Minnesota State Retirement System

State Patrol Retirement Fund

GASB Statement Nos. 67 and 68

Accounting and Financial Reporting for Pensions

June 30, 2024

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November 22, 2024

Minnesota State Retirement System
State Patrol Retirement Fund
St. Paul, Minnesota

Dear Board of Directors:

This report provides accounting and financial reporting information that is intended to comply with the Governmental Accounting Standards Board (GASB) Statements No. 67 and No. 68 for the State Patrol Retirement Fund, as amended by GASB Statement No. 82. These calculations have been made on a basis that is consistent with our understanding of these accounting standards.

GASB Statement No. 67 is the accounting standard that applies to the financial reports issued by retirement systems. GASB Statement No. 68 establishes accounting and financial reporting for state and local government employers who provide their employees (including former employees) pension benefits through a trust. GASB Statement No. 82 is an amendment to GASB Statements No. 67, No. 68, and No. 73, intended to improve consistency in the application of the accounting standards.

Our calculation of the liability associated with the benefits described in this report was performed for the purpose of providing financial reporting and disclosure information that satisfies the requirements of GASB Statements No. 67 and No. 68. The Net Pension Liability is not an appropriate measure for measuring the sufficiency of plan assets to cover the estimated cost of settling the employer's benefit obligation. The Net Pension Liability is not an appropriate measure for assessing the need for or amount of future employer contributions. The calculation of the plan's liability for this report may not be applicable for purposes of funding the plan. A calculation of the plan's liability for purposes other than satisfying the requirements of GASB Statements No. 67 and No. 68 may produce significantly different results. The information in this report is calculated on a total plan basis. Minnesota State Retirement System (MSRS) is responsible for preparing the Schedule of Employer Allocations and the Schedule of Pension Amounts by Employer, as applicable. This report may be provided to parties other than the MSRS only in its entirety and only with the permission of MSRS. GRS is not responsible for unauthorized use of this report.

This report is based upon information, furnished to us by MSRS, concerning retirement and ancillary benefits, active members, deferred vested members, retirees and beneficiaries, and financial data. If your understanding of this information is different, please let us know. This information was checked for internal consistency, but it was not audited.

This report complements the actuarial valuation report for funding purposes that was or will be provided to the System and should be considered in conjunction with that report. Please see the actuarial valuation report as of June 30, 2024 for additional discussion of the nature of actuarial calculations and more information related to participant data, economic and demographic assumptions, and benefit provisions.

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To the best of our knowledge, the information contained within this report is accurate and fairly represents the actuarial position of the State Patrol Retirement Fund as of the measurement date. All calculations have been made in conformity with generally accepted actuarial principles and practices as well as with the Actuarial Standards of Practice issued by the Actuarial Standards Board.

This report was prepared using our proprietary valuation model and related software which, in our professional judgment, has the capability to provide results that are consistent with the purposes of the valuation and has no material limitations or known weaknesses. We performed tests to ensure that the model reasonably represents that which is intended to be modeled.

The signing actuaries are independent of the plan sponsor. We are not aware of any relationship that would impair the objectivity of our work.

Bonita J. Wurst and Sheryl L. Christensen are Members of the American Academy of Actuaries (MAAA) and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

Respectfully submitted,
Gabriel, Roeder, Smith & Company

Bonita J. Wurst

Bonita J. Wurst, ASA, EA, FCA, MAAA

Sheryl Christensen

Sheryl L. Christensen, FSA, EA, FCA, MAAA

BJW/SLC:rmn

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SECTION A

EXECUTIVE SUMMARY

Executive Summary
as of June 30, 2024 (Dollars in Thousands)

	2024
Actuarial Valuation Date	June 30, 2024
Measurement Date of the Net Pension Liability	June 30, 2024
Membership	
Number of	
- Service Retirements	916
- Survivors	158
- Disability Retirements	98
- Deferred Retirements	79
- Terminated Other Non-Vested	64
- Active Members	987
- Total	2,302
Covered-employee Payroll (1)	$ 113,331
Net Pension Liability	
Total Pension Liability	$ 1,207,559
Plan Fiduciary Net Position	1,052,966
Net Pension Liability	$ 154,593
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	87.20%
Net Pension Liability as a Percentage of Covered-employee Payroll	136.41%
Development of the Single Discount Rate	
Single Discount Rate	7.00%
Long-Term Expected Rate of Investment Return	7.00%
Long-Term Municipal Bond Rate(2)	3.97%
Last year ending June 30 in the 2025 to 2124 projection period for which projected benefit payments are fully funded	2124
Total Pension Expense / (Income)	$ 21,030

Deferred Outflows and Deferred Inflows of Resources by Source Arising from Current and Prior Periods to be Recognized in Future Pension Expenses

	Deferred Outflows of Resources	Deferred Inflows of Resources
Difference between expected and actual experience in the measurement of Total Pension Liability	$ 27,769	$ 3,520
Changes in assumptions	30,048	41,016
Net difference between projected and actual earnings on pension plan investments	48,455	84,444
Totals	$ 106,272	$ 128,980

(1) *Assumed equal to actual member contributions divided by employee contribution rate.*
(2) *Based on the 20-Year Municipal GO Index of mixed maturity general obligation municipal bonds as of the weekly rate closest to but not later than the Measurement Date.*

Discussion

Accounting Standard

For pension plans that are administered through trusts or equivalent arrangements, Governmental Accounting Standards Board (GASB) Statement No. 67, *Financial Reporting for Pension Plans*, establishes standards of financial reporting for separately issued financial reports and specifies the required approach for measuring the pension liability. Similarly, GASB Statement No. 68, *Accounting and Financial Reporting for Pensions*, establishes standards for state and local government employers (as well as non-employer contributing entities) to account for and disclose the net pension liability, pension expense, and other information associated with providing retirement benefits to their employees (and former employees) on their basic financial statements. GASB Statement No. 82, *Pension Issues*, is an amendment to GASB Statements No. 67, No. 68, and No. 73, intended to improve consistency in the application of the accounting standards.

The following discussion provides a summary of the information that is required to be disclosed under these accounting standards. A number of these disclosure items are provided in this report. However, certain information, such as notes regarding accounting policies and investments, is not included in this report and the retirement system and/or plan sponsor will be responsible for preparing and disclosing that information to comply with these accounting standards.

Financial Statements

GASB Statement No. 68 requires state and local governmental employers to recognize the net pension liability and the pension expense on their financial statements. The net pension liability is the difference between the total pension liability and the plan's fiduciary net position. In traditional actuarial terms, this is analogous to the accrued liability less the market value of assets (not the smoothed actuarial value of assets that is often encountered in actuarial valuations performed to determine the employer's contribution requirement).

Paragraph 57 of GASB Statement No. 68 states, "Contributions to the pension plan from the employer subsequent to the measurement date of the collective net pension liability and before the end of the employer's reporting period should be reported as a deferred outflow of resources related to pensions." The information contained in this report does not incorporate any contributions made to the State Patrol Retirement Fund subsequent to the measurement date of June 30, 2024.

The pension expense or income recognized each fiscal year is equal to the change in the net pension liability from the beginning of the year to the end of the year, adjusted for deferred recognition of the difference between expected and actual experience in the measurement of the total pension liability, assumption changes, and investment experience.

Pension plans that prepare their own, stand-alone financial statements are required to present two financial statements – a Statement of Fiduciary Net Position and a Statement of Changes in Fiduciary Net Position in accordance with GASB Statement No. 67. The *Statement of Fiduciary Net Position* presents the assets and liabilities of the pension plan at the end of the pension plan's reporting period. The *Statement of Changes in Fiduciary Net Position* presents the additions, such as contributions and investment income, and deductions, such as benefit payments and expenses, and net increase or decrease in the fiduciary net position.

Notes to Financial Statements

GASB Statement No. 68 requires the notes of the employer's financial statements to disclose the total pension expense, the pension plan's liabilities and assets, and deferred outflows and inflows of resources related to pensions.

GASB Statement Nos. 67 and 68 require the notes of the financial statements for the employers and pension plans to include certain descriptive information about the pension plans through which the pension benefits are provided. The list of disclosure items should include:

- A description of benefits provided by the plan;
- The classes of employees and number of members covered by the pension plan;
- A description of the plan's funding policy, which includes member and employer contribution requirements;
- The pension plan's investment policies;
- The pension plan's fiduciary net position, net pension liability, and the pension plan's fiduciary net position as a percentage of the total pension liability;
- The net pension liability using a discount rate that is 1% higher and 1% lower than the current discount rate used to calculate the total pension liability and net pension liability for financial reporting purposes;
- Significant assumptions and methods used to calculate the total pension liability;
- Inputs to the discount rates; and
- Certain information about mortality assumptions and the dates of experience studies.

Retirement systems that issue stand-alone financial statements are required to disclose additional information in accordance with GASB Statement No. 67. This information includes:

- The composition of the pension plan's Board and the authority under which benefit terms may be amended;
- A description of how fair value is determined;
- Information regarding certain reserves and investments, which include concentrations of investments greater than or equal to 5%, receivables, and insurance contracts excluded from plan assets; and
- Annual money-weighted rate of return.

MSRS' comprehensive annual financial report, which contains the basic financial statements and related note disclosures for the State Patrol Retirement Fund, can be found online at www.msrs.state.mn.us/annual-reports-fy-2024 or obtained from MSRS at 60 Empire Drive, Suite 300, St. Paul, Minnesota, 55103 or requested via email at info@msrs.us or telephone at 1.800.657.5757.

Required Supplementary Information

GASB Statement No. 67 requires a 10-year fiscal history of:

- Sources of changes in the net pension liability;
- Information about the components of the net pension liability and related ratios, including the pension plan's fiduciary net position as a percentage of the total pension liability, and the net pension liability as a percent of covered-employee payroll; and
- A comparison of the actual employer contributions to the actuarially determined contributions based on the plan's funding policy.

Measurement of the Net Pension Liability

The net pension liability is to be measured as the total pension liability, less the amount of the pension plan's fiduciary net position. In actuarial terms, this will be the accrued liability less the market value of assets (not the smoothed actuarial value of assets that is often encountered in actuarial valuations performed to determine the employer's contribution requirement).

General Implications of Contribution Allocation Procedure or Funding Policy on Future Expected Plan Contributions and Funded Status

Given the plan's contribution allocation procedure, if there are no changes in benefits, Chapter 356 required contributions are made, and all actuarial assumptions are met (including the assumption of the plan earning 7.00% on an actuarial value of assets basis, as prescribed by statutes), then the following outcomes are expected:

1. The employer normal cost is expected to remain approximately level as a percentage of payroll;
2. The funded status of the plan is expected to gradually improve and is expected to be 100% funded within the next 24 years; and
3. The unfunded liability will grow initially as a dollar amount for two years (based on the current 24- year amortization period and if contributions are equal to the required amount) before beginning to decline.

The projections in this report are strictly for the purpose of determining the GASB single discount rate and are different from a funding projection for the ongoing plan.

Limitations of Funded Status Measurements

Unless otherwise indicated, a funded status measurement presented in this report is based upon the actuarial accrued liability and the market value of assets. Unless otherwise indicated, with regard to any funded status measurements presented in this report:

1. The measurement is inappropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations; in other words, of transferring the obligations to an unrelated third party in an arm's length market value type transaction.
2. The measurement is dependent upon the actuarial cost method which, in combination with the plan's amortization policy, affects the timing and amounts of future contributions. The amounts of future contributions will most certainly differ from those assumed in this report due to future actual experience differing from assumed experience based upon the actuarial assumptions. A funded status measurement in this report of 100% is not synonymous with no required future contributions. If the funded status were 100%, the plan would still require future normal cost contributions (i.e., contributions to cover the cost of the active membership accruing an additional year of service credit).
3. The measurement would produce a different result if the actuarial value of assets were used instead of the market value of assets.

Limitation of Project Scope

Actuarial standards do not require the actuary to evaluate the ability of the plan sponsor or other contributing entity to make required contributions to the plan when due. Such an evaluation was not within the scope of this project and is not within the actuary's domain of expertise. Consequently, the actuary performed no such evaluation.

Timing of the Valuation

GASB Statement Nos. 67 and 68 require that an actuarial valuation to determine the total pension liability is required to be performed at least every two years. For employer reporting, the net pension liability and pension expense should be measured as of a date (measurement date) no earlier than the end of the employer's prior fiscal year, consistently applied from period to period. If the actuarial valuation used to determine the total pension liability is not calculated as of the measurement date, the total pension liability is required to be rolled forward from the actuarial valuation date to the measurement date.

The total pension liability shown in this report is based on an actuarial valuation performed as of June 30, 2024 and a measurement date of June 30, 2024.

Single Discount Rate

Projected benefit payments are required to be discounted to their actuarial present values using a Single Discount Rate that reflects (1) a long-term expected rate of return on pension plan investments (to the extent that the plan's fiduciary net position is projected to be sufficient to pay benefits) and (2) tax-exempt municipal bond rate based on an index of 20-year general obligation bonds with an average AA credit rating as of the measurement date (to the extent that the contributions for use with the long-term expected rate of return are not met).

For the purpose of this valuation, the expected rate of return on pension plan investments is 7.00%; the municipal bond rate is 3.97% (based on the weekly rate closest to but not later than the measurement date of the "20-Year Municipal GO AA Index" as published by Fidelity); and the resulting single discount rate is 7.00%.

SECTION B

FINANCIAL STATEMENTS

Statement of Pension Expense Under GASB Statement No. 68
Fiscal Year Ended June 30, 2024 (Dollars in Thousands)

A. Expense			
1.	Service Cost	$	29,442
2.	Interest on the Total Pension Liability		80,498
3.	Current-Period Benefit Changes		-
4.	Employee Contributions		(17,453)
5.	Projected Earnings on Plan Investments		(65,818)
6.	Pension Plan Administrative Expense		272
7.	Other Changes in Plan Fiduciary Net Position		1
8.	Recognition of Outflow (Inflow) of Resources due to differences between expected and actual experience in the measurement of the Total Pension Liability		
	Arising from Current Reporting Period		(448)
9.	Recognition of Outflow (Inflow) of Resources due to assumption changes		
	Arising from Current Reporting Period		-
10.	Recognition of Outflow (Inflow) of Resources due to the difference between projected (7.00%) and actual earnings on Pension Plan Investments		
	Arising from Current Reporting Period		(9,945)
11.	**Increases/(Decreases) from Experience in the Current Reporting Period**	**$**	**16,549**
12.	Recognition of Outflow (Inflow) of Resources due to differences between expected and actual experience in the measurement of the Total Pension Liability		
	Arising from Prior Reporting Periods	$	9,417
13.	Recognition of Outflow (Inflow) of Resources due to assumption changes		
	Arising from Prior Reporting Periods		3,291
14.	Recognition of Outflow (Inflow) of Resources due to the difference between projected and actual earnings on Pension Plan Investments		
	Arising from Prior Reporting Periods		(8,227)
15.	**Total Pension Expense / (Income)**	**$**	**21,030**

Differences between expected and actual experience and changes in assumptions are recognized in pension expense using a systematic and rational method over a closed period equal to the average of the expected remaining service lives of all employees that are provided with pension through the pension plan (active employees and inactive employees) determined as of the beginning of the measurement period.

At the beginning of the current measurement period, the expected remaining service lives of all active employees in the plan was approximately 12,993 years. Additionally, the total plan membership (active employees and inactive employees) was 2,277. As a result, the average of the expected remaining service lives for purposes of recognizing the applicable deferred outflows and inflows of resources established in the current measurement period is 6.0000 years (rounded).

Additionally, differences between projected and actual earnings on plan investments should be recognized in pension expense using a systematic and rational method over a closed five-year period. For this purpose, the deferred outflows and inflows of resources are recognized in the pension expense as a level dollar amount over the closed period identified above.

Statement of Outflows and Inflows
Arising from Current Reporting Period
Fiscal Year Ended June 30, 2024 (Dollars in Thousands)

A. Outflows (Inflows) of Resources due to Liabilities		
1. Difference between expected and actual experience of the Total Pension Liability (gains) or losses	$	(2,687)
2. Assumption Changes (gains) or losses		-
3. Recognition period for Liabilities: Average of the expected remaining service lives of all employees {in years, rounded to the nearest whole number}		6
4. Outflow (Inflow) of Resources to be recognized in the current pension expense for the difference between expected and actual experience of the Total Pension Liability		(448)
5. Outflow (Inflow) of Resources to be recognized in the current pension expense for Assumption Changes		-
6. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Liabilities	$	(448)
7. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses for the difference between expected and actual experience of the Total Pension Liability	$	(2,239)
8. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses for Assumption Changes		-
9. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Liabilities	$	(2,239)
B. Outflows (Inflows) of Resources due to Assets		
1. Net difference between projected and actual earnings on pension plan investments (gains) or losses	$	(49,724)
2. Recognition period for Assets {in years}		5
3. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Assets		(9,945)
4. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Assets	$	(39,779)

Statement of Outflows and Inflows
Arising from Current and Prior Reporting Periods
Fiscal Year Ended June 30, 2024 (Dollars in Thousands)

A. Outflows and Inflows of Resources due to Liabilities and Assets to be Recognized in Current Pension Expense

	Outflows of Resources	Inflows of Resources	Net Outflows/(Inflows) of Resources
1. Due to Liabilities	$ 24,828	$ 12,568	$ 12,260
2. Due to Assets	29,109	47,281	(18,172)
3. Total	$ 53,937	$ 59,849	$ (5,912)

B. Outflows and Inflows of Resources by Source to be Recognized in Current Pension Expense

	Outflows of Resources	Inflows of Resources	Net Outflows/(Inflows) of Resources
1. Differences between expected and actual experience	$ 9,804	$ 835	$ 8,969
2. Assumption Changes	15,024	11,733	3,291
3. Net Difference between projected and actual earnings on pension plan investments	29,109	47,281	(18,172)
4. Total	$ 53,937	$ 59,849	$ (5,912)

C. Deferred Outflows and Deferred Inflows of Resources by Source to be Recognized in Future Pension Expenses

	Deferred Outflows of Resources	Deferred Inflows of Resources	Net Deferred Outflows/ (Inflows) of Resources
1. Differences between expected and actual experience	$ 27,769	$ 3,520	$ 24,249
2. Assumption Changes	30,048	41,016	(10,968)
3. Net Difference between projected and actual earnings on pension plan investments*	48,455	84,444	(35,989)
4. Total	$ 106,272	$ 128,980	$ (22,708)

D. Deferred Outflows and Deferred Inflows of Resources by Year to be Recognized in Future Pension Expenses

Year Ending June 30	Net Deferred Outflows/ (Inflows) of Resources
2025	$ (11,253)
2026	22,508
2027	(17,009)
2028	(16,507)
2029	(447)
Thereafter	-
Total	$ (22,708)

** Paragraph 71(b) of GASB Statement No. 68 requires deferred outflows and inflows arising from differences between projected and actual earnings on pension plan investments to be aggregated and shown as a net amount. For purposes of this valuation, amounts are shown separately for calculation purposes.*

Recognition of Deferred Outflows and Inflows of Resources Fiscal Year Ended June 30, 2024 (Dollars in Thousands)

Year Established	Initial Amount	Initial Recognition Period	Current Year Recognition	Remaining Recognition	Remaining Recognition Period
Deferred Outflow (Inflow) Due to Differences Between Expected and Actual Experience on Liabilities					
2019	$ 2,757	6.0000	$ 459	$ 0	0.0000
2020	(535)	6.0000	(89)	(90)	1.0000
2021	1,596	6.0000	266	532	2.0000
2022	54,474	6.0000	9,079	27,237	3.0000
2023	(1,787)	6.0000	(298)	(1,191)	4.0000
2024	(2,687)	6.0000	(448)	(2,239)	5.0000
Total			**$ 8,969**	**$ 24,249**	
Deferred Outflow (Inflow) Due to Assumption Changes					
2021	$ 90,144	6.0000	$ 15,024	$ 30,048	2.0000
2022	(35,484)	6.0000	(5,914)	(17,742)	3.0000
2023	(34,912)	6.0000	(5,819)	(23,274)	4.0000
Total			**$ 3,291**	**$ (10,968)**	
Deferred Outflow (Inflow) Due to Differences Between Projected and Actual Earnings on Plan Investments					
2020	$ 24,414	5.0000	$ 4,882	$ 0	0.0000
2021	(168,354)	5.0000	(33,671)	(33,670)	1.0000
2022	121,136	5.0000	24,227	48,455	2.0000
2023	(18,325)	5.0000	(3,665)	(10,995)	3.0000
2024	(49,724)	5.0000	(9,945)	(39,779)	4.0000
Total			**$ (18,172)**	**$ (35,989)**	
Deferred Outflow (Inflow) Due to All Sources					
Total			**$ (5,912)**	**$ (22,708)**	

Statement of Fiduciary Net Position as of June 30, 2024 (Dollars in Thousands)

Assets		**June 30, 2024**
Cash & Short-term Investments	$	19,332
Receivables		1,759
Investment Pools (at fair value)		1,033,099
Securities Lending Collateral		44,960
Capital Assets		-
Total Assets	**$**	**1,099,150**
Total Deferred Outflows of Resources	**$**	**-**
Total Liabilities	**$**	**(46,184)**
Total Deferred Inflows of Resources	**$**	**-**
Net Position Restricted for Pensions	**$**	**1,052,966**

Statement of Changes in Fiduciary Net Position for Year Ended June 30, 2024 (Dollars in Thousands)

1.	**Net Position at market value at beginning of year**	**$**	**943,099**
Additions			
2.	Contributions		
	a. Employee	$	17,453
	b. Employer		34,064
	c. Other sources - Supplemental State Aid		12,971
	d. Total contributions	$	64,488
3.	Investment income		
	a. Investment income/(loss)	$	119,448
	b. Investment expenses		(3,906)
	c. Net investment income/(loss)	$	115,542
4.	Other Additions	$	-
5.	**Total Additions** *(2.d.) + (3.c.) + (4.)*	**$**	**180,030**
Deductions			
6.	Benefits Paid		
	a. Annuity benefits	$	(69,703)
	b. Refunds		(187)
	c. Total benefits paid	$	(69,890)
7.	Expenses		
	a. Other deductions	$	(1)
	b. Administrative		(272)
	c. Total expenses	$	(273)
8.	**Total Deductions** *(6.c.) + (7.c.)*	**$**	**(70,163)**
9.	**Net increase/(decrease) in fiduciary net position** *(5.) + (8.)*	**$**	**109,867**
10.	**Net position at market value at end of year** *(1.) + (9.)*	**$**	**1,052,966**
11.	State Board of Investment calculated annual investment return for the State Patrol Retirement Fund*		12.4%

** The fiscal year 2024 investment return for the Combined Funds is 12.3%.*

SECTION C

REQUIRED SUPPLEMENTARY INFORMATION

Schedule of Changes in Net Pension Liability and Related Ratios
Current Period
Fiscal Year Ended June 30, 2024 (Dollars in Thousands)

A. Total pension liability		
1. Service cost	$	29,442
2. Interest on the total pension liability		80,498
3. Changes of benefit terms		-
4. Difference between expected and actual experience of the total pension liability		(2,687)
5. Changes of assumptions		-
6. Benefit payments, including refunds of employee contributions		(69,890)
7. Net change in total pension liability	$	37,363
8. Total pension liability – beginning		1,170,196
9. Total pension liability – ending	**$**	**1,207,559**
B. Plan fiduciary net position		
1. Contributions – employer [1]	$	47,035
2. Contributions – employee		17,453
3. Net investment income		115,542
4. Benefit payments, including refunds of employee contributions		(69,890)
5. Pension plan administrative expense		(272)
6. Other changes		(1)
7. Net change in plan fiduciary net position	$	109,867
8. Plan fiduciary net position – beginning		943,099
9. Plan fiduciary net position – ending	**$**	**1,052,966**
C. Net pension liability, *A.9. - B.9.*	**$**	**154,593**
D. Plan fiduciary net position as a percentage of the total pension liability, *B.9. / A.9.*		**87.20%**
E. Covered-employee payroll [2]	**$**	**113,331**
F. Net pension liability as a percentage of covered-employee payroll, *C. / E.*		**136.41%**

[1] Includes $1 million supplemental state aid and $12 million in one-time state aid.
[2] Assumed equal to actual member contributions divided by employee contribution rate.

Schedule of Changes in Net Pension Liability and Related Ratios Multiyear
(Dollars in Thousands)

Last 10 Fiscal Years

Fiscal year ending June 30,	2024	2023	2022	2021	2020	2019	2018	2017	2016	2015
Total Pension Liability										
Service Cost	$ 29,442	$ 29,951	$ 26,648	$ 21,795	$ 21,122	$ 19,375	$ 24,935	$ 29,758	$ 16,555	$ 16,144
Interest on the Total Pension Liability	80,498	77,346	71,049	72,625	70,465	68,227	65,110	58,865	64,592	63,753
Benefit Changes	0	2,002	0	0	0	0	(2,604)	0	0	0
Difference between Expected and Actual Experience	(2,687)	(1,787)	54,474	1,596	(535)	2,757	(8,369)	(2,418)	(22,222)	(12,855)
Assumption Changes	0	(34,912)	(35,484)	90,144	0	0	(126,888)	(112,694)	283,584	0
Benefit Payments	(69,703)	(66,343)	(64,332)	(63,094)	(61,859)	(60,375)	(59,653)	(58,560)	(57,695)	(55,465)
Refunds	(187)	(237)	(174)	(116)	(112)	(428)	(39)	(5)	(79)	(15)
Net Change in Total Pension Liability	$ 37,363	$ 6,020	$ 52,181	$ 122,950	$ 29,081	$ 29,556	$ (107,508)	$ (85,054)	$ 284,735	$ 11,562
Total Pension Liability - Beginning	1,170,196	1,164,176	1,111,995	989,045	959,964	930,408	1,037,916	1,122,970	838,235	826,673
Total Pension Liability - Ending (a)	**$ 1,207,559**	**$ 1,170,196**	**$ 1,164,176**	**$ 1,111,995**	**$ 989,045**	**$ 959,964**	**$ 930,408**	**$1,037,916**	**$1,122,970**	**$ 838,235**
Plan Fiduciary Net Position										
Employer Contributions [1]	$ 47,035	$ 32,537	$ 33,258	$ 25,809	$ 22,975	$ 20,479	$ 16,952	$ 16,783	$ 14,938	$ 14,763
Employee Contributions	17,453	16,434	16,515	13,606	12,595	12,038	10,657	10,520	9,292	9,174
Pension Plan Net Investment Income	115,542	77,364	(59,360)	224,273	31,073	51,823	70,474	93,077	(774)	28,903
Benefit Payments	(69,703)	(66,343)	(64,332)	(63,094)	(61,859)	(60,375)	(59,653)	(58,560)	(57,695)	(55,465)
Refunds	(187)	(237)	(174)	(116)	(112)	(428)	(39)	(5)	(79)	(15)
Pension Plan Administrative Expense	(272)	(235)	(190)	(204)	(224)	(191)	(184)	(208)	(220)	(170)
Other	(1)	(2)	0	0	(2)	(1)	(7)	0	0	0
Net Change in Plan Fiduciary Net Position	**$ 109,867**	**$ 59,518**	**$ (74,283)**	**$ 200,274**	**$ 4,446**	**$ 23,345**	**$ 38,200**	**$ 61,607**	**$ (34,538)**	**$ (2,810)**
Plan Fiduciary Net Position - Beginning	**943,099**	**883,581**	**957,864**	**757,590**	**753,144**	**729,799**	**691,599**	**629,992**	**664,530**	**667,340**
Plan Fiduciary Net Position - Ending (b)	**$ 1,052,966**	**$ 943,099**	**$ 883,581**	**$ 957,864**	**$ 757,590**	**$ 753,144**	**$ 729,799**	**$ 691,599**	**$ 629,992**	**$ 664,530**
Net Pension Liability - Ending (a) - (b)	**$ 154,593**	**$ 227,097**	**$ 280,595**	**$ 154,131**	**$ 231,455**	**$ 206,820**	**$ 200,609**	**$ 346,317**	**$ 492,978**	**$ 173,705**
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	**87.20 %**	**80.59 %**	**75.90 %**	**86.14 %**	**76.60 %**	**78.46 %**	**78.44 %**	**66.63 %**	**56.10 %**	**79.28 %**
Covered-Employee Payroll [2]	**$ 113,331**	**$ 106,714**	**$ 107,240**	**$ 88,351**	**$ 84,530**	**$ 80,792**	**$ 74,007**	**$ 73,056**	**$ 69,343**	**$ 68,463**
Net Pension Liability as a Percentage of Covered-Employee Payroll	**136.41 %**	**212.81 %**	**261.65 %**	**174.45 %**	**273.81 %**	**255.99 %**	**271.07 %**	**474.04 %**	**710.93 %**	**253.72 %**

Notes to Schedule:

[1] *Includes $1 million supplemental state aid and, in fiscal year 2024, also includes $12 million in one-time state aid.*
[2] *Assumed equal to actual member contributions divided by employee contribution rate.*

Schedule of Net Pension Liability Multiyear
(Dollars in Thousands)

Last 10 Fiscal Years

Fiscal Year Ending June 30,	Total Pension Liability	Plan Net Position	Net Pension Liability	Plan Net Position as a % of Total Pension Liability	Covered-Employee Payroll	Net Pension Liability as a % of Covered-Employee Payroll
	(a)	(b)	(a) - (b) = (c)	(b) / (c)	(d)	(c) / (d)
2015	$ 838,235	$ 664,530	$ 173,705	79.28%	$ 68,463	253.72%
2016	1,122,970	629,992	492,978	56.10	69,343	710.93
2017	1,037,916	691,599	346,317	66.63	73,056	474.04
2018	930,408	729,799	200,609	78.44	74,007	271.07
2019	959,964	753,144	206,820	78.46	80,792	255.99
2020	989,045	757,590	231,455	76.60	84,530	273.81
2021	1,111,995	957,864	154,131	86.14	88,351	174.45
2022	1,164,176	883,581	280,595	75.90	107,240	261.65
2023	1,170,196	943,099	227,097	80.59	106,714	212.81
2024	1,207,559	1,052,966	154,593	87.20	113,331	136.41

Schedule of Contributions Multiyear (Dollars in Thousands)

Last 10 Fiscal Years

Fiscal Year Ending June 30,	Actuarially Determined Contribution (1)	Actual Contributions (2)	Contribution Deficiency (Excess)	Covered-Employee Payroll (3)	Actual Contribution as a % of Covered-Employee Payroll
	(a)	(b)	(a) - (b) = (c)	(d)	(b) / (d)
2015	$ 20,648	$ 14,763	$ 5,885	$ 68,463	21.56%
2016	20,463	14,938	5,525	69,343	21.54
2017	19,031	16,783	2,248	73,056	22.97
2018	20,900	16,952	3,948	74,007	22.91
2019	21,281	20,479	802	80,792	25.35
2020	21,580	22,975	(1,395)	84,530	27.18
2021	22,203	25,809	(3,606)	88,351	29.21
2022	20,611	33,258	(12,647)	107,240	31.01
2023	19,902	32,537	(12,635)	106,714	30.49
2024	27,007	47,035	(20,028)	113,331	41.50

Notes to Schedule of Contributions

Methods and Assumptions Used to Determine Fiscal Year Ending June 30, 2024 Contribution Rates Reported in this Schedule:

Notes	(1) Actuarially determined contribution rates are calculated as of each June 30 and apply to the fiscal year beginning on the day after the measurement date. (2) Includes supplemental state aid of $1 million. (3) Assumed equal to actual member contributions divided by employee contribution rate.
Valuation Date	June 30, 2023
Actuarial Cost Method	Entry Age Normal
Amortization Method	Level Percentage of Payroll, Closed
Remaining Amortization Period	25 years
Asset Valuation Method	5-Year smoothed market; no corridor
Inflation	2.25%
Payroll Growth	3.00%
Salary Increases	Service based tables ranging from 12.50% with one year of service to 3.00% with 25 or more years of service, including inflation
Investment Rate of Return	7.00%
Retirement Age	Experience-based table of rates that are specific to the type of eligibility condition. Last updated for the 2021 valuation pursuant to an experience study of the period 2015-2019.
Healthy Post-retirement Mortality	Pub-2010 General Retired Mortality Table adjusted for mortality improvements using mortality improvement Scale MP-2019.

Other Information:

Benefit Increases After Retirement	1.00% per annum

See separate funding actuarial valuation report as of July 1, 2023 for additional detail. To obtain this report, contact MSRS as noted on page 3. The report is also available online at https://www.msrs.state.mn.us/annual-reports-fy-2023

Schedule of Investment Returns Multiyear

Last 10 Fiscal Years

Fiscal Year Ending June 30,	Annual Return[1]
2015	4.5 %
2016	(0.1)
2017	15.2
2018	10.5
2019	7.3
2020	4.2
2021	30.3
2022	(6.3)
2023	8.9
2024	12.4

[1] *Annual money-weighted rate of return, net of investment expenses.*

The Minnesota State Board of Investment (SBI) compiled this data and the related investment notes and provided it to MSRS for GASB compliance purposes. MSRS furnished this information to us for inclusion within this report. We did not audit this information. We are not responsible for its accuracy or completeness.

Rate of Return

For the fiscal year ended June 30, 2024, the annual money-weighted rate of return for the State Patrol Retirement Fund was 12.4%. The money-weighted rate of return is a method of calculating period-by-period returns on pension plan investments that adjusts for the changing amounts actually invested. For purposes of this schedule, the money-weighted rate of return is calculated as the internal rate of return on pension plan investments, net of pension plan investment expense.

To request additional information about the computation of the annual money-weighted rate of return and the investments for the Minnesota Retirement Systems (including the investments for MSRS' defined benefit retirement funds), contact SBI at 60 Empire Drive, Suite 100, St. Paul, Minnesota, 55103, via email at minn.sbi@state.mn.us or telephone at 651.296.3328.

SECTION D

ADDITIONAL FINANCIAL STATEMENT DISCLOSURES

Asset Allocation

Long-Term Expected Return on Plan Assets

The long-term expected rate of return on pension plan investments was determined using a building-block method. Estimates for expected future real rates of return (expected returns, net of inflation) were developed for each asset class using both long-term historical returns and long-term capital market expectation from a number of investment management and consulting organizations. The asset class estimates and the target allocations were then combined to produce a geometric, long-term expected rate of return for the portfolio. Inflation expectations were applied to derive the nominal rate of return for the portfolio. For each major asset class that is included in the pension fund's target asset allocation as of June 30, 2024, these estimates are summarized in the following table:

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return (Geometric Mean)
Domestic Equity	33.5%	5.10%
International Equity	16.5%	5.30%
Private Markets	25.0%	5.90%
Fixed Income	25.0%	0.75%
Total	100.0%	

The Minnesota State Board of Investment (SBI) compiled this data and the related investment notes and provided it to MSRS for GASB compliance purposes. MSRS furnished this information to us for inclusion within this report. We did not audit this information. We are not responsible for its accuracy or completeness.

For purposes of this valuation, the long-term expected rate of return assumption is 7.00%. This assumption is based on the State Employees Retirement Fund experience study report dated June 29, 2023.

Sensitivity of Net Pension Liability to the Single Discount Rate Assumption

Single Discount Rate

A Single Discount Rate of 7.00% was used to measure the total pension liability. This Single Discount Rate was based on the expected rate of return on pension plan investments of 7.00%. The projection of cash flows used to determine this Single Discount Rate assumed that member, employer, and state contributions will be made at the current statutory contribution rates. Based on these assumptions, the pension plan's fiduciary net position and future contributions were sufficient to finance all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

Regarding the sensitivity of the net pension liability to changes in the Single Discount Rate, the following presents the plan's net pension liability, calculated using a Single Discount Rate of 7.00%, as well as what the plan's net pension liability would be if it were calculated using a Single Discount Rate that is one percent lower (6.00%) or one percent higher (8.00%) than the current rate:

Sensitivity of Net Pension Liability to the Single Discount Rate Assumption

(Dollars in Thousands)

	1% Decrease 6.00%	Current Single Discount Rate Assumption 7.00%	1% Increase 8.00%
Total Pension Liability	$1,363,945	$1,207,559	$1,079,086
Net Position Restricted for Pensions	1,052,966	1,052,966	1,052,966
Net Pension Liability	**$ 310,979**	**$ 154,593**	**$ 26,120**

For more information on the calculation of the single discount rate, refer to Section G of this report.

Note that we believe the 8.00% interest rate assumption does not comply with Actuarial Standards of Practice.

GASB Statement No. 68 Reconciliation (Dollars in Thousands)

	Total Pension Liability (a)	Plan Fiduciary Net Position (b)	Net Pension Liability (a) - (b)	Deferred Outflows	Deferred Inflows	Total Pension Expense
Balance Beginning of Year	**$ 1,170,196**	**$ 943,099**	**$ 227,097**	**$ 160,209**	**$ 136,418**	
Changes for the Year:						
Service Cost	$ 29,442		$ 29,442			$ 29,442
Interest on Total Pension Liability	80,498		80,498			80,498
Interest on Fiduciary Net Position		$ 65,818 [1]	(65,818)			(65,818)
Changes in Benefit Terms	-		-			-
Liability Experience Gains and Losses	(2,687)		(2,687)	$ -	$ 2,239	(448)
Changes in Assumptions	-		-	-	-	-
Recognition of Deferred Outflows/(Inflows) of Resources Arising from Prior Reporting Periods						
Liability Experience Gains/(Losses)				(9,804)	(387)	9,417
Assumption Changes				(15,024)	(11,733)	3,291
Investment Gains/(Losses)				(29,109)	(37,336)	(8,227)
Contributions - Employer		47,035 [2]	(47,035)			
Contributions - Employees		17,453	(17,453)			(17,453)
Asset Gain/(Loss)		49,724 [1]	(49,724)	-	39,779	(9,945)
Benefit Payments and Refunds	(69,890)	(69,890)	-			
Administrative Expenses		(272)	272			272
Other changes		(1)	1			1
Net Changes	**$ 37,363**	**$ 109,867**	**$ (72,504)**	**$ (53,937)**	**$ (7,438)**	**$ 21,030**
Balance End of Year	**$ 1,207,559**	**$ 1,052,966**	**$ 154,593**	**$ 106,272**	**$ 128,980**	

[1] *The sum of these items in column (b) equals the net investment income of $115,542.*

[2] *Includes supplemental state aid of $1 million and one-time state aid of $12 million.*

Summary of Population Statistics

		Terminated		Recipients			
	Actives	Deferred Retirement	Other Non-Vested	Service Retirement	Disability Retirement	Survivor	Total
Members on July 1, 2023	**979**	**76**	**54**	**911**	**94**	**163**	**2,277**
New members	61						**61**
Return to active	0	0	0	0	0	0	**0**
Terminated non-vested	(15)	0	15	0	0	0	**0**
Service retirements	(20)	(2)	0	22	0	0	**0**
Terminated deferred	(6)	6	0	0	0	0	**0**
Terminated refund/transfer	(6)	(1)	(5)	0	0	0	**(12)**
Deaths	(1)	0	0	(17)	(1)	(8)	**(27)**
New beneficiary	0	0	0	0	0	3	**3**
Disabled	(5)	0	0	0	5	0	**0**
Unexpected status change	0	0	0	0	0	0	**0**
Net change	8	3	10	5	4	(5)	**25**
Members on July 1, 2024	**987**	**79**	**64**	**916**	**98**	**158**	**2,302**

SECTION E

SUMMARY OF BENEFITS

Summary of Plan Provisions

Following is a summary of the major plan provisions used in the valuation of this report. MSRS is solely responsible for the validity, accuracy and comprehensiveness of this information. If any of the plan provisions shown below are not accurate and complete, the valuation results may differ significantly from those shown in this report and may require a revision of this report.

Plan year	July 1 through June 30
Eligibility	State troopers, conservation officers, certain crime bureau and gambling enforcement officers, and certain other persons listed in Minnesota Statutes 352B.011 subdivision 10.
Contributions	Percent of Salary:

Effective as of	Member	Regular Employer	Supplemental Employer	Total
July 1, 2021	15.40%	23.10%	7.00%	45.50%

	Supplemental employer contributions remain in effect until the plan is 100% funded on a market value of assets basis for a minimum of three consecutive years. Member contributions are "picked up" according to the provisions of Internal Revenue Code 414(h).
State contributions	$1 million paid annually on October 1 until the earlier of 1) both the Public Employees Retirement Association Police and Fire Plan and the State Patrol Retirement Fund attaining 90% funded status for three consecutive years (on an actuarial value of assets basis), or 2) July 1, 2048.
Allowable service	Service during which member contributions were deducted. Includes period receiving temporary Worker's Compensation and reduced salary from employer. See Normal Retirement benefit definition below for information about service limits.
Salary	Salaries excluding lump sum payments at separation.
Average salary	Average of the five highest years of Salary. Average Salary is based on all Allowable Service if less than five years. Average Salary is based on all years without regard to any service limits.

Summary of Plan Provisions (Continued)

Retirement

Normal retirement benefit

Age/Service requirement	Age 55 and three years (ten years if first hired after June 30, 2013) of Allowable Service.
Amount	3.00% of Average Salary for each year of Allowable Service up to 33 years. Members with at least 28 years of service as of July 1, 2013, are not subject to this service limit. Member contributions made after the service cap will be refunded at retirement.

Early retirement benefit

Age/Service requirement	Age 50 and three years (ten years if first hired after June 30, 2013) of Allowable Service.
Amount	Normal Retirement Benefit based on Allowable Service and Average Salary at retirement reduced by 0.34% for each month that the member is under age 55. If the effective date of retirement is before July 1, 2015, the reduction is 1/10% for each month that the member is under age 55 at the time of retirement.

Form of payment	Life annuity. Actuarially equivalent options are: 50%, 75%, or 100% Joint and Survivor, or 15-year certain. If a Joint and Survivor benefit is elected and the beneficiary predeceases the annuitant, the annuitant's benefit increases to the Life Annuity amount. This "bounce back" is subsidized by the plan.
Benefit increases	1.00% per year. A benefit recipient who has been receiving a benefit for at least 12 full months as of the June 30 of the calendar year immediately before the adjustment will receive a full increase. Members receiving benefits for at least one month but less than 12 full months as of the June 30 of the calendar year immediately before the adjustment will receive a pro rata increase.

Summary of Plan Provisions (Continued)

Disability

Duty disability benefit

Age/Service requirement	Member who cannot perform his duties as a direct result of a disability relating to an act of duty.
Amount	60% of Average Salary plus 3.00% of Average Salary for each year in excess of 20 years of Allowable Service (pro rata for completed months). Payments cease at age 65 (age 55 if disabled after June 30, 2015) or the 5-year anniversary of the effective date of the disability benefit, whichever is later. Payments stop earlier if disability ceases or death occurs. Benefits may be paid upon re-employment but salary plus benefit cannot exceed current salary of position held at time of disability.

Non-duty disability benefit

Age/Service requirement	At least one year of Allowable Service and disability not related to covered employment.
Amount	Normal Retirement Benefit based on Allowable Service (minimum of 15 years) and Average Salary at disability without reduction for commencement before age 55. Payments cease at age 65 (age 55 if disabled after June 30, 2015) or earlier if disability ceases or death occurs. Benefits may be paid upon re-employment but salary plus benefit cannot exceed current salary of position held at time of disability.

Total and permanent duty disability benefit

Age/Service requirement	Member who cannot perform any substantial gainful activity as a direct result of a disability (physical or psychological) relating to an act of duty, which is expected to persist for a period of 12 months or more. If condition no longer qualifies as total and permanent, benefit will be recalculated under the duty disability benefit provisions.
Amount	99% of member's average monthly salary.

Summary of Plan Provisions (Continued)

Disability (Concluded)	
<u>**Retirement after disability**</u>	
Age/Service requirement	Age 65 (age 55 if disabled after June 30, 2015) with continued disability.
Amount	Optional annuity continues. Otherwise, normal retirement benefit equal to the disability benefit paid, or an actuarially equivalent option.
<u>**Form of payment**</u>	Same as for retirement.
<u>**Benefit increases**</u>	Same as for retirement.

Death	
<u>**Surviving spouse benefit**</u>	
Age/Service requirement	Member who is active or receiving a disability benefit or former member.
Amount	50% of Average Salary if member was active or occupational disability and either had less than three years (five years if first hired after June 30, 2013) of Allowable Service or was under age 55. Annuity is paid for life. Surviving spouse receives the 100% joint and survivor benefit commencing on the member's 55th birthday if member was active or a disability with three years (five years if first hired after June 30, 2013) of Allowable Service. A spouse who had been receiving the 50% benefit shall be entitled to the greater benefit. The surviving spouse of a former member receives the 100% joint and survivor benefit commencing on the member's 55th birthday if former member had three years (five years if first hired after June 30, 2013) of Allowable Service.
Benefit increases	Same as for retirement.
<u>**Surviving dependent children's benefit**</u>	
Age/Service requirement	Member who is active or receiving a disability benefit. Child must be unmarried, under age 18 (or 23 if full-time student) and dependent upon the member.
Amount	10% of Average Salary for each child and $20 per month prorated among all dependent children. Benefit must not be less than 50% nor exceed 70% of Average Salary.
Benefit increases	Same as for retirement.
<u>**Refund of contributions**</u>	
Age/Service requirement	Member dies before receiving any retirement benefits and survivor benefits are not payable.
Amount	Member's contributions with 6.00% interest through June 30, 2011. Beginning July 1, 2011, a member's contributions increase with 4.00% interest. Beginning July 1, 2018, member contributions increase with 3.00% interest.

Summary of Plan Provisions (Continued)

Termination	
Refund of contributions	
Age/service requirement	Termination of state service.
Amount	Member's contributions with 6.00% interest through June 30, 2011. Beginning July 1, 2011, a member's contributions increase with 4.00% interest. Beginning July 1, 2018, member contributions increase with 3.00% interest. If a member is vested, a deferred annuity may be elected in lieu of a refund.
Deferred benefit	
Age/service requirement	Three years (ten years if first hired after June 30, 2013) of Allowable Service.
Amount	Benefit is computed under law in effect at termination and increased by the following annual augmentation percentage: (a.) 0.00% before July 1, 1971; (b.) 5.00% from July 1, 1971, to January 1, 1981; (c.) 3.00% thereafter (2.50% if hired after June 30, 2006) until January 1, 2012; (d.) 2.00% after December 31, 2011, through December 31, 2018; and (e.) 0.00% thereafter. Amount is payable at normal or early retirement. If a member terminated employment prior to July 1, 1997, but was not eligible to commence their pension before July 1, 1997, an actuarial increase shall be made for the change in the post-retirement interest rates from 5.00% to 6.00%.
Optional form conversion factors	Effective July 1, 2019 and phased in over a 24-month period, actuarially equivalent factors based on the RP-2014 mortality table for healthy annuitants for a member turning age 55 in 2021, reflecting projected mortality improvements using Scale MP-2017, white collar adjustment, blended 90% males, 6.44% post-retirement interest, and 7.50% pre-retirement interest. Reflecting statutory requirements, joint and survivor factors are based on an interest assumption of 6.50%.

Summary of Plan Provisions (Concluded)

Combined service annuity	Members are eligible for combined service benefits if they: (a.) Have sufficient allowable service in total that equals or exceeds the applicable service credit vesting requirement of the retirement plan with the longest applicable service credit vesting requirement; (b.) Have at least six months of allowable service credit in each plan worked under; and (c.) Are not in receipt of a benefit from another plan, or have applied for benefits with an effective date within one year. Members who meet the above requirements must have their benefit based on the following: (a.) Allowable service in all covered plans are combined in order to determine eligibility for early retirement. (b.) Average salary is based on the high five consecutive years during their entire service in all covered plans.
Changes in plan provisions	The state contribution of $1 million per year will continue until the earlier of 1) both the Public Employees Retirement Association Police and Fire Plan and the State Patrol Retirement Fund attaining 90% funded status for three consecutive years (on an actuarial value of assets basis), or 2) July 1, 2048. The contribution was previously due to expire upon attainment of 90% funded status for one year.

SECTION F

ACTUARIAL COST METHOD AND ACTUARIAL ASSUMPTIONS

Actuarial Methods Used for the Determination of Total Pension Liability and Related Values

Actuarial Cost Method

Normal cost and the allocation of benefit values between service rendered before and after the valuation date were determined using an **Individual Entry-Age Actuarial Cost Method** having the following characteristics:

(i) The annual normal cost for each individual active member, payable from the date of employment to the date of retirement, is sufficient to accumulate the value of the member's benefit at the time of retirement; and

(ii) Each annual normal cost is a constant percentage of the member's year by year projected covered pay.

Actuarial gains/(losses), as they occur, reduce (increase) the Total Pension Liability.

Asset Valuation Method

Fair value of assets.

Summary of Actuarial Assumptions Used for the Determination of Total Pension Liability and Related Values

The following assumptions were used in valuing the liabilities and benefits under the plan. The assumptions are based on the experience study dated June 30, 2020 and a review of inflation and investment assumptions included in the State Employees Retirement Fund Experience Study report dated June 29, 2023. An experience study for the 2019-2023 period was issued on July 16, 2024. This report recommended changes to demographic assumptions, expected to be effective at a future date. The Allowance for Combined Service Annuity assumptions are based on an analysis completed by the LCPR actuary and documented in a report dated October 2016.

Investment return	7.00% per annum.
Single discount rate	7.00% per annum.
Salary increases	Reported salary at valuation date increased according to the rate table, to current fiscal year and annually for each future year. Prior fiscal year salary is annualized for members with less than one year of service.
Inflation	2.25% per year.
Payroll growth	3.00% per year.
Mortality rates	
Healthy pre-retirement	Pub-2010 General Employee Mortality Table adjusted for mortality improvements using mortality improvement Scale MP-2019.
Healthy post-retirement	Pub-2010 General Retired Mortality Table adjusted for mortality improvements using mortality improvement Scale MP-2019.
Disabled	Pub-2010 General Disabled Mortality Table adjusted for mortality improvements using mortality improvement Scale MP-2019.
Notes	The Pub-2010 employee mortality table as published by the Society of Actuaries (SOA) contains mortality rates for ages 18 to 80 and the annuitant mortality table contains mortality rates for ages 50 to 120. We have extended the annuitant mortality table as needed for members younger than age 50 who are receiving a benefit by deriving rates based on the employee table and the juvenile table. Similarly, we have extended the employee table as needed for members older than age 80 by deriving rates based on the annuitant table.
Retirement	Members retiring from active status are assumed to retire according to the age related rates shown in the rate table. Members who have attained the highest assumed retirement age are assumed to retire in one year. Note that plan changes reflected in this report may result in behavior changes that are not anticipated in the current retirement rates.
Withdrawal	Service-related rates based on experience; see table of sample rates.
Disability	Age-related rates based on experience; see table of sample rates. All incidences are assumed to be duty-related. There is no assumed incidence of the total and permanent duty disability benefit; actual incidence of this benefit will be monitored and may be included in future valuations.

Summary of Actuarial Assumptions (Continued)

Allowance for combined service annuity	Liabilities for former, vested members are increased by 13.00% to account for the effect of some participants having eligibility for a Combined Service Annuity.
Administrative expenses	In the valuation year, equal to prior year administrative expenses expressed as percentage of prior year projected payroll. In each subsequent year, equal to the initial administrative expense percentage applied to payroll for the closed group.
Refund of contributions	For non-vested members, account balances accumulate interest until the assumed commencement date and are discounted back to the valuation date. Active members decrementing after becoming eligible for a benefit are assumed to take the contributions accumulated with interest if larger than the value of the benefit.
Commencement of deferred benefits	Members receiving deferred annuities (including current terminated deferred members) are assumed to begin receiving benefits at age 55.
Percentage married	85% of active members are assumed to be married. Actual marital status is used for members in payment status.
Age of spouse	Females are assumed to be two years younger than their spouses, and males are assumed to be two years older than their spouses.
Eligible children	Each member may have two dependent children depending on member's age. Assumed first child is born at member's age 28 and second child at member's age 31.
Form of payment	Married members retiring from active status are assumed to elect subsidized Joint and Survivor form of annuity as follows: 12.5% elect 50% Joint & Survivor option 12.5% elect 75% Joint & Survivor option 70.0% elect 100% Joint & Survivor option Remaining married and unmarried members are assumed to elect the Straight Life option.
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.
Decrement operation	Withdrawal decrements do not operate during retirement eligibility. Decrements are assumed to occur mid-fiscal year.
Service credit accruals	It is assumed that members accrue one year of service credit per year.
Pay increases	Pay increases are assumed to happen at the beginning of the fiscal year. This is equivalent to assuming that reported earnings are pensionable earnings for the year ending on the valuation date.
Final average salary	For present value of future benefit purposes, final average salary was calculated in accordance with pay increase assumptions, but was not permitted to fall below the final average salary reported in the data.

Summary of Actuarial Assumptions (Continued)

Unknown data for certain members	To prepare this report, GRS has used and relied on participant data supplied by the Fund. Although GRS has reviewed the data in accordance with Actuarial Standards of Practice No. 23, GRS has not verified or audited any of the data or information provided. In cases where submitted data was missing or incomplete, the following assumptions were applied: <u>Data for active members</u>: There was 0 members reported with zero or invalid salary (<$100). We used prior year salary. There was 1 member reported with a missing gender. We assumed male gender for retirees and female gender for survivors. There were no members reported with a missing or invalid birth date. <u>Data for terminated members</u>: There were 3 members reported without a benefit. We calculated benefits for these members using the reported Credited Service and Termination Date. There were no members reported with a missing or invalid date of birth or gender. <u>Data for members receiving benefits</u>: There was 1 member reported with a missing gender. We assumed male gender for retirees and female gender for survivors. There were no members reported with a missing or invalid birth date. There were no members reported without a benefit. There were no survivors reported with an expired benefit. There were 8 retirees reported with a bounceback annuity and an unreasonable reduction factor. A factor of 0.80, 0.85 and 0.90 was assumed for the 100%, 75% and 50% joint and survivor annuity, respectively. There were 3 retirees reported with a survivor option and a survivor date of death. We assumed no benefit was payable to the survivor, and the member benefit already reflected the "pop-up," if any. For retirees who elected a survivor benefit option, we used the valuation assumptions if the survivor date of birth was missing or invalid (149 members) and/or the survivor gender was missing or invalid (136 members).
Changes in actuarial assumptions	There were no changes in actuarial assumptions since the prior valuation.

Summary of Actuarial Assumptions (Continued)

Age in 2024	Percentage of Members Dying each Year*					
	Healthy Post-Retirement Mortality**		Healthy Pre-Retirement Mortality**		Disability Mortality**	
	Male	Female	Male	Female	Male	Female
20	0.04%	0.01%	0.04%	0.01%	0.44%	0.26%
25	0.03	0.01	0.03	0.01	0.34	0.21
30	0.05	0.02	0.05	0.02	0.51	0.36
35	0.07	0.03	0.07	0.03	0.69	0.56
40	0.09	0.04	0.09	0.04	0.86	0.76
45	0.12	0.07	0.10	0.06	1.07	0.99
50	0.28	0.21	0.14	0.08	1.51	1.41
55	0.41	0.29	0.21	0.13	2.02	1.78
60	0.63	0.40	0.32	0.20	2.55	2.05
65	0.91	0.59	0.47	0.28	3.03	2.17
70	1.41	0.95	0.65	0.43	3.60	2.54
75	2.37	1.66	0.97	0.71	4.61	3.54
80	4.25	3.06	1.54	1.21	6.53	5.47
85	7.77	5.78	6.53	4.97	9.78	8.69
90	13.48	10.78	13.48	10.78	14.93	12.83

* *Generally, mortality rates are expected to increase as age increases (with the exception of young ages, where expected mortality may decrease as age increases). In cases where the application of the projection scale would reverse the nature of this trend, standard mortality rates have been adjusted slightly. The adjustment has no material effect on results.*

*** Rates are adjusted for mortality improvements using Scale MP-2019 from a base year of 2010.*

Age	Percent of Members Decrementing Each Year Due to Disability Retirement
20	0.030%
25	0.050
30	0.090
35	0.135
40	0.155
45	0.239
50	0.481
55	0.800
60+	0.000

Summary of Actuarial Assumptions (Concluded)

Age	Percent Retiring
50	3 %
51	5
52	5
53	3
54	4
55	65
56	40
57	30
58	15
59	20
60+	100

Salary Scale	
Year	Increase
1	12.50%
2	8.50
3	7.50
4	7.25
5	7.00
6	6.75
7	6.50
8	5.50
9	5.00
10	4.50
11	4.25
12	4.00
13	4.00
14	4.00
15	4.00
16	3.75
17	3.50
18	3.50
19	3.50
20	3.50
21	3.40
22	3.30
23	3.20
24	3.10
25+	3.00

Year	Percent of Members Terminating (Withdrawing) Each Year
1	5.00%
2	3.50
3	2.50
4	2.25
5	2.00
6	1.75
7	1.50
8	1.25
9	1.00
10	0.75
11	0.75
12	0.75
13	0.75
14	0.75
15	0.50
16	0.50
17	0.50
18	0.50
19	0.50
20	0.50
21	0.50
22+	0.00

SECTION G

CALCULATION OF THE SINGLE DISCOUNT RATE

Calculation of the Single Discount Rate

GASB Statement No. 67 includes a specific requirement for the discount rate that is used for the purpose of the measurement of the Total Pension Liability. This rate considers the ability of the fund to meet benefit obligations in the future. To make this determination, employer contributions, employee contributions, benefit payments, expenses and investment returns are projected into the future. The Plan Fiduciary Net Position (assets) in future years can then be determined and compared to its obligation to make benefit payments in those years. As long as assets are projected to be on hand in a future year, the long-term expected rate of return is used as the discount rate. In years where assets are not projected to be sufficient to meet benefit payments, the use of a municipal rate is required, as described in the following paragraph.

The *Single Discount Rate* (SDR) is equivalent to applying these two rates to the benefits that are projected to be paid during the different time periods. The SDR reflects (1) the long-term expected rate of return on pension plan investments (during the period in which the plan fiduciary net position is projected to be sufficient to pay benefits) and (2) tax-exempt municipal bond rate based on an index of 20-year general obligation bonds with an average AA credit rating as of the measurement date (to the extent that the contributions for use with the long-term expected rate of return are not met).

For the purpose of this valuation, the expected rate of return on pension plan investments is 7.00%; the municipal bond rate is 3.97% (based on the weekly rate closest to but not later than the measurement date of the “20-Year Municipal GO Index” as published by Fidelity) and **the resulting single discount rate as of June 30, 2024 is 7.00%**. In describing this index, Fidelity notes that the municipal curves are constructed using option-adjusted analytics of a diverse population of over 10,000 tax-exempt securities.

The tables in this section provide background for the development of the single discount rate.

The **Projection of Contributions** table shows the development of expected contributions in future years. Normal Cost contributions for future hires are not included (nor are their liabilities).

The **Projection of Plan Fiduciary Net Position** table shows the development of expected asset levels in future years.

The **Present Values of Projected Benefit Payments** table shows the development of the Single Discount Rate. It breaks down the benefit payments into present values for funded and unfunded portions and shows the equivalent total at the SDR.

Single Discount Rate Development
Projection of Contributions (Dollars in Thousands)

	Projected Covered-Employee Payroll			Projected Contributions				
Fiscal Year Ending	Payroll for Current Employees	Payroll for New Employees	Total Employee Payroll	Contributions from Current Employees	Employer Contributions for Current Employees	Contributions on Future Payroll toward Current UAL[1]	Additional State Contributions[2]	Total Contributions
	(a)	(b)	(c) = (a) + (b)	(d) = (a) x 15.4%	(e) = (a) x 23.1%[3]	(f)	(g)	(h) = (d) + (e) + (f) + (g)
2024	$ 113,331		$ 113,331					
2025	115,958	$ 590	116,548	$ 17,858	$ 34,903	$ 110	$ 1,000	$ 53,871
2026	115,378	4,666	120,044	17,768	34,729	868	1,000	54,365
2027	114,673	8,972	123,645	17,660	34,517	1,669	1,000	54,845
2028	113,636	13,719	127,355	17,500	34,204	2,552	1,000	55,256
2029	112,017	19,158	131,175	17,251	33,717	3,564	-	54,531
2030	110,339	24,772	135,111	16,992	33,212	4,608	-	54,812
2031	108,341	30,823	139,164	16,685	32,611	5,733	-	55,028
2032	105,717	37,622	143,339	16,280	31,821	6,998	-	55,099
2033	102,758	44,881	147,639	15,825	30,930	8,348	-	55,103
2034	99,892	52,176	152,068	15,383	30,067	9,705	-	55,156
2035	97,167	59,463	156,630	14,964	29,247	11,060	-	55,271
2036	94,270	67,059	161,329	14,518	21,776	7,779	-	44,073
2037	91,251	74,918	166,169	14,053	21,079	8,691	-	43,822
2038	88,255	82,899	171,154	13,591	20,387	9,616	-	43,595
2039	84,838	91,451	176,289	13,065	19,598	10,608	-	43,271
2040	80,713	100,865	181,578	12,430	18,645	11,700	-	42,775
2041	76,375	110,650	187,025	11,762	17,643	12,835	-	42,240
2042	71,437	121,199	192,636	11,001	16,502	14,059	-	41,562
2043	66,402	132,013	198,415	10,226	15,339	15,314	-	40,878
2044	61,625	142,742	204,367	9,490	14,235	16,558	-	40,284
2045	56,473	154,025	210,498	8,697	13,045	17,867	-	39,609
2046	50,835	165,978	216,813	7,829	11,743	19,253	-	38,825
2047	45,043	178,274	223,317	6,937	10,405	20,680	-	38,021
2048	39,215	190,802	230,017	6,039	9,059	22,133	-	37,231
2049	33,648	203,270	236,918	5,182	7,773	23,579	-	36,534
2050	28,407	215,618	244,025	4,375	6,562	25,012	-	35,948
2051	23,049	228,297	251,346	3,550	5,324	26,482	-	35,356
2052	18,028	240,858	258,886	2,776	4,164	27,940	-	34,880
2053	13,471	253,182	266,653	2,075	3,112	29,369	-	34,556
2054	9,684	264,968	274,652	1,491	2,237	30,736	-	34,465
2055	6,485	276,407	282,892	999	1,498	32,063	-	34,560
2056	4,157	287,222	291,379	640	960	33,318	-	34,918
2057	2,553	297,567	300,120	393	590	34,518	-	35,501
2058	1,396	307,728	309,124	215	323	35,696	-	36,234
2059	774	317,623	318,397	119	179	36,844	-	37,142
2060	386	327,563	327,949	59	89	37,997	-	38,146
2061	181	337,607	337,788	28	42	39,162	-	39,232
2062	73	347,848	347,921	11	17	40,350	-	40,378
2063	9	358,350	358,359	1	2	41,569	-	41,572
2064	-	369,110	369,110	-	-	42,817	-	42,817
2065	-	380,183	380,183	-	-	44,101	-	44,101
2066	-	391,589	391,589	-	-	45,424	-	45,424
2067	-	403,336	403,336	-	-	46,787	-	46,787
2068	-	415,436	415,436	-	-	48,191	-	48,191
2069	-	427,899	427,899	-	-	49,636	-	49,636
2070	-	440,736	440,736	-	-	51,125	-	51,125
2071	-	453,958	453,958	-	-	52,659	-	52,659
2072	-	467,577	467,577	-	-	54,239	-	54,239
2073	-	481,605	481,605	-	-	55,866	-	55,866
2074	-	496,053	496,053	-	-	57,542	-	57,542

1. *Equal to contributions (45.50% of payroll for 11 years and 38.50% of payroll thereafter for new employees) net of normal cost and expenses (26.90% of payroll).*
2. *State contributions equal to $1.0 million are assumed to end after 4 years. Actual end dates will depend on the funding status of this plan and the PERA Police and Fire Plan.*
3. *Ultimate contribution rate; projected 2024 through 2035 employer contribution rates are based on a 30.1% of pay contribution.*

Totals may not add due to rounding.

Single Discount Rate Development
Projection of Contributions (Dollars in Thousands, Concluded)

	Projected Covered-Employee Payroll			Projected Contributions				
Fiscal Year Ending	Payroll for Current Employees	Payroll for New Employees	Total Employee Payroll	Contributions from Current Employees	Employer Contributions for Current Employees	Contributions on Future Payroll toward Current UAL[1]	Additional State Contributions[2]	Total Contributions
	(a)	(b)	(c) = (a) + (b)	(d) = (a) x 15.4%	(e) = (a) x 23.1%[3]	(f)	(g)	(h) = (d) + (e) + (f) + (g)
2075	$ -	$ 510,934	$ 510,934	$ -	$ -	$ 59,268	$ -	$ 59,268
2076	-	526,262	526,262	-	-	61,046	-	61,046
2077	-	542,050	542,050	-	-	62,878	-	62,878
2078	-	558,312	558,312	-	-	64,764	-	64,764
2079	-	575,061	575,061	-	-	66,707	-	66,707
2080	-	592,313	592,313	-	-	68,708	-	68,708
2081	-	610,082	610,082	-	-	70,770	-	70,770
2082	-	628,385	628,385	-	-	72,893	-	72,893
2083	-	647,236	647,236	-	-	75,079	-	75,079
2084	-	666,653	666,653	-	-	77,332	-	77,332
2085	-	686,653	686,653	-	-	79,652	-	79,652
2086	-	707,253	707,253	-	-	82,041	-	82,041
2087	-	728,470	728,470	-	-	84,503	-	84,503
2088	-	750,324	750,324	-	-	87,038	-	87,038
2089	-	772,834	772,834	-	-	89,649	-	89,649
2090	-	796,019	796,019	-	-	92,338	-	92,338
2091	-	819,900	819,900	-	-	95,108	-	95,108
2092	-	844,496	844,496	-	-	97,962	-	97,962
2093	-	869,831	869,831	-	-	100,900	-	100,900
2094	-	895,926	895,926	-	-	103,927	-	103,927
2095	-	922,804	922,804	-	-	107,045	-	107,045
2096	-	950,488	950,488	-	-	110,257	-	110,257
2097	-	979,003	979,003	-	-	113,564	-	113,564
2098	-	1,008,373	1,008,373	-	-	116,971	-	116,971
2099	-	1,038,624	1,038,624	-	-	120,480	-	120,480
2100	-	1,069,783	1,069,783	-	-	124,095	-	124,095
2101	-	1,101,876	1,101,876	-	-	127,818	-	127,818
2102	-	1,134,933	1,134,933	-	-	131,652	-	131,652
2103	-	1,168,981	1,168,981	-	-	135,602	-	135,602
2104	-	1,204,050	1,204,050	-	-	139,670	-	139,670
2105	-	1,240,172	1,240,172	-	-	143,860	-	143,860
2106	-	1,277,377	1,277,377	-	-	148,176	-	148,176
2107	-	1,315,698	1,315,698	-	-	152,621	-	152,621
2108	-	1,355,169	1,355,169	-	-	157,200	-	157,200
2109	-	1,395,824	1,395,824	-	-	161,916	-	161,916
2110	-	1,437,699	1,437,699	-	-	166,773	-	166,773
2111	-	1,480,830	1,480,830	-	-	171,776	-	171,776
2112	-	1,525,255	1,525,255	-	-	176,930	-	176,930
2113	-	1,571,012	1,571,012	-	-	182,237	-	182,237
2114	-	1,618,143	1,618,143	-	-	187,705	-	187,705
2115	-	1,666,687	1,666,687	-	-	193,336	-	193,336
2116	-	1,716,688	1,716,688	-	-	199,136	-	199,136
2117	-	1,768,188	1,768,188	-	-	205,110	-	205,110
2118	-	1,821,234	1,821,234	-	-	211,263	-	211,263
2119	-	1,875,871	1,875,871	-	-	217,601	-	217,601
2120	-	1,932,147	1,932,147	-	-	224,129	-	224,129
2121	-	1,990,111	1,990,111	-	-	230,853	-	230,853
2122	-	2,049,815	2,049,815	-	-	237,779	-	237,779
2123	-	2,111,309	2,111,309	-	-	244,912	-	244,912
2124	-	2,174,648	2,174,648	-	-	252,259	-	252,259

1. *Equal to contributions (45.50% of payroll for 11 years and 38.50% of payroll thereafter for new employees) net of normal cost and expenses (26.90% of payroll).*
2. *State contributions equal to $1.0 million are assumed to end after 4 years. Actual end dates will depend on the funding status of this plan and the PERA Police and Fire Plan.*
3. *Ultimate contribution rate; projected 2024 through 2035 employer contribution rates are based on a 30.1% of pay contribution.*

Totals may not add due to rounding.

Single Discount Rate Development
Projection of Plan Fiduciary Net Position (Dollars in Thousands)

Fiscal Year Ending	Projected Beginning Plan Fiduciary Net Position	Projected Total Contributions	Projected Benefit Payments	Projected Administrative Expenses	Projected Investment Earnings at 7.00%	Projected Ending Plan Net Position
	(a)	(b)	(c)	(d)	(e)	(f)=(a)+(b)-(c)-(d)+(e)
2025	$ 1,052,966	$ 53,871	$ 71,992	$ 278	$ 73,075	$ 1,107,641
2026	1,107,641	54,365	72,686	277	76,895	1,165,938
2027	1,165,938	54,845	75,237	275	80,905	1,226,176
2028	1,226,176	55,256	77,877	273	85,045	1,288,328
2029	1,288,328	54,531	80,685	269	89,274	1,351,178
2030	1,351,178	54,812	83,391	265	93,590	1,415,924
2031	1,415,924	55,028	86,217	260	98,033	1,482,508
2032	1,482,508	55,099	89,272	254	102,591	1,550,672
2033	1,550,672	55,103	92,212	247	107,262	1,620,578
2034	1,620,578	55,156	94,850	240	112,066	1,692,710
2035	1,692,710	55,271	97,430	233	117,031	1,767,349
2036	1,767,349	44,073	100,126	226	121,778	1,832,847
2037	1,832,847	43,822	102,788	219	126,263	1,899,925
2038	1,899,925	43,595	105,421	212	130,860	1,968,747
2039	1,968,747	43,271	108,209	204	135,571	2,039,177
2040	2,039,177	42,775	111,315	194	140,377	2,110,820
2041	2,110,820	42,240	114,642	183	145,260	2,183,494
2042	2,183,494	41,562	118,389	171	150,195	2,256,691
2043	2,256,691	40,878	122,142	159	155,167	2,330,435
2044	2,330,435	40,284	125,676	148	160,187	2,405,082
2045	2,405,082	39,609	129,457	136	165,260	2,480,358
2046	2,480,358	38,825	133,619	122	170,359	2,555,802
2047	2,555,802	38,021	137,755	108	175,471	2,631,431
2048	2,631,431	37,231	141,896	94	180,596	2,707,267
2049	2,707,267	36,534	145,760	81	185,748	2,783,708
2050	2,783,708	35,948	149,422	68	190,953	2,861,119
2051	2,861,119	35,356	153,046	55	196,227	2,939,602
2052	2,939,602	34,880	156,326	43	201,592	3,019,704
2053	3,019,704	34,556	159,196	32	207,090	3,102,121
2054	3,102,121	34,465	161,160	23	212,788	3,188,191
2055	3,188,191	34,560	162,743	16	218,762	3,278,755
2056	3,278,755	34,918	163,296	10	225,095	3,375,462
2057	3,375,462	35,501	163,313	6	231,884	3,479,528
2058	3,479,528	36,234	162,672	3	239,216	3,592,303
2059	3,592,303	37,142	161,486	2	247,183	3,715,140
2060	3,715,140	38,146	159,932	1	255,869	3,849,223
2061	3,849,223	39,232	158,068	-	265,357	3,995,743
2062	3,995,743	40,378	156,108	-	275,720	4,155,734
2063	4,155,734	41,572	153,900	-	287,036	4,330,442
2064	4,330,442	42,817	151,564	-	299,389	4,521,084
2065	4,521,084	44,101	149,097	-	312,863	4,728,952
2066	4,728,952	45,424	146,489	-	327,549	4,955,436
2067	4,955,436	46,787	143,736	-	343,545	5,202,032
2068	5,202,032	48,191	140,839	-	360,954	5,470,337
2069	5,470,337	49,636	137,799	-	379,890	5,762,065
2070	5,762,065	51,125	134,618	-	400,472	6,079,044
2071	6,079,044	52,659	131,298	-	422,827	6,423,232
2072	6,423,232	54,239	127,845	-	447,094	6,796,719
2073	6,796,719	55,866	124,264	-	473,417	7,201,738
2074	7,201,738	57,542	120,559	-	501,953	7,640,674

For purposes of this projection, we assumed the 23.1% regular employer statutory contribution rate would continue after the plan becomes fully funded.

Totals may not add due to rounding.

Single Discount Rate Development
Projection of Plan Fiduciary Net Position
(Dollars in Thousands, Concluded)

Fiscal Year Ending	Projected Beginning Plan Fiduciary Net Position	Projected Total Contributions	Projected Benefit Payments	Projected Administrative Expenses	Projected Investment Earnings at 7.00%	Projected Ending Plan Net Position
	(a)	(b)	(c)	(d)	(e)	(f)=(a)+(b)-(c)-(d)+(e)
2075	$ 7,640,674	$ 59,268	$ 116,736	$ -	$ 532,870	$ 8,116,076
2076	8,116,076	61,046	112,800	-	566,345	8,630,668
2077	8,630,668	62,878	108,753	-	602,568	9,187,361
2078	9,187,361	64,764	104,600	-	641,745	9,789,269
2079	9,789,269	66,707	100,343	-	684,091	10,439,724
2080	10,439,724	68,708	95,986	-	729,842	11,142,289
2081	11,142,289	70,770	91,532	-	779,246	11,900,773
2082	11,900,773	72,893	86,985	-	832,569	12,719,250
2083	12,719,250	75,079	82,352	-	890,097	13,602,075
2084	13,602,075	77,332	77,640	-	952,135	14,553,901
2085	14,553,901	79,652	72,863	-	1,019,007	15,579,696
2086	15,579,696	82,041	68,036	-	1,091,061	16,684,762
2087	16,684,762	84,503	63,179	-	1,168,667	17,874,753
2088	17,874,753	87,038	58,317	-	1,252,221	19,155,694
2089	19,155,694	89,649	53,481	-	1,342,143	20,534,005
2090	20,534,005	92,338	48,700	-	1,438,882	22,016,526
2091	22,016,526	95,108	44,010	-	1,542,915	23,610,539
2092	23,610,539	97,962	39,447	-	1,654,751	25,323,805
2093	25,323,805	100,900	35,046	-	1,774,932	27,164,592
2094	27,164,592	103,927	30,842	-	1,904,036	29,141,713
2095	29,141,713	107,045	26,867	-	2,042,679	31,264,570
2096	31,264,570	110,257	23,150	-	2,191,517	33,543,194
2097	33,543,194	113,564	19,714	-	2,351,253	35,988,297
2098	35,988,297	116,971	16,577	-	2,522,635	38,611,327
2099	38,611,327	120,480	13,752	-	2,706,465	41,424,521
2100	41,424,521	124,095	11,245	-	2,903,599	44,440,970
2101	44,440,970	127,818	9,056	-	3,114,954	47,674,686
2102	47,674,686	131,652	7,175	-	3,341,511	51,140,674
2103	51,140,674	135,602	5,589	-	3,584,321	54,855,008
2104	54,855,008	139,670	4,277	-	3,844,509	58,834,910
2105	58,834,910	143,860	3,213	-	4,123,283	63,098,840
2106	63,098,840	148,176	2,370	-	4,421,936	67,666,581
2107	67,666,581	152,621	1,715	-	4,741,853	72,559,340
2108	72,559,340	157,200	1,220	-	5,084,521	77,799,841
2109	77,799,841	161,916	854	-	5,451,531	83,412,434
2110	83,412,434	166,773	590	-	5,844,588	89,423,205
2111	89,423,205	171,776	405	-	6,265,521	95,860,098
2112	95,860,098	176,930	278	-	6,716,285	102,753,035
2113	102,753,035	182,237	193	-	7,198,976	110,134,055
2114	110,134,055	187,705	137	-	7,715,838	118,037,461
2115	118,037,461	193,336	100	-	8,269,271	126,499,968
2116	126,499,968	199,136	76	-	8,861,847	135,560,874
2117	135,560,874	205,110	60	-	9,496,317	145,262,240
2118	145,262,240	211,263	49	-	10,175,624	155,649,078
2119	155,649,078	217,601	41	-	10,902,921	166,769,559
2120	166,769,559	224,129	34	-	11,681,580	178,675,234
2121	178,675,234	230,853	29	-	12,515,209	191,421,266
2122	191,421,266	237,779	24	-	13,407,669	205,066,690
2123	205,066,690	244,912	20	-	14,363,095	219,674,676
2124	219,674,676	252,259	59	-	15,385,905	235,312,781

For purposes of this projection, we assumed the 23.1% statutory regular employer statutory contribution rate would continue after the plan becomes fully funded.

Totals may not add due to rounding.

Single Discount Rate Development
Present Values of Projected Benefits (Dollars in Thousands)

Fiscal Year Ending	Projected Beginning Plan Fiduciary Net Position	Projected Benefit Payments	Funded Portion of Benefit Payments	Unfunded Portion of Benefit Payments	Present Value of Funded Benefit Payments using Expected Return Rate (v)	Present Value of Unfunded Benefit Payments using Municipal Bond Rate (vf)	Present Value of Benefit Payments using Single Discount Rate (sdr)
(a)	(b)	(c)	(d)	(e)	(f)=(d)*v^((a)-.5)	(g)=(e)*vf ^((a)-.5)	(h)=(c)/(1+sdr)^(a-.5)
2025	$ 1,052,966	$ 71,992	$ 71,992	$ 0	$ 69,597	$ 0	$ 69,597
2026	1,107,641	72,686	72,686	0	65,671	0	65,671
2027	1,165,938	75,237	75,237	0	63,529	0	63,529
2028	1,226,176	77,877	77,877	0	61,456	0	61,456
2029	1,288,328	80,685	80,685	0	59,507	0	59,507
2030	1,351,178	83,391	83,391	0	57,479	0	57,479
2031	1,415,924	86,217	86,217	0	55,539	0	55,539
2032	1,482,508	89,272	89,272	0	53,745	0	53,745
2033	1,550,672	92,212	92,212	0	51,883	0	51,883
2034	1,620,578	94,850	94,850	0	49,876	0	49,876
2035	1,692,710	97,430	97,430	0	47,881	0	47,881
2036	1,767,349	100,126	100,126	0	45,987	0	45,987
2037	1,832,847	102,788	102,788	0	44,121	0	44,121
2038	1,899,925	105,421	105,421	0	42,291	0	42,291
2039	1,968,747	108,209	108,209	0	40,569	0	40,569
2040	2,039,177	111,315	111,315	0	39,004	0	39,004
2041	2,110,820	114,642	114,642	0	37,541	0	37,541
2042	2,183,494	118,389	118,389	0	36,232	0	36,232
2043	2,256,691	122,142	122,142	0	34,935	0	34,935
2044	2,330,435	125,676	125,676	0	33,595	0	33,595
2045	2,405,082	129,457	129,457	0	32,341	0	32,341
2046	2,480,358	133,619	133,619	0	31,197	0	31,197
2047	2,555,802	137,755	137,755	0	30,059	0	30,059
2048	2,631,431	141,896	141,896	0	28,937	0	28,937
2049	2,707,267	145,760	145,760	0	27,780	0	27,780
2050	2,783,708	149,422	149,422	0	26,615	0	26,615
2051	2,861,119	153,046	153,046	0	25,477	0	25,477
2052	2,939,602	156,326	156,326	0	24,321	0	24,321
2053	3,019,704	159,196	159,196	0	23,147	0	23,147
2054	3,102,121	161,160	161,160	0	21,900	0	21,900
2055	3,188,191	162,743	162,743	0	20,668	0	20,668
2056	3,278,755	163,296	163,296	0	19,381	0	19,381
2057	3,375,462	163,313	163,313	0	18,115	0	18,115
2058	3,479,528	162,672	162,672	0	16,864	0	16,864
2059	3,592,303	161,486	161,486	0	15,646	0	15,646
2060	3,715,140	159,932	159,932	0	14,481	0	14,481
2061	3,849,223	158,068	158,068	0	13,376	0	13,376
2062	3,995,743	156,108	156,108	0	12,346	0	12,346
2063	4,155,734	153,900	153,900	0	11,375	0	11,375
2064	4,330,442	151,564	151,564	0	10,470	0	10,470
2065	4,521,084	149,097	149,097	0	9,626	0	9,626
2066	4,728,952	146,489	146,489	0	8,838	0	8,838
2067	4,955,436	143,736	143,736	0	8,105	0	8,105
2068	5,202,032	140,839	140,839	0	7,422	0	7,422
2069	5,470,337	137,799	137,799	0	6,787	0	6,787
2070	5,762,065	134,618	134,618	0	6,196	0	6,196
2071	6,079,044	131,298	131,298	0	5,648	0	5,648
2072	6,423,232	127,845	127,845	0	5,140	0	5,140
2073	6,796,719	124,264	124,264	0	4,669	0	4,669
2074	7,201,738	120,559	120,559	0	4,234	0	4,234

Totals may not add due to rounding.

Single Discount Rate Development
Present Values of Projected Benefits
(Dollars in Thousands, Concluded)

Fiscal Year Ending	Projected Beginning Plan Fiduciary Net Position	Projected Benefit Payments	Funded Portion of Benefit Payments	Unfunded Portion of Benefit Payments	Present Value of Funded Benefit Payments using Expected Return Rate (v)	Present Value of Unfunded Benefit Payments using Municipal Bond Rate (vf)	Present Value of Benefit Payments using Single Discount Rate (sdr)
(a)	(b)	(c)	(d)	(e)	(f)=(d)*v^((a)-.5)	(g)=(e)*vf ^((a)-.5)	(h)=(c)/(1+sdr)^(a-.5)
2075	$ 7,640,674	$ 116,736	$ 116,736	$ -	$ 3,831	$ -	$ 3,831
2076	8,116,076	112,800	112,800	-	3,460	-	3,460
2077	8,630,668	108,753	108,753	-	3,117	-	3,117
2078	9,187,361	104,600	104,600	-	2,802	-	2,802
2079	9,789,269	100,343	100,343	-	2,512	-	2,512
2080	10,439,724	95,986	95,986	-	2,246	-	2,246
2081	11,142,289	91,532	91,532	-	2,002	-	2,002
2082	11,900,773	86,985	86,985	-	1,778	-	1,778
2083	12,719,250	82,352	82,352	-	1,573	-	1,573
2084	13,602,075	77,640	77,640	-	1,386	-	1,386
2085	14,553,901	72,863	72,863	-	1,216	-	1,216
2086	15,579,696	68,036	68,036	-	1,061	-	1,061
2087	16,684,762	63,179	63,179	-	921	-	921
2088	17,874,753	58,317	58,317	-	794	-	794
2089	19,155,694	53,481	53,481	-	681	-	681
2090	20,534,005	48,700	48,700	-	579	-	579
2091	22,016,526	44,010	44,010	-	489	-	489
2092	23,610,539	39,447	39,447	-	410	-	410
2093	25,323,805	35,046	35,046	-	340	-	340
2094	27,164,592	30,842	30,842	-	280	-	280
2095	29,141,713	26,867	26,867	-	228	-	228
2096	31,264,570	23,150	23,150	-	183	-	183
2097	33,543,194	19,714	19,714	-	146	-	146
2098	35,988,297	16,577	16,577	-	115	-	115
2099	38,611,327	13,752	13,752	-	89	-	89
2100	41,424,521	11,245	11,245	-	68	-	68
2101	44,440,970	9,056	9,056	-	51	-	51
2102	47,674,686	7,175	7,175	-	38	-	38
2103	51,140,674	5,589	5,589	-	28	-	28
2104	54,855,008	4,277	4,277	-	20	-	20
2105	58,834,910	3,213	3,213	-	14	-	14
2106	63,098,840	2,370	2,370	-	10	-	10
2107	67,666,581	1,715	1,715	-	6	-	6
2108	72,559,340	1,220	1,220	-	4	-	4
2109	77,799,841	854	854	-	3	-	3
2110	83,412,434	590	590	-	2	-	2
2111	89,423,205	405	405	-	1	-	1
2112	95,860,098	278	278	-	1	-	1
2113	102,753,035	193	193	-	-	-	-
2114	110,134,055	137	137	-	-	-	-
2115	118,037,461	100	100	-	-	-	-
2116	126,499,968	76	76	-	-	-	-
2117	135,560,874	60	60	-	-	-	-
2118	145,262,240	49	49	-	-	-	-
2119	155,649,078	41	41	-	-	-	-
2120	166,769,559	34	34	-	-	-	-
2121	178,675,234	29	29	-	-	-	-
2122	191,421,266	24	24	-	-	-	-
2123	205,066,690	20	20	-	-	-	-
2124	219,674,676	59	59	-	-	-	-
				Totals	$ 1,514,086	$ -	$ 1,514,086

Totals may not add due to rounding.

SECTION H

GLOSSARY OF TERMS

Glossary of Terms

Accrued Service	Service credited under the system which was rendered before the date of the actuarial valuation.
Actuarial Accrued Liability (AAL)	The AAL is the difference between the actuarial present value of all benefits and the actuarial value of future normal costs. The definition comes from the fundamental equation of funding which states that the present value of all benefits is the sum of the Actuarial Accrued Liability and the present value of future normal costs. The AAL may also be referred to as "accrued liability" or "actuarial liability."
Actuarial Assumptions	These assumptions are estimates of future experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income and compensation increases. Actuarial assumptions are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (compensation increases, payroll growth, inflation and investment return) consist of an underlying real rate of return plus an assumption for a long-term average rate of inflation.
Actuarial Cost Method	A mathematical budgeting procedure for allocating the dollar amount of the actuarial present value of the pension trust benefits between future normal cost and actuarial accrued liability. The actuarial cost method may also be referred to as the actuarial funding method.
Actuarial Equivalent	A single amount or series of amounts of equal actuarial value to another single amount or series of amounts, computed on the basis of appropriate actuarial assumptions.
Actuarial Gain (Loss)	The difference in liabilities between actual experience and expected experience during the period between two actuarial valuations is the gain (loss) on the accrued liabilities.
Actuarial Present Value (APV)	The amount of funds currently required to provide a payment or series of payments in the future. The present value is determined by discounting future benefit payments at predetermined rates of interest to reflect the expected effects of the time value (present value) of money and the probabilities of payment.
Actuarial Valuation	The actuarial valuation report determines, as of the actuarial valuation date, the service cost, total pension liability, and related actuarial present value of projected benefit payments for pensions performed in conformity with Actuarial Standards of Practice unless otherwise specified by the GASB.
Actuarial Valuation Date	The date as of which an actuarial valuation is performed.
Actuarially Determined Contribution (ADC)	A calculated contribution into a defined benefit pension plan for the reporting period, most often determined based on the funding policy of the plan. Typically, the Actuarially Determined Contribution has a normal cost payment and an amortization payment.

Glossary of Terms

Amortization Method	The method used to determine the periodic amortization payment may be a level dollar amount, or a level percent of pay amount. The period will typically be expressed in years, and the method will either be "open" (meaning, reset each year) or "closed" (the number of years remaining will decline each year).
Amortization Payment	The amortization payment is the periodic payment required to pay off an interest-discounted amount with payments of interest and principal.
Cost-of-Living Adjustments	Postemployment benefit changes intended to adjust benefit payments for the effects of inflation.
Cost-Sharing Multiple-Employer Defined Benefit Pension Plan (cost-sharing pension plan)	A multiple-employer defined benefit pension plan in which the pension obligations to the employees of more than one employer are pooled and pension plan assets can be used to pay the benefits of the employees of any employer that provides pensions through the pension plan.
Covered-Employee Payroll	The payroll of covered employees, which is typically only the pensionable pay (meets the statutory salary definition) and does not include pay above any pay cap.
Deferred Inflows and Outflows of Resources	The deferred inflows and outflows of pension resources are amounts used under GASB Statement No. 68 in developing the annual pension expense. Deferred inflows and outflows arise with differences between expected and actual experiences; changes of assumptions. The portion of these amounts not included in pension expense should be included in the deferred inflows or outflows of resources.
Discount Rate or Single Discount Rate	For GASB purposes, the discount rate is the single rate of return that results in the present value of all projected benefit payments to be equal to the sum of the funded and unfunded projected benefit payments, specifically: 1. The benefit payments to be made while the pension plans' fiduciary net position is projected to be greater than the benefit payments that are projected to be made in the period; and 2. The present value of the benefit payments not in (1) above, discounted using the municipal bond rate.
Entry Age Actuarial Cost Method or Entry Age Normal (EAN)	The EAN is a funding method for allocating the costs of the plan between the normal cost and the accrued liability. The actuarial present value of the projected benefits of each individual included in an actuarial valuation is allocated on a level basis (either level dollar or level percent of pay) over the earnings or service of the individual between entry age and assumed exit age(s). The portion of the actuarial present value allocated to a valuation year is the normal cost. The portion of this actuarial present value not provided for at a valuation date by the actuarial present value of future normal costs is the actuarial accrued liability. The sum of the accrued liability plus the present value of all future normal costs is the present value of all benefits.

Glossary of Terms

Fiduciary Net Position	The fiduciary net position is the value of the net assets of the trust restricted for pension benefits.
GASB	The Governmental Accounting Standards Board is an organization that exists with authority to promulgate accounting standards for state and local governmental entities.
Long-Term Expected Rate of Return	The long-term rate of return is the expected return to be earned over the entire trust portfolio based on the asset allocation of the portfolio.
Money-Weighted Rate of Return	The money-weighted rate of return is a method of calculating the returns that adjusts for the changing amounts actually invested. For purposes of GASB Statement No. 67, money-weighted rate of return is calculated as the internal rate of return on pension plan investments, net of pension plan investment expense.
Multiple-Employer Defined Benefit Pension Plan	A multiple-employer plan is a defined benefit pension plan that is used to provide pensions to the employees of more than one employer.
Municipal Bond Rate	The Municipal Bond Rate is the discount rate to be used for those benefit payments that occur after the assets of the trust have been depleted.
Net Pension Liability (NPL)	The NPL is the liability of employers and non-employer contributing entities to plan members for benefits provided through a defined benefit pension plan.
Non-Employer Contributing Entities	Non-employer contributing entities are entities that make contributing to a pension plan that is used to provide pensions to the employees of other entities. For purposes of the GASB Accounting Statements No. 67 and No. 68 plan members are not considered non-employer contributing entities.
Normal Cost	The actuarial present value of the pension trust benefits allocated to the current year by the actuarial cost method.
Other Postemployment Benefits (OPEB)	All postemployment benefits other than retirement income (such as death benefits, life insurance, disability, and long-term care) that are provided separately from a pension plan, as well as postemployment healthcare benefits regardless of the manner in which they are provided. Other postemployment benefits do not include termination benefits.
Real Rate of Return	The real rate of return is the rate of return on an investment after adjustment to eliminate inflation.
Service Cost	The service cost is the portion of the actuarial present value of projected benefit payments that is attributed to a valuation year.

Glossary of Terms

Total Pension Expense — The total pension expense is the sum of the following items that are recognized at the end of the employer's fiscal year:

1. Service Cost
2. Interest on the Total Pension Liability
3. Current-Period Changes in Benefit Terms
4. Employee Contributions
5. Projected Earnings on Plan Investments
6. Pension Plan Administrative Expense
7. Other Changes in Plan Fiduciary Net Position
8. Recognition of Outflow (Inflow) of Resources due to the difference between expected and actual in measurement of the Total Pension Liability
9. Recognition of Outflow (Inflow) of Resources due to Assumption Changes
10. Recognition of Outflow (Inflow) of Resources due to the difference between projected and actual earnings on pension plan investments

Total Pension Liability (TPL) — The TPL is the portion of the actuarial present value of projected benefit payments that is attributed to past periods of member service.

Unfunded Actuarial Accrued Liability (UAAL) — The UAAL is the difference between actuarial accrued liability and valuation assets.

Valuation Assets — The valuation assets are the plan fiduciary net position used in determining the net position liability of the plan. For purposes of the GASB Statement No. 67, the asset valuation method is equal to the market value of assets.