

# Actuarial Section



Experiences Are More Fulfilling Than Wealth.

Mr. Leon Wahlbrink  
Retiree From Corrections  
Osage Beach, MO  
Years of Service: 11 Years 11 Months  
Year Retired: 2000



## Actuary's Certification Letter



### Cavanaugh Macdonald

CONSULTING, LLC

*The experience and dedication you deserve*

October 12, 2021

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

Dear Members of the Board:

At your request, we have performed an actuarial valuation of the Missouri State Employees' Retirement System (MOSERS) as of June 30, 2021 for the purpose of determining the employer required contribution rate for the fiscal year ending June 30, 2023. Actuarial valuations are prepared annually for the Missouri State Employees' Plan (MSEP) and the Judicial Retirement Plan. The funding policy for both plans includes the Entry Age Normal actuarial cost method and the level percent of payroll methodology for the unfunded actuarial accrued liability (UAAL), which are set statutorily. The Board of Trustees is responsible for selecting the asset valuation method, amortization period and methodology for both plans. The selection of the amortization period reflects the Board's desire to fully fund the System within a reasonable period of time that complies with actuarial standards. The major findings of the valuations are contained in this section, which reflects the plan provisions in place on June 30, 2021, as amended by any legislation passed in the 2021 session.

A five-year comprehensive experience study was performed in 2021, including analysis of both the economic and demographic assumptions. All of the recommended changes to the assumptions and methods were adopted by the Board at their June 17, 2021 meeting. For more detail on the new set of assumptions, along with their impact on the current actuarial valuation results, please see the June 30, 2021 actuarial valuation report.

In preparing our report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, statutory provisions, member data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete, our results may be different and our calculations may need to be revised.

We further certify that all costs, liabilities, and other factors for the plans have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the plans and reasonable expectations); meet applicable Actuarial Standards of Practice (ASOPs); and which, in combination, offer our best estimate of anticipated experience affecting the plans. Nevertheless, the emerging costs of the plans will vary from those presented herein to the extent actual experience differs from that projected by the actuarial assumptions. The Board of Trustees has the final decision regarding the appropriateness of the assumptions and adopted the assumptions, as indicated in Appendix D of our *MSEP Actuarial Valuation Report* and Appendix C of our *Judges Actuarial Valuation Report*.

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In order to prepare the results in the actuarial valuation reports, we have utilized appropriate actuarial models that were developed for this purpose. These models use assumptions about future contingent events along with recognized actuarial approaches to develop the needed results. Future actuarial measurements may differ significantly from the current measurements presented in the June 30, 2021 valuation reports 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; and changes in plan provisions or applicable law. Due to the limited scope of our assignment, we did not perform an analysis of the potential range of future measurements.

Actuarial computations presented in this section are for purposes of determining the funding amounts for MSEP and the Judicial Retirement Plan as set out in the Missouri state statutes. The calculations have been made on a basis consistent with our understanding of the plans' funding policy. Determinations for purposes other than meeting these requirements may be significantly different from the results shown in the June 30, 2021 valuation reports. Accordingly, additional determinations may be needed for other purposes.

Based upon the June 30, 2021 valuation results, annual projection forecasting and the presumption that future contributions will be made at the full actuarial contribution rate, it is our opinion that the current funding policy will systematically accumulate assets sufficient to fund all future benefits of both the Missouri State Employees' Retirement System and the Judicial Retirement Plan, if all actuarial assumptions are met.

We provided the information used by staff to prepare the following schedules in the Actuarial Section: *Schedules of Funding Progress, Active Members by Attained Age and Years of Service, Schedules of Active Member Valuation Data, Short-Term Solvency Test, and Analysis of Financial Experience*. We also provided the information used by staff to prepare the following schedules in the Financial Section: *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*.

Actuarial computations, based on the actuarial valuations performed as of June 30, 2021, were also prepared as of June 30, 2021, for purposes of fulfilling financial accounting requirements for the plans under Governmental Accounting Standard Number 67 (GASB 67). The Missouri State Employees' Plan (MSEP) is a cost-sharing multiple employer plan and the Judicial Retirement Plan is a single employer plan. The assumptions used in the funding valuation were also used for GASB 67 calculations including the 6.95% assumed rate of return used in the funding valuation. In addition, the entry age normal actuarial cost method, which is required to be used under GASB 67, is also used in the funding valuations. The actuarial assumptions and methods meet the parameters set by Actuarial Standards of Practice, as issued by the Actuarial Standards Board, and generally accepted accounting principles (GAAP) applicable in the United States of America as promulgated by the Governmental Accounting Standards Board (GASB). Additional information related to GASB 67 can be found in the *Financial Section* of this report.

The consultants who worked on this assignment are pension actuaries. Cavanaugh Macdonald Consulting, LLC's advice is not intended to be a substitute for qualified legal or accounting counsel. We certify that, to the best of our knowledge and belief, the June 30, 2021 actuarial valuation reports are complete and accurate and have been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Sincerely,

A handwritten signature in cursive script that reads 'Patrice Beckham'.

Patrice A. Beckham, FSA, EA, FCA, MAAA  
Principal and Consulting Actuary

A handwritten signature in cursive script that reads 'Bryan K. Hoge'.

Bryan K. Hoge, FSA, EA, FCA, MAAA  
Consulting Actuary

## Summary of Actuarial Assumptions

### Actuarial Methods

#### Calculation of Normal Cost and Actuarial Accrued Liability

The funding method used to determine the normal cost and actuarial accrued liability was the entry age actuarial cost method described below.

- **Entry age actuarial cost method** – Under the entry age normal cost method, the actuarial present value of each member’s projected benefit is allocated on a level basis over the member’s compensation between the entry age of the member and their assumed exit age. The portion of the actuarial present value allocated to the valuation year is called the normal cost. The actuarial present value of benefits allocated to prior years of service is called the actuarial accrued liability. The unfunded actuarial accrued liability represents the difference between the actuarial accrued liability and the actuarial value of assets as of the valuation date. The unfunded actuarial accrued liability is calculated each year and reflects experience gains/losses.
- **Calculation of the actuarial value of assets (AVA)** – The Board adopted the current asset smoothing method effective with the June 30, 2018 valuation. Under the current method, the difference between the actual and assumed investment return on the fair value of assets is recognized evenly over a five-year period. No corridor is used with this method. In addition, the total unrecognized investment experience as of June 30, 2017, will be recognized evenly over a seven-year period beginning June 30, 2018.
- **Amortization of the unfunded actuarial accrued liability (UAAL)** – Beginning with the June 30, 2018, valuation, the UAAL is amortized using a “layered” approach. Under this method, the “Legacy UAAL”, as determined in the June 30, 2018 valuation, is amortized over a closed 30-year period. Subsequent changes in the UAAL due to actuarial gains/losses or assumption changes are separately financed by establishing amortization bases and payments, as a level percentage of payroll, over closed 30-year periods. Effective with the June 30, 2021 valuation, the amortization period for new bases will be amortized over a closed 25-year period. However, the bases established prior to June 30, 2021 continue to be amortized on their original schedule. Any change in the System's benefit structure shall be amortized over a closed period of 20 years, as set out in state statutes. The total UAAL amortization payment is the sum of the payments for each of the amortization bases.

#### Changes in Methods and Assumptions Since the Prior Year

An experience study which analyzed the System’s economic and demographic assumptions was performed in 2021 and the results were presented to the Board. Below is a summary of the changes to the actuarial methods and assumptions since the prior valuation:

- **Individual salary increase assumption** – The assumption was increased to partially reflect actual merit salary increases for MSEP plans and changed to a flat 3.0% for Judicial plans.
- **Mortality assumption** – The assumption for MSEP was changed to the Pub-2010 General Employees Below Median Tables with adjustments. The assumption for Judicial was changed to the Pub-2010 General Employees Median Mortality Table. Both use generational mortality with future improvements based on 75% of the MP-2020 Scale.
- **Retirement assumption** – The assumption was modified to partially reflect the observed experience with separate assumptions for MSEP, MSEP 2000 and MSEP 2011.
- **Termination assumption** – The assumption was changed to a single service-based assumption for MSEP plans and changed to 2.0% at all durations for the Judicial plans.
- **Disability assumption** – Minor adjustments to the disability assumption for the MSEP plans to partially reflect actual experience. The assumption was eliminated for the Judicial plans.
- **Refund assumption** – The refund election assumption was changed to assume the member elects the greater of the refund or the present value of the deferred monthly benefit.
- **Other assumptions** – Minor changes were made to the marriage assumption, military service assumption and the load for pre-retirement death benefits for terminated vested members.
- **Amortization method** – The amortization period for new bases established on or after June 30, 2021 is a closed 25-year period.

## Actuarial Assumptions

### Economic Assumptions

- **Investment return** – 6.95%, compounded annually, net of investment expenses
- **Inflation** – 2.25% per year
- **Payroll growth** – 2.25% per year
- **Cost-of-living adjustment (COLA)** – 4.00% on a compounded basis when a minimum COLA of 4.00% is in effect; 1.80% on a compounded basis when no minimum COLA is in effect
- **Interest on member contributions** – 1.50% per year
- **Administrative expenses** – actual prior year expenses are assumed for current year
- **Pay Increases** –
  - **MSEP** – 2.75% - 10.00% based on years of service; General Assembly members have a flat 2.50% assumption; See table on page 93 for pay increase assumptions by years of service.
  - **Judicial Plan** – 3.00% per year

### Demographic Assumptions

- **Mortality** – The mortality assumption includes an appropriate level of conservatism that reflects expected future mortality improvement

#### *MSEP/MSEP 2000/MSEP 2011*

- **Post-retirement** – Pub-2010 General Members Below Median Healthy Retiree mortality table, scaled by 104%, set back two years for males and set forward one year for females and projected generationally from 2010 to 2020 using Scale MP-2020 and 75% of Scale MP-2020 for years after 2020
- **Pre-retirement** – Pub-2010 General Members Below Median Employee mortality table, set back two years for males and set forward one year for females, projected generationally from 2010 to 2020 with Scale MP-2020 and 75% of Scale MP-2020 for years after 2020
- **Long-term disability** – Pub-2010 Non-Safety Disabled Retiree mortality table, without mortality projection

#### *Judicial Plan*

- **Post-retirement** – Pub-2010 General Members Median Healthy Retiree mortality table, projected generationally from 2010 to 2020 with Scale MP-2020 and 75% of Scale MP-2020 for years after 2020
- **Pre-retirement** – Pub-2010 General Members Median Employee mortality table, projected generationally from 2010 to 2020 with Scale MP-2020 and 75% of Scale MP-2020 for years after 2020
- **Long-term disability** – None

- **Termination** –

- **MSEP** – 1.25% - 27.00% based on years of service; Elected Officials and Legislators 5.00% - 35.00% based on years of service; See tables on pages 92-93 for termination assumptions by years of service.
- **Judicial Plan** – 2.00% per year

The actuarial valuation computations were made by or under the supervision of a Member of the American Academy of Actuaries (MAAA). Assumptions were adopted based on the findings of the experience study covering the five-year period ending June 30, 2020, and presented to the Board in 2021.

**MSEP**

**Percent of Eligible Active Members Retiring Within the Next Year**

MSEP	
Early Retirement	
Retirement Age	Percent Retiring
55-56	1%
57-59	2
60-61	8
62	25
63-64	5

MSEP 2000	
Early Retirement	
Retirement Age	Percent Retiring
57-59	3%
60-61	5

MSEP 2011	
Early Retirement	
Retirement Age	Percent Retiring
62-64	10%
65	15
66	20

MSEP	
Normal Retirement	
Retirement Age	Percent Retiring
48-61	17%
62	21
63-64	17
65-66	30
67-69	25
70	40
71-77	25
78	100

MSEP 2000	
Normal Retirement	
Retirement Age	Percent Retiring
48-57	35%
58-60	20
61	12
62	16
63	12
64	20
65	27
66	30
67-69	25
70	30
71-77	25
78	100

MSEP 2011	
Normal Retirement	
Retirement Age	Percent Retiring
55-57	40%
58-66	15
67-77	20
78	100

## Judicial Plan

### Percent of Eligible Active Members Retiring Within the Next Year

#### Judicial Plan

Early Retirement		Normal Retirement	
Retirement Age	Percent Retiring	Retirement Age	Percent Retiring
62-69	5%	55	10%
70	100	56-63	3
		64-66	10
		67	17.5
		68	25
		69	35
		70	100

#### Judicial Plan 2011

Normal Retirement	
Retirement Age	Percent Retiring
62	10%
63-66	3
67	25
68-69	20
70	100

## Elected Officials and Legislators

### Percent of Active Members Terminating Within the Next Year

Years of Service	Percent Terminating
0-3	5%
4-7	12
8+	35

MSEP

Separations From Active Employment Before Service Retirement Assumptions

Termination*		Disability	
Years of Service	Rate	Age	Rate
1	27.00%	25	0.03%
5	12.75	30	0.07
10	7.00	35	0.11
15	4.30	40	0.22
20	2.25	45	0.32
25+	1.25	50	0.43
		55	0.54
		60	0.59
		65	0.64

\*Does not apply to elected officials and legislators.

MSEP

Pay Increase Assumptions

Years of Service	Rates by Service*			Total
	Inflation	Productivity	Merit	
0	2.25%	0.25%	7.50%	10.00%
1	2.25	0.25	2.50	5.00
2	2.25	0.25	2.25	4.75
3	2.25	0.25	2.00	4.50
4	2.25	0.25	1.85	4.35
5	2.25	0.25	1.70	4.20
10	2.25	0.25	1.00	3.50
15	2.25	0.25	0.75	3.25
20	2.25	0.25	0.50	3.00
25+	2.25	0.25	0.25	2.75

\*General assembly members have a flat 2.5% assumption.

**Other Assumptions June 30, 2021**

- **Form of payment**

*MSEP*

- 50% Joint and survivor

*MSEP 2000/MSEP 2011*

- Straight life annuity

*Judicial Plan*

- **First employed before January 1, 2011** – 50% Joint & survivor
- **First employed on or after January 1, 2011** – Straight life annuity

- **Marital status**

*MSEP/MSEP 2000/MSEP 2011*

- **Percent married** – 65% married at retirement, 50% of those dying in active service are married
- **Spouse’s age** – Females assumed to be three years younger than males

*Judicial Plan*

- **Percent married** – 90% married
- **Spouse’s age** – Females assumed to be four years younger than males

- **Pay increase timing** – Pay increases are assumed to occur at the beginning of the 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.
- **Other liability adjustments**

*MSEP/MSEP 2000/MSEP 2011*

- Pre-retirement survivor benefits for spouse of an inactive-vested member. These factors are used to estimate the cost of immediate unreduced survivor annuities upon the death of a vested member.

Age	Male	Female
<30	1.56	1.42
30-39	1.26	1.20
40-49	1.11	1.08
>50	1.02	1.02

- **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.
  - **Retirement election**
- MSEP 2000*
- All regular state employees first employed 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 members, and uniformed water patrol members first employed before July 1, 2000, are assumed to elect MSEP at retirement.

- **Service adjustment**

- ***MSEP/MSEP 2000/MSEP 2011***

- It is assumed that each member will be granted seven months of service credit; four months for unused leave upon retirement and three months for military service purchases. For members first employed on or after January 1, 2011, it is assumed that each member will be granted five months for unused leave.

- **Forfeitures**

- ***MSEP 2011/Judicial Plan***

- For those first employed on or after January 1, 2011, employees are assumed to take a refund and forfeit their deferred pension if the refund amount is greater than the present value of their deferred benefit.

- **Salary and benefit limits** – For purposes of the valuation, no limits were applied to member compensation or benefits.

- **Commencement age for deferred vested benefit** – normal retirement date

- **Data Adjustments**

- ***MSEP/MSEP 2000/MSEP 2011***

- Active and retired member data was reported as of May 31, 2021. It was brought forward to June 30, 2021, by adding one month of service for all active members, one month of contributions and interest for MSEP 2011 members, and the June COLA for certain retired members. Financial information continues to be reported annually 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.

- When the option of choosing plans is available, inactive-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.

- ***Judicial Plan***

- Active and retired member data was reported as of May 31, 2021. It was brought forward to June 30, 2021, by adding one month of service for all active members, one month of contributions and interest for Judicial Plan 2011 members, and the June COLA for certain retired members. Financial information continues to be reported annually 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 statutory deadline.

- Active members reported with no annualized salary were assumed to receive the average active member pay.

- **Other Technical Valuation Procedures**

- Salary increases are assumed to apply to annual amounts.

- Decrements are assumed to occur mid-year, except that immediate retirement is assumed for those who are at or older than the age at which retirement rates are 100%. Standard adjustments are made for multiple decrements.

- No actuarial liability is included for participants who terminated without being vested prior to the valuation date, except those due a refund of contributions.

## Pension Trust Funds

## Employer Schedule of Funding Progress

## Last Ten Fiscal Years

MOSERS uses the entry-age normal actuarial cost method which 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 as of June 30	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]
2021	\$ 8,909,251,051	\$ 15,110,646,537	\$ 6,201,395,486	59.0%	\$ 1,961,975,052	316.1%
2020	8,711,224,151	14,258,408,888	5,547,184,737	61.1	1,980,910,473	280.0
2019	8,782,383,977	13,957,626,309	5,175,242,332	62.9	1,930,764,635	268.0
2018	8,830,410,210	13,612,763,961	4,782,353,751	64.9	1,915,143,002	249.7
2017	8,872,381,848	13,152,273,895	4,279,892,047	67.5	1,941,969,786	220.4
2016	8,878,057,191	12,751,162,753	3,873,105,562	69.6	1,921,528,936	201.6
2015	8,792,485,658	11,727,618,410	2,935,132,752	75.0	1,918,527,768	153.0
2014	8,637,758,955	11,494,571,835	2,856,812,880	75.1	1,902,719,928	150.1
2013	8,096,436,929	11,134,637,484	3,038,200,555	72.7	1,880,212,950	161.6
2012	7,897,167,203	10,793,651,577	2,896,484,374	73.2	1,864,069,493	155.4

## Judicial Plan

Actuarial Valuation Date as of June 30	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]
2021	\$ 194,988,153	\$ 626,284,219	\$ 431,296,066	31.1%	\$ 63,031,506	684.3%
2020	180,713,310	624,847,011	444,133,701	28.9	61,450,808	722.7
2019	172,224,529	617,482,705	445,258,176	27.9	60,380,734	737.4
2018	162,135,045	593,788,592	431,653,547	27.3	59,551,874	724.8
2017	151,828,631	564,417,925	412,589,294	26.9	58,150,935	709.5
2016	143,468,860	547,621,617	404,152,757	26.2	57,421,016	703.8
2015	134,349,908	482,969,311	348,619,403	27.8	55,656,457	626.4
2014	124,269,105	462,336,255	338,067,150	26.9	49,587,936	681.8
2013	111,140,339	435,378,358	324,238,019	25.5	48,697,726	665.8
2012	102,266,706	413,332,538	311,065,832	24.7	45,835,501	678.7

See *Schedule of Employer Contributions* on page 54.

## Pension Trust Funds

## Summary of Member Data Included in Valuations

June 30, 2021

## Active Members

Valuation Group	Number	Annual Covered Payroll	Group Averages		
			Annual Salary	Age (Yrs)	Service (Yrs)
<b>MSEP</b>					
Regular state employees	40,667	\$ 1,839,915,686	\$ 45,243	45.7	10.8
Elected officials	6	659,976	109,996	48.7	4.1
Legislative clerks	4	133,884	33,471	69.5	23.0
Legislators	195	7,013,774	35,968	51.5	3.7
Uniformed water patrol	9	695,171	77,241	43.8	17.9
Conservation department	1,261	59,803,569	47,426	45.1	14.5
School-term salaried employees	673	52,076,345	77,379	57.2	21.9
Administrative law judges	14	1,676,647	119,761	62.9	26.7
Total MSEP group	42,829	\$ 1,961,975,052	45,809	45.9	11.0
<b>Judicial Plan</b>	418	\$ 63,031,506	\$ 150,793	55.5	10.8

## Retired Members and Beneficiaries

Type of Benefit Payment	Number	Annual Benefits	Group Averages	
			Benefit	Age (Yrs.)
<b>MSEP</b>				
Retirement	46,305	\$ 765,376,860	\$ 16,529	70.9
Disability	1	2,340	2,340	65.0
Survivor of active member	1,759	20,095,272	11,424	63.7
Survivor of retired member	4,158	56,187,312	13,513	76.1
Total MSEP group	52,223	\$ 841,661,784	16,117	71.1
<b>Judicial Plan</b>	607	\$ 42,306,144	\$ 69,697	76.8

## Other Members

Plans	Number Inactive-Vested	Number Inactive-Nonvested	Number Leave of Absence	Number Long-Term Disability
MSEP	16,959	25,613	191	613
Judicial Plan	27	0	0	0

## Active Members by Attained Age and Years of Service

June 30, 2021

### MSEP

Attained Age	Years of Service to Valuation Date								Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35+	No.	Valuation Payroll
< 24	1,897	12							1,909	\$ 66,836,538
25-29	3,020	583	1						3,604	138,496,639
30-34	2,347	1,640	311	8					4,306	182,640,076
35-39	1,824	1,358	1,064	349	15				4,610	208,711,321
40-44	1,458	1,163	955	1,047	454	15			5,092	239,425,213
45-49	1,294	929	789	903	1,255	399	16		5,585	269,220,642
50-54	1,220	899	766	797	1,228	981	261	28	6,180	300,279,415
55-59	1,187	948	802	841	1,007	594	393	113	5,885	281,296,123
60-64	756	702	608	571	631	350	220	161	3,999	190,588,848
65+	269	302	274	236	209	131	92	146	1,659	84,480,237
Totals	15,272	8,536	5,570	4,752	4,799	2,470	982	448	42,829	\$ 1,961,975,052

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

**Group Averages:** Age – 45.9 years • Service – 11.0 years • Annual pay – \$45,809

### 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
< 39	22	3						25	\$ 3,609,515
40-44	28	12	4					44	6,493,592
45-49	22	13	8					43	6,328,225
50-54	25	14	16	12	2			69	10,384,961
55-59	20	23	19	9	8	2		81	12,357,972
60-64	11	25	24	6	19	12	1	98	14,837,692
65+	1	4	15	4	11	11	12	58	9,019,549
Totals	129	94	86	31	40	25	13	418	\$ 63,031,506

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

**Group Averages:** Age – 55.5 years • Service – 10.8 years • Annual pay – \$150,793

## Schedules of Active Member Valuation Data

Last Ten Fiscal Years

### MSEP

#### Schedule of Active Member Valuation Data

Valuation Date as of June 30	Participating Employers	Number	Annual Payroll	Average Annual Pay	% Increase in Average Pay
2021	17	42,829	\$ 1,961,975,052	\$ 45,809	6.37%
2020	17	45,999	1,980,910,473	43,064	4.53
2019	17	46,864	1,930,764,635	41,199	2.84
2018	18	47,806	1,915,143,002	40,061	0.90
2017	18	48,910	1,941,969,786	39,705	2.21
2016	18	49,464	1,921,528,936	38,847	1.20
2015	18	49,980	1,918,527,768	38,386	2.12
2014	18	50,621	1,902,719,928	37,588	1.62
2013	18	50,833	1,880,212,950	36,988	1.86
2012	18	51,332	1,864,069,493	36,314	0.02

### Judicial Plan

#### Schedule of Active Member Valuation Data

Valuation Date as of June 30	Participating Employers	Number	Annual Payroll	Average Annual Pay	% Increase in Average Pay
2021	1	418	\$ 63,031,506	\$ 150,793	2.57%
2020	1	418	61,450,808	147,012	0.80
2019	1	414	60,380,734	145,847	1.64
2018	1	415	59,551,874	143,498	1.17
2017	1	410	58,150,935	141,832	0.78
2016	1	408	57,421,016	140,738	2.41
2015	1	405	55,656,457	137,423	12.24
2014	1	405	49,587,936	122,439	0.57
2013	1	400	48,697,726	121,744	5.71
2012	1	398	45,835,501	115,165	0.14

## Retirees and Beneficiaries Added and Removed - MSEP

Last Ten Fiscal Years

Benefit Type	Fiscal Year Ended June 30		Added to Rolls		Removed from Rolls		Rolls at End of Year		Percentage Increase/(Decrease)	
	Number	Annual Allowances	Number	Annual Allowances	Number	Annual Allowances	Number	Annual Allowances	Annual Allowances	Average Annual Allowances
<b>2021</b>										
Retirees	2,679	\$ 52,111,212	1,558	\$ 24,543,024	46,844	\$ 769,074,952	\$ 16,418	3.72%	1.24%	
Beneficiaries	623	8,799,852	397	4,270,596	5,946	76,728,359	12,904	6.27	2.23	
<b>2020</b>										
Retirees	2,393	47,592,468	1,347	21,088,044	45,723	741,506,764	16,217	3.71	1.33	
Beneficiaries	506	7,538,112	358	3,849,576	5,720	72,199,103	12,622	5.38	2.66	
<b>2019</b>										
Retirees	2,510	49,663,164	1,247	20,068,656	44,677	715,002,340	16,004	4.32	1.37	
Beneficiaries	513	7,606,344	321	3,395,964	5,572	68,510,567	12,296	6.55	2.88	
<b>2018</b>										
Retirees	2,875	51,096,000	1,295	17,429,136	43,414	685,407,832	15,788	5.17	1.34	
Beneficiaries	480	6,373,080	334	3,124,044	5,380	64,300,187	11,952	5.32	2.46	
<b>2017</b>										
Retirees	2,810	44,397,240	1,282	17,552,484	41,834	651,740,968	15,579	4.30	0.49	
Beneficiaries	473	5,953,224	276	2,599,608	5,234	61,051,151	11,664	5.81	1.83	
<b>2016</b>										
Retirees	2,829	41,259,384	1,165	15,963,864	40,306	624,896,212	15,504	4.22	(0.08)	
Beneficiaries	475	5,779,596	283	2,563,344	5,037	57,697,535	11,455	5.90	1.87	
<b>2015</b>										
Retirees	2,885	43,895,520	1,066	14,075,772	38,642	599,600,692	15,517	5.23	0.28	
Beneficiaries	465	5,649,900	246	2,203,788	4,845	54,481,283	11,245	6.75	1.93	
<b>2014</b>										
Retirees	2,631	37,702,375	956	12,406,774	36,823	569,780,944	15,474	4.65	(0.11)	
Beneficiaries	421	5,141,385	197	1,842,199	4,626	51,035,171	11,032	6.91	1.73	
<b>2013</b>										
Retirees	2,676	41,153,143	1,001	13,305,438	35,148	544,485,343	15,491	5.39	0.37	
Beneficiaries	431	5,418,267	221	1,876,266	4,402	47,735,985	10,844	8.01	2.86	
<b>2012</b>										
Retirees	2,655	39,865,026	908	11,424,712	33,473	516,637,638	15,434	5.83	0.30	
Beneficiaries	371	4,966,813	195	1,666,285	4,192	44,193,984	10,542	8.07	3.53	

## Retirees and Beneficiaries Added and Removed - Judicial Plan

Last Ten Fiscal Years

Benefit Type	Fiscal Year Ended June 30		Added to Rolls		Removed from Rolls		Rolls at End of Year		Percentage Increase/(Decrease)	
	Number	Annual Allowances	Number	Annual Allowances	Number	Annual Allowances	Number	Annual Allowances	Annual Allowances	Average Annual Allowances
<b>2021</b>										
Retirees	26	\$ 2,674,404	13	\$ 824,256	460	\$ 35,963,402	\$ 78,181	5.42%	2.44%	
Beneficiaries	10	411,408	11	469,104	150	5,856,549	39,044	(0.98)	(0.32)	
<b>2020</b>										
Retirees	21	2,245,320	9	753,144	447	34,113,254	76,316	4.57	1.77%	
Beneficiaries	7	397,068	11	449,532	151	5,914,245	39,167	(0.88)	1.75	
<b>2019</b>										
Retirees	39	3,749,292	17	1,357,068	435	32,621,078	74,991	7.91	2.46	
Beneficiaries	12	643,452	15	555,528	155	5,966,709	38,495	1.50	3.46	
<b>2018</b>										
Retirees	23	2,642,868	15	1,074,540	413	30,228,854	73,193	5.47	3.43	
Beneficiaries	9	470,700	8	322,200	158	5,878,785	37,208	2.59	1.94	
<b>2017</b>										
Retirees	21	2,128,128	16	1,239,612	405	28,660,526	70,767	3.20	1.93	
Beneficiaries	12	507,360	2	87,936	157	5,730,285	36,499	7.90	1.03	
<b>2016</b>										
Retirees	16	1,671,084	14	1,078,356	400	27,772,010	69,430	2.18	1.67	
Beneficiaries	8	383,940	11	397,176	147	5,310,861	36,128	(0.25)	1.79	
<b>2015</b>										
Retirees	39	3,599,880	21	1,395,888	398	27,179,282	68,290	8.82	3.90	
Beneficiaries	18	739,788	5	198,348	150	5,324,097	35,494	11.32	1.67	
<b>2014</b>										
Retirees	18	1,671,667	8	443,807	380	24,975,290	65,724	5.17	2.40	
Beneficiaries	7	320,389	7	216,813	137	4,782,657	34,910	2.21	2.21	
<b>2013</b>										
Retirees	27	2,233,387	13	851,802	370	23,747,430	64,182	6.18	2.16	
Beneficiaries	8	383,692	11	322,758	137	4,679,081	34,154	1.32	3.54	
<b>2012</b>										
Retirees	18	1,490,554	14	1,074,572	356	22,365,845	62,825	1.90	0.75	
Beneficiaries	8	394,339	6	218,310	140	4,618,147	32,987	3.96	2.48	

## Short-Term Solvency Test

Last Ten Fiscal Years

### MSEP

#### Actuarial Accrued Liabilities for

Fiscal Year	Member Contributions (1)	Current Retirees and Beneficiaries (2)	Active and Inactive Members, Employer Financed Portion (3)	Actuarial Value of Assets Available for Benefits	Percentage of Actuarial Liabilities Covered by Actuarial Value of Assets Available for		
					(1)	(2)	(3)
2021	\$ 187,797,531	\$ 9,037,922,330	\$ 5,884,926,676	\$ 8,909,251,051	100.0%	96.5%	0.0%
2020	157,133,312	8,701,290,590	5,399,984,986	8,711,224,151	100.0	98.3	0.0
2019	128,255,311	8,430,014,973	5,399,356,055	8,782,383,977	100.0	100.0	4.2
2018	103,784,514	8,073,692,664	5,435,286,783	8,830,410,210	100.0	100.0	12.0
2017	78,979,370	7,559,623,100	5,513,671,425	8,872,381,848	100.0	100.0	22.4
2016	60,618,379	7,305,895,284	5,384,649,090	8,878,057,191	100.0	100.0	28.1
2015	42,731,658	6,695,631,737	4,989,255,015	8,792,485,658	100.0	100.0	41.2
2014	27,111,467	6,347,728,717	5,119,731,651	8,637,758,955	100.0	100.0	44.2
2013	14,507,994	6,062,654,441	5,057,475,049	8,096,436,929	100.0	100.0	39.9
2012	5,431,451	5,749,411,068	5,038,809,058	7,897,167,203	100.0	100.0	42.5

### Judicial Plan

#### Actuarial Accrued Liabilities for

Fiscal Year	Member Contributions (1)	Current Retirees and Beneficiaries (2)	Active and Inactive Members, Employer Financed Portion (3)	Actuarial Value of Assets Available for Benefits	Percentage of Actuarial Liabilities Covered by Actuarial Value of Assets Available for		
					(1)	(2)	(3)
2021	\$ 7,294,197	\$ 438,537,859	\$ 180,452,163	\$ 194,988,153	100.0%	42.8%	0.0%
2020	5,991,360	436,014,583	182,841,068	180,713,310	100.0	40.1	0.0
2019	4,421,019	434,204,353	178,857,333	172,224,529	100.0	38.6	0.0
2018	3,124,482	401,725,610	188,938,500	162,135,045	100.0	39.6	0.0
2017	2,232,405	377,099,534	185,085,986	151,828,631	100.0	39.7	0.0
2016	1,855,955	354,715,048	191,050,614	143,468,860	100.0	39.9	0.0
2015	1,204,757	316,042,514	165,722,040	134,349,908	100.0	42.1	0.0
2014	716,564	285,124,436	176,469,255	124,269,105	100.0	43.3	0.0
2013	421,753	274,911,416	160,045,189	111,140,339	100.0	40.3	0.0
2012	209,817	258,642,149	154,450,572	102,266,706	100.0	39.5	0.0

## Analysis of Financial Experience

Year Ended June 30, 2021

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.

<b>MSEP</b>		<b>Valuation Date June 30</b>	<b>Actuarial Gain (Loss) as a % of Beginning Accrued Liabilities</b>
Unfunded actuarial accrued liability (UAAL) at beginning of year	\$ 5,547,184,737	2021	(0.7)%
Normal cost from last valuation	152,097,309	2020	(2.3)
Actual employer and member contributions	(500,864,631)	2019	(1.8)
Miscellaneous income	(80,121)	2018	(0.9)
Administrative expenses	8,816,943	2017	(1.6)
Interest accrual	379,285,901	2016	(3.2)
Expected UAAL before changes	5,586,440,138	2015	(0.9)
Change from any changes in benefits, assumptions, or methods	515,859,705	2014	2.1
Expected UAAL after changes	6,102,299,843	2013	(2.8)
Less: Actual UAAL at end of year	(6,201,395,486)	2012	(4.7)
Gain (loss) during year from experience	<u>\$ (99,095,643)</u>		
Gain (loss) as a percent of actuarial accrued liabilities at start of year (\$14,464,720,010)	(0.7)%		

<b>Judicial</b>		<b>Valuation Date June 30</b>	<b>Actuarial Gain (Loss) as a % of Beginning Accrued Liabilities</b>
Unfunded actuarial accrued liability (UAAL) at beginning of year	\$ 444,133,701	2021	1.4 %
Normal cost from last valuation	12,036,133	2020	(0.2)
Actual employer and member contributions	(41,444,937)	2019	(0.8)
Administrative expenses	75,822	2018	(0.3)
Interest accrual	30,290,372	2017	(0.3)
Expected UAAL before changes	445,091,091	2016	0.1
Change from any changes in benefits, assumptions, or methods	(4,928,456)	2015	(1.5)
Expected UAAL after changes	440,162,635	2014	1.5
Less: Actual UAAL at end of year	(431,296,066)	2013	(2.6)
Gain (loss) during year from experience	<u>\$ 8,866,569</u>	2012	(0.6)
Gain (loss) as a percent of actuarial accrued liabilities at start of year (\$638,098,784)	1.4 %		

## Comparison of Plans for General State Employees

June 30, 2021

Benefit Provisions	MSEP (Closed Plan)	MSEP 2000	MSEP 2011
<b>Membership</b> <i>Eligible members employed in positions which normally require at least 1,040 hours of work per year</i>	<ul style="list-style-type: none"> <li>Employed prior to July 1, 2000 and vested in the MSEP</li> </ul>	<ul style="list-style-type: none"> <li>First employed on or after July 1, 2000, but prior to January 1, 2011</li> <li>Left state employment prior to becoming vested and returned to employment on or after July 1, 2000</li> </ul>	<ul style="list-style-type: none"> <li>First employed on or after January 1, 2011, or</li> <li>Returned to employment after electing the buyout option</li> </ul>
<b>Member Contributions</b>	<ul style="list-style-type: none"> <li>None</li> </ul>	<ul style="list-style-type: none"> <li>None</li> </ul>	<ul style="list-style-type: none"> <li>4% of pay</li> </ul>
<b>Vesting</b> <i>Eligible for future pension</i>	<ul style="list-style-type: none"> <li>5 years</li> </ul>	<ul style="list-style-type: none"> <li>5 years</li> </ul>	<ul style="list-style-type: none"> <li>5 years</li> </ul>
<b>Service Purchases</b>	<ul style="list-style-type: none"> <li>May purchase up to 4 years of active-duty military service or qualifying public sector service at subsidized rate; may also purchase public sector service at full actuarial cost</li> </ul>	<ul style="list-style-type: none"> <li>May purchase up to 4 years of active-duty military service or qualifying public sector service at subsidized rate; may also purchase public sector service at full actuarial cost</li> </ul>	<ul style="list-style-type: none"> <li>May purchase qualifying public sector service at full actuarial cost</li> </ul>
<b>Service Transfers</b>	<ul style="list-style-type: none"> <li>May transfer state service to other positions covered by MOSERS under 104.800; under 105.691 with written agreements to transfer required funds; from MPERS, PSRS/PEERS, Lincoln Univ.; service as circuit clerk, deputy circuit clerk, division clerk, or juvenile court employee; or qualifying state board service.</li> </ul>	<ul style="list-style-type: none"> <li>May transfer service under 104.1090 or 105.691 from other systems with written agreements to transfer required funds; from MPERS, PSRS/PEERS, Lincoln Univ.; service as circuit clerk, deputy circuit clerk, division clerk, or juvenile court employee; or qualifying state board service.</li> </ul>	<ul style="list-style-type: none"> <li>May transfer service under 105.691 from other systems with written agreements to transfer required funds; from MPERS, PSRS/PEERS; service as circuit clerk, deputy circuit clerk, division clerk, or juvenile court employee; or qualifying state board service.</li> </ul>
<b>Death Prior to Retirement</b>	<ul style="list-style-type: none"> <li><b>Nonduty-related death</b> (<i>vested members</i>) Survivor benefit paid using Joint &amp; 100% survivor option to eligible spouse or 80% of life income annuity paid to eligible children.</li> <li><b>Duty-related death</b> (<i>no min. service requirement</i>) Survivor benefit to eligible spouse or children no less than 50% of average compensation. Payable the month following the member's death</li> </ul>	<ul style="list-style-type: none"> <li><b>Nonduty-related death</b> (<i>vested members</i>) Survivor benefit paid using Joint &amp; 100% survivor option to eligible spouse or 80% of life income annuity paid to eligible children.</li> <li><b>Duty-related death</b> (<i>no min. service requirement</i>) Survivor benefit to eligible spouse or children no less than 50% of average compensation. Payable the month following the member's death</li> </ul>	<ul style="list-style-type: none"> <li><b>Nonduty-related death</b> (<i>vested members</i>) Survivor benefit paid using Joint &amp; 100% survivor option to eligible spouse or 80% of life income annuity paid to eligible children. Payable the month following the member's death; for inactive-vested, payable when member would have reached normal retirement eligibility.</li> <li><b>Duty-related death</b> (<i>no min. service requirement</i>) Survivor benefit to eligible spouse or children no less than 50% of average compensation. Payable the month following the member's death</li> </ul>

## Comparison of Plans for General State Employees (continued)

June 30, 2021

Benefit Provisions	MSEP (Closed Plan)	MSEP 2000	MSEP 2011
<p><b>Early Retirement</b> <i>Eligible for reduced pension benefit once age and service requirements are met</i></p>	<ul style="list-style-type: none"> <li>Age 55 + 10 years of service <i>Base benefit reduced 1/2 of 1% (.005) for each month age is younger than normal retirement</i></li> </ul>	<ul style="list-style-type: none"> <li>Age 57 + 5 years of service <i>Base benefit reduced 1/2 of 1% (.005) for each month age is younger than normal retirement</i></li> </ul>	<ul style="list-style-type: none"> <li>Age 62 + 5 years of service at time of termination <i>Base benefit reduced 1/2 of 1% (.005) for each month age is younger than normal retirement</i> <i>Inactive-vested members ineligible</i></li> </ul>
<p><b>Normal Retirement</b> <i>Eligible for unreduced pension benefit once age and service requirements are met</i></p>	<ul style="list-style-type: none"> <li>Age 65 + 5 years of service or</li> <li>Age 60 + 15 years of service or</li> <li>Rule of 80 – (at least age 48) Age + years of service = 80 or more <i>Age 50 if first became eligible prior to Aug. 28, 2003</i></li> </ul>	<ul style="list-style-type: none"> <li>Age 62 + 5 years of service or</li> <li>Rule of 80 – (at least age 48) Age + years of service = 80 or more <i>Age 50 if first became eligible prior to Aug. 28, 2003</i> <i>Inactive-vested members ineligible for Rule of 80</i></li> </ul>	<ul style="list-style-type: none"> <li>Age 67 + 5 years of service or</li> <li>Rule of 90 – (at least age 55) Age + years of service = 90 or more at time of termination <i>Inactive-vested members ineligible for Rule of 90</i></li> </ul>
<p><b>Base Benefit</b> <i>Payable for life</i></p>	<ul style="list-style-type: none"> <li>.016 x FAP x Service <i>Future formula increases, if any, may be passed along to retirees.</i></li> </ul>	<ul style="list-style-type: none"> <li>.017 x FAP x Service <i>Future formula increases, if any, will not be passed along to retirees.</i></li> </ul>	<ul style="list-style-type: none"> <li>.017 x FAP x Service <i>Future formula increases, if any, will not be passed along to retirees.</i></li> </ul>
<p><b>Temporary Benefit</b> <i>Stops at age 62</i></p>	<ul style="list-style-type: none"> <li>Not available</li> </ul>	<ul style="list-style-type: none"> <li>.008 x FAP x Service <i>Available to members retiring under Rule of 80</i></li> </ul>	<ul style="list-style-type: none"> <li>.008 x FAP x Service <i>Available to members retiring under Rule of 90</i></li> </ul>
<p><b>BackDROP</b> <i>Lump-sum payment at retirement in addition to reduced monthly pension</i></p>	<ul style="list-style-type: none"> <li>Must work at least 2 years beyond normal retirement eligibility to be eligible; elect BackDROP at retirement (if applicable)</li> </ul>	<ul style="list-style-type: none"> <li>Must work at least 2 years beyond normal retirement eligibility to be eligible; elect BackDROP at retirement (if applicable)</li> </ul>	<ul style="list-style-type: none"> <li>Not available</li> </ul>
<p><b>Benefit Payment Options</b> <i>Determines whether or not a benefit will be paid to anyone after member's death</i></p>	<ul style="list-style-type: none"> <li>Life Income Annuity</li> <li>Unreduced Joint &amp; 50% Survivor</li> <li>Joint &amp; 100% Survivor</li> <li>Life Income with 60 Guaranteed Payments</li> <li>Life Income with 120 Guaranteed Payments</li> </ul>	<ul style="list-style-type: none"> <li>Life Income Annuity</li> <li>Joint &amp; 50% Survivor</li> <li>Joint &amp; 100% Survivor</li> <li>Life Income with 120 Guaranteed Payments</li> <li>Life Income with 180 Guaranteed Payments</li> </ul>	<ul style="list-style-type: none"> <li>Life Income Annuity</li> <li>Joint &amp; 50% Survivor</li> <li>Joint &amp; 100% Survivor</li> <li>Life Income with 120 Guaranteed Payments</li> <li>Life Income with 180 Guaranteed Payments</li> </ul>
<p><b>Cost-of-Living Adjustment (COLA)</b> <i>Helps offset effects of inflation increasing the cost of goods and services</i></p>	<ul style="list-style-type: none"> <li><b>Employed before Aug. 28, 1997</b> Receive 4-5% each year until reaching 65% COLA cap. After reaching cap, the rate is based on 80% of the percentage increase in the average CPI (0-5%)</li> <li><b>Employed on/after Aug. 28, 1997</b> Based on 80% of the percentage increase in the average CPI (0-5%)</li> </ul>	<ul style="list-style-type: none"> <li>Based on 80% of the percentage increase in the average CPI (0-5%)</li> </ul>	<ul style="list-style-type: none"> <li>Based on 80% of the percentage increase in the average CPI (0-5%)</li> </ul>
<p><b>In-Service COLA</b> <i>Service beyond age 65</i></p>	<ul style="list-style-type: none"> <li>Applicable COLA rate (if eligible)</li> </ul>	<ul style="list-style-type: none"> <li>Not available</li> </ul>	<ul style="list-style-type: none"> <li>Not available</li> </ul>

## Comparison of Plans for Legislators

June 30, 2021

Benefit Provisions	MSEP (Closed Plan)	MSEP 2000	MSEP 2011
<b>Membership</b> <i>Elected Members of the General Assembly</i>	<ul style="list-style-type: none"> <li>Employed prior to July 1, 2000 and vested in the MSEP</li> </ul>	<ul style="list-style-type: none"> <li>First employed on or after July 1, 2000, but prior to January 1, 2011</li> <li>Left state employment prior to becoming vested and returned to employment on or after July 1, 2000</li> </ul>	<ul style="list-style-type: none"> <li>First employed on or after January 1, 2011, or</li> <li>Returned to employment after electing the buyout option</li> </ul>
<b>Member Contributions</b>	<ul style="list-style-type: none"> <li>None</li> </ul>	<ul style="list-style-type: none"> <li>None</li> </ul>	<ul style="list-style-type: none"> <li>4% of pay</li> </ul>
<b>Vesting</b> <i>Eligible for future pension</i>	<ul style="list-style-type: none"> <li>3 biennial assemblies (6 years)</li> </ul>	<ul style="list-style-type: none"> <li>3 biennial assemblies (6 years)</li> </ul>	<ul style="list-style-type: none"> <li>3 biennial assemblies (6 years)</li> </ul>
<b>Service Purchases</b>	<ul style="list-style-type: none"> <li>May purchase up to 4 years of active-duty military service or qualifying public sector service at subsidized rate; may also purchase public sector service at full actuarial cost</li> </ul>	<ul style="list-style-type: none"> <li>May purchase up to 4 years of active-duty military service or qualifying public sector service at subsidized rate; may also purchase public sector service at full actuarial cost</li> </ul>	<ul style="list-style-type: none"> <li>May purchase qualifying public sector service at full actuarial cost</li> </ul>
<b>Service Transfers</b>	<ul style="list-style-type: none"> <li>May transfer state service to other positions covered by MOSERS under 104.800; under 105.691 with written agreements to transfer required funds; from MPERS, PSRS/PEERS, Lincoln Univ.; service as circuit clerk, deputy circuit clerk, division clerk, or juvenile court employee; or qualifying state board service.</li> </ul>	<ul style="list-style-type: none"> <li>May transfer service under 104.1090 or 105.691 from other systems with written agreements to transfer required funds; from MPERS, PSRS/PEERS, Lincoln Univ.; service as circuit clerk, deputy circuit clerk, division clerk, or juvenile court employee; or qualifying state board service.</li> </ul>	<ul style="list-style-type: none"> <li>May transfer service under 105.691 from other systems with written agreements to transfer required funds; from MPERS, PSRS/PEERS; service as circuit clerk, deputy circuit clerk, division clerk, or juvenile court employee; or qualifying state board service.</li> </ul>
<b>Death Prior to Retirement</b>	<ul style="list-style-type: none"> <li><b>Nonduty-related death</b> (<i>vested members</i>) Survivor benefit paid using Joint &amp; 100% survivor option to eligible spouse or 80% of life income annuity paid to eligible children.</li> <li><b>Duty-related death</b> (<i>no min. service requirement</i>) Survivor benefit to eligible spouse or children no less than 50% of rate of compensation. <i>Payable the month following the member's death</i></li> </ul>	<ul style="list-style-type: none"> <li><b>Nonduty-related death</b> (<i>vested members</i>) Survivor benefit paid using Joint &amp; 100% survivor option to eligible spouse or 80% of life income annuity paid to eligible children.</li> <li><b>Duty-related death</b> (<i>no min. service requirement</i>) Survivor benefit to eligible spouse or children no less than 50% of rate of compensation. <i>Payable the month following the member's death</i></li> </ul>	<ul style="list-style-type: none"> <li><b>Nonduty-related death</b> (<i>vested members</i>) Survivor benefit paid using Joint &amp; 100% survivor option to eligible spouse or 80% of life income annuity paid to eligible children. <i>Payable the month following the member's death; for inactive-vested, payable when member would have reached normal retirement eligibility</i></li> <li><b>Duty-related death</b> (<i>no min. service requirement</i>) Survivor benefit to eligible spouse or children no less than 50% of rate of compensation. <i>Payable the month following the member's death</i></li> </ul>
<b>Early Retirement</b> <i>Eligible for reduced pension benefit once age and service requirements are met</i>	<ul style="list-style-type: none"> <li>Not available</li> </ul>	<ul style="list-style-type: none"> <li>Not available</li> </ul>	<ul style="list-style-type: none"> <li>Not available</li> </ul>

## Comparison of Plans for Legislators (continued)

June 30, 2021

Benefit Provisions	MSEP (Closed Plan)	MSEP 2000	MSEP 2011
<b>Normal Retirement</b> <i>Eligible for unreduced pension benefit once age and service requirements are met</i>	<ul style="list-style-type: none"> <li>Age 55 + 3 biennial assemblies or</li> <li>Rule of 80 – (at least age 48)</li> <li>Age + years of service = 80 or more</li> </ul>	<ul style="list-style-type: none"> <li>Age 55 + 3 biennial assemblies or</li> <li>Rule of 80 – (at least age 50)</li> <li>Age + years of service = 80 or more</li> <li><i>Inactive-vested members ineligible for Rule of 80</i></li> </ul>	<ul style="list-style-type: none"> <li>Age 62 + 3 biennial assemblies or</li> <li>Rule of 90 – (at least age 55)</li> <li>Age + years of service = 90 or more at time of termination</li> <li><i>Inactive-vested members ineligible for Rule of 90</i></li> </ul>
<b>Base Benefit</b> <i>Payable for life</i>	<ul style="list-style-type: none"> <li>Biennial Assemblies x \$150</li> <li><i>Future formula increases, if any, may be passed along to retirees.</i></li> </ul>	<ul style="list-style-type: none"> <li>(Active Pay ÷ 24) x Service</li> <li><i>Capped at 100% of pay; future formula increases, if any, will not be passed along to retirees.</i></li> </ul>	<ul style="list-style-type: none"> <li>(Active Pay ÷ 24) x Service</li> <li><i>Capped at 100% of pay; future formula increases, if any, will not be passed along to retirees.</i></li> </ul>
<b>Temporary Benefit</b> <i>Stops at age 62</i>	<ul style="list-style-type: none"> <li>Not available</li> </ul>	<ul style="list-style-type: none"> <li>Not available</li> </ul>	<ul style="list-style-type: none"> <li>Not available</li> </ul>
<b>BackDROP</b> <i>Lump-sum payment at retirement in addition to reduced monthly pension</i>	<ul style="list-style-type: none"> <li>Not available</li> </ul>	<ul style="list-style-type: none"> <li>Not available</li> </ul>	<ul style="list-style-type: none"> <li>Not available</li> </ul>
<b>Benefit Payment Options</b> <i>Determines whether or not a benefit will be paid to anyone after member's death</i>	<ul style="list-style-type: none"> <li>Life Income Annuity</li> <li>Unreduced Joint &amp; 50% Survivor</li> <li>Joint &amp; 100% Survivor</li> <li>Life Income with 60 Guaranteed Payments</li> <li>Life Income with 120 Guaranteed Payments</li> </ul>	<ul style="list-style-type: none"> <li>Life Income Annuity</li> <li>Joint &amp; 50% Survivor</li> <li>Joint &amp; 100% Survivor</li> <li>Life Income with 120 Guaranteed Payments</li> <li>Life Income with 180 Guaranteed Payments</li> </ul>	<ul style="list-style-type: none"> <li>Life Income Annuity</li> <li>Joint &amp; 50% Survivor</li> <li>Joint &amp; 100% Survivor</li> <li>Life Income with 120 Guaranteed Payments</li> <li>Life Income with 180 Guaranteed Payments</li> </ul>
<b>Cost-of-Living Adjustment (COLA)</b> <i>Helps offset effects of inflation increasing the cost of goods and services</i>	<ul style="list-style-type: none"> <li><b>Sworn in before Aug. 28, 1997</b> Receive 4-5% each year until reaching 65% COLA cap. After reaching cap, the rate is based on 80% of the percentage increase in the average CPI (0-5%)</li> <li><b>Sworn in on/after Aug. 28, 1997</b> Based on 80% of the percentage increase in the average CPI (0-5%)</li> </ul>	<ul style="list-style-type: none"> <li>Benefit adjustment based on increase in pay for an active member</li> </ul>	<ul style="list-style-type: none"> <li>Benefit adjustment based on increase in pay for an active member</li> </ul>
<b>In-Service COLA</b> <i>Service beyond age 65</i>	<ul style="list-style-type: none"> <li>Applicable COLA rate (if eligible)</li> </ul>	<ul style="list-style-type: none"> <li>Not available</li> </ul>	<ul style="list-style-type: none"> <li>Not available</li> </ul>

## Comparison of Plans for Statewide Elected Officials

June 30, 2021

Benefit Provisions	MSEP (Closed Plan)	MSEP 2000	MSEP 2011
<b>Membership</b> <i>Members elected to state office</i>	<ul style="list-style-type: none"> <li>Employed prior to July 1, 2000 and vested in the MSEP</li> </ul>	<ul style="list-style-type: none"> <li>First employed on or after July 1, 2000, but prior to January 1, 2011</li> <li>Left state employment prior to becoming vested and returned to employment on or after July 1, 2000</li> </ul>	<ul style="list-style-type: none"> <li>First employed on or after January 1, 2011, or</li> <li>Returned to employment after electing the buyout option</li> </ul>
<b>Member Contributions</b>	<ul style="list-style-type: none"> <li>None</li> </ul>	<ul style="list-style-type: none"> <li>None</li> </ul>	<ul style="list-style-type: none"> <li>4% of pay</li> </ul>
<b>Vesting</b> <i>Eligible for future pension</i>	<ul style="list-style-type: none"> <li>4 years (1 term)</li> </ul>	<ul style="list-style-type: none"> <li>4 years (1 term)</li> </ul>	<ul style="list-style-type: none"> <li>4 years (1 term)</li> </ul>
<b>Service Purchases</b>	<ul style="list-style-type: none"> <li>May purchase up to 4 years of active-duty military service or qualifying public sector service at subsidized rate; may also purchase public sector service at full actuarial cost</li> </ul>	<ul style="list-style-type: none"> <li>May purchase up to 4 years of active-duty military service or qualifying public sector service at subsidized rate; may also purchase public sector service at full actuarial cost</li> </ul>	<ul style="list-style-type: none"> <li>May purchase qualifying public sector service at full actuarial cost</li> </ul>
<b>Service Transfers</b>	<ul style="list-style-type: none"> <li>May transfer state service to other positions covered by MOSERS under 104.800; under 105.691 with written agreements to transfer required funds; from MPERS, PSRS/PEERS, Lincoln Univ.; service as circuit clerk, deputy circuit clerk, division clerk, or juvenile court employee; or qualifying state board service.</li> </ul>	<ul style="list-style-type: none"> <li>May transfer service under 104.1090 or 105.691 from other systems with written agreements to transfer required funds; from MPERS, PSRS/PEERS, Lincoln Univ.; service as circuit clerk, deputy circuit clerk, division clerk, or juvenile court employee; or qualifying state board service.</li> </ul>	<ul style="list-style-type: none"> <li>May transfer service under 105.691 from other systems with written agreements to transfer required funds; from MPERS, PSRS/PEERS; service as circuit clerk, deputy circuit clerk, division clerk, or juvenile court employee; or qualifying state board service.</li> </ul>
<b>Death Prior to Retirement</b>	<ul style="list-style-type: none"> <li><b>Nonduty-related death</b> (<i>vested members</i>) Survivor benefit paid using Joint &amp; 100% survivor option to eligible spouse or 80% of life income annuity paid to eligible children.</li> <li><b>Duty-related death</b> (<i>no min. service requirement</i>) Survivor benefit to eligible spouse or children no less than 50% of rate of compensation. <i>Payable the month following the member's death</i></li> </ul>	<ul style="list-style-type: none"> <li><b>Nonduty-related death</b> (<i>vested members</i>) Survivor benefit paid using Joint &amp; 100% survivor option to eligible spouse or 80% of life income annuity paid to eligible children.</li> <li><b>Duty-related death</b> (<i>no min. service requirement</i>) Survivor benefit to eligible spouse or children no less than 50% of rate of compensation. <i>Payable the month following the member's death</i></li> </ul>	<ul style="list-style-type: none"> <li><b>Nonduty-related death</b> (<i>vested members</i>) Survivor benefit paid using Joint &amp; 100% survivor option to eligible spouse or 80% of life income annuity paid to eligible children. <i>Payable the month following the member's death; for inactive-vested, payable when member would have reached normal retirement eligibility</i></li> <li><b>Duty-related death</b> (<i>no min. service requirement</i>) Survivor benefit to eligible spouse or children no less than 50% of current pay. <i>Payable the month following the member's death</i></li> </ul>
<b>Early Retirement</b> <i>Eligible for reduced pension benefit once age and service requirements are met</i>	<ul style="list-style-type: none"> <li>Age 55 + 10 years of service <i>Base benefit reduced 1/2 of 1% (.005) for each month age is younger than normal retirement</i></li> </ul>	<ul style="list-style-type: none"> <li>Not available</li> </ul>	<ul style="list-style-type: none"> <li>Not available</li> </ul>

## Comparison of Plans for Statewide Elected Officials (continued)

June 30, 2021

Benefit Provisions	MSEP (Closed Plan)	MSEP 2000	MSEP 2011
<p><b>Normal Retirement</b> <i>Eligible for unreduced pension benefit once age and service requirements are met</i></p>	<ul style="list-style-type: none"> <li>Age 65 + 4 years of service or</li> <li>Age 60 + 15 years of service or</li> <li>Rule of 80 – (at least age 50) Age + years of service = 80 or more</li> </ul>	<ul style="list-style-type: none"> <li>Age 55 + 4 years of service or</li> <li>Rule of 80 – (at least age 50) Age + years of service = 80 or more <i>Inactive-vested members ineligible for Rule of 80</i></li> </ul>	<ul style="list-style-type: none"> <li>Age 62 + 4 years of service or</li> <li>Rule of 90 – (at least age 55) Age + years of service = 90 or more at time of termination <i>Inactive-vested members ineligible for Rule of 90</i></li> </ul>
<p><b>Base Benefit</b> <i>Payable for life</i></p>	<ul style="list-style-type: none"> <li>Less than 12 years of service .016 x FAP x Service</li> <li>12+ years of service Monthly Statutory Comp. x .50 <i>Future formula increases, if any, may be passed</i></li> </ul>	<ul style="list-style-type: none"> <li>(Active Pay ÷ 24) x Service <i>Capped at 12 years of service or 50% of pay; future formula increases, if any, will not be passed along to retirees.</i></li> </ul>	<ul style="list-style-type: none"> <li>(Active Pay ÷ 24) x Service <i>Capped at 12 years of service or 50% of pay; future formula increases, if any, will not be passed along to retirees</i></li> </ul>
<p><b>Temporary Benefit</b> <i>Stops at age 62</i></p>	<ul style="list-style-type: none"> <li>Not available</li> </ul>	<ul style="list-style-type: none"> <li>Not available</li> </ul>	<ul style="list-style-type: none"> <li>Not available</li> </ul>
<p><b>BackDROP</b> <i>Lump-sum payment at retirement in addition to reduced monthly pension</i></p>	<ul style="list-style-type: none"> <li>Not available</li> </ul>	<ul style="list-style-type: none"> <li>Not available</li> </ul>	<ul style="list-style-type: none"> <li>Not available</li> </ul>
<p><b>Benefit Payment Options</b> <i>Determines whether or not a benefit will be paid to anyone after member's death</i></p>	<ul style="list-style-type: none"> <li>Life Income Annuity</li> <li>Unreduced Joint &amp; 50% Survivor</li> <li>Joint &amp; 100% Survivor</li> <li>Life Income with 60 Guaranteed Payments</li> <li>Life Income with 120 Guaranteed Payments</li> </ul>	<ul style="list-style-type: none"> <li>Life Income Annuity</li> <li>Joint &amp; 50% Survivor</li> <li>Joint &amp; 100% Survivor</li> <li>Life Income with 120 Guaranteed Payments</li> <li>Life Income with 180 Guaranteed Payments</li> </ul>	<ul style="list-style-type: none"> <li>Life Income Annuity</li> <li>Joint &amp; 50% Survivor</li> <li>Joint &amp; 100% Survivor</li> <li>Life Income with 120 Guaranteed Payments</li> <li>Life Income with 180 Guaranteed Payments</li> </ul>
<p><b>Cost-of-Living Adjustment (COLA)</b> <i>Helps offset effects of inflation increasing the cost of goods and services</i></p>	<ul style="list-style-type: none"> <li><b>Sworn in before Aug. 28, 1997</b> Receive 4-5% each year until reaching 65% COLA cap. After reaching cap, the rate is based on 80% of the percentage increase in the average CPI (0-5%)</li> <li><b>Sworn in on/after Aug. 28, 1997</b> Based on 80% of the percentage increase in the average CPI (0-5%)</li> <li><b>12+ years of service</b> In addition to applicable COLA above, benefit will be recalculated for increases in statutory compensation for highest position held.</li> </ul>	<ul style="list-style-type: none"> <li>Benefit adjustment based on increase in pay for an active member</li> </ul>	<ul style="list-style-type: none"> <li>Benefit adjustment based on increase in pay for an active member</li> </ul>
<p><b>In-Service COLA</b> <i>Service beyond age 65</i></p>	<ul style="list-style-type: none"> <li>Applicable COLA rate (if eligible)</li> </ul>	<ul style="list-style-type: none"> <li>Not available</li> </ul>	<ul style="list-style-type: none"> <li>Not available</li> </ul>

## Comparison of Plans for Judges

June 30, 2021

Benefit Provisions	Judicial Plan (Closed Plan)	Judicial Plan 2011
<b>Membership</b>	<ul style="list-style-type: none"> <li>Must be employed prior to January 1, 2011 in a MOSERS benefit-eligible position as a judge or commissioner of the supreme court, court of appeals, any circuit court (does not include municipal judge), probate court, magistrate court, court of common pleas, criminal corrections, justice of the peace; commissioner or deputy commissioner of the probate division of the circuit court appointed after February 29, 1972, in a first class county having a charter form of government or in a city not within a county; commissioner of the juvenile division of the circuit court appointed pursuant to RSMo 211.023 or drug treatment court pursuant to RSMo 478.466, or any family court.</li> </ul>	<ul style="list-style-type: none"> <li>Employed for the first time on or after January 1, 2011 as a judge or commissioner of the supreme court, court of appeals, any circuit court (does not include municipal judge), probate court, magistrate court, court of common pleas, criminal corrections, justice of the peace; commissioner or deputy commissioner of the probate division of the circuit court appointed after February 29, 1972, in a first class county having a charter form of government or in a city not within a county; commissioner of the juvenile division of the circuit court appointed pursuant to RSMo 211.023 or drug treatment court pursuant to RSMo 478.466, or any family court.</li> </ul>
<b>Member Contributions</b>	<ul style="list-style-type: none"> <li>None</li> </ul>	<ul style="list-style-type: none"> <li>4% of pay</li> </ul>
<b>Vesting</b> <i>Eligible for future pension</i>	<ul style="list-style-type: none"> <li>Automatic the day you become a member</li> </ul>	<ul style="list-style-type: none"> <li>Automatic the day you become a member</li> </ul>
<b>Service Purchases</b>	<ul style="list-style-type: none"> <li>May purchase up to 4 years of active-duty military service or qualifying public sector service at subsidized rate; may also purchase public sector service at full actuarial cost</li> </ul>	<ul style="list-style-type: none"> <li>May purchase qualifying public sector service at full actuarial cost</li> </ul>
<b>Service Transfers</b>	<ul style="list-style-type: none"> <li>May transfer state service to other positions covered by MOSERS under 104.800 or under 105.691 with written agreements to transfer required funds</li> </ul>	<ul style="list-style-type: none"> <li>May transfer state service to other positions covered by MOSERS under 104.800 or under 105.691 with written agreements to transfer required funds</li> </ul>
<b>Death Prior to Retirement</b>	<ul style="list-style-type: none"> <li><b>Nonduty-related death</b> Survivor benefit paid to eligible spouse equal to 50% of benefit the member would have received based on service to age 70. <i>Payable the month following the member's death</i></li> </ul>	<ul style="list-style-type: none"> <li><b>Nonduty-related death</b> Survivor benefit paid to eligible spouse equal to 50% of benefit the member would have received based on service to age 70. <i>Payable the month following the member's death</i></li> </ul>
<b>Early Retirement</b> <i>Eligible for reduced pension benefit once age and service requirements are met</i>	<ul style="list-style-type: none"> <li><b>Less than 12 years of service</b> <i>Age 62 or</i></li> <li><b>Less than 15 years of service</b> <i>Age 60</i></li> </ul>	<ul style="list-style-type: none"> <li><b>Less than 12 years of service</b> <i>Age 67 or</i></li> <li><b>Less than 20 years of service</b> <i>Age 62</i></li> </ul>
<b>Normal Retirement</b> <i>Eligible for unreduced pension benefit once age and service requirements are met</i>	<ul style="list-style-type: none"> <li>Age 62 + 12 years of service or</li> <li>Age 60 + 15 years of service or</li> <li>Age 55 + 20 years of service</li> </ul>	<ul style="list-style-type: none"> <li>Age 67 + 12 years of service or</li> <li>Age 62 + 20 years of service</li> </ul>

## Comparison of Plans for Judges (continued)

June 30, 2021

Benefit Provisions	Judicial Plan (Closed Plan)	Judicial Plan 2011
<b>Base Benefit</b> <i>Payable for life</i>	<ul style="list-style-type: none"> <li>• <i>Monthly pay</i> <math>\times</math> .50 = <i>Monthly Base Benefit</i></li> </ul>	<ul style="list-style-type: none"> <li>• <i>Monthly pay</i> <math>\times</math> .50 = <i>Monthly Base Benefit</i></li> </ul>
<b>Temporary Benefit</b> <i>Stops at age 62</i>	<ul style="list-style-type: none"> <li>• Not available</li> </ul>	<ul style="list-style-type: none"> <li>• Not available</li> </ul>
<b>BackDROP</b> <i>Lump-sum payment at retirement in addition to reduced monthly pension</i>	<ul style="list-style-type: none"> <li>• Not available</li> </ul>	<ul style="list-style-type: none"> <li>• Not available</li> </ul>
<b>Benefit Payment Options</b> <i>Determines whether or not a benefit will be paid to anyone after member's death</i>	<ul style="list-style-type: none"> <li>• Life Income Annuity (if unmarried)</li> <li>• Automatic Unreduced Joint &amp; 50% Survivor</li> </ul>	<ul style="list-style-type: none"> <li>• Life Income Annuity</li> <li>• Joint &amp; 50% Survivor</li> <li>• Joint &amp; 100% Survivor</li> <li>• Life Income with 120 Guaranteed Payments</li> <li>• Life Income with 180 Guaranteed Payments</li> </ul>
<b>Cost-of-Living Adjustment (COLA)</b> <i>Helps offset effects of inflation increasing the cost of goods and services</i>	<ul style="list-style-type: none"> <li>• <b>Sworn in before Aug. 28, 1997</b> Receive 4-5% each year until reaching 65% COLA cap. After reaching cap, the rate is based on 80% of the percentage increase in the average CPI (0-5%)</li> <li>• <b>Sworn in on/after Aug. 28, 1997</b> Based on 80% of the percentage increase in the average CPI (0-5%)</li> </ul>	<ul style="list-style-type: none"> <li>• Based on 80% of the percentage increase in the CPI (0-5%)</li> </ul>
<b>In-Service COLA</b> <i>Service beyond age 60</i>	<ul style="list-style-type: none"> <li>• Judges who work beyond normal retirement have increased benefits upon retirement.</li> </ul>	<ul style="list-style-type: none"> <li>• Not available</li> </ul>

## Comparison of Plans for Uniformed Members of the Water Patrol\*

June 30, 2021

Benefit Provisions	MSEP (Closed Plan)	MSEP 2000
<b>Membership</b> <i>Eligible members employed in positions which normally require at least 1,040 hours of work per year</i>	<ul style="list-style-type: none"> <li>Employed prior to July 1, 2000 and vested in the MSEP</li> </ul>	<ul style="list-style-type: none"> <li>Employed for the first time on or after July 1, 2000, but prior to January 1, 2011</li> <li>Left state employment prior to becoming vested and returned to employment on or after July 1, 2000</li> </ul>
<b>Member Contributions</b>	<ul style="list-style-type: none"> <li>None</li> </ul>	<ul style="list-style-type: none"> <li>None</li> </ul>
<b>Vesting</b> <i>Eligible for future pension</i>	<ul style="list-style-type: none"> <li>5 years</li> </ul>	<ul style="list-style-type: none"> <li>5 years</li> </ul>
<b>Service Purchases</b>	<ul style="list-style-type: none"> <li>May purchase up to 4 years of active-duty military service or qualifying public sector service at subsidized rate; may also purchase public sector service at full actuarial cost</li> </ul>	<ul style="list-style-type: none"> <li>May purchase up to 4 years of active-duty military service or qualifying public sector service at subsidized rate; may also purchase public sector service at full actuarial cost</li> </ul>
<b>Service Transfers</b>	<ul style="list-style-type: none"> <li>May transfer state service to other positions covered by MOSERS under 104.800</li> </ul>	<ul style="list-style-type: none"> <li>May transfer state service to other positions covered by MOSERS under 104.1090</li> </ul>
<b>Death Prior to Retirement</b>	<ul style="list-style-type: none"> <li><b>Nonduty-related death</b> (<i>vested members</i>) Survivor benefit paid using Joint &amp; 100% survivor option to eligible spouse or 80% of life income annuity paid to eligible children.</li> <li><b>Duty-related death</b> (<i>no min. service requirement</i>) Survivor benefit to eligible spouse or children no less than 50% of average compensation. <i>Payable the month following the member's death</i></li> </ul>	<ul style="list-style-type: none"> <li><b>Nonduty-related death</b> (<i>vested members</i>) Survivor benefit paid using Joint &amp; 100% survivor option to eligible spouse or 80% of life income annuity paid to eligible children.</li> <li><b>Duty-related death</b> (<i>no min. service requirement</i>) Survivor benefit to eligible spouse or children no less than 50% of average compensation. <i>Payable the month following the member's death</i></li> </ul>
<b>Early Retirement</b> <i>Eligible for reduced pension benefit once age and service requirements are met</i>	<ul style="list-style-type: none"> <li>Not available</li> </ul>	<ul style="list-style-type: none"> <li>Age 57 + 10 years of service</li> </ul>
<b>Normal Retirement</b> <i>Eligible for unreduced pension benefit once age and service requirements are met</i>	<ul style="list-style-type: none"> <li>Age 55 + 5 years of service or</li> <li>Rule of 80 – (at least age 48) Age + years of service = 80 or more <i>Age 50 if first became eligible prior to Aug. 28, 2003</i></li> </ul>	<ul style="list-style-type: none"> <li>Age 62 + 5 years of service or</li> <li>Rule of 80 – (at least age 48) Age + years of service = 80 or more <i>Age 50 if first became eligible prior to Aug. 28, 2003</i> <i>Inactive-vested members ineligible for Rule of 80</i></li> </ul>
<b>Base Benefit</b> <i>Payable for life</i>	<ul style="list-style-type: none"> <li>.016 x FAP x Service increased by 33% <i>Future formula increases, if any, may be passed along to retirees</i></li> </ul>	<ul style="list-style-type: none"> <li>.017 x FAP x Service <i>Future formula increases, if any, will not be passed along to retirees</i></li> </ul>

## Comparison of Plans for Uniformed Members of the Water Patrol\* (continued)

June 30, 2021

Benefit Provisions	MSEP (Closed Plan)	MSEP 2000
<b>Temporary Benefit</b> <i>Stops at age 62</i>	<ul style="list-style-type: none"> <li>Not available</li> </ul>	<ul style="list-style-type: none"> <li>.008 x FAP x Service  <i>Available to members retiring under Rule of 80</i></li> </ul>
<b>BackDROP</b> <i>Lump-sum payment at retirement in addition to reduced monthly pension</i>	<ul style="list-style-type: none"> <li>Must work at least 2 years beyond normal retirement eligibility to be eligible; elect BackDROP at retirement (if applicable)</li> </ul>	<ul style="list-style-type: none"> <li>Must work at least 2 years beyond normal retirement eligibility to be eligible; elect BackDROP at retirement (if applicable)</li> </ul>
<b>Benefit Payment Options</b> <i>Determines whether or not a benefit will be paid to anyone after member's death</i>	<ul style="list-style-type: none"> <li>Life Income Annuity</li> <li>Unreduced Joint &amp; 50% Survivor</li> <li>Joint &amp; 100% Survivor</li> <li>Life Income with 60 Guaranteed Payments</li> <li>Life Income with 120 Guaranteed Payments</li> </ul>	<ul style="list-style-type: none"> <li>Life Income Annuity</li> <li>Joint &amp; 50% Survivor</li> <li>Joint &amp; 100% Survivor</li> <li>Life Income with 120 Guaranteed Payments</li> <li>Life Income with 180 Guaranteed Payments</li> </ul>
<b>Cost-of-Living Adjustment (COLA)</b> <i>Helps offset effects of inflation increasing the cost of goods and services</i>	<ul style="list-style-type: none"> <li><b>Employed before Aug. 28, 1997</b>                      Receive 4-5% each year until reaching 65% COLA cap. After reaching cap, the rate is based on 80% of the percentage increase in the average CPI (0-5%)</li> <li><b>Employed on/after Aug. 28, 1997</b>                      Based on 80% of the percentage increase in the average CPI (0-5%)</li> </ul>	<ul style="list-style-type: none"> <li>Based on 80% of the percentage increase in the average CPI (0-5%)</li> </ul>
<b>In-Service COLA</b> <i>Service beyond age 65</i>	<ul style="list-style-type: none"> <li>COLA given for service beyond age 65  <i>COLA provisions determined by employment date</i></li> </ul>	<ul style="list-style-type: none"> <li>Not available</li> </ul>

\* Eligibility for membership in the MSEP and MSEP 2000 is closed for uniformed members of the water patrol. Employees hired on or after January 1, 2011, are members of the Missouri Department of Transportation and Patrol Employees' Retirement System (MPERS).

## Life Insurance Plans

June 30, 2021

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"> <li>• <b>Basic life insurance</b> An amount equal to one times annual salary (with a minimum of \$15,000) while actively employed.</li> </ul>	<ul style="list-style-type: none"> <li>• Actively employed in an eligible state position resulting in membership in MOSERS.</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Duty-related death benefit</b> 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.</li> </ul>	<ul style="list-style-type: none"> <li>• Actively employed in an eligible state position resulting in membership in MOSERS.</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Optional life insurance</b> 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.</li> </ul>	<ul style="list-style-type: none"> <li>• Actively employed in an eligible state position resulting in membership in MOSERS.</li> </ul>

\* Terminating employees may convert coverage up to the amount they had as an active employee at individual rates. Not available to employees of the Department of Conservation and universities except Lincoln University and State Technical College of Missouri.

### Retired Members

Plan Provision	Requirement
<ul style="list-style-type: none"> <li>• <b>Basic life insurance at retirement</b> \$5,000 basic life insurance during retirement.</li> </ul>	<ul style="list-style-type: none"> <li>• Must retire directly from active employment.</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Optional life insurance at retirement (MSEP)</b> 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.</li> </ul>	<ul style="list-style-type: none"> <li>• Must retire directly from active employment.</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Optional life insurance at retirement (MSEP 2000)</b> 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.</li> </ul>	<ul style="list-style-type: none"> <li>• Must retire directly from active employment.</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Optional life insurance at retirement (MSEP 2011)</b> 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.</li> </ul>	<ul style="list-style-type: none"> <li>• Must retire directly from active employment.</li> </ul>

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, 2021

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

### Active Members

Classification	Requirement
<ul style="list-style-type: none"> <li>• <b>General state employees, legislators, and elected state officials</b> 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.</li> </ul>	<ul style="list-style-type: none"> <li>• 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.</li> </ul>
<ul style="list-style-type: none"> <li>• Water patrol</li> </ul>	<ul style="list-style-type: none"> <li>• 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.</li> </ul>
<ul style="list-style-type: none"> <li>• Judges</li> </ul>	<ul style="list-style-type: none"> <li>• 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.</li> </ul>

## Changes in Plan Provisions

The 2021 legislative session ended on May 14. While the MOSERS clean-up bill (House Bill 701) remained viable until the last week of the legislative session, the bill did not pass nor did any other provisions that would have directly affected MOSERS' statutes. The General Assembly maintained its long-standing commitment to fully funding the Board's certified employer contribution rates through passage of MOSERS' appropriation in House Bill 5.

**House Bill 5** - The General Assembly authorized the appropriation of \$505 million to MOSERS for fiscal year 2022. This appropriation funds the Board-certified employer contribution rate. This amount was generated from the employer contribution rates calculated in the annual actuarial valuations performed by MOSERS' retained actuarial professionals and certified by the MOSERS Board of Trustees at its September 2020 Board meeting.

## Actuarial Present Values

June 30, 2021

## MSEP

Actuarial Present Value June 30, 2021	Actuarial Present Value	Portion Covered by Future Normal Cost Contributions	Actuarial Accrued Liabilities
<b>Active members</b>			
Service retirement benefits based on services rendered before and likely to be rendered after valuation date	\$ 5,603,652,696	\$ 716,391,681	\$ 4,887,261,015
Disability benefits likely to be paid to present active members who become totally and permanently disabled	103,634,873	58,855,653	44,779,220
Survivor benefits likely to be paid to widows/widowers and children of present active members who die before retiring	60,406,791	16,087,169	44,319,622
Separation benefits likely to be paid to present active members	381,830,475	285,616,219	96,214,256
<b>Active member totals</b>	<b>\$ 6,149,524,835</b>	<b>\$ 1,076,950,722</b>	5,072,574,113
<b>Members on leave of absence &amp; LTD</b>			
Service retirement benefits based on service rendered before the valuation date			77,977,265
<b>Inactive-vested members</b>			
Service retirement benefits based on service rendered before the valuation date			886,871,740
<b>Retired lives</b>			9,037,922,330
<b>Pending refunds</b>			35,301,089
<b>Total actuarial accrued liability</b>			15,110,646,537
<b>Less: actuarial value of assets</b>			8,909,251,051
<b>Unfunded actuarial accrued liability</b>			<b>\$ 6,201,395,486</b>
<b>Funded ratio</b>			59.0%

## Actuarial Present Values

June 30, 2021

### Judicial Plan

Actuarial Present Value June 30, 2021	Actuarial Present Value	Portion Covered by Future Normal Cost Contributions	Actuarial Accrued Liabilities
<b>Active members</b>			
Service retirement benefits based on services rendered before and likely to be rendered after valuation date	\$ 253,705,742	\$ 78,533,391	\$ 175,172,351
Survivor benefits likely to be paid to widows/widowers and children of present active members who die before retiring	4,523,749	3,279,523	1,244,226
Separation benefits likely to be paid to present active members	15,415,657	14,397,266	1,018,391
<b>Active member totals</b>	<b>\$ 273,645,148</b>	<b>\$ 96,210,180</b>	177,434,968
<b>Inactive-vested members</b>			10,311,392
<b>Retired lives</b>			438,537,859
<b>Total actuarial accrued liability</b>			626,284,219
<b>Less: actuarial value of assets</b>			194,988,153
<b>Unfunded actuarial accrued liability</b>			<b>\$ 431,296,066</b>
<b>Funded ratio</b>			31.1%