



“Social security and your state pension are important components to financial stability in retirement, but don’t forget the last part of the “three-legged stool” strategy — personal savings.

I’ve been a state employee for nearly 30 years. Six months after I began working, I learned of the deferred compensation program. The first month I contributed, also marked the stock market’s historic “Black Monday” event. While scary at the time, I’ve had positive growth and compound interest over the years, which has made for a very nice return on my contributions.

That “perfect time” to start saving will not happen on its own. Start by saving small amounts monthly and you’ll be invigorated as you see your money grow over time. That \$20 becomes hundreds, then thousands, and can become tens-of-thousands of dollars saved.”

— Daniel

Fulton State Hospital (DMH)

“That ‘perfect time’ to start saving will not happen on its own. Start by saving small amounts monthly and you’ll be invigorated as you see your money grow over time.”



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Actuary's Certification Letter



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October 14, 2016

The Board of Trustees
Missouri State Employees' Retirement System
907 Wildwood Drive
Jefferson City, Missouri 65109

Dear Board Members:

The basic financial objective of the Missouri State Employees' Retirement System (MOSERS), as stipulated under Missouri Revised Statutes 104.440 and 104.1066, is to establish and receive contributions which:

- (1) when expressed in terms of percents of active member payroll will remain approximately level from generation to generation of Missouri citizens, and which
- (2) when combined with present assets and future investment return will be sufficient to meet the present and future financial obligations of MOSERS.

In order to measure progress toward this fundamental objective, MOSERS performs annual actuarial valuations on the Missouri State Employees' Retirement Plan (MSEP) and the Judges Retirement Plan (Judicial Plan). The purposes of the valuations are to (i) measure present financial position, and (ii) establish contribution rates that provide for the normal cost and level percent of payroll amortization of unfunded actuarial accrued liabilities over a reasonable period. The latest completed actuarial valuations were based upon data and assumptions as of June 30, 2016, presented to the board in separate reports issued September 7, 2016 (Judicial Plan) and September 9, 2016 (MSEP). These valuations indicate that the calculated contribution rates for the fiscal year ending June 30, 2018, for the benefits scheduled to be in effect on and after July 1, 2016, meet the basic financial objective. These contribution rates are 19.45% of payroll for 49,464 active MSEP members, and 62.09% of payroll for 408 Judicial Plan members.

At the September 17, 2014, board meeting, the board adopted a minimum funding policy. Specifically, the minimum employer contribution rate will remain at the level calculated in the June 30, 2013, valuation until the respective plans are individually 80% funded. These contribution rates are 16.97% of payroll for active MSEP members, and 58.45% of payroll for Judicial Plan members, both of which are below the current rates and therefore do not apply.

The GASB 67 disclosures were issued on September 30, 2016, in a separate report due to the expressed intent of GASB to disconnect reporting requirements from funding requirements.

The actuarial valuations are based upon financial and participant data which is prepared by retirement system staff, assumptions regarding future rates of investment return, salary increases, inflation, and assumptions regarding rates of retirement, turnover, death, and disability among MSEP and Judicial Plan members and their beneficiaries. The data is reviewed by us for internal and year-to-year consistency as well as general reasonableness prior to its use in the actuarial valuations. It is also summarized and tabulated for the purpose of analyzing trends.

We are not responsible for the accuracy or completeness of the data. The demographic assumptions were adopted by the board of trustees on June 16, 2016, based upon recommendations made in an experience study covering the period from July 1, 2010 to June 30, 2015. The economic assumptions were adopted by the board of trustees on June 16, 2016. The assumptions and methods used in this valuation comply with the current actuarial standards of practice.

The benefit structure is outlined in the actuarial section of the annual report. We provided the information used in the supporting schedules in the *Actuarial Section*, and the *Schedule of Employers' Net Pension Liability*, *Sensitivity of Net Pension Liability to Changes in the Discount Rate*, *Schedule of Changes in Employers' Net Pension Liability* and the *Schedule of Employer Contributions* in the *Financial Section*.

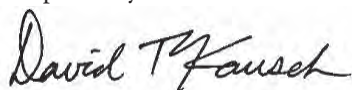
Based upon the valuation results, it is our opinion that the Missouri State Employees' Retirement Plan and the Judicial Retirement Plan continue to operate in accordance with actuarial principles of level percent of payroll financing. To the best of our knowledge the information contained in this report is accurate and fairly presents the actuarial position of the plans as of the valuation date. All calculations have been made in conformity with generally accepted actuarial principles and practices, with the Actuarial Standards of Practice issued by the Actuarial Standards Board and with applicable statutes.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or 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.

This certification letter should not be relied on for any purpose other than the purposes described. Determinations of the financial results associated with the benefits described in this report in a manner other than the intended purpose may produce significantly different results.

David T. Kausch and Brad Lee Armstrong are independent of the plan sponsor and 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.

Respectfully submitted,



David T. Kausch, FSA, EA, FCA, MAAA
Senior Consultant & Chief Actuary



Brad Lee Armstrong, ASA, EA, FCA, MAAA
Senior Consultant & Actuary

Summary of Actuarial Assumptions

Economic Assumptions

The economic assumptions were adopted by the board on June 16, 2016, to be first effective for the June 30, 2016, valuations. The assumed rate of return on investments used in the FY16 valuations was 7.65% per year, compounded annually (net after investment expenses). This assumption takes into consideration 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 pages 94 and 96. A portion of the assumption for each age represents merit and/or seniority increase, and the other 3% 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% 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%, on a compounded basis, when a minimum COLA of 4% is in effect (4% for 12 years, 3.06% the next year to reach a cumulative 65% followed by 2%). When no minimum COLA is in effect, price inflation is assumed to be 2.5% and the annual COLA is assumed to be 2% (80% of 2.5%), on a compounded basis.

The table to the right provides the assumed rate of return (ARR) on investments, assumed price inflation (API), and real return objective (RRO) for the past ten valuation years.

Valuation Year	ARR %	API %	RRO %
2016	7.65%	2.50%	5.15%
2015	8.00	2.50	5.50
2014	8.00	2.50	5.50
2013	8.00	2.50	5.50
2012	8.00	2.50	5.50
2011	8.50	3.20	5.30
2010	8.50	3.20	5.30
2009	8.50	3.20	5.30
2008	8.50	3.50	5.00
2007	8.50	3.50	5.00

Non-Economic Assumptions

The demographic assumptions were adopted by the board on June 16, 2016, to be first effective for the June 30, 2016, valuation. The mortality table, for post-retirement mortality, used in evaluating allowances to be paid was the RP-2014 Healthy Annuitant mortality table, projected from 2006 to 2026 with Scale MP-2015 and scaled by 120%. Related values are shown on pages 94 and 96. This assumption is used to measure the probabilities of each benefit payment being made after retirement. The pre-retirement mortality table used was the RP-2014 Employee mortality table, projected from 2006 to 2026 with Scale MP-2015 and scaled by 95% for males and 90% for females. The pre-retirement mortality table used for Long-Term Disability (LTD) members was the RP-2014 Disabled mortality table, projected from 2006 to 2026 with Scale MP-2015 and scaled by 95% for males and 90% for females.

The probabilities of age and service retirement are shown on page 95. It was assumed that each member will be granted 4 months (5 months for 2011 plan members) of service credit for unused leave upon retirement and 4 months of military service purchases (0 months for 2011 plan members). The probabilities of withdrawal from service, disability and death-in-service are shown on pages 94-96. 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 and 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. This method was first effective with the June 30, 2014 valuation. 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. The unfunded accrued actuarial liability (UAAL) payment is calculated such that the minimum employer contribution rate will be at least 16.97% of payroll and 58.45% for judges (the rate calculated in the June 30, 2013 valuation) until such a time as each plan is at least 80% funded. When the plan becomes at least 80% funded, the remaining closed amortization period will be used to calculate the employer contribution rate to be made. Employer contribution dollars were assumed to be paid in equal installments throughout the employer's fiscal year.

The valuation assets used to determine funding requirements recognize assumed investment income fully each year. Differences between actual and assumed investment return are phased-in over an open five-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 and projecting salary by 3.0% (wage inflation assumption) per year from the year of disability to the current year to reflect indexing of pay in ultimate retirement benefits.

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

MSEP - Retirement Values | June 30, 2016

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		Future Life Expectancy (Years)			
	Old Plan COLA		New Plan COLA		Service		Disability	
	Men	Women	Men	Women	Men	Women	Men	Women
40	\$232.55	\$233.39	\$188.71	\$192.71	40.95	43.52	31.67	37.37
45	224.67	225.75	180.96	186.10	36.33	38.90	28.24	33.43
50	215.04	216.17	171.72	177.90	31.84	34.33	25.02	29.63
55	203.45	204.34	160.97	167.90	27.52	29.85	21.99	26.06
60	189.59	189.93	148.53	155.96	23.38	25.49	19.08	22.66
65	172.99	172.53	133.99	141.77	19.40	21.29	16.23	19.25
70	153.41	152.07	117.23	125.31	15.62	17.28	13.44	15.89
75	131.21	128.92	98.73	106.89	12.13	13.56	10.80	12.77
80	107.27	104.17	79.34	87.21	9.03	10.22	8.40	10.01
85	83.33	79.90	60.48	67.65	6.42	7.37	6.33	7.71

**MSEP - Separations From Active Employment Before
Service Retirement and Individual Pay Increase Assumptions | June 30, 2016**

Sample Ages	Years of Service	Percent of Active Members Separating Within the Next Year						Pay Increase Assumptions for an Individual Employee			
		Withdrawal*		Death**		Disability		Years of Service	Merit and Seniority***	Base (Economy)	Increase Next Year
		Men	Women	Men	Women	Men	Women				
	0	24.0%	27.5%					1	5.75%	3.00%	8.75%
	1	19.0	21.5					2	2.50	3.00	5.50
	2	15.5	16.3					3	1.50	3.00	4.50
	3	13.3	13.5					4	1.25	3.00	4.25
	4	11.2	11.3					5	1.00	3.00	4.00
25	5+	13.5	14.0	0.03%	0.01%	0.10%	0.10%	6	1.00	3.00	4.00
30		10.6	11.0	0.03	0.02	0.10	0.10	7	1.00	3.00	4.00
35		8.2	8.5	0.04	0.03	0.10	0.10	8	1.00	3.00	4.00
40		5.8	6.0	0.05	0.03	0.36	0.36	9	0.75	3.00	3.75
45		4.3	4.5	0.07	0.05	0.41	0.41	10	0.50	3.00	3.50
50		2.9	3.0	0.13	0.08	0.57	0.57	15	0.50	3.00	3.50
55		2.9	3.0	0.22	0.14	0.77	0.77	20	0.50	3.00	3.50
60		2.9	3.0	0.40	0.20	1.02	1.02	25	0.25	3.00	3.25
65		2.9	3.0	0.70	0.30	1.23	1.23	30	0.25	3.00	3.25
70		2.9	3.0	1.17	0.50	1.23	1.23				

* Does not apply to elected officials and legislators.

*** Does not apply to members of the General Assembly.

** 2% of the deaths in active service are assumed to be duty-related.

SUMMARY OF ACTUARIAL ASSUMPTIONS

MSEP - Percent of Eligible Active Members Retiring Next Year | June 30, 2016

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	20%						
49	20	10%					
50	20	10	21%				
51	20	10	21				
52	20	10	21				
53	20	10	21				
54	20	10	21				
55	20	10	21	45%			
56	20	10	21	45			
57	20	10	21	35	57	2.4%	
58	20	10	21	35	58	3.1	
59	20	10	21	30	59	3.0	
60	20	10	21	35	60	5.1	
61	19	10	21	25	61	6.0	
62	18	22	29	40	62	6.0	10%
63	16	18	24	30	63	6.0	10
64	15	17	17	20	64	6.0	10
65	19	19	27	30	65	6.0	50
66	24	25	28	25	66	6.0	50
67	10	25	23	20	67	6.0	
68	20	25	23	20	68	6.0	
69	20	25	23	20	69	6.0	
70	20	25	23	20	70	6.0	
71	20	25	23	20	71	6.0	
72	20	25	23	20	72	6.0	
73	20	25	23	20	73	6.0	
74	20	25	23	20	74	6.0	
75	50	50	23	50	75	6.0	
76	50	50	23	50	76	6.0	
77	75	75	23	75	77	6.0	
78	100	100	100	100	78	6.0	

* For members hired prior to January 1, 2011.

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

Elected Official and Legislators — Percent of Active Members Separating Within the Next Year | June 30, 2016

Years of Service	Withdrawal		Years of Service	Withdrawal	
	Men/Women			Men/Women	
1	8.0%		5	12.0%	
2	8.0		6	12.0	
3	8.0		7	12.0	
4	8.0		8+	35.0	

SUMMARY OF ACTUARIAL ASSUMPTIONS

Judicial Plan - Retirement Values | June 30, 2016

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		Future Life Expectancy (Years)			
	Old Plan COLA		New Plan COLA		Service		Disability	
	Men	Women	Men	Women	Men	Women	Men	Women
40	\$235.59	\$236.34	\$191.85	\$195.44	43.01	45.51	30.97	35.98
45	228.38	229.31	184.72	189.33	38.33	40.84	27.58	32.11
50	219.51	220.52	176.14	181.72	33.77	36.21	24.42	28.40
55	208.76	209.56	166.06	172.38	29.36	31.65	21.43	24.92
60	195.78	196.11	154.26	161.14	25.11	27.22	18.58	21.62
65	180.10	179.73	140.35	147.66	21.01	22.91	15.79	18.30
70	161.44	160.27	124.14	131.84	17.09	18.79	13.04	15.04
75	140.01	137.93	106.03	113.98	13.45	14.93	10.45	12.00
80	116.51	113.61	86.72	94.56	10.17	11.43	8.10	9.34
85	92.52	89.19	67.61	74.92	7.38	8.40	6.08	7.14

Judicial Plan - Percent of Eligible Active Members Retiring Next Year | June 30, 2016

Retirement Age	Normal Retirement Pattern				Retirement Age	Early Retirement Pattern	
	Judicial Plan*		Judicial Plan 2011**			Judicial Plan*	
	Percent Eligible		Percent Eligible			Percent Eligible	
	Men	Women	Men	Women		Men	Women
55	20%	3%					
56	16	3					
57	13	3					
58	9	3					
59	5	3					
60	8	8					
61	5	8					
62	8	8	30%	35%	62	6%	3%
63	10	8	20	20	63	6	3
64	12	8	15	20	64	6	3
65	12	15	30	50	65	6	3
66	20	15	25	25	66	6	3
67	20	15	20	25	67	6	3
68	30	15	20	25	68	6	3
69	30	15	30	50	69	6	3
70	100	100	100	100	70	100	100

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

Judicial Plan - Separations From Active Employment Before Service Retirement and Individual Pay Increase Assumptions | June 30, 2016

Sample Ages	Percent of Active Members Separating Within the Next Year				Pay Increase Assumptions for an Individual Employee			Percent of Active Members Separating Within the Next Year		
	Death		Disability		Merit and Seniority	Base (Economy)	Increase Next Year	Service Index	Withdrawal	
	Men	Women	Men	Woman					Men	Women
25	0.03%	0.01%	0.01%	0.01%	2.20%	3.00%	5.20%	1	0.040%	0.040%
30	0.03	0.02	0.02	0.01	2.20	3.00	5.20	2	0.010	0.023
35	0.04	0.03	0.03	0.02	1.48	3.00	4.48	3	0.013	0.023
40	0.05	0.04	0.04	0.03	0.76	3.00	3.76	4	0.013	0.023
45	0.07	0.05	0.05	0.04	0.60	3.00	3.60	5	0.013	0.023
50	0.13	0.09	0.08	0.07	0.54	3.00	3.54	6-10	0.013	0.023
55	0.24	0.16	0.13	0.12	0.44	3.00	3.44	11-15	0.017	0.023
60	0.42	0.23	0.20	0.19	0.00	3.00	3.00	16+	0.010	0.010
65	0.74	0.33	0.20	0.19	0.00	3.00	3.00			
70	1.23	0.55	0.20	0.19	0.00	3.00	3.00			

SUMMARY OF ACTUARIAL ASSUMPTIONS

Miscellaneous Technical Assumptions | June 30, 2016**Pay Increase Timing**

Beginning of fiscal year.

Decrement Timing

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

Eligibility Testing

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

Benefit Service

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

Decrement Relativity

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

Decrement Operation

Disability and withdrawal do not operate during normal retirement eligibility.

Normal Form of Benefit

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

For judges, the assumed normal form of benefit is the straight life form, with 50% continuing to an eligible surviving spouse for members hired prior to January 1, 2011.

Other Liability Adjustments**Pre-Retirement Survivor Benefits for Spouse of Terminated Vested Member**

The factors used to estimate the cost of immediate unreduced survivor annuities upon the death of a vested member were updated based on prior experience.

Pre-Retirement Survivor Benefits for Spouse of Terminated-Vested Member		
Age	Male	Female
<30	1.57	1.31
30-39	1.24	1.13
40-49	1.09	1.05
>50	1.02	1.01

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 eight months of service credit, four months for unused leave upon retirement and four months for military service purchases. For members hired on or after January 1, 2011, it is assumed that each member will be granted five months for unused leave.

Marriage Assumption

It is assumed that, among active members, 70% are married at retirement, 60% of those dying in active service are married, and men are three years older than their spouses.

SUMMARY OF ACTUARIAL ASSUMPTIONS

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.

For judges, vested members are assumed not to take a refund of member contributions and forfeit their benefit upon separation from service.

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, 2016. It is assumed for valuation purposes that there is no turnover among members and no new entrants during the month of June 2016. New entrant assumed demographic patterns are based on the demographics of active members hired within the last three to eight years.

Data Adjustments

Active and retired member data was reported as of May 31, 2016. It was brought forward to June 30, 2016, 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, 2016. 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 \$38,805 (\$116,459 for Administrative Law Judges) as of June 30, 2016. There were 25 Regular State Employee members affected by this assumption.

For judges, active members reported with no annualized salary were assumed to receive the average active member pay, which is \$140,738, as of June 30, 2016.

When the option of choosing plans is available, terminated vested members are reported with two records, one with benefits under the MSEP and one with benefits under the MSEP 2000. 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 three years younger for male retirees and three years older for female retirees. For the terminated vested members, GRS staff found one member less than what was initially reported. This was confirmed with MOSERS' staff. For members reported with no gender, the member is assumed to be male.

For judges, 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 four years younger for male retirees and four years older for female retirees.

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

Actuarial Asset Value Smoothing

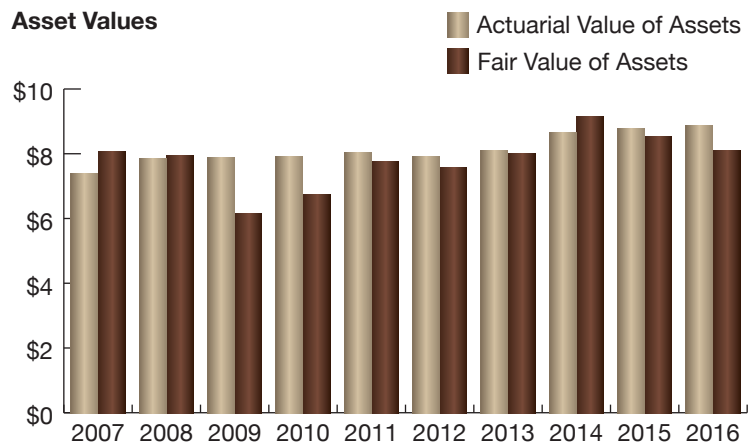
The financing objective of the vast majority of public retirement plans is to establish contribution rates and collect contributions which remain relatively level as a percent of active member payroll over decades of time. This concept is sometimes referred to as attempting to achieve intergenerational equity, meaning future generations will not be expected to pay more or less (in inflation adjusted terms) than the present generation contributes to support the plan.

Some critics of smoothing the actuarial value of assets suggest that pension plans are not providing “transparency” in connection with operations. Actual practice suggests otherwise. The *Statements of Fiduciary Net Position* and *Changes in Fiduciary Net Position* in the *Financial Section* are prepared on the basis of fair values. Beyond that, all information related to asset values and results of investment activity in the *Investment Section* of this report is prepared on the basis of fair values. This is required by the accounting and reporting standards established by the Governmental Accounting Standards Board and by the Government Finance Officers Association’s *Guidelines for the Preparation of a Comprehensive Annual Financial Report*. Both organizations have been long-standing proponents of transparency in governmental accounting and reporting – public retirement plans commonly subscribe to the dictates of both.

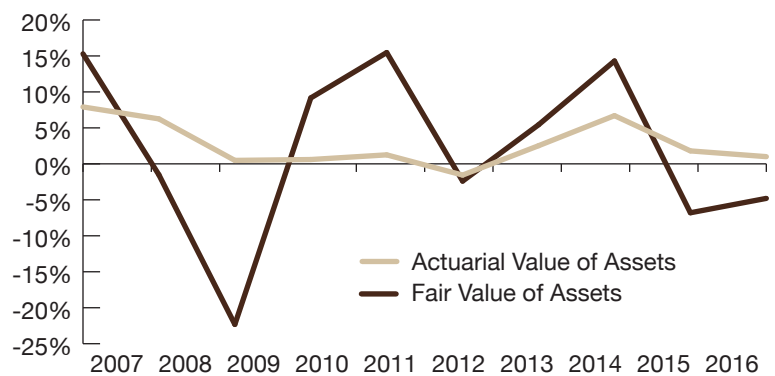
Many public retirement plans have begun to emphasize use of asset classes that, by their nature, tend to be somewhat volatile in fair value. This is being done with the objective of increasing long-term investment returns, thus providing increased benefit security for plan participants and lower contribution rates for taxpayers than would otherwise be the case. With fair value accounting for contribution rate determination purposes, we could achieve more level contribution rates by employing lower volatility asset classes but the level contribution rate would be much higher than is the case with the higher return expectations we have as the result of taking on asset volatility risk.

When operating with a long-term time horizon, with contribution rate stability as a key objective, asset smoothing for actuarial purposes is simply a tool. Asset smoothing for actuarial purposes is a practical solution to responsibly achieving intergenerational equity, giving recognition to the fact that market cycles do not coincide with financial reporting periods. The use of the “market-related” value established through smoothing simply makes more sense for determining contribution rates than using fair value. The charts above further illustrate the impact of smoothing volatility in actuarial computations.

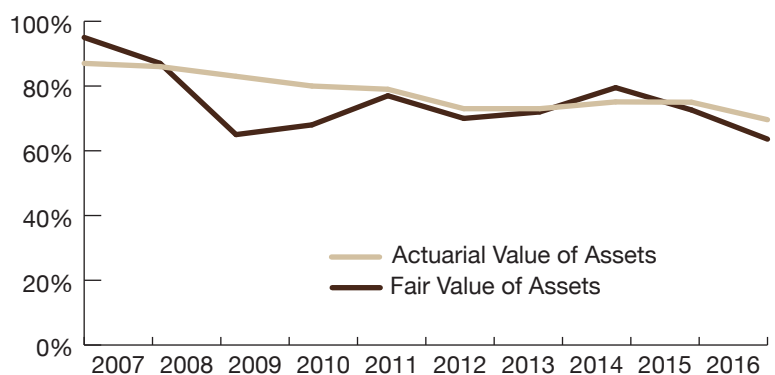
Asset Values



Percent Change in Asset Values



Percent Funded



*Pension Trust Funds***Employer Schedule of Funding Progress | Last Ten Years**

MOSERS uses the entry-age normal funding method. The entry-age normal actuarial cost method allocates the actuarial present value of each member's projected benefits on a level basis over the member's pensionable compensation between the entry age of the member and assumed exit ages.

MSEP

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) Entry Age (b)	Unfunded AAL (UAAL) (b-a)	Percent Funded (a/b)	Annual Covered Payroll (c)	UAAL Percentage of Covered Payroll [(b-a)/c]
6/30/2007	\$7,377,289,283	\$ 8,500,428,641	\$1,123,139,358	86.8%	\$1,846,643,330	60.8%
6/30/2008	7,838,495,768	9,128,347,470	1,289,851,702	85.9	1,916,527,398	67.3
6/30/2009	7,876,079,342	9,494,806,715	1,618,727,373	83.0	2,002,402,087	80.8
6/30/2010	7,923,377,393	9,853,155,445	1,929,778,052	80.4	1,945,095,321	99.2
6/30/2011	8,022,481,408	10,123,544,043	2,101,062,635	79.2	1,875,569,816	112.0
6/30/2012	7,897,167,203	10,793,651,577	2,896,484,374	73.2	1,864,069,493	155.4
6/30/2013	8,096,436,929	11,134,637,484	3,038,200,555	72.7	1,880,212,950	161.6
6/30/2014	8,637,758,955	11,494,571,835	2,856,812,880	75.1	1,902,719,928	150.1
6/30/2015	8,792,485,658	11,727,618,410	2,935,132,752	75.0	1,918,527,768	153.0
6/30/2016	8,878,057,191	12,751,162,753	3,873,105,562	69.6	1,921,528,936	201.6

Judicial Plan

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) Entry Age (b)	Unfunded AAL (UAAL) (b-a)	Percent Funded (a/b)	Annual Covered Payroll (c)	UAAL Percentage of Covered Payroll [(b-a)/c]
6/30/2007	\$ 61,903,516	\$326,666,373	\$264,762,857	19.0%	\$40,846,581	648.2%
6/30/2008	73,194,379	354,796,453	281,602,074	20.6	44,542,530	632.2
6/30/2009	81,337,881	369,106,841	287,768,960	22.0	45,505,512	632.4
6/30/2010	88,976,738	382,012,773	293,036,035	23.3	46,112,730	635.5
6/30/2011	98,398,628	393,484,589	295,085,961	25.0	45,888,020	643.1
6/30/2012	102,266,706	413,332,538	311,065,832	24.7	45,835,501	678.7
6/30/2013	111,140,339	435,378,358	324,238,019	25.5	48,697,726	665.8
6/30/2014	124,269,105	462,336,255	338,067,150	26.9	49,587,936	681.8
6/30/2015	134,349,908	482,969,311	348,619,403	27.8	55,656,457	626.4
6/30/2016	143,468,860	547,621,617	404,152,757	26.2	57,421,016	703.8

See *Required Notes to the Schedules of Supplementary Information*.
See accompanying *Independent Auditors' Report*.

Pension Trust Funds

Summary of Member Data Included in Valuations | June 30, 2016

Active Members

Valuation Group	Number	Payroll	Group Averages		
			Salary	Age (Yrs.)	Service (Yrs.)
MSEP					
Regular state employees	46,652	\$1,760,954,416	\$ 37,747	45.2	10.8
Elected officials	6	659,977	109,996	47.7	8.7
Legislative clerks	17	637,809	37,518	62.4	23.0
Legislators	194	6,978,820	35,973	52.7	5.1
Uniformed water patrol	11	721,310	65,574	40.7	15.1
Conservation department	1,371	59,149,578	43,143	44.5	14.2
School-term salaried employees	1,186	89,282,632	75,280	57.4	21.6
Administrative law judges	27	3,144,394	116,459	58.8	21.9
Total MSEP group	49,464	\$1,921,528,936	\$ 38,847	45.5	11.2
Judicial Plan	408	\$ 57,421,016	\$140,738	56.7	12.0

Retired Lives

Type of Benefit Payment	Number	Annual Benefits	Group Averages	
			Benefit	Age (Yrs.)
MSEP				
Retirement	39,799	\$623,139,988	\$15,657	69.7
Disability	4	14,640	3,660	63.0
Survivor of active member	1,658	17,580,693	10,604	62.4
Survivor of retired member	3,367	40,079,686	11,904	75.3
Total MSEP group	44,828	\$680,815,007	\$15,187	69.9
Judicial Plan	540	\$ 33,189,832	\$61,463	75.8

Others

Group	Terminated-Vested	Leave of Absence	Long-Term Disability
MSEP	19,512	132	928
Judicial Plan	26	0	1

Active Members by Attained Age and Years of Service | June 30, 2016

MSEP

Attained Age	Years of Service to Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30+	No.	Valuation Payroll
15-19	94							94	\$ 2,396,533
20-24	2,049	6						2,055	57,822,351
25-29	4,035	546	14					4,595	148,984,633
30-34	2,742	1,647	498	17				4,904	174,216,818
35-39	2,027	1,409	1,374	543	16			5,369	202,764,305
40-44	1,562	1,127	1,108	1,446	425	20		5,688	221,426,491
45-49	1,523	1,052	990	1,402	1,210	476	58	6,711	269,296,848
50-54	1,409	1,060	1,070	1,320	1,080	998	473	7,410	304,709,083
55-59	1,119	956	950	1,302	934	732	596	6,589	272,173,222
60	194	181	197	237	144	107	101	1,161	48,331,660
61	148	144	181	207	148	107	72	1,007	43,851,427
62	113	152	128	181	98	82	67	821	35,480,883
63	94	113	111	156	94	75	57	700	30,390,857
64	75	93	117	145	85	55	84	654	29,129,971
65	41	72	83	92	72	37	72	469	21,052,309
66	39	67	66	66	36	29	41	344	16,170,991
67	22	47	36	44	26	22	26	223	10,418,013
68	14	36	43	37	20	14	23	187	9,127,311
69	18	33	26	34	12	15	19	157	7,861,704
70+	35	51	59	55	52	24	50	326	15,923,526
Totals	17,353	8,792	7,051	7,284	4,452	2,793	1,739	49,464	\$1,921,528,936

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

Group Averages: Age — 45.5 years • Service — 11.2 years • Annual pay — \$38,847

Judicial Plan

Attained Age	Years of Service to Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30+	No.	Valuation Payroll
30-34	3							3	\$ 404,841
35-39	11	3						14	1,902,279
40-44	14	9						23	3,147,060
45-49	16	17	13	3				49	6,717,896
50-54	22	19	7	12	4			64	9,004,582
55-59	26	27	8	25	11	2		99	13,921,102
60		1	1	2	3	3	1	11	1,607,823
61	2	6	3	3	3	1	1	19	2,661,687
62	2	5	1	2	6	6	2	24	3,471,439
63	2	5	2	1	5	1	2	18	2,556,053
64	1	3	3	7	4	1		19	2,728,962
65	2	2	3	2	1		2	12	1,682,881
66		2	5	4	1	3	1	16	2,273,658
67			3	3	1		2	9	1,288,528
68		4		6	5	2	1	18	2,623,156
69		3		2	3	1	1	10	1,429,069
Totals	101	106	49	72	47	20	13	408	\$57,421,016

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

Group Averages: Age — 56.7 years • Service — 12.0 years • Annual pay — \$140,738

Schedules of Active Member Valuation Data | Ten Years Ended June 30, 2016

MSEP

Schedule of Active Member Valuation Data				
Valuation Date	Number	Annual Payroll	Annual Average Pay	% Increase in Average Pay
June 30, 2007	54,363	\$1,846,643,330	\$33,969	4.15%
June 30, 2008	54,542	1,916,527,398	35,139	3.44
June 30, 2009	55,057	2,002,402,087	36,370	3.50
June 30, 2010	53,478	1,945,095,321	36,372	0.01
June 30, 2011	51,660	1,875,569,816	36,306	(0.18)
June 30, 2012	51,332	1,864,069,493	36,314	0.02
June 30, 2013	50,833	1,880,212,950	36,988	1.86
June 30, 2014	50,621	1,902,719,928	37,588	1.62
June 30, 2015	49,980	1,918,527,768	38,386	2.12
June 30, 2016	49,464	1,921,528,936	38,847	1.20

Judicial Plan

Schedule of Active Member Valuation Data				
Valuation Date	Number	Annual Payroll	Annual Average Pay	% Increase in Average Pay
June 30, 2007	400	\$40,846,581	\$102,116	(0.09)%
June 30, 2008	401	44,542,530	111,079	8.78
June 30, 2009	397	45,505,512	114,623	3.19
June 30, 2010	402	46,112,730	114,708	0.07
June 30, 2011	399	45,888,020	115,008	0.26
June 30, 2012	398	45,835,501	115,165	0.14
June 30, 2013	400	48,697,726	121,744	5.71
June 30, 2014	405	49,587,936	122,439	0.57
June 30, 2015	405	55,656,457	137,423	12.24
June 30, 2016	408	57,421,016	140,738	2.41

Retirees and Beneficiaries Added and Removed | Ten Years Ended June 30, 2016*

MSEP

Fiscal Year Ended	Classification	Benefit Type	Added to Rolls		Removed from Rolls	
			Number	Annual Allowances	Number	Annual Allowances
June 30, 2009	General employees	Retirement	2,195	\$37,338,992	852	\$9,903,887
		Survivor of active	82	996,258	54	390,167
		Survivor of retired	251	3,077,466	110	827,564
		Disability	0	876	1	4,237
	Lincoln University - vested	Retirement	0	0	0	0
		Survivor of active	0	0	0	0
	Legislators	Retirement	21	746,414	8	120,396
		Survivor of active	0	5,137	1	14,128
		Survivor of retired	4	84,108	2	20,473
	Elected officials	Retirement	2	105,141	0	0
		Survivor of active	0	2,997	0	0
		Survivor of retired	0	1,274	0	0
ALJs	Retirement	3	168,517	2	90,337	
	Survivor of retired	2	57,238	1	27,354	
June 30, 2010	General employees	Retirement	2,298	34,755,192	833	9,979,318
		Survivor of active	83	1,054,292	49	276,401
		Survivor of retired	246	3,080,424	117	1,078,265
		Disability	0	830	1	2,985
	Lincoln University - vested	Retirement	1	5,671	0	0
		Survivor of active	0	0	0	0
	Legislators	Retirement	12	201,562	12	239,880
		Survivor of active	0	3,975	1	16,709
		Survivor of retired	5	78,765	0	0
	Elected officials	Retirement	0	0	1	66,911
		Survivor of active	0	3,117	0	0
		Survivor of retired	1	34,780	0	0
ALJs	Retirement	3	113,877	1	46,794	
	Survivor of active	0	0	0	0	
	Survivor of retired	0	7,332	0	0	
June 30, 2011	General employees	Retirement	2,850	41,203,358	892	10,670,476
		Survivor of active	65	914,689	46	261,503
		Survivor of retired	298	3,059,195	176	1,670,990
		Disability	0	79	1	1,732
	Lincoln University - vested	Retirement	1	1,780	0	0
		Survivor of active	0	0	0	0
	Legislators	Retirement	41	601,171	10	185,635
		Survivor of active	0	2,903	1	19,612
		Survivor of retired	5	73,841	2	16,628
	Elected officials	Retirement	0	0	0	0
		Survivor of active	0	3,242	0	0
		Survivor of retired	0	1,053	0	0
ALJs	Retirement	4	212,519	0	0	
	Survivor of active	0	0	0	0	
	Survivor of retired	0	2,599	1	27,724	
June 30, 2012	General employees	Retirement	2,637	39,423,910	895	11,116,063
		Survivor of active	82	1,129,634	34	197,452
		Survivor of retired	282	3,665,503	158	1,416,283
		Disability	0	458	0	0
	Lincoln University - vested	Retirement	0	0	2	11,032
		Survivor of active	0	0	0	0
	Legislators	Retirement	13	229,979	8	139,545
		Survivor of active	0	3,531	0	0
		Survivor of retired	4	80,142	3	52,550
	Elected officials	Retirement	2	86,431	0	0
		Survivor of active	0	3,371	0	0
		Survivor of retired	0	1,336	0	0
ALJs	Retirement	3	124,248	3	158,072	
	Survivor of active	1	25,592	0	0	
	Survivor of retired	2	57,704	0	0	

* Schedule is intended to show information for 10 years. Additional years will be displayed as they become available.

Source of Data: MOSERS benefit payment database as of June 30, 2016.
Other Actuarial Section information reported based on MOSERS data as of May 31, 2016.

Rolls at End of Year				
Number	Annual Allowances	Percentage Increase (Decrease) in Annual Allowances	Average Annual Allowances	Percentage Increase (Decrease) in Average Annual Allowances
27,942	\$425,200,398	6.90%	\$15,217	1.76%
1,364	12,095,246	5.28	8,867	3.10
2,259	22,538,130	11.09	9,977	4.15
10	33,055	(9.23)	3,306	(0.15)
13	55,953	0.00	4,304	0.00
1	2,624	0.00	2,624	0.00
262	5,207,953	13.66	19,878	8.03
13	146,210	(5.79)	11,247	1.45
56	771,979	8.98	13,785	5.09
14	620,135	20.42	44,295	3.21
1	77,924	4.00	77,924	4.00
1	33,117	4.00	33,117	4.00
26	1,177,522	7.11	45,289	2.99
11	275,852	12.15	25,077	1.95
29,407	449,976,272	5.83	15,302	0.56
1,398	12,873,137	6.43	9,208	3.85
2,388	24,540,289	8.88	10,277	3.01
9	30,900	(6.52)	3,433	3.84
14	61,624	10.14	4,402	2.28
1	2,624	0.00	2,624	0.00
262	5,169,635	(0.74)	19,731	(0.74)
12	133,476	(8.71)	11,123	(1.10)
61	850,744	10.20	13,947	1.18
13	553,224	(10.79)	42,556	(3.93)
1	81,041	4.00	81,041	4.00
2	67,897	105.02	33,949	2.51
28	1,244,605	5.70	44,450	(1.85)
0	0	0.00	0	0.00
11	283,184	2.66	25,744	2.66
31,365	480,509,154	6.79	15,320	0.12
1,417	13,526,323	5.07	9,546	3.67
2,510	25,928,494	5.66	10,330	0.52
8	29,247	(5.35)	3,656	6.50
15	63,404	2.89	4,227	(3.98)
1	2,624	0.00	2,624	0.00
293	5,585,171	8.04	19,062	(3.39)
11	116,767	(12.52)	10,615	(4.57)
64	907,957	6.73	14,187	1.72
13	553,224	0.00	42,556	0.00
1	84,283	4.00	84,283	4.00
2	68,950	1.55	34,475	1.55
32	1,457,124	17.08	45,535	2.44
0	0	0.00	0	0.00
10	258,059	(8.87)	25,806	0.24
33,107	508,817,001	5.89	15,369	0.32
1,465	14,458,505	6.89	9,869	3.38
2,634	28,177,714	8.67	10,698	3.56
8	29,705	1.57	3,713	1.56
13	52,372	(17.40)	4,029	(4.68)
1	2,624	0.00	2,624	0.00
298	5,675,605	1.62	19,046	(0.08)
11	120,298	3.02	10,936	3.02
65	935,549	3.04	14,393	1.45
15	639,655	15.62	42,644	0.21
1	87,654	4.00	87,654	4.00
2	70,286	1.94	35,143	1.94
32	1,423,300	(2.32)	44,478	(2.32)
1	25,592	0.00	25,592	0.00
12	315,763	22.36	26,314	1.97

Retirees and Beneficiaries Added and Removed continued on pages 106-107.

Retirees and Beneficiaries Added and Removed continued from pages 104-105.

MSEP

Fiscal Year Ended	Classification	Benefit Type	Added to Rolls		Removed from Rolls	
			Number	Annual Allowances	Number	Annual Allowances
June 30, 2013	General employees	Retirement	2,632	\$40,416,533	983	\$12,869,826
		Survivor of active	97	1,080,366	64	400,983
		Survivor of retired	323	4,085,887	150	1,363,799
		Disability	0	696	1	3,854
	Lincoln University - vested	Retirement	2	5,980	0	0
		Survivor of active	0	0	0	0
	Legislators	Retirement	37	442,937	15	320,292
		Survivor of active	0	3,851	0	0
		Survivor of retired	9	176,283	6	88,725
	Elected officials	Retirement	1	53,873	0	0
		Survivor of active	0	3,506	0	0
		Survivor of retired	0	1,458	0	0
	ALJs	Retirement	4	233,124	2	111,466
		Survivor of active	0	1,024	0	0
		Survivor of retired	2	65,892	1	22,759
June 30, 2014	General employees	Retirement	2,612	37,411,991	944	12,205,892
		Survivor of active	90	1,095,464	34	262,401
		Survivor of retired	324	3,954,360	157	1,504,423
		Disability	0	408	2	7,391
	Lincoln University - vested	Retirement	0	0	0	0
		Survivor of active	0	0	0	0
	Legislators	Retirement	18	239,904	7	95,748
		Survivor of active	0	3,680	0	0
		Survivor of retired	5	39,520	5	44,445
	Elected officials	Retirement	0	0	1	19,605
		Survivor of active	0	2,788	0	0
		Survivor of retired	1	10,811	0	0
	ALJs	Retirement	1	50,072	2	78,138
		Survivor of active	1	27,358	0	0
		Survivor of retired	0	7,404	1	30,930
June 30, 2015	General employees	Retirement	2,865	43,527,132	1,061	13,940,436
		Survivor of active	111	1,160,798	56	434,928
		Survivor of retired	350	4,399,848	180	1,673,736
		Disability	0	180	1	5,220
	Lincoln University - vested	Retirement	1	2,340	0	0
		Survivor of active	0	0	0	0
	Legislators	Retirement	16	236,916	4	130,116
		Survivor of active	0	3,432	1	15,180
		Survivor of retired	3	61,956	9	79,944
	Elected officials	Retirement	0	0	0	0
		Survivor of active	1	15,802	0	0
		Survivor of retired	0	0	0	0
	ALJs	Retirement	3	128,952	0	0
		Survivor of active	0	1,452	0	0
		Survivor of retired	0	6,612	0	0
June 30, 2016	General employees	Retirement	2,815	40,917,948	1,147	15,381,612
		Survivor of active	101	1,023,096	56	377,484
		Survivor of retired	365	4,493,892	222	2,073,192
		Disability	0	108	0	0
	Lincoln University - vested	Retirement	1	3,444	1	3,936
		Survivor of active	0	0	0	0
	Legislators	Retirement	8	107,412	15	427,428
		Survivor of active	0	3,084	0	0
		Survivor of retired	7	173,760	3	50,448
	Elected officials	Retirement	0	0	0	0
		Survivor of active	0	0	0	0
		Survivor of retired	0	0	0	0
	ALJs	Retirement	5	230,472	2	150,888
		Survivor of active	0	1,176	0	0
		Survivor of retired	2	84,588	2	62,220

* Schedule is intended to show information for 10 years. Additional years will be displayed as they become available.

Source of Data: MOSERS benefit payment database as of June 30, 2016.
Other Actuarial Section information reported based on MOSERS data as of May 31, 2016.

Rolls at End of Year				
Number	Annual Allowances	Percentage Increase (Decrease) in Annual Allowances	Average Annual Allowances	Percentage Increase (Decrease) in Average Annual Allowances
34,756	\$536,363,708	5.41%	\$15,432	0.41%
1,498	15,137,889	4.70	10,105	2.39
2,807	30,899,802	9.66	11,008	2.90
7	26,546	(10.63)	3,792	2.13
15	58,351	11.42	3,890	(3.45)
1	2,623	(0.04)	2,623	(0.04)
320	5,798,251	2.16	18,120	(4.86)
11	124,149	3.20	11,286	3.20
68	1,023,107	9.36	15,046	4.54
16	693,528	8.42	43,346	1.65
1	91,160	4.00	91,160	4.00
2	71,744	2.07	35,872	2.07
34	1,544,957	8.55	45,440	2.16
1	26,615	4.00	26,615	4.00
13	358,896	13.66	27,607	4.91
36,424	561,569,807	4.70	15,418	(0.09)
1,554	15,970,952	5.50	10,277	1.70
2,974	33,349,739	7.93	11,214	1.87
5	19,563	(26.31)	3,913	3.19
15	58,351	0.00	3,890	0.00
1	2,623	0.00	2,623	0.00
331	5,942,407	2.49	17,953	(0.92)
11	127,829	2.96	11,621	2.97
68	1,018,182	(0.48)	14,973	(0.49)
15	673,923	(2.83)	44,928	3.65
1	93,948	3.06	93,948	3.06
3	82,555	15.07	27,518	(23.29)
33	1,516,891	(1.82)	45,966	1.16
2	53,973	102.79	26,987	1.40
12	335,370	(6.56)	27,948	1.24
38,227	591,156,503	5.27	15,464	0.30
1,608	16,696,822	4.54	10,384	1.04
3,144	36,075,851	8.17	11,475	2.33
4	14,523	(25.76)	3,631	(7.21)
16	60,691	4.01	3,793	(2.49)
1	2,623	0.00	2,623	0.00
339	6,049,207	1.80	17,844	(0.61)
10	116,081	(9.19)	11,608	(0.11)
66	1,000,194	(1.77)	15,154	1.21
15	673,923	0.00	44,928	0.00
2	109,750	16.82	54,875	(41.59)
3	82,555	0.00	27,518	0.00
36	1,645,843	8.50	45,718	(0.54)
2	55,425	2.69	27,713	2.69
12	341,982	1.97	28,499	1.97
39,895	616,692,839	4.32	15,458	(0.04)
1,653	17,342,434	3.87	10,491	1.03
3,287	38,496,551	6.71	11,712	2.07
4	14,631	0.74	3,658	0.74
16	60,199	(0.81)	3,762	(0.82)
1	2,623	0.00	2,623	0.00
332	5,729,191	(5.29)	17,257	(3.29)
10	119,165	2.66	11,917	2.66
70	1,123,506	12.33	16,050	5.91
15	673,923	0.00	44,928	0.00
2	109,750	0.00	54,875	0.00
3	82,555	0.00	27,518	0.00
39	1,725,427	4.84	44,242	(3.23)
2	56,601	2.12	28,301	2.12
12	364,350	6.54	30,363	6.54

Retirees and Beneficiaries Added and Removed | Ten Years Ended June 30, 2016*

Judicial Plan

Fiscal Year Ended	Benefit Type	Added to Rolls		Removed from Rolls	
		Number	Annual Allowances	Number	Annual Allowances
June 30, 2009	Retirement	30	\$1,922,615	15	\$ 957,943
	Survivor of active	1	59,484	0	0
	Survivor of retired	9	418,266	2	61,344
June 30, 2010	Retirement	12	1,137,305	13	750,021
	Survivor of active	0	32,700	2	32,399
	Survivor of retired	11	436,312	5	130,920
June 30, 2011	Retirement	36	2,501,248	9	563,214
	Survivor of active	0	14,893	1	35,792
	Survivor of retired	4	167,535	9	206,465
June 30, 2012	Retirement	18	1,490,554	14	1,074,572
	Survivor of active	0	22,717	0	0
	Survivor of retired	8	371,622	6	218,310
June 30, 2013	Retirement	27	2,233,387	13	851,802
	Survivor of active	0	28,591	1	33,778
	Survivor of retired	8	355,101	10	288,980
June 30, 2014	Retirement	18	1,671,667	8	443,807
	Survivor of active	2	66,272	0	0
	Survivor of retired	5	254,117	7	216,813
June 30, 2015	Retirement	39	3,599,880	21	1,395,888
	Survivor of active	0	34,344	0	0
	Survivor of retired	18	705,444	5	198,348
June 30, 2016	Retirement	16	1,671,084	14	1,078,356
	Survivor of active	0	15,072	1	43,032
	Survivor of retired	8	368,868	10	354,144

* Schedule is intended to show information for 10 years. Additional years will be displayed as they become available.

Rolls at End of Year				
Number	Annual Allowances	Percentage Increase (Decrease) in Annual Allowances	Average Annual Allowances	Percentage Increase (Decrease) in Average Annual Allowances
326	\$19,624,545	5.17%	\$60,198	0.33%
37	1,056,425	5.97	28,552	3.10
103	3,139,829	12.83	30,484	5.16
325	20,011,829	1.97	61,575	2.29
35	1,056,726	0.03	30,192	5.74
109	3,445,221	9.73	31,608	3.69
352	21,949,863	9.68	62,358	1.27
34	1,035,827	(1.98)	30,466	0.91
104	3,406,291	(1.13)	32,753	3.62
356	22,365,845	1.90	62,825	0.75
34	1,058,544	2.19	31,134	2.19
106	3,559,603	4.50	33,581	2.53
370	23,747,431	6.18	64,182	2.16
33	1,053,358	(0.49)	31,920	2.52
104	3,625,723	1.86	34,863	3.82
380	24,975,291	5.17	65,724	2.40
35	1,119,630	6.29	31,989	0.22
102	3,663,027	1.03	35,912	3.01
398	25,951,423	9.28	65,205	1.59
35	1,087,702	3.26	31,077	(2.64)
115	4,132,819	13.99	35,938	3.08
400	26,544,151	2.28	66,360	1.77
34	1,059,742	(2.57)	31,169	0.30
113	4,147,543	0.36	36,704	2.13

Short-Term Solvency Test | Ten Years Ended June 30, 2016

MSEP

Fiscal Year	Actuarial Accrued Liabilities for				Percentage of Actuarial Liabilities Covered by Actuarial Value of Assets Available for		
	Member Contributions	Current Retirees and Beneficiaries	Active and Inactive Members, Employer Financed Portion	Actuarial Value of Assets Available for Benefits	(1)	(2)	(3)
	(1)	(2)	(3)				
2007	\$ 0	\$4,208,621,537	\$4,291,807,104	\$7,377,289,283	100.0%	100.0%	73.8%
2008	0	4,408,682,437	4,719,665,033	7,838,495,768	100.0	100.0	72.7
2009	0	4,737,859,976	4,756,946,739	7,876,079,342	100.0	100.0	66.0
2010	0	5,012,677,769	4,840,477,676	7,923,377,393	100.0	100.0	60.1
2011	67,126	5,357,794,617	4,765,682,300	8,022,481,408	100.0	100.0	55.9
2012	706,422	5,749,411,068	5,043,534,087	7,897,167,203	100.0	100.0	42.6
2013	1,504,901	6,062,654,441	5,070,478,142	8,096,436,929	100.0	100.0	40.1
2014	2,133,130	6,347,728,717	5,144,706,988	8,637,758,955	100.0	100.0	44.5
2015	2,452,605	6,695,631,737	5,029,504,068	8,792,485,658	100.0	100.0	41.6
2016	1,776,133	7,305,895,284	5,443,491,336	8,878,057,191	100.0	100.0	28.8

Judicial Plan

Fiscal Year	Actuarial Accrued Liabilities for				Percentage of Actuarial Liabilities Covered by Actuarial Value of Assets Available for		
	Member Contributions	Current Retirees and Beneficiaries	Active and Inactive Members, Employer Financed Portion	Actuarial Value of Assets Available for Benefits	(1)	(2)	(3)
	(1)	(2)	(3)				
2007	\$ 0	\$199,489,503	\$127,176,870	\$ 61,903,516	100.0%	31.0%	0.0%
2008	0	216,369,879	138,426,574	73,194,379	100.0	33.8	0.0
2009	0	231,505,591	137,601,250	81,337,881	100.0	35.1	0.0
2010	0	236,113,077	145,899,696	88,976,738	100.0	37.7	0.0
2011	284	251,532,354	141,951,951	98,398,628	100.0	39.1	0.0
2012	795	258,642,149	154,689,594	102,266,706	100.0	39.5	0.0
2013	2,924	274,911,416	160,464,018	111,140,339	100.0	40.4	0.0
2014	5,717	285,124,436	177,206,102	124,269,105	100.0	43.6	0.0
2015	8,691	316,042,514	166,918,106	134,349,908	100.0	42.5	0.0
2016	4,933	354,715,048	192,901,636	143,468,860	100.0	40.4	0.0

Analysis of Financial Experience | Year Ended June 30, 2016

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 sizable year-to-year variations from assumed experience are common. Detail on the analysis of the financial experience is shown below.

MSEP

	\$ Millions	Valuation Date June 30	Actuarial Gain (Loss) as a % of Beginning Accrued Liabilities
Unfunded actuarial accrued liability (UAAL) at beginning of year	\$2,935.1	2007	1.0
Normal cost from last valuation	157.5	2008	0.1
Actual employer contributions	(356.5)	2009	(5.2)
Interest accrual	226.8	2010	(4.0)
Expected UAAL before changes	2,962.9	2011	(2.4)
Change from any changes in benefits, assumptions, or methods	528.8	2012	(4.7)
Expected UAAL after changes	3,491.7	2013	(2.8)
Less: Actual UAAL at end of year	3,872.8	2014	2.1
Gain (loss)	\$ (381.1)	2015	(0.9)
Gain (loss) as a percent of actuarial accrued liabilities at start of year (\$11,727)	(3.2)%	2016	(3.2)

Judicial Plan

	\$ Millions	Valuation Date June 30	Actuarial Gain (Loss) as a % of Beginning Accrued Liabilities
Unfunded actuarial accrued liability (UAAL) at beginning of year	\$348.6	2007	(0.6)
Normal cost from last valuation	11.1	2008	(3.0)
Actual employer contributions	(34.3)	2009	(1.8)
Interest accrual	26.9	2010	(1.1)
Expected UAAL before changes	352.3	2011	(0.4)
Change from any changes in benefits, assumptions, or methods	52.1	2012	(0.6)
Expected UAAL after changes	404.4	2013	(2.6)
Less: Actual UAAL at end of year	404.1	2014	1.5
Gain (loss)	\$ 0.3	2015	(1.5)
Gain (loss) as a percent of actuarial accrued liabilities at start of year (\$483)	0.1%	2016	0.1

Comparison of Plans for General State Employees | June 30, 2016

MSEP • MSEP 2000 • MSEP 2011

Benefit Provisions	MSEP
Membership eligibility	<ul style="list-style-type: none"> Members who work in a permanent position normally requiring at least 1,040 hours of work a year.
Vesting	<ul style="list-style-type: none"> 5 years
Base benefit formula	<ul style="list-style-type: none"> .016 x FAP x service <i>In the past, formula increases have been passed along to MSEP retirees.</i>
Temporary benefit formula	<ul style="list-style-type: none"> Not available
Benefit payment options	<ul style="list-style-type: none"> Life income annuity Unreduced joint & 50% survivor Joint & 100% survivor Life income with 60 guaranteed payments Life income with 120 guaranteed payments
Cost-of-living adjustment (COLA)	<ul style="list-style-type: none"> If hired before August 28, 1997, will receive 4-5% each year until reaching the 65% cap. After COLA cap, the rate is based on 80% of the percentage increase in the CPI (0-5%). If hired on or after August 28, 1997, annual COLA will be based on 80% of the percentage increase in the CPI (0-5%).
Normal retirement eligibility	<ul style="list-style-type: none"> Age 65 with 5 years of service Age 60 with 15 years of service “Rule of 80”- at least age 48 with age and service equaling 80 or more <i>Age 50 if first became eligible prior to August 28, 2003</i>
Early retirement eligibility	<ul style="list-style-type: none"> Age 55 with 10 years of service <i>Base benefit will be reduced ½ of 1% (.005) for each month member’s age is younger than normal retirement.</i>
Death before retirement	<ul style="list-style-type: none"> Non duty-related death (<i>vested members</i>) <ul style="list-style-type: none"> Survivor benefit to eligible spouse calculated using the joint & 100% survivor option or 80% of the member’s life income annuity paid to eligible children. Duty-related death (<i>no minimum service requirement</i>). <ul style="list-style-type: none"> Survivor benefit to eligible spouse or children no less than 50% of average compensation.
In-service COLA	<ul style="list-style-type: none"> COLA given for service beyond age 65. COLA provisions are determined by employment date.
BackDROP	<ul style="list-style-type: none"> Must work at least 2 years beyond normal retirement eligibility to be eligible for BackDROP.
Service purchases	<ul style="list-style-type: none"> May purchase up to 4 years of active-duty military service or qualifying public sector service at subsidized rate. May also purchase qualifying public sector service at full actuarial cost.
Service transfers	<ul style="list-style-type: none"> May transfer state service to other positions covered by MOSERS under 104.800.
Member contributions	<ul style="list-style-type: none"> None

MSEP 2000

- Members hired for the first time on or after July 1, 2000, but prior to January 1, 2011, in a permanent position normally requiring at least 1,040 hours of work a year.
 - Members who left state employment prior to becoming vested and returned to work on or after July 1, 2000, in a permanent position normally requiring at least 1,040 hours of work a year.
 - 5 years
 - .017 x FAP x service
Future formula increases, if any, will not be passed along to retirees.
 - .008 x FAP x service
Available to those who retire under the "Rule of 80."
 - Life income annuity
 - Joint & 50% survivor
 - Joint & 100% survivor
 - Life income with 120 guaranteed payments
 - Life income with 180 guaranteed payments
 - Based on 80% of the percentage increase in the CPI (0-5%).
-
- Age 62 with 5 years of service
"Rule of 80" — at least age 48 with age and service equaling 80 or more
Age 50 if first became eligible prior to August 28, 2003
Terminated-vested members not eligible for "Rule of 80."
 - Age 57 with 5 years of service
Base benefit will be reduced ½ of 1% (.005) for each month member's age is younger than normal retirement.
- Non duty-related death (*vested members*)
 - Survivor benefit to eligible spouse calculated using the joint & 100% survivor option or 80% of the member's life income annuity paid to eligible children.
 - Duty-related death (*no minimum service requirement*).
 - Survivor benefit to eligible spouse or children no less than 50% of average compensation.
 - Not available
- Must work at least 2 years beyond normal retirement eligibility to be eligible for BackDROP.
 - May purchase up to 4 years of active-duty military service or qualifying public sector service at subsidized rate. May also purchase qualifying public sector service at full actuarial cost.
 - May transfer service under 104.1090 from other systems with written agreements to transfer required funds.
 - None

MSEP 2011

- Members hired for the first time on or after January 1, 2011, in a permanent position normally requiring at least 1,040 hours of work a year.
 - 10 years
 - .017 x FAP x service
Future formula increases, if any, will not be passed along to retirees.
 - .008 x FAP x service
Available to those who retire under the "Rule of 90."
 - Life income annuity
 - Joint & 50% survivor
 - Joint & 100% survivor
 - Life income with 120 guaranteed payments
 - Life income with 180 guaranteed payments
 - Based on 80% of the percentage increase in the CPI (0-5%).
-
- Age 67 with 10 years of service
 - "Rule of 90" — at least age 55 with age and service equaling 90 or more
Terminated-vested members not eligible for "Rule of 90."
 - Age 62 at the time of termination with 10 years of service
Base benefit will be reduced ½ of 1% (.005) for each month member's age is younger than normal retirement.
Terminated-vested members are not eligible.
- Non duty-related death (*vested members*)
 - Survivor benefit to eligible spouse calculated using the joint & 100% survivor option or 80% of the member's life income annuity paid to eligible children.
 - Duty-related death (*no minimum service requirement*).
 - Survivor benefit to eligible spouse or children no less than 50% of average compensation.
 - Not available
- Not available
 - May purchase qualifying public sector service at full actuarial cost.
 - Not available
 - 4% of pay

Comparison of Plans for Legislators | June 30, 2016

MSEP • MSEP 2000 • MSEP 2011

Benefit Provisions	MSEP
Membership eligibility	<ul style="list-style-type: none"> Elected to the General Assembly
Vesting	<ul style="list-style-type: none"> 3 full-biennial assemblies (6 years)
Base benefit formula	<ul style="list-style-type: none"> Biennial assemblies x \$150 <i>In the past, formula increases have been passed along to MSEP retirees.</i>
Temporary benefit formula	<ul style="list-style-type: none"> Not available
Benefit payment options	<ul style="list-style-type: none"> Life income annuity <i>Unreduced</i> joint & 50% survivor Joint & 100% survivor Life income with 60 guaranteed payments Life income with 120 guaranteed payments
Cost-of-living adjustment (COLA)	<ul style="list-style-type: none"> If sworn in before August 28, 1997, will receive 4-5% each year until reaching 65% cap. After COLA cap, the rate is based on 80% of the percentage increase in the CPI (0-5%). If sworn in on or after August 28, 1997, COLA will be based on 80% of the percentage increase in the CPI (0-5%).
Normal retirement eligibility	<ul style="list-style-type: none"> Age 55 with 3 full-biennial assemblies or “Rule of 80” — at least age 48 with age and service equaling 80 or more
Early retirement eligibility	<ul style="list-style-type: none"> Not available
Death before retirement	<ul style="list-style-type: none"> Non duty-related death (<i>vested members</i>) <ul style="list-style-type: none"> Survivor benefit to eligible spouse calculated using the joint & 100% survivor option or 80% of the member’s life income annuity paid to eligible children. Duty-related death (<i>no minimum service requirement</i>) <ul style="list-style-type: none"> Survivor benefit to eligible spouse or children no less than 50% of the rate of compensation.
In-service COLA	<ul style="list-style-type: none"> COLA given for service beyond age 65. COLA provisions are determined by employment date.
BackDROP	<ul style="list-style-type: none"> Not available
Service purchases	<ul style="list-style-type: none"> May purchase up to 4 years of active-duty military service or qualifying public sector service at subsidized rate. May also purchase qualifying public sector service at full actuarial cost.
Service transfers	<ul style="list-style-type: none"> May transfer state service to other positions covered by MOSERS under 104.800.
Member contributions	<ul style="list-style-type: none"> None

MSEP 2000	MSEP 2011
<ul style="list-style-type: none"> Elected to the General Assembly on or after July 1, 2000, but prior to January 1, 2011 	<ul style="list-style-type: none"> Elected to the General Assembly on or after January 1, 2011
<ul style="list-style-type: none"> 3 full-biennial assemblies (6 years) 	<ul style="list-style-type: none"> 3 full-biennial assemblies (6 years)
<ul style="list-style-type: none"> (Active legislator's pay ÷ 24) x service <i>Capped at 100% of pay; future formula increases, if any, will not be passed along to retirees.</i> 	<ul style="list-style-type: none"> (Active legislator's pay ÷ 24) x service <i>Capped at 100% of pay; future formula increases, if any, will not be passed along to retirees.</i>
<ul style="list-style-type: none"> Not available 	<ul style="list-style-type: none"> Not available
<ul style="list-style-type: none"> Life income annuity 	<ul style="list-style-type: none"> Life income annuity
<ul style="list-style-type: none"> Joint & 50% survivor 	<ul style="list-style-type: none"> Joint & 50% survivor
<ul style="list-style-type: none"> Joint & 100% survivor 	<ul style="list-style-type: none"> Joint & 100% survivor
<ul style="list-style-type: none"> Life income with 120 guaranteed payments 	<ul style="list-style-type: none"> Life income with 120 guaranteed payments
<ul style="list-style-type: none"> Life income with 180 guaranteed payments 	<ul style="list-style-type: none"> Life income with 180 guaranteed payments
<ul style="list-style-type: none"> Benefit adjustment based on increase in pay for an active member of the general assembly. 	<ul style="list-style-type: none"> Benefit adjustment based on increase in pay for an active member of the general assembly.
<ul style="list-style-type: none"> Age 55 with 3 full-biennial assemblies or "Rule of 80" — at least age 50 with age and service equaling 80 or more <i>Terminated-vested members not eligible for "Rule of 80."</i> 	<ul style="list-style-type: none"> Age 62 at time of termination with 3 full-biennial assemblies or "Rule of 90" — at least age 55 with age and service equaling 90 or more <i>Terminated-vested members not eligible for "Rule of 90."</i>
<ul style="list-style-type: none"> Not available 	<ul style="list-style-type: none"> Not available
<ul style="list-style-type: none"> Non duty-related death (<i>vested members</i>) <ul style="list-style-type: none"> Survivor benefit to eligible spouse calculated using the joint & 100% survivor option or 80% of the member's life income annuity paid to eligible children. Duty-related death (<i>no minimum service requirement</i>) <ul style="list-style-type: none"> Survivor benefit to eligible spouse or children no less than 50% of rate of compensation. 	<ul style="list-style-type: none"> Non duty-related death (<i>vested members</i>) <ul style="list-style-type: none"> Survivor benefit to eligible spouse calculated using the joint & 100% survivor option or 80% of the member's life income annuity paid to eligible children. Duty-related death (<i>no minimum service requirement</i>) <ul style="list-style-type: none"> Survivor benefit to eligible spouse or children no less than 50% of rate of compensation.
<ul style="list-style-type: none"> Not available 	<ul style="list-style-type: none"> Not available
<ul style="list-style-type: none"> Not available 	<ul style="list-style-type: none"> Not available
<ul style="list-style-type: none"> May purchase up to 4 years of active-duty military service or qualifying public sector service at subsidized rate. May also purchase qualifying public sector service at full actuarial cost. 	<ul style="list-style-type: none"> May purchase qualifying public sector service at full actuarial cost.
<ul style="list-style-type: none"> May transfer service under 104.1090 from other systems with written agreements to transfer required funds. 	<ul style="list-style-type: none"> Not available
<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> 4% of pay

Comparison of Plans for Statewide Elected Officials | June 30, 2016

MSEP • MSEP 2000 • MSEP 2011

Benefit Provisions	MSEP
Membership eligibility	<ul style="list-style-type: none"> • Elected to state office
Vesting	<ul style="list-style-type: none"> • 4 years (1 term)
Base benefit formula	<ul style="list-style-type: none"> • Less than 12 years of service FAP x .016 x service • 12 or more years of service Monthly statutory compensation x .50 <i>In the past, formula increases have been passed along to MSEP retirees.</i>
Temporary benefit formula	<ul style="list-style-type: none"> • Not available
Benefit payment options	<ul style="list-style-type: none"> • Life income annuity • <i>Unreduced</i> joint & 50% survivor • Joint & 100% survivor • Life income with 60 guaranteed payments • Life income with 120 guaranteed payments
Cost-of-living adjustment (COLA)	<ul style="list-style-type: none"> • Less than 12 years of service <ul style="list-style-type: none"> – Statewide elected officials sworn in before August 28, 1997 will receive 4-5% each year until they reach 65% cap. After COLA cap, the rate is based on 80% of the percentage increase in the CPI (0-5%). – Statewide elected officials sworn in between August 28, 1997 and June 30, 2000, will receive a COLA equal to 80% of percentage increase in the CPI (0-5%). • 12 or more years of service <ul style="list-style-type: none"> – Statewide elected officials with 12 or more years of service will receive a COLA based on increases in statutory compensation for the highest position held. – Statewide elected officials sworn in before August 28, 1997 will receive 4-5% each year until they reach 65% cap. After COLA cap, the rate is based on 80% of the percentage increase in the CPI (0-5%). – Statewide elected officials sworn in between August 28, 1997 and June 30, 2000, will receive a COLA equal to 80% of percentage increase in the CPI (0-5%).
Normal retirement eligibility	<ul style="list-style-type: none"> • Age 60 with 15 years of service or • “Rule of 80” — at least age 50 with age and service equaling 80 or more
Early retirement eligibility	<ul style="list-style-type: none"> • Age 55 with 10 years of service
Death before retirement	<ul style="list-style-type: none"> • Non duty-related death (<i>vested members</i>) <ul style="list-style-type: none"> – Survivor benefit to eligible spouse calculated using the joint & 100% survivor option or 80% of the member’s life income annuity paid to eligible children. • Duty-related death (<i>no minimum service requirement</i>) <ul style="list-style-type: none"> – Survivor benefit to eligible spouse or children no less than 50% of current pay.
In-service COLA	<ul style="list-style-type: none"> • COLA provisions determined by amount of service relative to 12 years and date of employment.
BackDROP	<ul style="list-style-type: none"> • Not available
Service purchases	<ul style="list-style-type: none"> • May purchase up to 4 years of active-duty military service or qualifying public sector service at subsidized rate. May also purchase qualifying public sector service at full actuarial cost.
Service transfers	<ul style="list-style-type: none"> • May transfer state service to other positions covered by MOSERS under 104.800.
Member contributions	<ul style="list-style-type: none"> • None

MSEP 2000

- First elected on or after July 1, 2000, but prior to January 1, 2011
- 4 years (1 term)
- (Active elected official's pay ÷ 24) x service
Capped at 12 years of service or 50% of pay; future formula increases, if any, will not be passed along to retirees.

- Not available
- Life income annuity
- Joint & 50% survivor
- Joint & 100% survivor
- Life income with 120 guaranteed payments
- Life income with 180 guaranteed payments
- Benefit adjustment based on increase in pay for an active statewide elected official.

- Age 55 with 4 years of service or
- "Rule of 80" - at least age 50 with age and service equaling 80 or more
Terminated-vested members not eligible for "Rule of 80."

- Not available
- Non duty-related death (*vested members*)
 - Survivor benefit to eligible spouse calculated using the joint & 100% survivor option or 80% of the member's life income annuity paid to eligible children.
- Duty-related death (*no minimum service requirement*)
 - Survivor benefit to eligible spouse or children no less than 50% of current pay.

- Not available

- Not available

- May purchase up to 4 years of active-duty military service or qualifying public sector service at subsidized rate; may also purchase qualifying public sector service at full actuarial cost.
- May transfer service under 104.1090 from other systems with written agreements to transfer required funds.

- None

MSEP 2011

- First elected on or after January 1, 2011
- 4 years (1 term)
- (Active elected official's pay ÷ 24) x service
Capped at 12 years of service or 50% of pay; future formula increases, if any, will not be passed along to retirees.

- Not available
- Life income annuity
- Joint & 50% survivor
- Joint & 100% survivor
- Life income with 120 guaranteed payments
- Life income with 180 guaranteed payments
- Benefit adjustment based on increase in pay for an active statewide elected official.

- Age 62 at time of termination with 4 years of service or
- "Rule of 90" - at least age 55 with age and service equaling 90 or more
Terminated-vested members not eligible for "Rule of 90."

- Not available
- Non duty-related death (*vested members*)
 - Survivor benefit to eligible spouse calculated using the joint & 100% survivor option or 80% of the member's life income annuity paid to eligible children.
- Duty-related death (*no minimum service requirement*)
 - Survivor benefit to eligible spouse or children no less than 50% of current pay.

- Not available

- Not available

- May purchase qualifying public sector service at full actuarial cost.

- Not available

- 4% of pay

Comparison of Plans for Judges | June 30, 2016

Judicial Plan • Judicial Plan 2011

Benefit Provisions	Judicial Plan
Membership eligibility	<ul style="list-style-type: none"> • Must be a judge or commissioner of the supreme court or the court of appeals, a judge of the circuit court, probate court, magistrate court, court of common pleas, court of criminal corrections, a justice of the peace, or a commissioner or deputy commissioner of the circuit court appointed after February 29, 1972; a commissioner of the juvenile division of the circuit court appointed pursuant to Section 211.023, RSMo; a commissioner of the drug court pursuant to Section 478.466, RSMo; or a commissioner of the family court.
Vesting	<ul style="list-style-type: none"> • Immediate
Base benefit formula	<ul style="list-style-type: none"> • Monthly pay x .50 = monthly base benefit
Temporary benefit formula	<ul style="list-style-type: none"> • Not available
Benefit payment options	<ul style="list-style-type: none"> • Life income annuity • Automatic <i>unreduced</i> joint and 50% survivor option <i>If married at least two continuous years immediately preceding judges death.</i>
Cost-of-living adjustment (COLA)	<ul style="list-style-type: none"> • If hired before August 28, 1997, will receive 4-5% each year until reaching 65% cap. After COLA cap, the rate is based on 80% of the percentage increase in the CPI (0-5%) • If hired on or after August 28, 1997, based on 80% of the percentage increase in the CPI (0-5%).
Normal retirement eligibility	<ul style="list-style-type: none"> • Age 62 with 12 years service • Age 60 with 15 years service • Age 55 with 20 years service
Reduced retirement eligibility	<ul style="list-style-type: none"> • Age 60 if less than 15 years service • Age 62 if less than 12 years service
Death before retirement	<ul style="list-style-type: none"> • Non duty-related death <ul style="list-style-type: none"> – Survivor benefit to eligible spouse equal to 50% of the benefit the member would have received based on service to age 70.
In-service COLA	<ul style="list-style-type: none"> • Judges who are at least age 60 and work beyond the date first eligible for unreduced benefits will receive COLAs for each year worked beyond normal retirement eligibility. COLA provisions are determined by date of employment.
BackDROP	<ul style="list-style-type: none"> • Not available
Service purchases	<ul style="list-style-type: none"> • May purchase up to 4 years of active-duty military service or qualifying public sector service at subsidized rate. May also purchase qualifying public sector service at full actuarial cost.
Service transfers	<ul style="list-style-type: none"> • May transfer state service to other positions covered by MOSERS under 104.800.
Member contributions	<ul style="list-style-type: none"> • None

Judicial Plan 2011

- Must be a judge or commissioner of the supreme court or the court of appeals, a judge of the circuit court, probate court, magistrate court, court of common pleas, court of criminal corrections, a justice of the peace, or a commissioner or deputy commissioner of the circuit court; a commissioner of the juvenile division of the circuit court appointed pursuant to Section 211.023, RSMo; a commissioner of the drug court pursuant to Section 478.466, RSMo; or a commissioner of the family court appointed or elected a judge for the first time on or after January 1, 2011.

- Immediate
- Monthly pay x .50 = monthly base benefit
- Not available
- Life income annuity
- Joint & 50% survivor
- Joint & 100% survivor
- Life income with 120 guaranteed payments
- Life income with 180 guaranteed payments
- Based on 80% of the percentage increase in the CPI (0-5%)

- Age 67 with 12 years service
- Age 62 with 20 years service

- Age 67 if less than 12 years service
- Age 62 if less than 20 years service
- Non duty-related death
 - Survivor benefit to eligible spouse equal to 50% of the benefit the member would have received based on service to age 70.
- Not available

- Not available
- May purchase qualifying public sector service at full actuarial cost.

- May transfer state service to other positions covered by MOSERS under 104.800.
- 4% of pay

Comparison of Plans for Uniformed Members of the Water Patrol | June 30, 2016

MSEP • MSEP 2000

Benefit Provisions	MSEP	MSEP 2000
Membership eligibility	<ul style="list-style-type: none"> Members who work in a permanent position normally requiring at least 1,040 hours of work a year. 	<ul style="list-style-type: none"> Members hired for the first time on or after July 1, 2000, in a permanent position normally requiring at least 1,040 hours of work a year. Members who left state employment prior to becoming vested and returned to work on or after July 1, 2000, in a permanent position normally requiring at least 1,040 hours of work a year.
Vesting	<ul style="list-style-type: none"> 5 years of service 	<ul style="list-style-type: none"> 5 years of service
Base benefit formula	<ul style="list-style-type: none"> 1.6% x FAP x service increased by 33.3% 	<ul style="list-style-type: none"> 1.7% x FAP x service
Temporary benefit formula	<ul style="list-style-type: none"> Not available 	<ul style="list-style-type: none"> 0.8% x FAP x service (must retire under "Rule of 80")
Benefit payment options	<ul style="list-style-type: none"> Life income annuity Unreduced joint and 50% survivor Joint & 100% survivor 60 or 120 guaranteed payments 	<ul style="list-style-type: none"> Life income annuity Joint & 50% survivor Joint & 100% survivor 120 or 180 guaranteed payments
Cost-of-living adjustment (COLA)	<ul style="list-style-type: none"> If hired before August 28, 1997, will receive 4-5% each year until reaching 65% cap. After COLA cap, the rate is based on 80% of the percentage increase in the CPI (0-5%). If hired on or after August 28, 1997, based on 80% of the percentage increase in the CPI (0-5%). 	<ul style="list-style-type: none"> Based on 80% of the percentage increase in the CPI (0-5%).
Normal retirement eligibility	<ul style="list-style-type: none"> Age 55 with 5 years of service "Rule of 80" - minimum age 48 	<ul style="list-style-type: none"> Age 62 with 5 years of service "Rule of 80" - minimum age 48
Early retirement eligibility	<ul style="list-style-type: none"> Not available 	<ul style="list-style-type: none"> Age 57 with 10 years of service
Death before retirement	<ul style="list-style-type: none"> Non duty-related death (<i>vested members</i>) <ul style="list-style-type: none"> Survivor benefit to eligible spouse calculated using the joint & 100% survivor option or 80% of the member's life income annuity paid to eligible children. Duty-related death (<i>no minimum service requirement</i>) <ul style="list-style-type: none"> Survivor benefit to eligible spouse or children no less than 50% of current pay. 	<ul style="list-style-type: none"> Non duty-related death (<i>vested members</i>) <ul style="list-style-type: none"> Survivor benefit to eligible spouse calculated using the joint & 100% survivor option or 80% of the member's life income annuity paid to eligible children. Duty-related death (<i>no minimum service requirement</i>) <ul style="list-style-type: none"> Survivor benefit to eligible spouse or children no less than 50% of current pay.
In-service COLA	<ul style="list-style-type: none"> COLA given for service beyond age 65. COLA provisions are determined by employment date. 	<ul style="list-style-type: none"> Not available
BackDROP	<ul style="list-style-type: none"> Must work at least two years beyond normal retirement eligibility to be eligible for BackDROP. 	<ul style="list-style-type: none"> Must work at least two years beyond normal retirement eligibility to be eligible for BackDROP.
Service purchases	<ul style="list-style-type: none"> May purchase up to 4 years of active-duty military service or qualifying public sector service at subsidized rate. May also purchase qualifying public sector service at full actuarial cost. 	<ul style="list-style-type: none"> May purchase up to 4 years of active-duty military service or qualifying public sector service at subsidized rate. May also purchase qualifying public sector service at full actuarial cost.
Service transfers	<ul style="list-style-type: none"> May transfer state service to other positions covered by MOSERS under 104.800. 	<ul style="list-style-type: none"> May transfer state service to other positions covered by MOSERS under 104.1090.
Member contributions	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> None

SUMMARY OF PLAN PROVISIONS

Life Insurance Plans | June 30, 2016

MOSERS administers basic and optional term life insurance plans for eligible state employees and retirees.

Active Members*

Plan Provision	Requirement
<ul style="list-style-type: none"> • Basic life insurance - An amount equal to one times annual salary (with a minimum of \$15,000) while actively employed. 	<ul style="list-style-type: none"> • Actively employed in an eligible state position resulting in membership in MOSERS.
<ul style="list-style-type: none"> • Duty-related death benefit - Duty-related death benefit equivalent to two times the annual salary the member was earning at the time of death in addition to the basic life insurance amount of one times annual salary. 	<ul style="list-style-type: none"> • Actively employed in an eligible state position resulting in membership in MOSERS.
<ul style="list-style-type: none"> • Optional life insurance - Additional life insurance may be purchased in a flat amount in multiples of \$10,000 not to exceed the maximum (lesser of six times annual salary or \$800,000). Spouse coverage may be purchased in multiples of \$10,000 up to a maximum of \$100,000; however, the amount of spouse coverage cannot exceed the amount of optional life insurance coverage the member has purchased. Coverage for children is available in a flat amount of \$10,000 per child. 	<ul style="list-style-type: none"> • Actively employed in an eligible state position resulting in membership in MOSERS.

* Terminating employees may convert coverage up to the amount they had as an active employee at individual rates.

Retired Members

Plan Provision	Requirement
<ul style="list-style-type: none"> • Basic life insurance at retirement - \$5,000 basic life insurance during retirement. 	<ul style="list-style-type: none"> • Must retire directly from active employment.
<ul style="list-style-type: none"> • Optional life insurance at retirement (MSEP) - An employee may retain up to the lesser of \$60,000 or the amount of optional life insurance coverage held at the time of retirement at the group rate and may convert any remaining basic and optional life insurance at individual rates. Coverage for spouse ends at member's retirement and may be converted at individual rates. 	<ul style="list-style-type: none"> • Must retire directly from active employment.
<ul style="list-style-type: none"> • Optional life insurance at retirement (MSEP 2000) - Under "Rule of 80", an employee may retain the current amount of coverage prior to retirement until age 62 at which time coverage is reduced to \$60,000, and may convert any remaining basic and optional life insurance at individual rates. Coverage for spouse ends at member's retirement and may be converted at individual rates. 	<ul style="list-style-type: none"> • Must retire directly from active employment.
<ul style="list-style-type: none"> • Optional life insurance at retirement (MSEP 2011) - Under "Rule of 90", an employee may retain the current amount of coverage prior to retirement until age 62 at which time coverage is reduced to \$60,000, and may convert any remaining basic and optional life insurance at individual rates. Coverage for spouse ends at member's retirement and may be converted at individual rates. 	<ul style="list-style-type: none"> • Must retire directly from active employment.

Note: Insured employees may port their life insurance and their dependent life insurance when their coverage has been reduced or terminated if they meet certain qualifications.

Long-Term Disability (LTD) Insurance Plans | June 30, 2016

MOSERS administers the LTD Plan for eligible state employees who become disabled during active employment.

Active Members

Classification	Requirement
<p>General state employees, legislators, and elected state officials - Members of MOSERS in a position normally requiring 1,040 hours of work a year are covered under the LTD plan, unless they work for a state agency which has its own LTD plan.</p>	<ul style="list-style-type: none"> Eligible participants receive 60% of their compensation minus primary social security, workers' compensation, and employer provided income. Benefits commence after 90 days of disability or when sick leave benefits are no longer payable, whichever occurs last. LTD benefits cease upon the earliest of (i) when disability ends, (ii) when the member is first eligible for normal retirement benefits or is receiving early retirement benefits, (iii) upon a member's death, (iv) the date benefits become payable under any other group long-term disability insurance plan, or, (v) the date the member fails to provide proof of continued disability and entitlement to LTD benefits.
<p>Water patrol</p>	<ul style="list-style-type: none"> Uniformed members who are eligible for statutory occupational disability receive benefits equal to 50% of compensation with no offset for social security at the time of disability. For nonoccupational disabilities, eligible participants receive the same benefit as general employees.
<p>Judges</p>	<ul style="list-style-type: none"> In addition to the disability benefits provided to general employees, judges may receive benefits under the state constitution. Participants may receive 50% of salary until the current term expires.

Changes in Plan Provisions

During the 2016 legislative session, Senate Bill 585 was passed and signed by the Governor. This bill provides for MOSERS coverage of juvenile court positions in multi-county judicial circuits when such circuits split into single county circuits and all salary for these positions is received from the state; otherwise, there were no changes in benefit plan provisions this year.

Actuarial Present Values | June 30, 2016

MSEP

Actuarial Present Value June 30, 2016	Actuarial Present Value	Portion Covered by Future Normal Cost Contributions	Actuarial Accrued Liabilities
Active members			
Service retirement benefits based on services rendered before and likely to be rendered after valuation date	\$5,058,251,210	\$ 650,835,032	\$ 4,407,416,178
Disability benefits likely to be paid to present active members who become totally and permanently disabled	167,686,558	103,681,884	64,004,674
Survivor benefits likely to be paid to widows and children of present active members who die before retiring	58,052,028	14,107,063	43,944,965
Separation benefits likely to be paid to present active members	396,014,751	181,973,237	214,041,514
Refunds likely to be paid to present active members	54,369,551	52,593,418	1,776,133
Active member totals	\$5,734,374,098	\$1,003,190,634	4,731,183,464
Members on leave of absence & LTD			
Service retirement benefits based on service rendered before the valuation date			121,521,161
Terminated-vested members			
Service retirement benefits based on service rendered before the valuation date			592,562,844
Retired lives			7,293,973,373
Pending refunds			11,405,729
BackDROP installment payments incurred, but not yet paid			516,182
Total actuarial accrued liability			12,751,162,753
Less: actuarial value of assets			8,878,057,191
Unfunded actuarial accrued liability			\$ 3,873,105,562
Funded ratio			69.6%

Actuarial Present Values | June 30, 2016

Judicial Plan

Actuarial Present Value June 30, 2016	Actuarial Present Value	Portion Covered by Future Normal Cost Contributions	Actuarial Accrued Liabilities
Active members			
Service retirement benefits based on services rendered before and likely to be rendered after valuation date	\$246,664,413	\$64,303,520	\$182,360,893
Disability benefits likely to be paid to present active members who become totally and permanently disabled	1,446,086	1,488,681	(42,595)
Survivor benefits likely to be paid to widows and children of present active members who die before retiring	4,555,333	2,671,030	1,884,303
Separation benefits likely to be paid to present active members	8,584,028	8,387,082	196,946
Refunds likely to be paid to present active members	48,682	43,749	4,933
Active member totals	\$261,298,542	\$76,894,062	184,404,480
Retired lives			354,715,048
Terminated-vested members			7,897,327
Member on leave of absence			0
Members on LTD			604,762
Total actuarial accrued liability			547,621,617
Less: actuarial value of assets			143,468,860
Unfunded actuarial accrued liability			\$404,152,757
Funded ratio			26.2%