GRS

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January 31, 2014

CONFIDENTIAL

Ms. Judith Delaney
Executive Assistant
Missouri State Employees'
Retirement System
907 Wildwood Drive
Jefferson City, MO 65109

Re: House Bill No. 1244 (HB 1244)

Dear Judy:

Enclosed are the results of a supplemental actuarial valuation as of June 30, 2013 related to a proposed change for future hires of the Missouri State Employees' Retirement System.

If you have any questions or comments, please contact us.

Respectfully submitted,

Brad Lee Armstrong

BLA:ah
Enclosures

cc: Gary W. Findlay, Executive Director
David T. Kausch, GRS

Missouri State Employees' Retirement System
Supplemental Actuarial Valuation
as of June 30, 2013

REQUESTED BY: Ms. Judith Delaney, Executive Assistant

SUBMITTED BY: Brad L. Armstrong, ASA, EA, MAAA and David T. Kausch, FSA, EA, MAAA
Gabriel, Roeder, Smith & Company

DATE: January 31, 2014

This report contains results of a supplemental valuation to determine the effects of adding a new tier of benefits for general assembly and elected official members hired on or after January 1, 2015.

This report is intended to describe the financial effect of the proposed changes. No statement in this report is intended to be interpreted as a recommendation in favor of the changes, or in opposition to them. The date of the valuation was June 30, 2013. Brad Armstrong and David Kausch are Members of the American Academy of Actuaries (MAAA) and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

If the scheduled contributions are made (subject to normal year-to-year experience fluctuations), then the System will be able to pay all benefits promised when due. Our understanding is that the State is currently paying the appropriate total contribution rate.

Actuarial assumptions and methods were consistent with those used in the regular actuarial valuation of the Retirement System on the valuation date, unless otherwise noted. In particular:

- The assumed rate of interest was 8.0%.
- Payroll was assumed to increase 3% per year.
- For the regular valuation, Unfunded Actuarial Accrued Liability as of June 30, 2013 is amortized over 30 years.

The active group size is assumed to remain constant.

A brief summary of the data used in this valuation follows:

			Group Averages		
Valuation Group	**Number**	**Payroll**	**Salary**	**Age(yrs.)**	**Service(yrs.)**
General Assembly	197	$ 7,081,591	$ 35,947	50.5	3.7
Elected Officials	6	$ 659,969	$ 109,995	48.3	6.4
Total MOSERS	50,833	$ 1,880,212,950	$ 36,988	45.8	11.3

Current MSEP 2011 Provisions Affected:

Statewide Elected Officials

Normal Retirement Eligibility

i) Age 62 with at least 4 years of credited service.
ii) Age 55 with age plus credited service equal to 90 or more.

Early Retirement Eligibility

i) N/A

Normal Retirement Benefit

1/24 of pay times first 12 years of credited service as a statewide elected official.

Vested Deferred Eligibility

4 years of service.

Post-Retirement Benefit Adjustments

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.

Members of the General Assembly

Normal Retirement Eligibility

i) Age 62 with completion of at least 3 full biennial assemblies.
ii) Age 55 with completion of at least 3 full biennial assemblies with age plus credited service equal to 90 or more.

Early Retirement Eligibility

i) N/A

Normal Retirement Benefit

1/24 of pay times first 24 years of credited service as member of the General Assembly.

Vested Deferred Eligibility

6 years of service (3 biennial assemblies).

Post-Retirement Benefit Adjustments

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

New Provisions Under Consideration (For general assembly and elected officials hired on or after January 1, 2015):

Normal Retirement Eligibility

i) Age 67 with at least 10 years of credited service.
ii) Age 55 with age plus credited service equal to 90 or more.

Normal Retirement Benefit

1.7% of average compensation times years of credited service with a 2.5% temporary benefit payable between ages 55 and 62 with age plus service equal to 90 or more.

Early Retirement Eligibility

Age 62 with at least 10 years of credited service. Benefit equal to the normal retirement benefit reduced by ½% for each month that retirement precedes eligibility for normal retirement. Normal retirement is age 67.

Vested Deferred Eligibility

10 years of service.

Post-Retirement Benefit Adjustments

Annual benefit percentage increase equal to the lesser of:

i) 80% of the CPI increase
ii) 5.0%

The proposed changes to benefits for new hires have **no effect** on the MOSERS current MSEP 2011 benefit obligation or current employer contributions for the active members currently covered under the Missouri State Employees' Retirement System MSEP 2011 plan.

We used the current active members as of June 30, 2013 to estimate the effect on future active members beginning with the FY 2015 contribution. For purposes of estimating the change in the new benefit tier, retirement rates were adjusted to account for later retirement eligibility. The actual retirement rates used in this portion of our cost estimate are shown on page 10.

Missouri State Employees' Retirement System
Supplemental Actuarial Valuation
as of June 30, 2013

	Impact on MOSERS in Total		
	Present Benefits	**Proposed Benefits**	**Increase/ (Decrease)**
FY 2014-15 Contribution			
Normal Cost	8.31 %	8.30 %	(0.01) %
Member Contributions	(1.15) %	(1.15) %	0.00 %
UAAL% (30-year amortization)	9.81	9.81	0.00
Total Contribution Rate	16.97 %	16.96 %	(0.01) %
UAAL $ Millions (6/30/2013)	$3,038	$3,038	$0
Percent Funded	72.7 %	72.7 %	0.0 %

Projected Change in Annual Contributions
($ Millions)

Years Out	Year Ending 6/30	Total Projected Payroll ($ Millions)	Estimated Dollar Change ($ Millions)	% of Payroll Change
1	2015	$1,995	$ (0.2)	(0.01%)
5	2019	2,245	(0.4)	(0.02%)
10	2024	2,603	(1.0)	(0.04%)
15	2029	3,017	(1.5)	(0.05%)
20	2034	3,498	(1.7)	(0.05%)
Ultimate				(0.06%)

Comment A: The long-term effect of the proposed changes is a decrease in total system normal cost of 0.06% of payroll. This decrease would emerge over time as new employees replace the existing workforce. We did not make any adjustments to the new employees for the election cycles.

Comment B: Because of term limits, the majority of affected members are assumed to terminate prior to vesting and take a refund of contributions. If these members were to take other covered positions (e.g. as a regular state employee), there would be additional cost to the system. This contingency is not reflected in this valuation.

Comment B: The calculations are based upon assumptions regarding future events, which may or may not materialize. They are also based upon present and proposed plan provisions that are outlined in the report. If you have reason to believe that the assumptions that were used are unreasonable, that the plan provisions are incorrectly described, that important plan provisions relevant to this proposal are not described, or that conditions have changed since the calculations were made, you should contact the author(s) of this report prior to relying on information in the report.

Comment C: If you have reason to believe that the information provided in this report is inaccurate, or is in any way incomplete, or if you need further information in order to make an informed decision on the subject matter of this report, please contact the author(s) of the report prior to making such decision.

Comment D: In the event that more than one plan change is being considered, it is very important to remember that the results of separate actuarial valuations cannot generally be added together to produce a correct estimate of the combined effect of all of the changes. The total can be considerably greater than the sum of the parts due to the interaction of various plan provisions with each other, and with the assumptions that must be used.

Comment E: This report is intended to describe the financial effect of the proposed plan changes on the retirement system. Except as otherwise noted, potential effects on other benefit plans were not considered.

Comment F: The reader of this report should keep in mind that actuarial calculations are mathematical estimates based on current data and assumptions about future events (which may or may not materialize). Please note that actuarial calculations can and do vary from one valuation year to the next. As a result, the cost impact of a benefit change may fluctuate over time, as the demographics of the group changes.

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

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

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

Pay increase assumptions for individual active members are shown for sample ages on page 8. Part of the assumption for each age is for merit and/or seniority increase, and the other 3.0% recognizes wage inflation. This assumption is used to project a member's current salary to the salaries upon which benefits will be based.

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

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

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

The mortality table, for post-retirement mortality, used in evaluating allowances to be paid was the RP 2000 combined healthy mortality table, projected to 2016 with Scale AA. Related values are shown on page 9. This assumption is used to measure the probabilities of each benefit payment being made after retirement. The pre-retirement mortality rates used were 100% of the post-retirement mortality rates for males and 80% of the post-retirement mortality for females.

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

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

The probabilities of age and service retirement are shown on page 10. 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 8. For disability retirement, impaired longevity was recognized by use of special mortality tables.

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

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

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

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

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

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

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

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

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

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

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

Elected Officials and Legislators

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.

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

Retirement Values
June 30, 2013

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

Percent of Eligible Active Members Retiring Next Year

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

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