852,284)	(3.80)%
2032	498,105	1,290,621	(792,516)	(6.40)%	2057	619,922	1,496,041	(876,119)	(3.75)%
2033	498,514	1,306,603	(808,089)	(6.43)%	2058	629,993	1,532,204	(902,211)	(3.71)%
2034	499,270	1,319,783	(820,513)	(6.45)%	2059	640,524	1,570,894	(930,370)	(3.67)%
2035	500,372	1,330,149	(829,777)	(6.44)%	2060	651,529	1,611,969	(960,440)	(3.64)%
2036	501,850	1,338,101	(836,251)	(6.41)%	2061	663,016	1,655,332	(992,316)	(3.61)%
2037	503,688	1,344,439	(840,751)	(6.36)%	2062	674,999	1,700,828	(1,025,829)	(3.58)%

* 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% (1.08/1.030, minus 1). The remainder of the expected investment income is needed to preserve the purchasing power of the trust fund.

SUPPLEMENTAL DISCLOSURE INFORMATION

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.

Supplemental Disclosure Information June 30, 2012

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 five-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, 2012. 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, 2012, the unfunded actuarial accrued liability of the System was determined as follows:

Actuarial Accrued Liability of System:	<u>\$ in Thousands</u>
Active members (35,883 vested, 15,449 non-vested)	\$ 4,414,906
Retirees and beneficiaries currently receiving benefits (37,308 vested)	5,748,986
Terminated members not yet receiving benefits (18,034 vested)	629,335
Future BackDROP Payments	<u>426</u>
Total Actuarial Accrued Liability	10,793,652
Actuarial Value of Assets	7,897,167
Unfunded Actuarial Accrued Liability	<u>\$ 2,896,484</u>

During the year ended June 30, 2012, the System experienced a net change of \$670,107,534 in the actuarial accrued liability. Of this change, \$259,141,745 was due to changes in assumptions. There were no changes in benefit provisions.

Supplemental Disclosure Information
June 30, 2012

(continued)

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 an open 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, 2012, contributions totaling \$263,373,924 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		
2013-14	2012	16.98		

Supplemental Disclosure Information
June 30, 2012
(concluded)

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	10,534,509,832	75.0	2,637,342,629	1,864,069,493	141.5
6/30/2012 *	7,897,167,203	10,793,651,577	73.2	2,896,484,374	1,864,069,493	155.4

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.

APPENDIX

Financial Principles and Operational Techniques

Promises Made, and Eventually Paid. As each year is completed, MOSERS in effect hands an "IOU" to each member then acquiring a year of service credit --- the "IOU" says: "The Missouri State Employees' Retirement System owes you certain retirement benefits -- payments in cash commencing when you qualify for retirement."

The related key financial question is, which generation of taxpayers contributes the money to cover the IOU?

The present taxpayers, who receive the benefit of the member's present year of service?

Or the future taxpayers, who happen to be in Missouri at the time the IOU becomes a cash demand?

The law governing MOSERS' financing intends that this year's taxpayers contribute the money to cover the IOUs being handed out this year. By following this principle, *funds will be accumulated during members' working years, which, combined with income on invested assets, will be sufficient to pay benefits throughout retirement.*

An inevitable by-product of this financing design is the accumulation of reserve assets, for decades, and the income produced when the assets are invested. Over time, *investment income becomes the largest contributor* toward benefits, and directly influences the contribution amount required from the employer.

In actuarial terminology, the minimum level percent of payroll contribution rate consists of:

Normal Cost (the cost of members' service being rendered this year)

... plus ...

Interest on Unfunded Actuarial Accrued Liabilities (unfunded actuarial accrued liabilities are the difference between: actuarial liabilities for members' service already rendered; and the actuarial value of MOSERS' accrued assets).

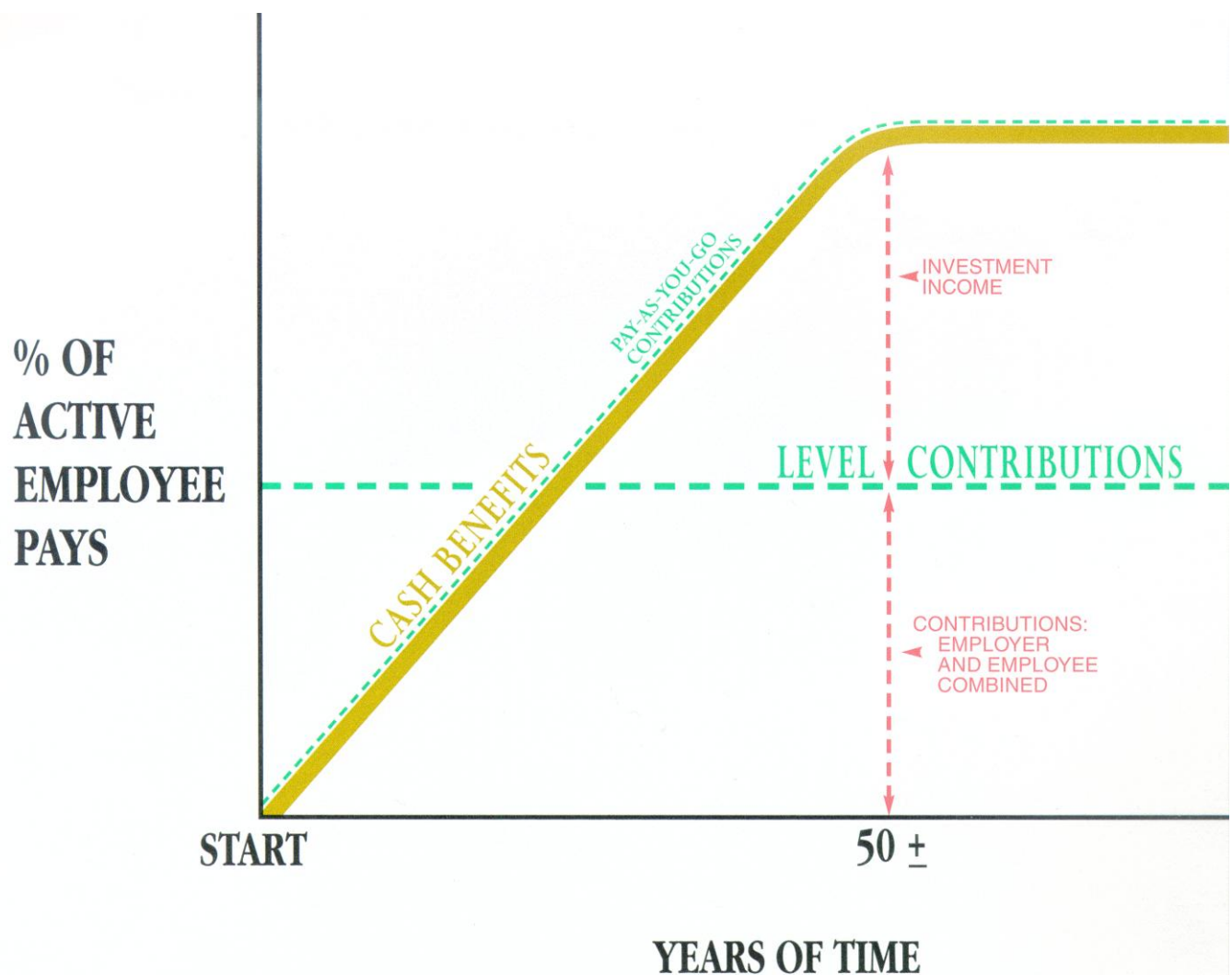
Computing Contributions To Support Funded Benefits. From a given schedule of benefits and from the member data and asset data provided, the actuary determines the contribution rates to support the benefits, by means of ***an actuarial valuation and a funding method.***

An actuarial valuation has a number of ingredients such as: the rate of investment income which plan assets will earn; the rates of withdrawal of active members who leave covered employment before qualifying for any monthly benefit; the rates of mortality; the rates of disability; the rates of salary increases; and the assumed age or ages at actual retirement.

In an actuarial valuation, assumptions are made as to what the above rates will be, for the next year and for decades in the future. Only the subsequent actual experience of the plan can indicate the degree of accuracy of the assumptions.

Reconciling Differences Between Assumed Experience and Actual Experience. Once actual experience has occurred and been observed, it will not coincide exactly with assumed experience, regardless of the wisdom of those who developed the assumptions, or the skill of the actuary and the many calculations made. The future cannot be predicted with precision.

MOSERS copes with these continually changing differences by having annual actuarial valuations. Each actuarial valuation is a complete recalculation of assumed future experience, taking into account all past differences between assumed and actual experience. The result is ***continuing adjustments in financial position, and contribution rates.***



CASH BENEFITS LINE. This relentlessly increasing line is the fundamental reality of retirement plan financing. It happens each time a new benefit is added for future retirements (and happens regardless of the design for contributing for benefits).

LEVEL CONTRIBUTION LINE. Determining the level contribution line requires detailed assumptions concerning a variety of experiences in future decades, including:

Economic Risk Areas

- Rates of investment return
- Rates of pay increase
- Changes in active member group size

Non-Economic Risk Areas

- Ages at actual retirement
- Rates of mortality
- Rates of withdrawal of active members (turnover)
- Rates of disability

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, commonly in the 20-30 year range.

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, 2012 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 63. 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. 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 mortality table, projected to 2016 with Scale AA. Related values are shown on page 64. 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, 2012 Actuarial Valuation

The probabilities of age and service retirement are shown on page 65 and 66. 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 63. 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 a closed five-year period. Valuation assets are not permitted to deviate from the market value by more than 20%.

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.

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.

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.

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, 2012

Sample Ages	Years of Service	Percent of Active Members ----- Separating within the Next Year -----						Pay Increase Assumptions -- For An Individual Employee --		
		Withdrawal ***		Death*		Disability		Merit & Seniority**	Base (Economy)	Increase Next Year
		Men	Women	Men	Women	Men	Women			
	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

Percent of Active Members Separating within the Next Year

Years of Service	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, 2012

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
(For Members Hired Prior to January 1, 2011)**

Normal Retirement Pattern					Early Retirement Pattern		
Retirement Age	MSEP and MSEP 2000			MSEP 2011**	Retirement Age	MSEP*	MSEP 2011**
	Percent Eligible			Percent Eligible		Percent Eligible	Percent Eligible
	1 st Year	2 nd Year	3 rd Year				
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	0	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	

Summary of Assumptions Used
June 30, 2012
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 mortality decrements do not operate during the first five years of service. 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:	<p><i>MSEP 2000 Benefits for Active Employees</i></p> <p>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.</p>

Pre-Retirement Survivor Benefits for Spouse of Terminated Vested Member

<u>Age</u>	<u>Male/Female</u>
<30	2.15/1.85
30-39	1.46/1.34
40-49	1.16/1.12
>50	1.04/1.03

Summary of Assumptions Used
June 30, 2012
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.
- 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, 2012
Miscellaneous and Technical Assumptions
(Concluded)

Data Adjustments:

Active and retired member data was reported as of May 31, 2012. It was brought forward to June 30, 2012 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, 2012. 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 \$36,278 (\$98,046 for Administrative Law Judges) as of June 30, 2012. 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.

A summary of total members was provided by MOSERS staff. For the June 30, 2012 valuation, it was determined that two active members reported in the data had two records each. These extra records were removed and the total active member number count was reduced by two.

It was reported by MOSERS staff that one member was incorrectly reported as a legislator. This record was re-coded as a regular state employee.

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

June 30, 2012 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 a closed 5-year period. 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. If assumed rates are exactly realized for 4 consecutive years, valuation assets will become equal to 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, 2012 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.

**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:
Open Amortization over 30 years*

Year	Active Member Payroll	Unfunded Actuarial Accrued Liability	UAAL Adjusted for Wage Inflation	Annual Contributions		UAAL as % of Payroll
				Dollars	% of Payroll	
-----\$ in millions-----						
1	\$1,920	\$2,896	\$2,896	\$128	6.65 %	150.86 %
2	1,978	2,995	2,908	190	9.60	151.47
3	2,037	3,038	2,863	193	9.45	149.13
4	2,098	3,081	2,819	195	9.31	146.83
5	2,161	3,124	2,776	198	9.16	144.57
6	2,226	3,168	2,733	201	9.02	142.34
7	2,293	3,213	2,691	204	8.88	140.14
8	2,361	3,258	2,649	207	8.75	137.98
9	2,432	3,304	2,608	209	8.61	135.85
10	2,505	3,351	2,568	212	8.48	133.75
11	2,580	3,398	2,528	215	8.35	131.69
12	2,658	3,446	2,489	218	8.22	129.65
13	2,737	3,494	2,451	222	8.09	127.65
14	2,820	3,544	2,413	225	7.97	125.68
15	2,904	3,594	2,376	228	7.84	123.74
16	2,991	3,644	2,339	231	7.72	121.83
17	3,081	3,696	2,303	234	7.60	119.95
18	3,173	3,748	2,268	238	7.49	118.10
19	3,269	3,801	2,233	241	7.37	116.28
20	3,367	3,854	2,198	244	7.26	114.49

**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:
Open Amortization over 30 years
(concluded)*

Year	Active Member Payroll	Unfunded Actuarial Accrued Liability	UAAL Adjusted for Wage Inflation	Annual Contributions		UAAL as % of Payroll
				Dollars	% of Payroll	
-----\$ in millions-----						
21	\$3,468	\$3,909	\$2,164	\$248	7.15 %	112.72 %
22	3,572	3,964	2,131	251	7.04	110.98
23	3,679	4,020	2,098	255	6.93	109.27
24	3,789	4,077	2,066	258	6.82	107.58
25	3,903	4,134	2,034	262	6.71	105.92
26	4,020	4,192	2,002	266	6.61	104.29
27	4,141	4,252	1,971	270	6.51	102.68
28	4,265	4,311	1,941	273	6.41	101.09
29	4,393	4,372	1,911	277	6.31	99.53
30	4,525	4,434	1,882	281	6.21	98.00

Active Members as of June 30, 2012

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	9							9	\$ 179,026
20-24	562	6						568	14,417,420
25-29	1,449	293	3					1,745	52,803,205
30-34	1,052	782	187	3				2,024	67,468,415
35-39	698	622	577	114	2			2,013	72,913,274
40-44	641	482	655	543	91	4		2,416	94,173,039
45-49	572	501	554	490	458	153	6	2,734	112,471,857
50-54	521	467	603	449	459	438	92	3,029	129,081,537
55-59	436	440	533	430	457	328	179	2,803	121,993,243
60	70	88	108	79	84	47	44	520	22,735,795
61	80	90	94	46	68	52	39	469	19,966,059
62	58	60	78	63	55	36	40	390	17,587,711
63	50	73	59	57	38	23	28	328	15,529,456
64	44	56	41	43	33	19	25	261	11,690,375
65	38	49	59	32	25	15	25	243	11,840,269
66	29	35	42	24	23	11	28	192	10,025,776
67	8	20	22	17	18	10	10	105	5,714,014
68	8	9	18	11	11	8	14	79	4,115,295
69	2	7	17	11	4	3	12	56	2,875,420
70 & Over	24	41	46	32	18	10	35	206	9,703,449
Totals	6,351	4,121	3,696	2,444	1,844	1,157	577	20,190	\$797,284,635

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

Age: 46.0 years.

Service: 11.2 years.

Annual Pay: \$39,489

Active Members as of June 30, 2012

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	26							26	\$ 526,178
20-24	815	7						822	20,008,667
25-29	1,890	433	10					2,333	68,038,613
30-34	1,493	1,203	395	4				3,095	98,422,246
35-39	1,061	907	1,022	285	6			3,281	110,243,985
40-44	973	831	1,049	917	256	20		4,046	138,560,837
45-49	909	795	925	781	652	423	23	4,508	160,495,866
50-54	873	814	983	753	644	642	425	5,134	184,538,878
55-59	635	688	878	709	603	405	373	4,291	156,105,211
60	81	123	174	119	87	46	66	696	25,304,387
61	90	100	137	118	80	58	47	630	22,685,496
62	72	89	141	94	85	44	43	568	19,913,417
63	53	62	107	79	75	38	29	443	16,293,268
64	38	60	99	50	52	20	14	333	11,747,043
65	28	62	69	57	35	23	20	294	11,009,164
66	16	41	52	33	22	25	17	206	7,599,380
67	9	21	27	26	13	6	8	110	3,996,839
68	9	15	25	19	7	7	5	87	2,908,371
69	8	8	25	13	2	5	6	67	2,409,660
70 & Over	19	30	40	28	25	10	20	172	5,977,352
Totals	9,098	6,289	6,158	4,085	2,644	1,772	1,096	31,142	\$1,066,784,858

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: \$34,256

Basic Series Year-by-Year Total Returns (1926 – 2011)

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

GABRIEL, ROEDER, SMITH & COMPANY from SBBI Yearbook
 84=100, when available), not seasonally adjusted.

* Calculated using December to December CPI-U (1982-

October 24, 2012

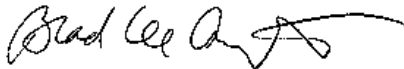
Mr. Gary W. Findlay
Executive Director
Missouri State Employees'
Retirement System
907 Wildwood
P.O. Box 209
Jefferson City, Missouri 65109

Re: MOSERS – Valuation Report - Revised

Dear Gary:

Enclosed are 20 copies of the June 30, 2012 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)