Minnesota State Retirement System
Judges Retirement Fund

GASB Statements No. 67 and No. 68
Accounting and Financial Reporting for Pensions
June 30, 2023

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November 27, 2023

Minnesota State Retirement System
Judges 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 Judges 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. The 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 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, 2023 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 Judges 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 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 Christensen, FSA, EA, FCA, MAAA

BJW/SLC:ah

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SECTION A

EXECUTIVE SUMMARY

Executive Summary
as of June 30, 2023 (Dollars in Thousands)

	2023
Actuarial Valuation Date	June 30, 2023
Measurement Date of the Net Pension Liability	June 30, 2023
Membership	
Number of	
- Service Retirements	330
- Survivors	79
- Disability Retirements	12
- Deferred Retirements	17
- Terminated Other Non-vested	1
- Active Members	321
- Total	760
Covered-Employee Payroll	$ 54,422 [1]
Net Pension Liability	
Total Pension Liability	$ 430,526
Plan Fiduciary Net Position	268,987
Net Pension Liability	$ 161,539
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	62.48%
Net Pension Liability as a Percentage of Covered-Employee Payroll	296.83%
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	3.86% [2]
Last year ending June 30 in the 2024 to 2123 projection period for which projected benefit payments are fully funded	2123
Total Pension Expense/(Income)	$ 17,176

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	$ 1,224	$ 2,356
Changes in assumptions	9,878	14,138
Net difference between projected and actual earnings on pension plan investments	22,252	23,633
Total	$ 33,354	$ 40,127

[1] *Assumed equal to actual employer contributions (not including $6 million state contribution) divided by employer 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.

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 Judges Retirement Fund subsequent to the measurement date of June 30, 2023.

The pension expense 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 to 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.

Both GASB Statements No. 67 and No. 68 require the notes to 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 Judges Retirement Fund, can be found online at www.msrs.state.mn.us/annual-reports-fy-2023 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
- 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 decline 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 25 years; and
3. The unfunded liability will grow initially as a dollar 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

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, 2023 and a measurement date of June 30, 2023.

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 long-term expected rate of return on pension plan investments is 7.00%; the municipal bond rate is 3.86% (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, 2023 (Dollars in Thousands)

A. Expense			
1.	Service Cost	$	11,063
2.	Interest on the Total Pension Liability		28,538
3.	Current-Period Benefit Changes		295
4.	Employee Contributions		(4,121)
5.	Projected Earnings on Plan Investments		(16,907)
6.	Pension Plan Administrative Expense		76
7.	Other Changes in Plan Fiduciary Net Position		-
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		(400)
9.	Recognition of Outflow (Inflow) of Resources due to assumption changes		
	Arising from Current Reporting Period		(1,996)
10.	Recognition of Outflow (Inflow) of Resources due to the difference between projected (7.50%) and actual earnings on Pension Plan Investments		
	Arising from Current Reporting Period		(1,021)
11.	**Increases/(Decreases) from Experience in the Current Reporting Period**	**$**	**15,527**
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	$	111
13.	Recognition of Outflow (Inflow) of Resources due to assumption changes		
	Arising from Prior Reporting Periods		2,888
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		(1,350)
15.	**Total Pension Expense / (Income)**	**$**	**17,176**

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 3,640 years. Additionally, the total plan membership (active employees and inactive employees) was 752. 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 5.0000 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, 2023 (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	$	(2,002)
2. Assumption Changes (gains) or losses		(9,979)
3. Recognition period for Liabilities: Average of the expected remaining service lives of all employees {in years}		5
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		(400)
5. Outflow (Inflow) of Resources to be recognized in the current pension expense for Assumption Changes		(1,996)
6. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Liabilities	$	(2,396)
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	$	(1,602)
8. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses for Assumption Changes		(7,983)
9. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Liabilities	$	(9,585)
B. Outflows (Inflows) of Resources due to Assets		
1. Net difference between projected and actual earnings on pension plan investments (gains) or losses	$	(5,106)
2. Recognition period for Assets {in years}		5
3. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Assets		(1,021)
4. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Assets	$	(4,085)

Statement of Outflows and Inflows
Arising from Current and Prior Reporting Periods
Fiscal Year Ended June 30, 2023 (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	$ 5,507	$ 4,904	$ 603
2. Due to Assets	8,423	10,794	(2,371)
3. Total	$ 13,930	$ 15,698	$ (1,768)

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	$ 568	$ 857	$ (289)
2. Assumption Changes	4,939	4,047	892
3. Net Difference between projected and actual earnings on pension plan investments	8,423	10,794	(2,371)
4. Total	**$ 13,930**	**$ 15,698**	**$ (1,768)**

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	$ 1,224	$ 2,356	$ (1,132)
2. Assumption Changes	9,878	14,138	(4,260)
3. Net Difference between projected and actual earnings on pension plan investments*	22,252	23,633	(1,381)
4. Total	**$ 33,354**	**$ 40,127**	**$ (6,773)**

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
2024	$ (2,028)
2025	(3,229)
2026	1,902
2027	(3,418)
2028	-
Thereafter	-
Total	**$ (6,773)**

** 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, 2023 (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	$ 804	5.0000	$ 160	$ 0	0.0000
2020	(802)	5.0000	(161)	(161)	1.0000
2021	(1,481)	5.0000	(296)	(593)	2.0000
2022	2,040	5.0000	408	1,224	3.0000
2023	(2,002)	5.0000	(400)	(1,602)	4.0000
Total			**$ (289)**	**$ (1,132)**	
Deferred Outflow (Inflow) Due to Assumption Changes					
2021	$ 24,695	5.0000	$ 4,939	$ 9,878	2.0000
2022	(10,257)	5.0000	(2,051)	(6,155)	3.0000
2023	(9,979)	5.0000	(1,996)	(7,983)	4.0000
Total			**$ 892**	**$ (4,260)**	
Deferred Outflow (Inflow) Due to Differences Between Projected and Actual Earnings on Plan Investments					
2019	$ 491	5.0000	$ 99	$ 0	0.0000
2020	6,797	5.0000	1,360	1,360	1.0000
2021	(48,867)	5.0000	(9,773)	(19,548)	2.0000
2022	34,820	5.0000	6,964	20,892	3.0000
2023	(5,106)	5.0000	(1,021)	(4,085)	4.0000
Total			**$ (2,371)**	**$ (1,381)**	
Deferred Outflow (Inflow) Due to All Sources					
Total			**$ (1,768)**	**$ (6,773)**	

Statement of Fiduciary Net Position as of June 30, 2023 (Dollars in Thousands)

Assets	June 30, 2023	
Cash & Short-term Investments	$	9,182
Receivables		549
Investment Pools (at fair value)		259,395
Securities Lending Collateral		13,891
Capital Assets		-
Total Assets	**$**	**283,017**
Total Deferred Outflows of Resources	**$**	**-**
Total Liabilities	**$**	**(14,030)**
Total Deferred Inflows of Resources	**$**	**-**
Net Position Restricted for Pensions	**$**	**268,987**

Statement of Changes in Fiduciary Net Position for the Fiscal Year Ended June 30, 2023 (Dollars in Thousands)

1. Net position at market value at beginning of year	**$**	**253,971**
Additions		
2. Contributions		
a. Employee	$	4,121
b. Employer		12,245
c. Other sources		6,000
d. Total contributions	$	22,366
3. Investment income		
a. Investment income/(loss)	$	22,287
b. Investment expenses		(274)
c. Net investment income/(loss)	$	22,013
4. Other Additions		-
5. Total Additions *(2.d.) + (3.c.) + (4.)*	**$**	**44,379**
Deductions		
6. Benefits Paid		
a. Annuity benefits	$	(29,287)
b. Refunds		-
c. Total benefits paid	$	(29,287)
7. Expenses		
a. Other deductions	$	-
b. Administrative		(76)
c. Total expenses	$	(76)
8. Total deductions *(6.c.) + (7.c.)*	**$**	**(29,363)**
9. Net increase/(decrease) in fiduciary net position *(5.) + (8.)*	**$**	**15,016**
10. Net position at market value at end of year *(1.) + (9.)*	**$**	**268,987**
11. State Board of Investment calculated annual investment return for the Judges Retirement Fund*		8.8%

** The fiscal year 2023 investment return for the Combined Funds is 8.9%.*

SECTION C

REQUIRED SUPPLEMENTARY INFORMATION

Schedule of Changes in Net Pension Liability and Related Ratios
Current Period
Fiscal Year Ended June 30, 2023 (Dollars in Thousands)

A. Total pension liability			
1. Service Cost	$	11,063	
2. Interest on the total pension liability		28,538	
3. Changes of benefit terms		295	
4. Difference between expected and actual experience of the total pension liability		(2,002)	
5. Changes of assumptions		(9,979)	
6. Benefit payments, including refunds of employee contributions		(29,287)	
7. Net change in total pension liability	$	(1,372)	
8. Total pension liability – beginning		431,898	
9. Total pension liability – ending	**$**	**430,526**	
B. Plan fiduciary net position			
1. Contributions – employer	$	18,245	(1)
2. Contributions – employee		4,121	
3. Net investment income		22,013	
4. Benefit payments, including refunds of employee contributions		(29,287)	
5. Pension plan administrative expense		(76)	
6. Other changes		-	
7. Net change in plan fiduciary net position	$	15,016	
8. Plan fiduciary net position – beginning		253,971	
9. Plan fiduciary net position – ending	**$**	**268,987**	
C. Net pension liability, *A.9 - B.9.*	**$**	**161,539**	
D. Plan fiduciary net position as a percentage of the total pension liability, *B.9 / A.9.*		**62.48%**	
E. Covered-employee payroll	**$**	**54,422**	(2)
F. Net pension liability as a percentage of covered-employee payroll, *C. / E.*		**296.83%**	

(1) *Includes $6 million supplemental state aid.*

(2) *Assumed equal to actual employer contributions (not including $6 million in state contributions) divided by employer 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,	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014
Total Pension Liability										
Service Cost	$ 11,063	$ 11,707	$ 10,204	$ 9,897	$ 9,881	$ 9,857	$ 9,483	$ 13,711	$ 12,251	$ 12,075
Interest on the Total Pension Liability	28,538	27,360	29,568	28,721	27,769	26,746	25,367	21,349	21,773	20,535
Benefit Changes	295	0	(9,525)	0	0	0	0	0	0	0
Experience[1]	(2,002)	2,040	(1,481)	(802)	804	1,424	(4,958)	7,135	(4,366)	5,080
Assumption Changes	(9,979)	(10,257)	24,695	0	0	0	11,652	(85,756)	21,696	(8,416)
Benefit Payments	(29,287)	(28,035)	(27,038)	(26,272)	(25,233)	(23,585)	(22,785)	(22,378)	(21,893)	(20,802)
Refunds	0	0	0	(30)	0	0	(309)	0	0	0
Net Change in Total Pension Liability	$ (1,372)	$ 2,815	$ 26,423	$ 11,514	13,221	14,442	18,450	(65,939)	29,461	8,472
Total Pension Liability - Beginning	431,898	429,083	402,660	391,146	377,925	363,483	345,033	410,972	381,511	373,039
Total Pension Liability - Ending (a)	**$ 430,526**	**$ 431,898**	**$ 429,083**	**$ 402,660**	**$ 391,146**	**$ 377,925**	**$ 363,483**	**$ 345,033**	**$ 410,972**	**$ 381,511**
Plan Fiduciary Net Position										
Employer Contributions [2]	$ 18,245	$ 18,248	$ 17,916	$ 17,767	$ 17,287	$ 17,027	$ 13,758	$ 10,219	$ 9,776	$ 9,426
Employee Contributions	4,121	4,214	4,166	4,168	4,049	3,973	3,932	3,763	3,629	3,578
Pension Plan Net Investment Income	22,013	(17,022)	64,934	8,955	14,491	19,265	24,729	(186)	7,572	28,011
Benefit Payments	(29,287)	(28,035)	(27,038)	(26,272)	(25,233)	(23,585)	(22,785)	(22,378)	(21,893)	(20,802)
Refunds	0	0	0	(30)	0	0	(309)	0	0	0
Pension Plan Administrative Expense	(76)	(72)	(77)	(113)	(87)	(66)	(89)	(93)	(60)	(55)
Other Changes	0	0	0	0	0	0	0	0	0	0
Net Change in Plan Fiduciary Net Position	**$ 15,016**	**$ (22,667)**	**$ 59,901**	**$ 4,475**	**10,507**	**16,614**	**19,236**	**(8,675)**	**(976)**	**20,158**
Plan Fiduciary Net Position - Beginning	**$ 253,971**	**$ 276,638**	**$ 216,737**	**$ 212,262**	**201,755**	**185,141**	**165,905**	**174,580**	**175,556**	**155,398**
Plan Fiduciary Net Position - Ending (b)	**$ 268,987**	**$ 253,971**	**$ 276,638**	**$ 216,737**	**$ 212,262**	**$ 201,755**	**$ 185,141**	**$ 165,905**	**$ 174,580**	**$ 175,556**
Net Pension Liability - Ending (a) - (b)	**$ 161,539**	**$ 177,927**	**$ 152,445**	**$ 185,923**	**178,884**	**176,170**	**178,342**	**179,128**	**236,392**	**205,955**
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	**62.48 %**	**58.80 %**	**64.47 %**	**53.83 %**	**54.27 %**	**53.38 %**	**50.94 %**	**48.08 %**	**42.48 %**	**46.02 %**
Covered-Employee Payroll[3]	**$ 54,422**	**$ 54,436**	**$ 52,960**	**$ 52,298**	**$ 50,164**	**$ 49,009**	**$ 47,813**	**$ 45,418**	**$ 43,449**	**$ 41,893**
Net Pension Liability as a Percentage of Covered-Employee Payroll	**296.83 %**	**326.86 %**	**287.85 %**	**355.51 %**	**356.60 %**	**359.46 %**	**373.00 %**	**394.40 %**	**544.07 %**	**491.62 %**

(1) *Includes impact of changes in expected timing of future post-retirement benefit increases.*

(2) *Includes $3 million supplemental state aid for fiscal year ending 2017 and $6 million annual supplemental state aid thereafter.*

(3) *Assumed equal to actual employer contributions (not including $6 million in state contributions) divided by employer contribution rate.*

Schedule of Net Pension Liability Multiyear (Dollars in Thousands)

Last 10 Fiscal Years

Fiscal Year Ending June 30,	Total Pension Liability (a)	Plan Net Position (b)	Net Pension Liability (a) - (b) = (c)	Plan Net Position as a % of Total Pension Liability (b)/(c)	Covered-Employee Payroll (d)	Net Pension Liability as a % of Covered-Employee Payroll (c)/(d)
2014	$ 381,511	$ 175,556	$ 205,955	46.02%	$ 41,893	491.62%
2015	410,972	174,580	236,392	42.48	43,449	544.07
2016	345,033	165,905	179,128	48.08	45,418	394.40
2017	363,483	185,141	178,342	50.94	47,813	373.00
2018	377,925	201,755	176,170	53.38	49,009	359.46
2019	391,146	212,262	178,884	54.27	50,164	356.60
2020	402,660	216,737	185,923	53.83	52,298	355.51
2021	429,083	276,638	152,445	64.47	52,960	287.85
2022	431,898	253,971	177,927	58.80	54,436	326.86
2023	430,526	268,987	161,539	62.48	54,422	296.83

Schedule of Contributions Multiyear (Dollars in Thousands)

Last 10 Fiscal Years

Fiscal Year Ending June 30,	Actuarially Determined Contribution [1]	Actual Contributions	Contribution Deficiency (Excess)	Covered-Employee Payroll [2]	Actual Contributions as a % of Covered-Employee Payroll
	(a)	(b)	(a) - (b) = (c)	(d)	(b)/(d)
2014	$ 14,193	$ 9,426	$ 4,767	$ 41,893	22.50%
2015	14,298	9,776	4,522	43,449	22.50
2016	15,644	10,219	5,425	45,418	22.50
2017	16,790	13,758 [3]	3,032	47,813	28.77
2018	18,032	17,027 [3]	1,005	49,009	34.74
2019	17,491	17,287 [3]	204	50,164	34.46
2020	18,304	17,767 [3]	537	52,298	33.97
2021	18,167	17,916 [3]	251	52,960	33.83
2022	15,661	18,248 [3]	(2,587)	54,436	33.52
2023	15,155	18,245 [3]	(3,090)	54,422	33.53

Notes to Schedule of Contributions

Methods and Assumptions Used to Determine Fiscal Year Ending June 30, 2023 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] Assumed equal to actual employer contributions (not including $6 million in state contributions) divided by employer contribution rate. [3] Includes supplemental state aid of $3,000 for fiscal year ending June 30, 2017 and $6,000 annual supplemental state aid thereafter.
Valuation Date	June 30, 2022
Actuarial Cost Method	Entry Age Normal
Amortization Method	Level Percentage of Payroll, Closed
Remaining Amortization Period	26 years
Asset Valuation Method	5-Year smoothed market; no corridor
Inflation	2.25%
Payroll Increases	2.50%
Salary Increases	2.50%
Investment Rate of Return	7.50%
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, dated June 30, 2020.
Healthy Post-Retirement Mortality	Pub-2010 General annuitant generational mortality tables, projected with scale MP-2019 from a base year of 2010.
Other Information	
Benefit Increases After Retirement	1.50% per year.

See separate funding actuarial valuation report as of July 1, 2022 for additional detail. To obtain this report, contact MSRS as noted on page 3. This report is also available online at:

https://www.msrs.state.mn.us/annual-reports-fy-2022

Schedule of Investment Returns Multiyear

Last 10 Fiscal Years

Fiscal Year Ending June 30,	Annual Return[1]
2014	18.7 %
2015	4.5
2016	(0.1)
2017	15.2
2018	10.5
2019	7.2
2020	4.2
2021	30.1
2022	(6.2)
2023	8.8

[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, 2023, the annual money-weighted rate of return for the Judges Retirement Fund was 8.8%. 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 355, St. Paul, Minnesota, 55103, via email at minn.sbi@state.mn.us or telephone at 1.651.296.3328.

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 real rate of return for the portfolio. Inflation expectations were applied to derive the nominal rate of return for the portfolio. For each asset class that is included in the pension fund's target asset allocation as of June 30, 2023, 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 projected to be available to make 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 fund's net pension liability, calculated using a single discount rate of 7.00%, as well as what the fund's net pension liability would be if it were calculated using a single discount rate that is 1-percentage-point lower (6.00%) or 1-percentage-point 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	$472,852	$430,526	$394,145
Net Position Restricted for Pensions	268,987	268,987	268,987
Net Pension Liability	**$203,865**	**$161,539**	**$125,158**

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	**$ 431,898**	**$ 253,971**	**$ 177,927**	**$ 47,284**	**$ 38,738**	
Changes for the Year:						
Service Cost	$ 11,063		$ 11,063			$ 11,063
Interest on Total Pension Liability	28,538		28,538			28,538
Interest on Plan Fiduciary Net Position		$ 16,907 [1]	(16,907)			(16,907)
Changes in Benefit Terms	295		295			295
Liability Experience Gains and Losses	(2,002)		(2,002)	$ -	$ 1,602	(400)
Changes in Assumptions	(9,979)		(9,979)	-	7,983	(1,996)
Recognition of Deferred Outflows/(Inflows) of Resources Arising from Prior Reporting Periods						
Liability Experience Gains/(Losses)				(568)	(457)	111
Assumption Changes				(4,939)	(2,051)	2,888
Investment Gains/(Losses)				(8,423)	(9,773)	(1,350)
Contributions - Employer		18,245	(18,245)			
Contributions - Employees		4,121	(4,121)			(4,121)
Asset Gain/(Loss)		5,106 [1]	(5,106)	-	4,085	(1,021)
Benefit Payments and Refunds	(29,287)	(29,287)	-			
Administrative Expenses		(76)	76			76
Other Changes						
Net Changes	**$ (1,372)**	**$ 15,016**	**$ (16,388)**	**$ (13,930)**	**$ 1,389**	**$ 17,176**
Balance End of Year	**$ 430,526**	**$ 268,987**	**$ 161,539**	**$ 33,354**	**$ 40,127**	

(1) The sum of these items in column (b) equals the net investment income of $22,013.

Summary of Population Statistics

		Terminated		Recipients			
	Actives*	Deferred Retirement	Other Non-Vested	Service Retirement	Disability Retirement	Survivor	Total
Members on July 1, 2022	**320**	**19**	**1**	**324**	**14**	**74**	**752**
New members	17						**17**
Return to active	0	0	0	0	0	0	**0**
Terminated non-vested	0	0	0	0	0	0	**0**
Service retirements	(13)	(4)	0	17	0	0	**0**
Terminated deferred	(2)	2	0	0	0	0	**0**
Terminated refund/transfer	0	0	0	0	0	0	**0**
Deaths	(1)	0	0	(11)	(2)	(2)	**(16)**
New beneficiary	0	0	0	0	0	7	**7**
Disabled	0	0	0	0	0	0	**0**
Unexpected status changes	0	0	0	0	0	0	**0**
Net change	1	(2)	0	6	(2)	5	**8**
Members on July 1, 2023	**321**	**17**	**1**	**330**	**12**	**79**	**760**

* *Includes Tier 1 active Judges who have reached the maximum benefit formula (employee contributions are directed to the Unclassified Employees Retirement Plan).*

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	A judge or justice of any court. If the member was active prior to January 1, 1974, benefits may be computed according to provisions of the prior plan.
Tier 1 / Tier 2 member	Tier 1 includes judges or justices first appointed or elected before July 1, 2013, and Tier 2 includes judges or justices first appointed or elected after June 30, 2013. A judge or justice with less than five years of service as of December 30, 2013, may make a one-time irrevocable election into Tier 2. For the purpose of this valuation, we have assumed no Tier 1 members elected Tier 2 benefits as of the valuation date.
Contributions	
Member	9.00% of salary for Tier 1 members, 7.00% of salary for Tier 2 members. Tier 1 member contributions after maximum benefit is reached are redirected to the Unclassified Employees Retirement Plan.
Employer	22.50% of salary.
	Member contributions are "picked up" according to the provisions of Internal Revenue Code 414(h).
State contributions	$6,000,000 per year until the Plan is fully funded for a minimum of three consecutive years on an actuarial value of assets basis. Additional one-time direct state aid payment of $293,032, payable October 1, 2023.
Allowable service	Service as a judge. Credit may also be earned for uncredited judicial service if the appropriate employee contributions, with interest, are made.
Salary	Salary set by law.
Average salary	Average of the five highest years of salary of the last 10 years prior to termination of judicial service.

Summary of Plan Provisions (Continued)

Retirement	
Normal retirement benefit	
Age/Service requirement	First appointed as a judge before July 1, 2013 (Tier 1): (a.) Age 65 and five years of Allowable Service (b.) Age 70 (mandatory retirement age) First appointed as a judge after June 30, 2013 (Tier 2): (a.) Age 66 and five years of Allowable Service (b.) Age 70 (mandatory retirement age) Judges appointed before July 1, 2013, with less than five years of allowable service on or before December 31, 2013, may make a one-time election for the Tier 2 benefit package.
Amount	First appointed as a judge before July 1, 2013 (Tier 1): 2.70% of Average Salary for each year of Allowable Service prior to July 1, 1980, and 3.20% of Average Salary for each year of Allowable Service after June 30, 1980. Maximum benefit equal to 76.80% of Average Salary. First appointed as a judge after June 30, 2013 (Tier 2): 2.50% of Average Salary for each year of Allowable Service. Tier 1 who elected into Tier 2: 3.20% of Average Salary for each year of Allowable Service prior to January 1, 2014, plus 2.50% of Average Salary for each year of Allowable Service after December 31, 2013.
Early retirement	
Age/Service requirement	Age 60 and five years of Allowable Service.
Amount	Normal Retirement Benefit based on Allowable Service and Average Salary at retirement date with reduction of 0.50% for each month the member is under Normal Retirement Age at time of retirement.
Form of payment	Life annuity. Actuarially equivalent options are: (a.) 50%,75% or 100% joint and survivor with no bounce back feature (b.) 50%, 75% or 100% with bounce back feature (c.) 15-year certain and life thereafter
Benefit increases	1.50% 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. An additional one-time, non-compounding benefit increase of 1.00%, payable for calendar year 2024 in a lump sum by March 31, 2024, to benefit recipients who have been receiving a benefit for at least 12 full months as of June 30, 2023.

Summary of Plan Provisions (Continued)

Disability

<u>Disability benefit</u>

Age/Service requirement	Permanent inability to perform the function of judge.
Amount	No benefit is paid by the Fund. Instead salary is continued for one year but not beyond age 70. Employee contributions continue and Allowable Service is earned. If disability continues after the first year (or at age 70 if earlier), the larger of 25.00% of Average Salary or the Normal Retirement Benefit, without reduction.

<u>Retirement after disability</u>

Age/Service requirement	Member is still disabled after salary payments cease after one year or at age 70, if earlier.
Amount	No change in disability benefit amount from pre-retirement computed benefit amount.
<u>Form of payment</u>	Same as for retirement.
<u>Benefit increases</u>	Same as for retirement.

Death

<u>Survivor's benefit</u>

Age/service requirement	Active or disabled member dies before retirement or a former member eligible for a deferred annuity dies.
Amount	Larger of 25% of Average Salary or 60% of Normal Retirement Benefit earned at date of death. If member dies after age 60 with five or more years of service, spouse may receive the 100% joint and survivor benefit the member had earned as of date of death. Benefit paid to spouse for life. If no spouse, benefit is paid to surviving dependent children until child marries, dies, or attains age 18 (age 22 if full-time student).
Benefit increases	Same as for retirement.

<u>Refund of contributions</u>

Age/service requirement	Member dies prior to retirement or former member eligible for a deferred annuity dies and survivors' 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 at 4.00% interest. Beginning July 1, 2018, a member's contributions increase at 3.00% interest.

Summary of Plan Provisions (Continued)

Termination	
Refund of contributions	
Age/Service requirement	Termination of service as a judge.
Amount	Member's contributions with 6.00% interest through June 30, 2011. Beginning July 1, 2011, a member's contributions increase at 4.00% interest. Beginning July 1, 2018, a member's contributions increase at 3.00% interest. If a member is vested, a deferred annuity may be elected in lieu of a refund.
Deferred benefit	
Age/service requirement	Five years of Allowable Service.
Amount	Benefit computed under law in effect at termination. 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%.
Form of payment	Same as for retirement.
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 66 in 2021, reflecting projected mortality improvements using Scale MP-2017, white collar adjustment, blended 70% males, 5.65% 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%.
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; and (b.) Average salary is based on the high five consecutive years during their entire service in all covered plans.

Summary of Plan Provisions (Concluded)

Changes in plan provisions	State contributions will continue until the plan is fully funded for a minimum of three consecutive years on an actuarial value of assets basis. These contributions were previously due to expire at the earlier of 1) the year after the plan reaches full funding on an actuarial value of assets basis, and 2) July 1, 2048. Additional one-time direct state aid contribution of $293,032 will be contributed to the Plan on October 1, 2023. A one-time, non-compounding benefit increase of 1.00% will be payable in a lump sum for calendar year 2024 by March 31, 2024.

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 dated June 29, 2023.

Investment return	7.00% per annum.
Single discount rate	7.00% per annum.
Salary increases	2.50% per year.
Payroll growth	2.50% per year.
Inflation	2.25% 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.
Withdrawal	None.
Disability	Age-related rates based on experience; see table of sample rates.
Administrative expenses	In the valuation year, equal to prior year administrative expenses expressed as a 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.

Summary of Actuarial Assumptions (Continued)

Commencement of deferred benefits	Members receiving deferred annuities (including current terminated deferred members) are assumed to begin receiving benefits at age 65.
Percentage married	Marital status as indicated by data.
Age of spouse	Male members are assumed to have a beneficiary three years younger and female members are assumed to have a beneficiary two years older.
Form of payment	Members are assumed to elect a life annuity.
Allowance for combined service annuity	None.
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	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.
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. There were no members reported with missing or invalid birth dates. In cases where submitted data was missing or incomplete, the following assumptions were applied: Data for active members: There were 7 Tier 1 members who have reached the 24-year service cap. These members are reflected as active members in this valuation. We assumed these members earned the greater of the salary reported under the Unclassified Employees Retirement Plan or $162,995.04 for the July 1, 2022 to June 30, 2023 plan year. There were no members reported with missing service. There were 3 members reported with a missing or invalid gender. We assumed female gender.

Summary of Actuarial Assumptions (Continued)

Unknown data for certain members (Concluded)	Data for terminated members: There were no members reported without a benefit and no members reported with a missing or invalid gender. Data for members receiving benefits: There were no members reported without a benefit. There were 3 members reported with a missing gender. We assumed male gender for retirees and female gender for survivors. There was 1 retiree 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 increase to the life annuity value (i.e. bounce back), if applicable. There were 3 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 no survivors reported on the data file with an expired benefit. There were retired members reported with a survivor option and an invalid or missing survivor gender (37 members) and/or survivor date of birth (30 members). We used the valuation assumptions if the survivor gender or date of birth was missing or invalid.
Changes in actuarial assumptions	The investment return and single discount rate were changed from 6.75% to 7.00%.

Summary of Actuarial Assumptions (Concluded)

Age in 2023	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	0.85	0.76
45	0.12	0.07	0.10	0.06	1.06	0.99
50	0.28	0.21	0.14	0.08	1.50	1.41
55	0.41	0.29	0.21	0.13	2.03	1.80
60	0.63	0.41	0.33	0.20	2.57	2.07
65	0.91	0.59	0.47	0.29	3.05	2.18
70	1.41	0.95	0.65	0.44	3.62	2.56
75	2.39	1.68	0.98	0.72	4.64	3.56
80	4.28	3.09	1.55	1.22	6.59	5.52
85	7.84	5.83	6.59	5.01	9.87	8.76
90	13.58	10.85	13.58	10.85	15.04	12.91

* *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.*

Percentage of Eligible Members Retiring each Year

Age	Disabled Retirement	Age	Healthy Retirement
20	0.000%	60	0.0%
25	0.000	61	2.5
30	0.000	62	4.0
35	0.000	63	8.0
40	0.006	64	8.0
45	0.018	65	25.0
50	0.030	66	23.0
55	0.072	67	15.0
60	0.186	68	20.0
65	0.000	69	40.0
70	0.000	70	100.0

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 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 bond 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 3.86% (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, 2023 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)

Fiscal Year Ending	Projected Covered-Employee Payroll			Projected Contributions				
	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)	(e)	(f)		(g) = (d) + (e) + (f)
2023	$ 54,422		$ 54,422					
2024	52,531	$ 1,059	53,590	$ 3,956	$ 11,819	$ 125	$ 6,293	$ 22,193
2025	51,040	3,890	54,930	3,829	11,484	458	6,000	21,771
2026	49,382	6,921	56,303	3,683	11,111	814	6,000	21,608
2027	48,037	9,674	57,711	3,518	10,808	1,138	6,000	21,464
2028	46,389	12,765	59,154	3,410	10,438	1,501	6,000	21,349
2029	44,442	16,191	60,633	3,267	10,000	1,904	6,000	21,171
2030	42,353	19,795	62,148	3,095	9,529	2,328	6,000	20,952
2031	40,303	23,399	63,702	2,849	9,068	2,752	6,000	20,669
2032	38,089	27,206	65,295	2,679	8,570	3,199	6,000	20,448
2033	35,879	31,048	66,927	2,512	8,073	3,651	6,000	20,236
2034	33,821	34,779	68,600	2,324	7,610	4,090	6,000	20,024
2035	31,795	38,520	70,315	2,164	7,154	4,530	6,000	19,848
2036	29,458	42,615	72,073	1,945	6,628	5,012	6,000	19,585
2037	26,953	46,922	73,875	1,778	6,064	5,518	6,000	19,360
2038	24,659	51,063	75,722	1,578	5,548	6,005	6,000	19,131
2039	22,433	55,182	77,615	1,462	5,047	6,489	6,000	18,998
2040	20,159	59,396	79,555	1,335	4,536	6,985	6,000	18,856
2041	17,868	63,676	81,544	1,198	4,020	7,488	6,000	18,706
2042	15,712	67,871	83,583	1,064	3,535	7,982	6,000	18,581
2043	13,574	72,098	85,672	929	3,054	8,479	6,000	18,462
2044	11,481	76,333	87,814	794	2,583	8,977	6,000	18,354
2045	9,533	80,477	90,010	663	2,145	9,464	6,000	18,272
2046	7,683	84,577	92,260	536	1,729	9,946	6,000	18,211
2047	6,085	88,481	94,566	426	1,369	10,405	6,000	18,200
2048	4,693	92,237	96,930	328	1,056	10,847	6,000	18,231
2049	3,427	95,927	99,354	240	771	11,281	6,000	18,292
2050	2,398	99,439	101,837	168	540	11,694	-	12,402
2051	1,697	102,686	104,383	119	382	12,076	-	12,577
2052	1,187	105,806	106,993	83	267	12,443	-	12,793
2053	684	108,984	109,668	48	154	12,817	-	13,019
2054	346	112,064	112,410	24	78	13,179	-	13,281
2055	242	114,978	115,220	17	54	13,521	-	13,592
2056	176	117,924	118,100	12	40	13,868	-	13,920
2057	68	120,985	121,053	5	15	14,228	-	14,248
2058	-	124,079	124,079	-	-	14,592	-	14,592
2059	-	127,181	127,181	-	-	14,956	-	14,956
2060	-	130,361	130,361	-	-	15,330	-	15,330
2061	-	133,620	133,620	-	-	15,714	-	15,714
2062	-	136,960	136,960	-	-	16,107	-	16,107
2063	-	140,384	140,384	-	-	16,509	-	16,509
2064	-	143,894	143,894	-	-	16,922	-	16,922
2065	-	147,491	147,491	-	-	17,345	-	17,345
2066	-	151,178	151,178	-	-	17,779	-	17,779
2067	-	154,958	154,958	-	-	18,223	-	18,223
2068	-	158,832	158,832	-	-	18,679	-	18,679
2069	-	162,803	162,803	-	-	19,146	-	19,146
2070	-	166,873	166,873	-	-	19,624	-	19,624
2071	-	171,044	171,044	-	-	20,115	-	20,115
2072	-	175,321	175,321	-	-	20,618	-	20,618
2073	-	179,704	179,704	-	-	21,133	-	21,133

1. *Equal to total contributions (29.50% of new employee payroll) net of new employee normal cost and expenses (17.74% of pay).*
2. *Additional State contributions equal to $6 million are assumed to stop after 26 years. An additional one-time direct state aid payment of $293,032 is included for 2024.*

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)	(e)	(f)		(g) = (d) + (e) + (f)
2074	$ -	$ 184,196	$ 184,196	$ -	$ -	$ 21,661	$ -	$ 21,661
2075	-	188,801	188,801	-	-	22,203	-	22,203
2076	-	193,521	193,521	-	-	22,758	-	22,758
2077	-	198,359	198,359	-	-	23,327	-	23,327
2078	-	203,318	203,318	-	-	23,910	-	23,910
2079	-	208,401	208,401	-	-	24,508	-	24,508
2080	-	213,611	213,611	-	-	25,121	-	25,121
2081	-	218,951	218,951	-	-	25,749	-	25,749
2082	-	224,425	224,425	-	-	26,392	-	26,392
2083	-	230,036	230,036	-	-	27,052	-	27,052
2084	-	235,787	235,787	-	-	27,729	-	27,729
2085	-	241,681	241,681	-	-	28,422	-	28,422
2086	-	247,723	247,723	-	-	29,132	-	29,132
2087	-	253,916	253,916	-	-	29,861	-	29,861
2088	-	260,264	260,264	-	-	30,607	-	30,607
2089	-	266,771	266,771	-	-	31,372	-	31,372
2090	-	273,440	273,440	-	-	32,157	-	32,157
2091	-	280,276	280,276	-	-	32,960	-	32,960
2092	-	287,283	287,283	-	-	33,784	-	33,784
2093	-	294,465	294,465	-	-	34,629	-	34,629
2094	-	301,827	301,827	-	-	35,495	-	35,495
2095	-	309,372	309,372	-	-	36,382	-	36,382
2096	-	317,107	317,107	-	-	37,292	-	37,292
2097	-	325,034	325,034	-	-	38,224	-	38,224
2098	-	333,160	333,160	-	-	39,180	-	39,180
2099	-	341,489	341,489	-	-	40,159	-	40,159
2100	-	350,027	350,027	-	-	41,163	-	41,163
2101	-	358,777	358,777	-	-	42,192	-	42,192
2102	-	367,747	367,747	-	-	43,247	-	43,247
2103	-	376,940	376,940	-	-	44,328	-	44,328
2104	-	386,364	386,364	-	-	45,436	-	45,436
2105	-	396,023	396,023	-	-	46,572	-	46,572
2106	-	405,923	405,923	-	-	47,737	-	47,737
2107	-	416,072	416,072	-	-	48,930	-	48,930
2108	-	426,473	426,473	-	-	50,153	-	50,153
2109	-	437,135	437,135	-	-	51,407	-	51,407
2110	-	448,064	448,064	-	-	52,692	-	52,692
2111	-	459,265	459,265	-	-	54,010	-	54,010
2112	-	470,747	470,747	-	-	55,360	-	55,360
2113	-	482,515	482,515	-	-	56,744	-	56,744
2114	-	494,578	494,578	-	-	58,162	-	58,162
2115	-	506,943	506,943	-	-	59,616	-	59,616
2116	-	519,616	519,616	-	-	61,107	-	61,107
2117	-	532,607	532,607	-	-	62,635	-	62,635
2118	-	545,922	545,922	-	-	64,200	-	64,200
2119	-	559,570	559,570	-	-	65,805	-	65,805
2120	-	573,559	573,559	-	-	67,451	-	67,451
2121	-	587,898	587,898	-	-	69,137	-	69,137
2122	-	602,596	602,596	-	-	70,865	-	70,865
2123	-	617,661	617,661	-	-	72,637	-	72,637

1. *Equal to total contributions (29.50% of new employee payroll) net of new employee normal cost and expenses (17.74% of pay).*
2. *Additional State contributions equal to $6 million are assumed to stop after 26 years. An additional one-time direct state aid payment of $293,032 is included for 2024.*

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)
2024	$ 268,987	$ 22,193	$ 30,193	$ 74	$ 18,551	$ 279,464
2025	279,464	21,771	31,248	71	19,234	289,150
2026	289,150	21,608	32,327	69	19,869	298,231
2027	298,231	21,464	33,233	67	20,469	306,864
2028	306,864	21,349	34,256	65	21,034	314,926
2029	314,926	21,171	35,284	62	21,557	322,308
2030	322,308	20,952	36,532	59	22,023	328,692
2031	328,692	20,669	37,469	56	22,429	334,265
2032	334,265	20,448	38,393	53	22,779	339,046
2033	339,046	20,236	39,228	50	23,078	343,082
2034	343,082	20,024	39,818	47	23,333	346,574
2035	346,574	19,848	40,281	45	23,556	349,652
2036	349,652	19,585	40,796	41	23,744	352,144
2037	352,144	19,360	41,348	38	23,892	354,010
2038	354,010	19,131	41,677	35	24,004	355,433
2039	355,433	18,998	41,875	31	24,092	356,617
2040	356,617	18,856	42,051	28	24,164	357,558
2041	357,558	18,706	42,112	25	24,223	358,350
2042	358,350	18,581	42,029	22	24,277	359,157
2043	359,157	18,462	41,877	19	24,335	360,058
2044	360,058	18,354	41,636	16	24,403	361,163
2045	361,163	18,272	41,259	13	24,490	362,653
2046	362,653	18,211	40,793	11	24,609	364,669
2047	364,669	18,200	40,147	9	24,772	367,485
2048	367,485	18,231	39,349	7	24,997	371,357
2049	371,357	18,292	38,456	5	25,301	376,489
2050	376,489	12,402	37,413	3	25,494	376,969
2051	376,969	12,577	36,182	2	25,576	378,938
2052	378,938	12,793	34,845	2	25,767	382,651
2053	382,651	13,019	33,510	1	26,081	388,240
2054	388,240	13,281	32,095	-	26,529	395,955
2055	395,955	13,592	30,568	-	27,133	406,112
2056	406,112	13,920	29,041	-	27,908	418,899
2057	418,899	14,248	27,558	-	28,865	434,454
2058	434,454	14,592	26,077	-	30,016	452,985
2059	452,985	14,956	24,584	-	31,378	474,735
2060	474,735	15,330	23,118	-	32,963	499,910
2061	499,910	15,714	21,680	-	34,788	528,732
2062	528,732	16,107	20,270	-	36,868	561,437
2063	561,437	16,509	18,890	-	39,219	598,275
2064	598,275	16,922	17,542	-	41,858	639,513
2065	639,513	17,345	16,227	-	44,804	685,435
2066	685,435	17,779	14,946	-	48,078	736,346
2067	736,346	18,223	13,703	-	51,700	792,566
2068	792,566	18,679	12,501	-	55,692	854,436
2069	854,436	19,146	11,343	-	60,079	922,318
2070	922,318	19,624	10,233	-	64,885	996,594
2071	996,594	20,115	9,175	-	70,138	1,077,672
2072	1,077,672	20,618	8,172	-	75,865	1,165,983
2073	1,165,983	21,133	7,228	-	82,097	1,261,985

For purposes of this projection, we assumed the 22.5% regular employer statutory contribution rate would continue after the plan becomes fully funded.

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)
2074	$ 1,261,985	$ 21,661	$ 6,345	$ -	$ 88,866	$ 1,366,167
2075	1,366,167	22,203	5,524	-	96,205	1,479,051
2076	1,479,051	22,758	4,769	-	104,152	1,601,192
2077	1,601,192	23,327	4,078	-	112,746	1,733,187
2078	1,733,187	23,910	3,453	-	122,027	1,875,671
2079	1,875,671	24,508	2,892	-	132,040	2,029,327
2080	2,029,327	25,121	2,395	-	142,835	2,194,888
2081	2,194,888	25,749	1,958	-	154,460	2,373,139
2082	2,373,139	26,392	1,580	-	166,973	2,564,924
2083	2,564,924	27,052	1,257	-	180,432	2,771,151
2084	2,771,151	27,729	985	-	194,900	2,992,795
2085	2,992,795	28,422	760	-	210,447	3,230,904
2086	3,230,904	29,132	577	-	227,145	3,486,604
2087	3,486,604	29,861	430	-	245,075	3,761,110
2088	3,761,110	30,607	314	-	264,320	4,055,723
2089	4,055,723	31,372	225	-	284,972	4,371,842
2090	4,371,842	32,157	158	-	307,130	4,710,971
2091	4,710,971	32,960	109	-	330,898	5,074,720
2092	5,074,720	33,784	73	-	356,390	5,464,821
2093	5,464,821	34,629	48	-	383,727	5,883,129
2094	5,883,129	35,495	31	-	413,039	6,331,632
2095	6,331,632	36,382	19	-	444,465	6,812,460
2096	6,812,460	37,292	12	-	478,154	7,327,894
2097	7,327,894	38,224	7	-	514,267	7,880,378
2098	7,880,378	39,180	4	-	552,974	8,472,528
2099	8,472,528	40,159	2	-	594,458	9,107,143
2100	9,107,143	41,163	1	-	638,916	9,787,221
2101	9,787,221	42,192	1	-	686,557	10,515,969
2102	10,515,969	43,247	-	-	737,605	11,296,821
2103	11,296,821	44,328	-	-	792,302	12,133,451
2104	12,133,451	45,436	-	-	850,905	13,029,792
2105	13,029,792	46,572	-	-	913,687	13,990,051
2106	13,990,051	47,737	-	-	980,946	15,018,734
2107	15,018,734	48,930	-	-	1,052,995	16,120,659
2108	16,120,659	50,153	-	-	1,130,171	17,300,983
2109	17,300,983	51,407	-	-	1,212,837	18,565,227
2110	18,565,227	52,692	-	-	1,301,379	19,919,298
2111	19,919,298	54,010	-	-	1,396,209	21,369,517
2112	21,369,517	55,360	-	-	1,497,771	22,922,648
2113	22,922,648	56,744	-	-	1,606,537	24,585,929
2114	24,585,929	58,162	-	-	1,723,016	26,367,107
2115	26,367,107	59,616	-	-	1,847,748	28,274,471
2116	28,274,471	61,107	-	-	1,981,315	30,316,893
2117	30,316,893	62,635	-	-	2,124,337	32,503,865
2118	32,503,865	64,200	-	-	2,277,479	34,845,544
2119	34,845,544	65,805	-	-	2,441,452	37,352,801
2120	37,352,801	67,451	-	-	2,617,017	40,037,269
2121	40,037,269	69,137	-	-	2,804,987	42,911,393
2122	42,911,393	70,865	-	-	3,006,235	45,988,493
2123	45,988,493	72,637	-	-	3,221,693	49,282,823

For purposes of this projection, we assumed the 22.5% regular employer statutory contribution rate would continue after the plan becomes fully funded.

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)
2024	$ 268,987	$ 30,193	$ 30,193	$ -	$ 29,189	$ -	$ 29,189
2025	279,464	31,248	31,248	-	28,232	-	28,232
2026	289,150	32,327	32,327	-	27,297	-	27,297
2027	298,231	33,233	33,233	-	26,226	-	26,226
2028	306,864	34,256	34,256	-	25,264	-	25,264
2029	314,926	35,284	35,284	-	24,320	-	24,320
2030	322,308	36,532	36,532	-	23,533	-	23,533
2031	328,692	37,469	37,469	-	22,558	-	22,558
2032	334,265	38,393	38,393	-	21,602	-	21,602
2033	339,046	39,228	39,228	-	20,628	-	20,628
2034	343,082	39,818	39,818	-	19,568	-	19,568
2035	346,574	40,281	40,281	-	18,501	-	18,501
2036	349,652	40,796	40,796	-	17,511	-	17,511
2037	352,144	41,348	41,348	-	16,587	-	16,587
2038	354,010	41,677	41,677	-	15,625	-	15,625
2039	355,433	41,875	41,875	-	14,673	-	14,673
2040	356,617	42,051	42,051	-	13,770	-	13,770
2041	357,558	42,112	42,112	-	12,888	-	12,888
2042	358,350	42,029	42,029	-	12,021	-	12,021
2043	359,157	41,877	41,877	-	11,194	-	11,194
2044	360,058	41,636	41,636	-	10,402	-	10,402
2045	361,163	41,259	41,259	-	9,633	-	9,633
2046	362,653	40,793	40,793	-	8,901	-	8,901
2047	364,669	40,147	40,147	-	8,187	-	8,187
2048	367,485	39,349	39,349	-	7,499	-	7,499
2049	371,357	38,456	38,456	-	6,850	-	6,850
2050	376,489	37,413	37,413	-	6,228	-	6,228
2051	376,969	36,182	36,182	-	5,629	-	5,629
2052	378,938	34,845	34,845	-	5,067	-	5,067
2053	382,651	33,510	33,510	-	4,554	-	4,554
2054	388,240	32,095	32,095	-	4,076	-	4,076
2055	395,955	30,568	30,568	-	3,628	-	3,628
2056	406,112	29,041	29,041	-	3,221	-	3,221
2057	418,899	27,558	27,558	-	2,857	-	2,857
2058	434,454	26,077	26,077	-	2,527	-	2,527
2059	452,985	24,584	24,584	-	2,226	-	2,226
2060	474,735	23,118	23,118	-	1,956	-	1,956
2061	499,910	21,680	21,680	-	1,715	-	1,715
2062	528,732	20,270	20,270	-	1,498	-	1,498
2063	561,437	18,890	18,890	-	1,305	-	1,305
2064	598,275	17,542	17,542	-	1,132	-	1,132
2065	639,513	16,227	16,227	-	979	-	979
2066	685,435	14,946	14,946	-	843	-	843
2067	736,346	13,703	13,703	-	722	-	722
2068	792,566	12,501	12,501	-	616	-	616
2069	854,436	11,343	11,343	-	522	-	522
2070	922,318	10,233	10,233	-	440	-	440
2071	996,594	9,175	9,175	-	369	-	369
2072	1,077,672	8,172	8,172	-	307	-	307
2073	1,165,983	7,228	7,228	-	254	-	254

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)
2074	$ 1,261,985	$ 6,345	$ 6,345	$ -	$ 29,189	$ -	$ 208
2075	1,366,167	5,524	5,524	-	28,232	-	169
2076	1,479,051	4,769	4,769	-	27,297	-	137
2077	1,601,192	4,078	4,078	-	26,226	-	109
2078	1,733,187	3,453	3,453	-	25,264	-	86
2079	1,875,671	2,892	2,892	-	24,320	-	68
2080	2,029,327	2,395	2,395	-	23,533	-	52
2081	2,194,888	1,958	1,958	-	22,558	-	40
2082	2,373,139	1,580	1,580	-	21,602	-	30
2083	2,564,924	1,257	1,257	-	20,628	-	22
2084	2,771,151	985	985	-	19,568	-	16
2085	2,992,795	760	760	-	18,501	-	12
2086	3,230,904	577	577	-	17,511	-	8
2087	3,486,604	430	430	-	16,587	-	6
2088	3,761,110	314	314	-	15,625	-	4
2089	4,055,723	225	225	-	14,673	-	3
2090	4,371,842	158	158	-	13,770	-	2
2091	4,710,971	109	109	-	12,888	-	1
2092	5,074,720	73	73	-	12,021	-	1
2093	5,464,821	48	48	-	11,194	-	0
2094	5,883,129	31	31	-	10,402	-	0
2095	6,331,632	19	19	-	9,633	-	0
2096	6,812,460	12	12	-	8,901	-	0
2097	7,327,894	7	7	-	8,187	-	0
2098	7,880,378	4	4	-	7,499	-	0
2099	8,472,528	2	2	-	6,850	-	0
2100	9,107,143	1	1	-	6,228	-	0
2101	9,787,221	1	1	-	5,629	-	0
2102	10,515,969	-	-	-	5,067	-	0
2103	11,296,821	-	-	-	4,554	-	0
2104	12,133,451	-	-	-	4,076	-	0
2105	13,029,792	-	-	-	3,628	-	0
2106	13,990,051	-	-	-	3,221	-	0
2107	15,018,734	-	-	-	2,857	-	0
2108	16,120,659	-	-	-	2,527	-	-
2109	17,300,983	-	-	-	2,226	-	-
2110	18,565,227	-	-	-	1,956	-	-
2111	19,919,298	-	-	-	1,715	-	-
2112	21,369,517	-	-	-	1,498	-	-
2113	22,922,648	-	-	-	1,305	-	-
2114	24,585,929	-	-	-	1,132	-	-
2115	26,367,107	-	-	-	979	-	-
2116	28,274,471	-	-	-	843	-	-
2117	30,316,893	-	-	-	722	-	-
2118	32,503,865	-	-	-	616	-	-
2119	34,845,544	-	-	-	522	-	-
2120	37,352,801	-	-	-	440	-	-
2121	40,037,269	-	-	-	369	-	-
2122	42,911,393	-	-	-	307	-	-
2123	45,988,493	-	-	-	254	-	-
				Totals	$ 506,306	$ -	$ 506,306

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 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 contributions 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.