

December 21, 2015

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CONFIDENTIAL

Ms. Ronda Stegmann
Legislative & Policy Coordinator
Missouri State Employees'
Retirement System
907 Wildwood Drive
Jefferson City, MO 65109

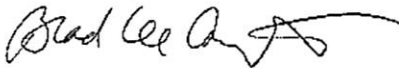
Re: House Bill No. 1591 (HB 1591)

Dear Ronda:

Enclosed are the results of a supplemental actuarial valuation related to a proposed benefit change for the Missouri State Employees' Retirement System June 30, 2015 valuation.

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

Respectfully submitted,



Brad Lee Armstrong, ASA, EA, FCA, MAAA



David T. Kausch, FSA, EA, FCA, MAAA

BLA/DTK:bd
Enclosure

**Missouri State Employees' Retirement System
Supplemental Actuarial Valuation
as of June 30, 2015**

REQUESTED BY: Mr. John Watson, Executive Director

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

DATE: December 21, 2015

This report presents results of a supplemental actuarial valuation to determine the effects of establishing a Hybrid Plan for all employees hired for the first time on or after January 1, 2017.

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, 2015. Brad Lee Armstrong and David T. 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, the Unfunded Actuarial Accrued Liability is amortized over 29 years.

We believe the assumptions are internally consistent and reasonable, based on the actual experience of MOSERS. These actuarial assumptions and methods comply with current actuarial standards of practice.

The active group size is assumed to remain constant.

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

Valuation Group	Number	Payroll	Group Averages		
			Salary	Age(yrs.)	Service(yrs.)
General Assembly	195	\$ 7,011,225	\$ 35,955	51.7	4.5
Elected Officials	6	659,970	109,995	46.7	7.7
Total MOSERS	49,980	1,918,532,280	38,386	45.6	11.2

**Missouri State Employees' Retirement System
Supplemental Actuarial Valuation
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Current MSEP 2011 Provisions:

Regular State Employees:

Benefit Formula: $1.7\% \times \text{credited service} \times \text{Final Average Pay}$

Temporary benefit: $0.8\% \times \text{service} \times \text{Final Average Pay}$ to age 62 (for those retiring under Rule of 90).

Normal Retirement Eligibility: Age 67 with 10 years of credited service or age 55 with age plus credited service equal to 90 or more.

Early Retirement Eligibility: Age 62 with 10 years of credited service, with normal retirement amount reduced by $\frac{1}{2}\%$ for each month that retirement precedes eligibility for normal retirement. Normal retirement is age 67.

Vesting period: 10 years of service

COLA: 80% of increase in CPI (2% maximum)

Members of the General Assembly:

Benefit Formula: $\frac{1}{24}$ of pay times years of credited service as a member of the General Assembly. The benefit is capped at 100% of pay.

Normal Retirement Eligibility: Age 62 and the completion of at least three full biennial assemblies or age 55 with age plus credited service equal to 90 or more.

COLA: 3.0%

Elected Officials:

Benefit Formula: $\frac{1}{24}$ of pay times years of credited service as a statewide Elected Official. The benefit is capped at 50% of pay.

Normal Retirement Eligibility: Age 62 with 4 years of credited service or age 55 with age plus credited service equal to 90 or more.

COLA: 3.0%

All Members:

Employee Contribution: 4.0%

**Missouri State Employees' Retirement System
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Members hired on or after January 1, 2017 will be eligible to participate in a **Defined Benefit Plan** with the following provisions:

Regular State Employees:

Benefit Formula: $1.0\% \times \text{credited service} \times \text{Final Average Pay}$

Temporary benefit: $0.8\% \times \text{service} \times \text{Final Average Pay}$ to age 62 (for those retiring under Rule of 90)

Normal Retirement Eligibility: Age 67 with 10 years of credited service or age 55 with age plus credited service equal to 90 or more.

Early Retirement Eligibility: Age 62 with 10 years of credited service, with normal retirement amount reduced by $\frac{1}{2}\%$ for each month that retirement precedes eligibility for normal retirement. Normal retirement is age 67.

Vesting period: **10 years** until the plan's actuary determines that the funded ratio of the most recent actuarial valuation is at least 90%, in which the vesting period will decrease to **5 years** for current and new members on January 1 of the following plan year.

Members of the General Assembly:

Benefit Formula: $\frac{1}{48}$ of pay times years of credited service as a member of the General Assembly. The benefit is capped at 50% of pay.

Normal Retirement Eligibility: Age 62 and the completion of at least three full biennial assemblies or age 55 with age plus credited service equal to 90 or more.

Elected Officials:

Benefit Formula: $\frac{1}{48}$ of pay times years of credited service as a statewide Elected Official. The benefit is capped at 25% of pay.

Normal Retirement Eligibility: Age 62 with 4 years of credited service or age 55 with age plus credited service equal to 90 or more.

All Members:

Employee Contribution: 4.0%

COLA: 80% of increase in CPI (2% maximum)

All members hired on or after January 1, 2016 will also participate in a **Defined Contribution Plan** with 3.0% employer contributions and 1.0% employee contributions.

The proposed removal of benefits for new hires has **no effect** on the MOSERS' current benefit obligation or current employer contributions for the active members currently covered under the Missouri State Employees' Retirement System plan.

**Missouri State Employees' Retirement System
Supplemental Actuarial Valuation
as of June 30, 2015**

Actuarial Statement

	Impact on MOSERS DB Employer		
	Contributions		
	Present Benefits	Proposed Benefits	Increase/ (Decrease)
FY 2016-2017 Contribution			
Total Normal Cost	8.18 %	8.13 %	(0.05) %
Member Contribution Rate	(1.51)	(1.51)	0.00
UAAL%	9.67	9.67	0.00
Total Employer Contribution Rate	16.34 %	16.29 %	(0.05) %
Employer Normal Cost (\$ millions)	\$ 131.8	\$ 130.8	\$ (1.0)
Estimated Employer Contribution (\$ millions)	\$ 323.0	\$ 322.0	\$ (1.0)
Valuation Results as of June 30, 2015 (\$ millions)			
Market Value of Assets (MVA)	\$ 8,516.7	\$ 8,516.7	\$ -
Actuarial Accrued Liability (AAL)	11,727.6	11,727.6	-
Actuarial Value of Assets (AVA)	8,792.5	8,792.5	-
Unfunded Actuarial Accrued Liability (UAAL)	\$ 2,935.1	\$ 2,935.1	\$ -
Percent Funded	75.0 %	75.0 %	0.0 %

* *Illustrative only. Estimated employer contribution amounts (shown in \$ millions) are based on the Total Computed Employer Contribution Rate shown and valuation payroll projected two years to the applicable fiscal year using the valuation assumptions of 0% for the first year and 3% for the second year. The projection on the following page uses a similar procedure, but it is applied to each individual participant as opposed to the aggregated approach used in this page, which results in small differences when computed.*

**Missouri State Employees' Retirement System
Supplemental Actuarial Valuation
as of June 30, 2015**

**Projected Change in Annual Employer Contributions
(in Thousands)**

Fiscal Year	Current Provisions (Beginning of Year)				Proposed Provisions (Beginning of Year)				Projected DB Employer Contributions						Projected DC Employer Contributions		Total Projected (DB +DC) Employer Contributions	
	Projected AAL	Projected AVA	Funded Ratio	Projected MVA	Projected AAL	Projected AVA	Funded Ratio	Projected MVA	Current		Est. Impact		Proposed		Proposed		Proposed	
									Rate	Dollars	Rate#	Dollars	Rate	Dollars	Rate@	Dollars	Rate	Dollars
2016	\$ 11,727,618	\$ 8,792,486	75.0%	\$ 8,516,655	\$ 11,727,618	\$ 8,792,486	75.0%	\$ 8,516,655	16.34%	\$ 317,259	(0.05%)	\$ (971)	16.29%	\$ 316,288	0.12%	\$ 2,394	16.41%	\$ 318,683
2017	12,087,011	9,118,237	75.4%	9,125,928	12,087,011	9,118,237	75.4%	9,125,928	16.11%	319,852	(0.09%)	(1,787)	16.02%	318,065	0.42%	8,378	16.44%	326,444
2018	12,419,866	9,411,492	75.8%	9,366,138	12,418,890	9,410,452	75.8%	9,365,181	15.88%	322,769	(0.33%)	(6,707)	15.55%	316,061	0.67%	13,543	16.22%	329,604
2019	12,722,292	9,677,451	76.1%	9,624,627	12,716,692	9,674,456	76.1%	9,621,815	15.68%	326,516	(0.53%)	(11,037)	15.15%	315,480	0.88%	18,243	16.03%	333,722
2020	12,996,655	9,918,723	76.3%	9,859,006	12,981,139	9,908,473	76.3%	9,849,549	15.48%	330,462	(0.72%)	(15,370)	14.76%	315,092	1.06%	22,678	15.82%	337,770
2021	13,246,944	10,140,023	76.5%	10,073,928	13,216,378	10,117,421	76.6%	10,052,777	15.28%	334,654	(0.88%)	(19,273)	14.40%	315,381	1.23%	26,962	15.63%	342,343
2022	13,475,752	10,344,252	76.8%	10,272,097	13,424,928	10,303,793	76.8%	10,233,840	15.10%	339,515	(1.03%)	(23,159)	14.07%	316,356	1.39%	31,195	15.46%	347,551
2023	13,689,286	10,537,917	77.0%	10,459,957	13,612,780	10,474,118	76.9%	10,399,119	14.91%	344,357	(1.15%)	(26,560)	13.76%	317,797	1.53%	35,414	15.29%	353,211
2024	13,885,916	10,720,245	77.2%	10,636,807	13,777,972	10,627,212	77.1%	10,547,536	14.76%	350,368	(1.28%)	(30,384)	13.48%	319,984	1.67%	39,636	15.15%	359,620
2025	14,064,021	10,889,823	77.4%	10,801,297	13,918,470	10,761,713	77.3%	10,677,696	14.60%	356,356	(1.40%)	(34,171)	13.20%	322,185	1.80%	43,879	15.00%	366,064
2026	14,223,648	11,047,863	77.7%	10,954,427	14,033,858	10,877,955	77.5%	10,789,862	14.45%	362,833	(1.51%)	(37,915)	12.94%	324,917	1.92%	48,114	14.86%	373,031
2027	14,365,891	11,196,030	77.9%	11,098,041	14,124,717	10,977,129	77.7%	10,885,310										

@ The ultimate DC contribution is 3.0% of projected payroll.

Fiscal Year	BOY Valuation		
	Payroll Projected	Pre 1/1/2017 Payroll*	Post 1/1/2017 Payroll*
2016	\$ 1,901,091	\$ 1,901,091	\$ -
2017	1,941,611	1,861,799	79,812
2018	1,985,426	1,706,146	279,279
2019	2,032,549	1,581,127	451,422
2020	2,082,374	1,474,287	608,087
2021	2,134,768	1,378,827	755,941
2022	2,190,146	1,291,405	898,741
2023	2,248,444	1,208,617	1,039,827
2024	2,309,572	1,129,094	1,180,478
2025	2,373,768	1,052,555	1,321,213
2026	2,440,792	978,150	1,462,642

* DB, DC and Total Contribution Rates are based on open group payroll.

Numbers may not add due to rounding.

**Missouri State Employees' Retirement System
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Comment A: The Board of Trustees is currently engaged in an experience study. The Board may change actuarial assumptions as a result of that study. The impact of this proposal depends on the assumptions. If adopted, the proposal will be reflected in the next actuarial valuation and will reflect the assumptions in effect in that valuation. The actual impact may differ from estimates shown in this report.

Comment B: The long-term effect of the proposed Hybrid Plan is an increase in total employer contribution of 0.69% of total MOSERS' payroll. The components of this long-term increase are as follows:

Components of Changes in Long-Term Total Employer Contribution Rate (as a percent of payroll)	
A. Change in total DB Normal Cost	(2.31)%
B. Change in DB member contribution rate	0.00%
C. Change in employer DB Normal Cost (A. - B.)	(2.31)%
D. Change in employer DC contribution rate	3.00%
E. Total change in employer contribution rate (C. + D.)	0.69%

These increases would emerge over time as new employees replace the existing workforce. For purposes of this supplemental valuation, the change in the DB employer contribution rate is reflected beginning January 1, 2017, even though the employer contribution rate for the year ending June 30, 2017 has already been certified by the Board of Trustees. The change in DC employer contribution rate is reflected beginning January 1, 2017. Since the DB plan remains open in the hybrid plan, there is no change in the amortization method of the Unfunded Accrued Liability contributions.

Comment C: The cost of the 5-year vesting is not shown in the projection due to not achieving 90% funded status. The long term effect of this change is highly dependent on the assumptions and demographics in place at implementation, both of which may materially change in the future.

Comment D: The proposal does not specify vesting of the 3% employer defined contribution rate nor does it discuss the treatment of forfeitures for non-vested employer DC contributions. For purposes of this supplemental valuation, we have assumed that the DC vesting will be immediate and therefore there will be no forfeitures.

Comment E: Capping the COLA at 2% may result in an average COLA slightly less than 2%. For the purposes of this report, a 1.5% COLA assumption was used. The COLA assumption represents the expectation of a lognormal distribution truncated at 2%.

Comment F: At the September 17, 2014 Board meeting, the Board adopted a minimum funding policy such that the employer contribution rate will be no less than 16.97% of payroll (the rate calculated in the June 30, 2013 valuation) until such a time as the plan is at least 80% funded on an actuarial value of assets basis. However, since the minimum contribution rate obfuscates the financial impact of the proposal, this supplemental valuation *does not reflect* the minimum funding policy.

**Missouri State Employees' Retirement System
Supplemental Actuarial Valuation
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Comment G: The probabilities of retirement were not adjusted with this study. Changes to plan design may affect member retirement behavior. We recommend continued monitoring of experience.

Comment H: The calculations are based upon assumptions regarding future events, which may or may not materialize. They are also based upon present and proposed assumptions 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 authors of this report prior to relying on information in the report.

Comment I: 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 authors of the report prior to making such decision.

Comment J: 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 K: 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 L: 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. Fluctuations from one year to the next may be more pronounced when dealing with small group sizes.

Summary of Assumptions Used for the June 30, 2015 Actuarial Valuation

All actuarial assumptions are expectations of future experience, not market measures. The rationale for the actuarial assumption is based on the System's investment policy, capital market expectations, and demographic experience. Actuarial assumptions were last reviewed in conjunction with the July 1, 2007 through June 30, 2011 4-Year Experience Study dated March 30, 2012.

-----*Economic Assumptions*-----

The economic assumptions were adopted by the Board on July 19, 2012 to be first effective for the June 30, 2012 valuation.

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 demographic assumptions were adopted by the Board on June 20, 2012 to be first effective for the June 30, 2012 valuation.

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 11. 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.

Summary of Assumptions Used for the June 30, 2015 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 closed 30-year amortization period, level percent of payroll amortization as adopted by the Board. This method was first effective with the June 30, 2014 valuation. As of June 30, 2015 valuation, 29 years remain. The amortization is based on the projected unfunded actuarial accrued liability to the beginning of the fiscal year during which the contributions are expected to be made.

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

The actuarial valuation computations were made by or under the supervision of Brad Lee Armstrong and David T. Kausch who are Members of the American Academy of Actuaries (MAAA).

**Separations from Active Employment before Service Retirement
and Individual Pay Increase Assumptions
as of June 30, 2015**

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, 2015

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

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

Percent of Eligible Active Members Retiring Next Year

Normal Retirement Pattern					Early Retirement Pattern		
Retirement Age	MSEP and MSEP 2000*			MSEP 2011**	Retirement Age	MSEP and MSEP 2000*	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	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.