



**MICHIGAN OFFICE OF  
RETIREMENT SERVICES**  
*Big Plans. Small Steps.*

# **5-Year Actuarial Experience Study Summary Report**

for the State Police Retirement System, a pension and other  
post-employment benefits trust fund of the State of Michigan  
Oct. 1, 2017, through Sept. 30, 2022

Prepared by  
Michigan Department of Technology, Management and Budget,  
Office of Retirement Services

# **About the State Police Retirement System**

This report is issued in compliance with the State Police Retirement Act, 1986 Public Act (PA) 182, as amended. The contents come from the 5-Year Actuarial Experience Study covering the period Oct. 1, 2017, through Sept. 30, 2022, and additional analysis performed after Sept. 30, 2023, by the Department of Treasury, Bureau of Investments (BOI) and the plan actuary. The report includes disclosures on investment assumptions and performance, and a forecast of future expected investment returns. In addition, this report provides a listing of key actuarial assumptions used in measuring the retirement system's liabilities and calculating contributions necessary to provide secure benefits for the membership.

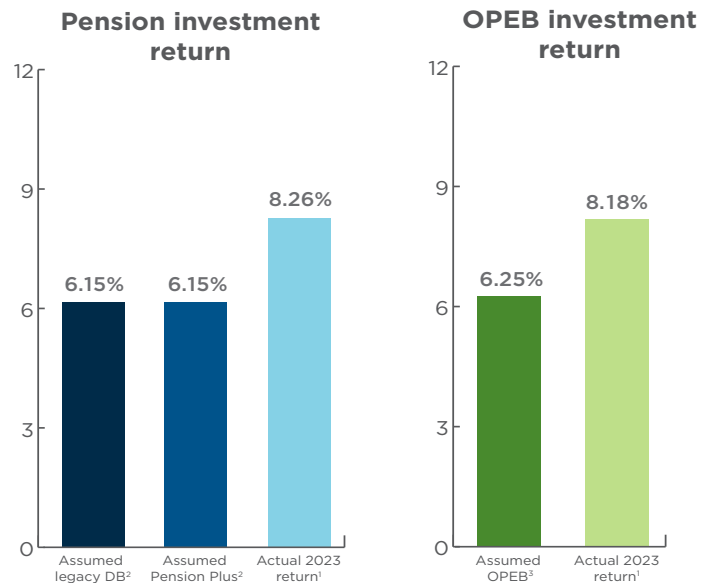
The Michigan State Police Retirement System (SPRS), henceforth referred to as the System, serves 3,406 retirees receiving monthly benefits, and 1,653 active defined benefit plan members. State police pensions are protected by Michigan's Constitution. The System's net assets are held in trust to meet future benefit payments. The state treasurer is the investment fiduciary and custodian of all investments of the System pursuant to state law.

# Assumed and actual investment returns

The Michigan Department of Treasury, BOI administers all the System's investments in accordance with the Public Employee Retirement System Investment Act, PA 314 of 1965. The main objective is maximizing the rate of return while meeting the actuarial assumptions through maintaining a diverse portfolio, eliminating unnecessary risks, and investing prudently.

The assumed rate of investment return (AROR) is a key assumption used by the plan actuary in determining the employer contribution rates each year. In FY 2023, the AROR for the pension plan was 6.15% and 6.25% for the OPEB plan.

The actual rate of investment return for the pension plan in FY 2023 was 8.26% for the pension plans and 8.18% for the OPEB plan.

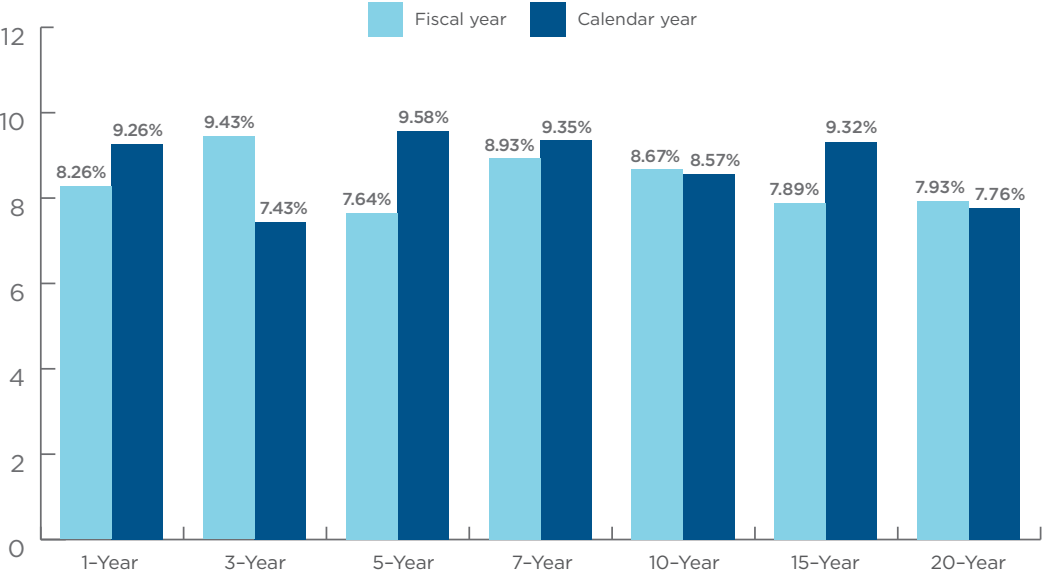


1. Treasury, BOI report. These figures are shown net of fees. Information shown in the ACFR is shown gross of fees.
2. 2022 SPRS Pension Actuarial Valuation, pages C-3 and C-5.
3. 2022 SPRS OPEB Actuarial Valuation, Page D-3.

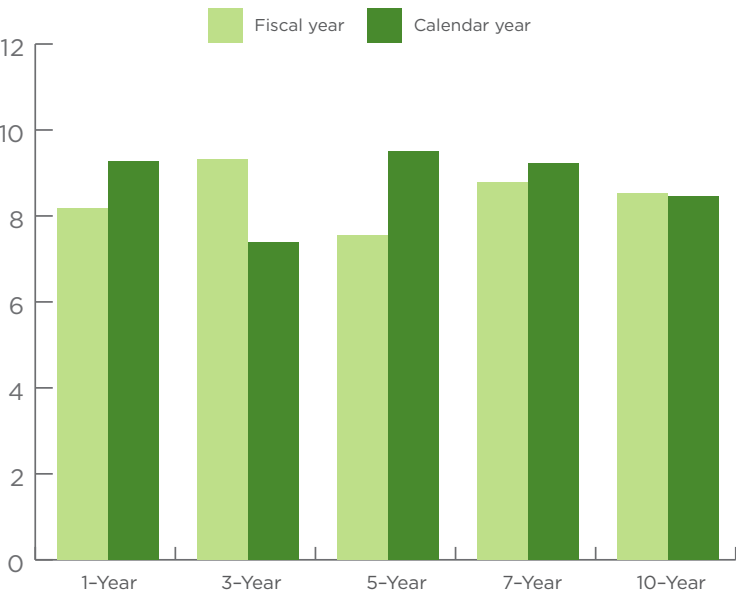
# Historical investment returns

Starting in FY 2013, the System began pre-funding OPEB. As the plan matures, 15- and 20-year investment returns will be reported. Historical investment returns for both pension and OPEB are presented in the following charts.

**Pension historical investment returns for 2023<sup>1</sup>**



**OPEB historical investment returns for 2023<sup>1</sup>**



1. Treasury, BOI report. These figures are shown net of fees. Information shown in the ACFR is shown gross of fees.

# Forecasted investment returns

The distribution of annual returns presented below is based upon the target asset allocation and the capital market assumptions from various investment firms used by the plan actuary in the 5-Year Experience Study. The results are based upon a price inflation assumption of 2.35%.

The expected annual investment return is 7.94%. The median of the distribution, that is the return that is expected to be achieved 50% of the time, is 7.16%.

Percentile	1	2	3	4	5	10	15	20	25	30
<b>95th</b>	30.61%	23.25%	20.13%	18.30%	17.07%	14.08%	12.78%	12.01%	11.48%	11.10%
<b>75th</b>	16.22%	13.49%	12.30%	11.59%	11.12%	9.94%	9.43%	9.12%	8.91%	8.76%
<b>50th</b>	7.16%	7.16%	7.16%	7.16%	7.16%	7.16%	7.16%	7.16%	7.16%	7.16%
<b>25th</b>	-1.19%	1.18%	2.25%	2.90%	3.34%	4.44%	4.94%	5.23%	5.43%	5.58%
<b>5th</b>	-12.07%	-6.83%	-4.41%	-2.93%	-1.92%	0.66%	1.82%	2.52%	3.00%	3.36%
<b>Geometric average</b>	7.94%	7.55%	7.42%	7.35%	7.31%	7.24%	7.21%	7.20%	7.19%	7.18%

1. From the plan actuary, based upon the SPRS 5-Year Experience Study, Oct. 1, 2017 through Sept. 30, 2022.

# Actuarial assumptions

Actuarial valuations for both the pension and OPEB plans involve estimates of the value of reported amounts and assumptions about the probability of the occurrence of events far into the future. Examples include assumptions about future employment, investment performance, and the healthcare cost trend.

## Actuarial assumptions for FY ended Sept. 30, 2022<sup>1</sup>

Pension and OPEB	
Actuarial cost method	Entry age, normal
Amortization method	Level percent of payroll
Payroll growth assumption <sup>2</sup>	0.75% reduced to 0% by Sept. 30, 2024
Amortization period <sup>3</sup>	Closed period, ending Sept. 30, 2038
Asset valuation method	5-year smoothed
Wage inflation rate	2.75%
OPEB	
Healthcare cost trend rate	
Pre-65	7.50% year 1 graded to 3.50% year 15, 3.00% year 120
Post-65	6.25% year 1 graded to 3.50% year 15, 3.00% year 120
Dental and vision premiums	3.50% each year, 3.00% year 120
AROR — closed plan <sup>4</sup>	6.25%
Pension — AROR	
Legacy DB — closed plan	6.15%
Pension Plus — open plan	6.15%

1. SPRS Pension and OPEB Actuarial Valuation for the FY ended Sept. 30, 2022.
2. PA 674 of 2018 enacted a gradual phase-in reduction to the payroll growth assumption to 0% in 50 basis point increments beginning with the Sept. 30, 2019, valuations. Once the 0% payroll growth assumption is fully phased in, the amortization method for both pension and OPEB will be level-dollar.
3. PA 674 of 2018 extended the amortization period for the UAAL in the System from 2036 to 2038.
4. The OPEB plan closed to new troopers and sergeants first hired on or after June 10, 2012. These employees participate in the Personal Healthcare Fund and may become eligible for a lump-sum payment of \$2,000 into a health reimbursement account upon their first termination from employment (with at least 10 years of service). These employees have the option of enrolling in the System's retiree healthcare at full cost at termination.

# Mortality assumptions

The mortality tables used in the valuation of the plan are described below.

**Active members:** PubS-2010 (public safety) Male and Female Employee Mortality Tables scaled by 100% for both males and females and projected with mortality improvements using the fully generational Mortality Projection (MP)-2021 projection scale from a base year of 2010.

**Healthy retirees:** PubS-2010 (public safety) Male and Female Healthy Retiree Mortality Tables scaled by 89% for males and 99% for females and projected with mortality improvements using the fully generational MP-2021 projection scale from a base year of 2010.

**Disabled retirees:** PubNS-2010 (public non-safety) Male and Female Disabled Retiree Mortality Tables scaled by 100% for both males and females and projected with mortality improvements using the fully generational MP-2021 projection scale from a base year of 2010.

Future life expectancy <sup>1</sup>						
Sample attained	Active members		Healthy retirement		Disability retirement	
Age	Men	Women	Men	Women	Men	Women
45	43.64	46.09	41.77	42.91	30.12	33.17
50	38.52	40.96	36.62	37.70	26.29	29.23
55	33.43	35.86	31.54	32.59	22.79	25.64
60	28.44	30.82	26.61	27.67	19.62	22.31
65	23.57	25.83	21.95	23.02	16.69	19.04
70	18.86	20.91	17.60	18.62	13.88	15.67
75	14.38	16.17	13.60	14.53	11.12	12.37
80	10.20	11.72	10.08	10.91	8.53	9.43

1. SPRS GASB Statement Number 67 Report, Sept. 30, 2023, Page 24. Life expectancy in future years is determined by the fully generational MP-2021 projection scale. The sample values shown are for individuals with the indicated attained ages in 2023.

# Retirement age assumptions<sup>1</sup>

The rates of retirement used to measure the probability of eligible members retiring during the next year are shown below. These assumptions will first be used for the Sept. 30, 2023 valuation of the System.

A hybrid plan member is eligible for retirement upon attainment of age 55 and completion of 25 years of service (YOS) or at age 60 with 10 or more YOS. All other members may retire or enter the Deferred Retirement Option Program (DROP) after accumulating 25 YOS, or, may retire upon attaining age 50 with 10 or more YOS. Of those members assumed to retire with 25 or more years of service, (based on the charts below) 70% are assumed to elect the DROP and 30% are assumed to retire without the DROP.

**In the age-based chart retirement was reached:**

- At age 50 or older with 10 YOS (non-hybrid).
- At age 55 or older with 25 YOS (hybrid).
- At age 60 or older with 10 YOS (hybrid).

**In the service-based chart retirement was reached:**

- After 25 or more YOS (non-hybrid).

Eligible members retiring			
Age-based retirement		Service-based retirement	
Age	Percentage retiring	YOS	Percentage retiring
50	20%	25	70%
51	20%	26	60%
52	25%	27	35%
53	25%	28	35%
54	30%	29	35%
55	35%	30	35%
56	30%	31	35%
57	30%	32	35%
58	30%	33	35%
59	30%	34	35%
60	50%	35	35%
61	50%	36	35%
62	50%	37	35%
63	50%	38	35%
64	50%	39	35%
65 or older	100%	40 or more	100%

1. SPRS GASB Statement Number 67 Report, Sept. 30, 2023, Page 25.





## **Michigan Office of Retirement Services**

Department of Technology, Management and Budget  
Anthony Estell, executive director

### **Our purpose**

ORS is an innovative retirement organization driven to empower our customers for a successful today and a secure tomorrow.

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