Minnesota State Retirement System
Judges Retirement Fund

GASB Statements No. 67 and No. 68
Accounting and Financial Reporting for Pensions
June 30, 2022

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November 18, 2022

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, 2022 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 reflects the impact of COVID-19 through June 30, 2022. It does not reflect the ongoing impact of COVID-19, which is likely to influence demographic and investment experience, at least in the short term. We will continue to monitor these developments and their impact on the plan.

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.

Brian B. Murphy, 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

Brian B. Murphy

Brian B. Murphy, FSA, EA, FCA, MAAA, PhD

Bonita J. Wurst

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BBM/BJW:rmn

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Table of Contents

SECTION A

EXECUTIVE SUMMARY

Executive Summary
as of June 30, 2022 (Dollars in Thousands)

	2022
Actuarial Valuation Date	June 30, 2022
Measurement Date of the Net Pension Liability	June 30, 2022
Membership	
Number of	
- Service Retirements	324
- Survivors	74
- Disability Retirements	14
- Deferred Retirements	19
- Terminated Other Non-vested	1
- Active Members	320
- Total	752
Covered-Employee Payroll	$ 54,436 [1]
Net Pension Liability	
Total Pension Liability	$ 431,898
Plan Fiduciary Net Position	253,971
Net Pension Liability	$ 177,927
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	58.80%
Net Pension Liability as a Percentage of Covered-Employee Payroll	326.86%
Development of the Single Discount Rate	
Single Discount Rate	6.75%
Long-Term Expected Rate of Investment Return	6.75%
Long-Term Municipal Bond Rate	3.69% [2]
Last year ending June 30 in the 2023 to 2122 projection period for which projected benefit payments are fully funded	2122
Total Pension Expense/(Income)	$ 17,965

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	$ 1,792	$ 1,211
Changes in assumptions	14,817	8,206
Net difference between projected and actual earnings on pension plan investments	30,675	29,321
Total	$ 47,284	$ 38,738

[1] *Assumed equal to actual employer contributions 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, 2022.

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-2022 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 7.50% 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 26 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, 2022 and a measurement date of June 30, 2022.

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 6.75%; the municipal bond rate is 3.69% (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 6.75%. The MSRS Board selected the long-term expected rate of investment return of 6.75% based on input from GRS that the proposed selection would be reasonable for the purpose of the measurement.

SECTION B

FINANCIAL STATEMENTS

Statement of Pension Expense Under GASB Statement No. 68
Fiscal Year Ended June 30, 2022 (Dollars in Thousands)

A. Expense

1.	Service Cost	$	11,707
2.	Interest on the Total Pension Liability		27,360
3.	Current-Period Benefit Changes		-
4.	Employee Contributions		(4,214)
5.	Projected Earnings on Plan Investments		(17,798)
6.	Pension Plan Administrative Expense		72
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		408
9.	Recognition of Outflow (Inflow) of Resources due to assumption changes		
	Arising from Current Reporting Period		(2,051)
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		6,964
11.	**Increases/(Decreases) from Experience in the Current Reporting Period**	**$**	**22,448**
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	$	(11)
13.	Recognition of Outflow (Inflow) of Resources due to assumption changes		
	Arising from Prior Reporting Periods		4,939
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		(9,411)
15.	**Total Pension Expense / (Income)**	**$**	**17,965**

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 3,440 years. Additionally, the total plan membership (active employees and inactive employees) was 733. 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, 2022 (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	$	2,040
2. Assumption Changes (gains) or losses		(10,257)
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		408
5. Outflow (Inflow) of Resources to be recognized in the current pension expense for Assumption Changes		(2,051)
6. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Liabilities	$	(1,643)
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	$	1,632
8. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses for Assumption Changes		(8,206)
9. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Liabilities	$	(6,574)
B. Outflows (Inflows) of Resources due to Assets		
1. Net difference between projected and actual earnings on pension plan investments (gains) or losses	$	34,820
2. Recognition period for Assets {in years}		5
3. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Assets		6,964
4. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Assets	$	27,856

Statement of Outflows and Inflows
Arising from Current and Prior Reporting Periods
Fiscal Year Ended June 30, 2022 (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	$ 5,792	$ 2,507	$ 3,285
2. Due to Assets	8,421	10,868	(2,447)
3. Total	$ 14,213	$ 13,375	$ 838

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	$ 853	$ 456	$ 397
2. Assumption Changes	4,939	2,051	2,888
3. Net Difference between projected and actual earnings on pension plan investments	8,421	10,868	(2,447)
4. Total	**$ 14,213**	**$ 13,375**	**$ 838**

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	$ 1,792	$ 1,211	$ 581
2. Assumption Changes	14,817	8,206	6,611
3. Net Difference between projected and actual earnings on pension plan investments*	30,675	29,321	1,354
4. Total	**$ 47,284**	**$ 38,738**	**$ 8,546**

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
2023	$ 1,649
2024	1,389
2025	188
2026	5,320
2027	-
Thereafter	-
Total	**$ 8,546**

** 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, 2022 (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					
2018	$ 1,424	5.0000	$ 284	$ 0	0.0000
2019	804	5.0000	161	160	1.0000
2020	(802)	5.0000	(160)	(322)	2.0000
2021	(1,481)	5.0000	(296)	(889)	3.0000
2022	2,040	5.0000	408	1,632	4.0000
Total			**$ 397**	**$ 581**	
Deferred Outflow (Inflow) Due to Assumption Changes					
2021	$ 24,695	5.0000	$ 4,939	$ 14,817	3.0000
2022	(10,257)	5.0000	(2,051)	(8,206)	4.0000
Total			**$ 2,888**	**$ 6,611**	
Deferred Outflow (Inflow) Due to Differences Between Projected and Actual Earnings on Plan Investments					
2018	$ (5,479)	5.0000	$ (1,095)	$ 0	0.0000
2019	491	5.0000	98	99	1.0000
2020	6,797	5.0000	1,359	2,720	2.0000
2021	(48,867)	5.0000	(9,773)	(29,321)	3.0000
2022	34,820	5.0000	6,964	27,856	4.0000
Total			**$ (2,447)**	**$ 1,354**	
Deferred Outflow (Inflow) Due to All Sources					
Total			**$ 838**	**$ 8,546**	

Statement of Fiduciary Net Position as of June 30, 2022 (Dollars in Thousands)

Assets		**June 30, 2022**
Cash & Short-term Investments	$	5,324
Receivables		552
Investment Pools (at fair value)		248,306
Securities Lending Collateral		13,087
Capital Assets		-
Total Assets	**$**	**267,269**
Total Deferred Outflows of Resources	**$**	**-**
Total Liabilities	**$**	**(13,298)**
Total Deferred Inflows of Resources	**$**	**-**
Net Position Restricted for Pensions	**$**	**253,971**

Statement of Changes in Fiduciary Net Position for the Fiscal Year Ended June 30, 2022 (Dollars in Thousands)

1. Net position at market value at beginning of year	**$**	**276,638**
Additions		
2. Contributions		
a. Employee	$	4,214
b. Employer		12,248
c. Other sources		6,000
d. Total contributions	$	22,462
3. Investment income		
a. Investment income/(loss)	$	(16,727)
b. Investment expenses		(295)
c. Net investment income/(loss)	$	(17,022)
4. Other Additions		-
5. Total Additions *(2.d.) + (3.c.) + (4.)*	**$**	**5,440**
Deductions		
6. Benefits Paid		
a. Annuity benefits	$	(28,035)
b. Refunds		-
c. Total benefits paid	$	(28,035)
7. Expenses		
a. Other deductions	$	-
b. Administrative		(72)
c. Total expenses	$	(72)
8. Total deductions *(6.c.) + (7.c.)*	**$**	**(28,107)**
9. Net increase/(decrease) in fiduciary net position *(5.) + (8.)*	**$**	**(22,667)**
10. Net position at market value at end of year *(1.) + (9.)*	**$**	**253,971**
11. State Board of Investment calculated annual investment return for the Judges Retirement Fund*		-6.2%

** The fiscal year 2022 investment return for the Combined Funds is -6.4%.*

SECTION C

REQUIRED SUPPLEMENTARY INFORMATION

Schedule of Changes in Net Pension Liability and Related Ratios
Current Period
Fiscal Year Ended June 30, 2022 (Dollars in Thousands)

A. Total pension liability			
1. Service Cost	$	11,707	
2. Interest on the total pension liability		27,360	
3. Changes of benefit terms		-	
4. Difference between expected and actual experience of the total pension liability		2,040	
5. Changes of assumptions		(10,257)	
6. Benefit payments, including refunds of employee contributions		(28,035)	
7. Net change in total pension liability	$	2,815	
8. Total pension liability – beginning		429,083	
9. Total pension liability – ending	**$**	**431,898**	
B. Plan fiduciary net position			
1. Contributions – employer	$	18,248	(1)
2. Contributions – employee		4,214	
3. Net investment income		(17,022)	
4. Benefit payments, including refunds of employee contributions		(28,035)	
5. Pension plan administrative expense		(72)	
6. Other changes		-	
7. Net change in plan fiduciary net position	$	(22,667)	
8. Plan fiduciary net position – beginning		276,638	
9. Plan fiduciary net position – ending	**$**	**253,971**	
C. Net pension liability, *A.9 - B.9.*	**$**	**177,927**	
D. Plan fiduciary net position as a percentage of the total pension liability, *B.9 / A.9.*		**58.80%**	
E. Covered-employee payroll	**$**	**54,436**	(2)
F. Net pension liability as a percentage of covered-employee payroll, *C. / E.*		**326.86%**	

(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 (which will be built prospectively)

Fiscal year ending June 30,	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
Total Pension Liability										
Service Cost	$ 11,707	$ 10,204	$ 9,897	$ 9,881	$ 9,857	$ 9,483	$ 13,711	$ 12,251	$ 12,075	
Interest on the Total Pension Liability	27,360	29,568	28,721	27,769	26,746	25,367	21,349	21,773	20,535	
Benefit Changes	0	(9,525)	0	0	0	0	0	0	0	
Experience[1]	2,040	(1,481)	(802)	804	1,424	(4,958)	7,135	(4,366)	5,080	
Assumption Changes	(10,257)	24,695	0	0	0	11,652	(85,756)	21,696	(8,416)	
Benefit Payments	(28,035)	(27,038)	(26,272)	(25,233)	(23,585)	(22,785)	(22,378)	(21,893)	(20,802)	
Refunds	0	0	(30)	0	0	(309)	0	0	0	
Net Change in Total Pension Liability	$ 2,815	$ 26,423	$ 11,514	$ 13,221	14,442	18,450	(65,939)	29,461	8,472	
Total Pension Liability - Beginning	429,083	402,660	391,146	377,925	363,483	345,033	410,972	381,511	373,039	
Total Pension Liability - Ending (a)	**$ 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]	$ 18,248	$ 17,916	$ 17,767	$ 17,287	$ 17,027	$ 13,758	$ 10,219	$ 9,776	$ 9,426	
Employee Contributions	4,214	4,166	4,168	4,049	3,973	3,932	3,763	3,629	3,578	
Pension Plan Net Investment Income	(17,022)	64,934	8,955	14,491	19,265	24,729	(186)	7,572	28,011	
Benefit Payments	(28,035)	(27,038)	(26,272)	(25,233)	(23,585)	(22,785)	(22,378)	(21,893)	(20,802)	
Refunds	0	0	(30)	0	0	(309)	0	0	0	
Pension Plan Administrative Expense	(72)	(77)	(113)	(87)	(66)	(89)	(93)	(60)	(55)	
Other Changes	0	0	0	0	0	0	0	0	0	
Net Change in Plan Fiduciary Net Position	**$ (22,667)**	**$ 59,901**	**$ 4,475**	**$ 10,507**	**16,614**	**19,236**	**(8,675)**	**(976)**	**20,158**	
Plan Fiduciary Net Position - Beginning	**$ 276,638**	**$ 216,737**	**$ 212,262**	**$ 201,755**	**185,141**	**165,905**	**174,580**	**175,556**	**155,398**	
Plan Fiduciary Net Position - Ending (b)	**$ 253,971**	**$ 276,638**	**$ 216,737**	**$ 212,262**	**$ 201,755**	**$ 185,141**	**$ 165,905**	**$ 174,580**	**$ 175,556**	
Net Pension Liability - Ending (a) - (b)	**$ 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	**58.80 %**	**64.47 %**	**53.83 %**	**54.27 %**	**53.38 %**	**50.94 %**	**48.08 %**	**42.48 %**	**46.02 %**	
Covered-Employee Payroll[3]	**$ 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	**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 state contributions) divided by employer contribution rate.*

Schedule of Net Pension Liability Multiyear (Dollars in Thousands)

Last 10 Fiscal Years (which will be built prospectively)

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)
2013						
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

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)
2013	$ 13,524	$ 8,177		$ 5,347	$ 39,888	20.50%
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

Notes to Schedule of Contributions

Methods and Assumptions Used to Determine Fiscal Year Ending June 30, 2022 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 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, 2021
Actuarial Cost Method	Entry Age Normal
Amortization Method	Level Percentage of Payroll, Closed
Remaining Amortization Period	27 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	1.75% through December 31, 2021, 1.50% thereafter.
	See separate funding actuarial valuation report as of July 1, 2021 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-2021

Schedule of Investment Returns Multiyear

Last 10 Fiscal Years

Fiscal Year Ending June 30,	Annual Return[1]
2013	
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)

[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, 2022, the annual money-weighted rate of return for the Judges Retirement Fund was -6.2%. 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.

Ten-Year Schedule of Money-Weighted Investment Return

Ten-year data is not available. Additional years will be provided when they become available.

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, 2022, 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 6.75%. This assumption is based on a review of inflation and investment return assumptions in our report dated July 12, 2022.

Sensitivity of Net Pension Liability to the Single Discount Rate Assumption

Single Discount Rate

A single discount rate of 6.75% 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 6.75%. 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 6.75%, 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 (5.75%) or 1-percentage-point higher (7.75%) than the current rate:

Sensitivity of Net Pension Liability to the Single Discount Rate Assumption

(Dollars in Thousands)

	1% Decrease 5.75%	Current Single Discount Rate Assumption 6.75%	1% Increase 7.75%
Total Pension Liability	$475,443	$431,898	$394,548
Net Position Restricted for Pensions	253,971	253,971	253,971
Net Pension Liability	**$221,472**	**$177,927**	**$140,577**

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

Note that we believe the 7.75% 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	**$ 429,083**	**$ 276,638**		**$ 152,445**	**$ 24,637**	**$ 41,856**	
Changes for the Year:							
Service Cost	$ 11,707			$ 11,707			$ 11,707
Interest on Total Pension Liability	27,360			27,360			27,360
Interest on Plan Fiduciary Net Position		$ 17,798	(1)	(17,798)			(17,798)
Changes in Benefit Terms	-			-			-
Liability Experience Gains and Losses	2,040			2,040	$ 1,632	$ -	408
Changes in Assumptions	(10,257)			(10,257)	-	8,206	(2,051)
Recognition of Deferred Outflows/(Inflows) of Resources Arising from Prior Reporting Periods							
Liability Experience Gains/(Losses)					(445)	(456)	(11)
Assumption Changes					(4,939)	-	4,939
Investment Gains/(Losses)					(1,457)	(10,868)	(9,411)
Contributions - Employer		18,248		(18,248)			
Contributions - Employees		4,214		(4,214)			(4,214)
Asset Gain/(Loss)		(34,820)	(1)	34,820	27,856	-	6,964
Benefit Payments and Refunds	(28,035)	(28,035)		-			
Administrative Expenses		(72)		72			72
Other Changes							
Net Changes	**$ 2,815**	**$ (22,667)**		**$ 25,482**	**$ 22,647**	**$ (3,118)**	**$ 17,965**
Balance End of Year	**$ 431,898**	**$ 253,971**		**$ 177,927**	**$ 47,284**	**$ 38,738**	

(1) The sum of these items in column (b) equals the net investment income of -$17,022.

Summary of Population Statistics

		Terminated		Recipients			
	Actives*	Deferred Retirement	Other Non-Vested	Service Retirement	Disability Retirement	Survivor	Total
Members on 7/1/2021	**320**	**19**	**0**	**303**	**16**	**75**	**733**
New members	26	0	0	0	0	0	**26**
Return to active	0	0	0	0	0	0	**0**
Terminated non-vested	0	0	0	0	0	0	**0**
Service retirements	(25)	0	0	25	0	0	**0**
Terminated deferred	0	0	0	0	0	0	**0**
Terminated refund/transfer	(1)	0	1	0	0	0	**0**
Deaths	0	0	0	(6)	(1)	(6)	**(13)**
New beneficiary	0	0	0	0	0	5	**5**
Disabled	0	0	0	0	0	0	**0**
Unexpected status changes	0	0	0	2	(1)	0	**1**
Net change	0	0	1	21	(2)	(1)	**19**
Members on 6/30/2022	**320**	**19**	**1**	**324**	**14**	**74**	**752**

* *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 earlier of 1) the year after the plan reaches full funding on an actuarial value of assets basis, and 2) July 1, 2048.
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.

Summary of Plan Provisions (Continued)

Disability

Disability benefit

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.

Retirement after disability

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.
Form of payment	Same as for retirement.
Benefit increases	Same as for retirement.

Death

Survivor's benefit

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.

Refund of contributions

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 (Concluded)

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.
Changes in plan provisions	None.

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 last experience study, dated June 30, 2020, and a review of inflation and investment assumptions dated July 12, 2022. The MSRS Board selected the long-term expected rate of investment return of 6.75% based on input from GRS that the proposed selection would be reasonable for the purpose of the measurement.

Investment return	6.75% per annum.
Single discount rate	6.75% 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.

Summary of Actuarial Assumptions (Continued)

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 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.
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 $169,263.90 for the July 1, 2021 to June 30, 2022 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 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 increase to the life annuity value (i.e. "bounce back"), if applicable. There were 4 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 (29 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 6.50% to 6.75%.

Summary of Actuarial Assumptions (Concluded)

Age in 2022	Percentage of Members Dying each Year* — Healthy Post-Retirement Mortality** Male	Healthy Post-Retirement Mortality** Female	Healthy Pre-Retirement Mortality** Male	Healthy Pre-Retirement Mortality** Female	Disability Mortality** Male	Disability Mortality** 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	0.20
30	0.05	0.02	0.05	0.02	0.50	0.36
35	0.07	0.03	0.07	0.03	0.68	0.55
40	0.09	0.04	0.09	0.04	0.84	0.75
45	0.11	0.06	0.10	0.06	1.05	0.98
50	0.28	0.21	0.14	0.08	1.50	1.42
55	0.42	0.30	0.21	0.13	2.04	1.81
60	0.64	0.41	0.33	0.20	2.59	2.08
65	0.92	0.59	0.47	0.29	3.06	2.18
70	1.42	0.95	0.65	0.44	3.63	2.57
75	2.40	1.69	0.99	0.73	4.67	3.59
80	4.32	3.12	1.57	1.23	6.65	5.57
85	7.90	5.87	6.65	5.05	9.95	8.83
90	13.68	10.92	13.68	10.92	15.15	12.99

* *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 6.75%; the municipal bond rate is 3.69% (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, 2022 is 6.75%.** 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*	Additional State Contributions**	Total Contributions
	(a)	(b)	(c) = (a) + (b)	(d)	(e)	(f)		(g) = (d) + (e) + (f)
2022	$ 54,436		$ 54,436					
2023	54,386	$ 986	55,372	$ 4,144	$ 12,237	$ 92	$ 6,000	$ 22,473
2024	52,993	3,763	56,756	4,015	11,923	353	6,000	22,291
2025	50,946	7,229	58,175	3,837	11,463	678	6,000	21,978
2026	49,286	10,343	59,629	3,690	11,089	970	6,000	21,749
2027	47,780	13,340	61,120	3,556	10,750	1,251	6,000	21,557
2028	46,035	16,613	62,648	3,406	10,358	1,558	6,000	21,322
2029	43,976	20,238	64,214	3,234	9,895	1,898	6,000	21,027
2030	41,774	24,046	65,820	3,054	9,399	2,255	6,000	20,708
2031	39,588	27,877	67,465	2,876	8,907	2,615	6,000	20,398
2032	37,222	31,930	69,152	2,688	8,375	2,995	6,000	20,058
2033	34,830	36,051	70,881	2,500	7,837	3,382	6,000	19,719
2034	32,614	40,039	72,653	2,326	7,338	3,756	6,000	19,420
2035	30,419	44,050	74,469	2,156	6,844	4,132	6,000	19,132
2036	27,898	48,433	76,331	1,965	6,277	4,543	6,000	18,785
2037	25,252	52,987	78,239	1,768	5,682	4,970	6,000	18,420
2038	22,881	57,314	80,195	1,602	5,148	5,376	6,000	18,126
2039	20,642	61,558	82,200	1,445	4,644	5,774	6,000	17,863
2040	18,370	65,885	84,255	1,286	4,133	6,180	6,000	17,599
2041	16,086	70,275	86,361	1,126	3,619	6,592	6,000	17,337
2042	13,962	74,558	88,520	977	3,142	6,993	6,000	17,112
2043	11,884	78,849	90,733	832	2,674	7,396	6,000	16,902
2044	9,861	83,140	93,001	690	2,219	7,798	6,000	16,707
2045	8,068	87,258	95,326	565	1,815	8,185	6,000	16,565
2046	6,411	91,299	97,710	449	1,442	8,564	6,000	16,455
2047	4,942	95,210	100,152	346	1,112	8,931	6,000	16,389
2048	3,664	98,992	102,656	256	824	9,285	6,000	16,365
2049	2,547	102,676	105,223	178	573	9,631	-	10,382
2050	1,719	106,134	107,853	120	387	9,955	-	10,462
2051	1,167	109,382	110,549	82	263	10,260	-	10,605
2052	760	112,553	113,313	53	171	10,557	-	10,781
2053	396	115,750	116,146	28	89	10,857	-	10,974
2054	173	118,877	119,050	12	39	11,150	-	11,201
2055	120	121,906	122,026	8	27	11,435	-	11,470
2056	87	124,990	125,077	6	20	11,724	-	11,750
2057	34	128,169	128,203	2	8	12,022	-	12,032
2058	-	131,409	131,409	-	-	12,326	-	12,326
2059	-	134,694	134,694	-	-	12,634	-	12,634
2060	-	138,061	138,061	-	-	12,950	-	12,950
2061	-	141,513	141,513	-	-	13,274	-	13,274
2062	-	145,050	145,050	-	-	13,605	-	13,605
2063	-	148,677	148,677	-	-	13,945	-	13,945
2064	-	152,394	152,394	-	-	14,294	-	14,294
2065	-	156,203	156,203	-	-	14,651	-	14,651
2066	-	160,108	160,108	-	-	15,018	-	15,018
2067	-	164,111	164,111	-	-	15,393	-	15,393
2068	-	168,214	168,214	-	-	15,778	-	15,778
2069	-	172,419	172,419	-	-	16,172	-	16,172
2070	-	176,730	176,730	-	-	16,577	-	16,577
2071	-	181,148	181,148	-	-	16,991	-	16,991
2072	-	185,677	185,677	-	-	17,416	-	17,416

* *Equal to total contributions (29.50% of new employee payroll) net of new employee normal cost and expenses (20.12% of pay).*

*** Additional State contributions equal to $6 million are assumed to stop after 26 years.*

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*	Additional State Contributions	Total Contributions
	(a)	(b)	(c) = (a) + (b)	(d)	(e)	(f)		(g) = (d) + (e) + (f)
2073	$ -	$ 190,319	$ 190,319	$ -	$ -	$ 17,851	$ -	$ 17,851
2074	-	195,077	195,077	-	-	18,298	-	18,298
2075	-	199,954	199,954	-	-	18,755	-	18,755
2076	-	204,952	204,952	-	-	19,224	-	19,224
2077	-	210,076	210,076	-	-	19,704	-	19,704
2078	-	215,328	215,328	-	-	20,197	-	20,197
2079	-	220,711	220,711	-	-	20,702	-	20,702
2080	-	226,229	226,229	-	-	21,220	-	21,220
2081	-	231,885	231,885	-	-	21,750	-	21,750
2082	-	237,682	237,682	-	-	22,294	-	22,294
2083	-	243,624	243,624	-	-	22,851	-	22,851
2084	-	249,715	249,715	-	-	23,422	-	23,422
2085	-	255,957	255,957	-	-	24,008	-	24,008
2086	-	262,356	262,356	-	-	24,608	-	24,608
2087	-	268,915	268,915	-	-	25,223	-	25,223
2088	-	275,638	275,638	-	-	25,854	-	25,854
2089	-	282,529	282,529	-	-	26,500	-	26,500
2090	-	289,592	289,592	-	-	27,163	-	27,163
2091	-	296,832	296,832	-	-	27,842	-	27,842
2092	-	304,253	304,253	-	-	28,538	-	28,538
2093	-	311,859	311,859	-	-	29,251	-	29,251
2094	-	319,656	319,656	-	-	29,982	-	29,982
2095	-	327,647	327,647	-	-	30,732	-	30,732
2096	-	335,838	335,838	-	-	31,500	-	31,500
2097	-	344,234	344,234	-	-	32,288	-	32,288
2098	-	352,840	352,840	-	-	33,095	-	33,095
2099	-	361,661	361,661	-	-	33,922	-	33,922
2100	-	370,703	370,703	-	-	34,770	-	34,770
2101	-	379,970	379,970	-	-	35,640	-	35,640
2102	-	389,470	389,470	-	-	36,531	-	36,531
2103	-	399,206	399,206	-	-	37,444	-	37,444
2104	-	409,186	409,186	-	-	38,380	-	38,380
2105	-	419,416	419,416	-	-	39,339	-	39,339
2106	-	429,902	429,902	-	-	40,323	-	40,323
2107	-	440,649	440,649	-	-	41,331	-	41,331
2108	-	451,665	451,665	-	-	42,364	-	42,364
2109	-	462,957	462,957	-	-	43,423	-	43,423
2110	-	474,531	474,531	-	-	44,509	-	44,509
2111	-	486,394	486,394	-	-	45,621	-	45,621
2112	-	498,554	498,554	-	-	46,762	-	46,762
2113	-	511,018	511,018	-	-	47,931	-	47,931
2114	-	523,793	523,793	-	-	49,129	-	49,129
2115	-	536,888	536,888	-	-	50,357	-	50,357
2116	-	550,310	550,310	-	-	51,616	-	51,616
2117	-	564,068	564,068	-	-	52,907	-	52,907
2118	-	578,170	578,170	-	-	54,229	-	54,229
2119	-	592,624	592,624	-	-	55,585	-	55,585
2120	-	607,440	607,440	-	-	56,975	-	56,975
2121	-	622,626	622,626	-	-	58,399	-	58,399
2122	-	638,191	638,191	-	-	60,561	-	60,561

* *Equal to total contributions (29.50% of new employee payroll) net of new employee normal cost and expenses (20.12% of pay).*

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 6.75%	Projected Ending Plan Net Position
	(a)	(b)	(c)	(d)	(e)	(f)=(a)+(b)-(c)-(d)+(e)
2023	$ 253,971	$ 22,473	$ 29,073	$ 71	$ 16,922	$ 264,222
2024	264,222	22,291	30,048	69	17,575	273,971
2025	273,971	21,978	31,293	66	18,182	282,772
2026	282,772	21,749	32,371	64	18,732	290,818
2027	290,818	21,557	33,290	62	19,239	298,262
2028	298,262	21,322	34,303	60	19,700	304,921
2029	304,921	21,027	35,337	57	20,105	310,659
2030	310,659	20,708	36,527	54	20,443	315,229
2031	315,229	20,398	37,472	51	20,710	318,814
2032	318,814	20,058	38,455	48	20,908	321,277
2033	321,277	19,719	39,366	45	21,032	322,617
2034	322,617	19,420	40,028	42	21,091	323,058
2035	323,058	19,132	40,574	40	21,093	322,669
2036	322,669	18,785	41,173	36	21,036	321,281
2037	321,281	18,420	41,786	33	20,910	318,792
2038	318,792	18,126	42,160	30	20,720	315,448
2039	315,448	17,863	42,377	27	20,478	311,385
2040	311,385	17,599	42,550	24	20,189	306,599
2041	306,599	17,337	42,599	21	19,856	301,172
2042	301,172	17,112	42,489	18	19,486	295,263
2043	295,263	16,902	42,296	15	19,087	288,941
2044	288,941	16,707	42,002	13	18,663	282,296
2045	282,296	16,565	41,519	10	18,226	275,558
2046	275,558	16,455	40,924	8	17,788	268,869
2047	268,869	16,389	40,180	6	17,358	262,430
2048	262,430	16,365	39,292	5	16,953	256,451
2049	256,451	10,382	38,289	3	16,384	244,925
2050	244,925	10,462	37,108	2	15,648	233,925
2051	233,925	10,605	35,768	2	14,954	223,714
2052	223,714	10,781	34,349	1	14,318	214,463
2053	214,463	10,974	32,915	1	13,748	206,269
2054	206,269	11,201	31,413	-	13,252	199,309
2055	199,309	11,470	29,835	-	12,844	193,788
2056	193,788	11,750	28,267	-	12,532	189,803
2057	189,803	12,032	26,732	-	12,324	187,427
2058	187,427	12,326	25,211	-	12,223	186,765
2059	186,765	12,634	23,698	-	12,239	187,940
2060	187,940	12,950	22,212	-	12,378	191,056
2061	191,056	13,274	20,756	-	12,648	196,222
2062	196,222	13,605	19,331	-	13,055	203,551
2063	203,551	13,945	17,940	-	13,607	213,163
2064	213,163	14,294	16,583	-	14,312	225,186
2065	225,186	14,651	15,265	-	15,180	239,752
2066	239,752	15,018	13,986	-	16,217	257,001
2067	257,001	15,393	12,751	-	17,435	277,078
2068	277,078	15,778	11,562	-	18,843	300,137
2069	300,137	16,172	10,424	-	20,450	326,335
2070	326,335	16,577	9,340	-	22,268	355,840
2071	355,840	16,991	8,313	-	24,307	388,825
2072	388,825	17,416	7,348	-	26,580	425,473

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 6.75%	Projected Ending Plan Net Position
	(a)	(b)	(c)	(d)	(e)	(f)=(a)+(b)-(c)-(d)+(e)
2073	$ 425,473	$ 17,851	$ 6,446	$ -	$ 29,098	$ 465,976
2074	465,976	18,298	5,609	-	31,875	510,540
2075	510,540	18,755	4,840	-	34,923	559,378
2076	559,378	19,224	4,137	-	38,259	612,724
2077	612,724	19,704	3,502	-	41,897	670,823
2078	670,823	20,197	2,932	-	45,854	733,942
2079	733,942	20,702	2,426	-	50,148	802,366
2080	802,366	21,220	1,983	-	54,798	876,401
2081	876,401	21,750	1,598	-	59,826	956,379
2082	956,379	22,294	1,269	-	65,254	1,042,658
2083	1,042,658	22,851	992	-	71,105	1,135,622
2084	1,135,622	23,422	763	-	77,407	1,235,688
2085	1,235,688	24,008	576	-	84,187	1,343,307
2086	1,343,307	24,608	427	-	91,476	1,458,964
2087	1,458,964	25,223	310	-	99,307	1,583,184
2088	1,583,184	25,854	220	-	107,716	1,716,534
2089	1,716,534	26,500	153	-	116,741	1,859,622
2090	1,859,622	27,163	104	-	126,423	2,013,104
2091	2,013,104	27,842	69	-	136,806	2,177,683
2092	2,177,683	28,538	45	-	147,939	2,354,115
2093	2,354,115	29,251	28	-	159,873	2,543,211
2094	2,543,211	29,982	17	-	172,661	2,745,837
2095	2,745,837	30,732	10	-	186,364	2,962,923
2096	2,962,923	31,500	6	-	201,043	3,195,460
2097	3,195,460	32,288	3	-	216,765	3,444,510
2098	3,444,510	33,095	2	-	233,603	3,711,206
2099	3,711,206	33,922	1	-	251,632	3,996,759
2100	3,996,759	34,770	1	-	270,936	4,302,464
2101	4,302,464	35,640	-	-	291,600	4,629,704
2102	4,629,704	36,531	-	-	313,718	4,979,953
2103	4,979,953	37,444	-	-	337,390	5,354,787
2104	5,354,787	38,380	-	-	362,722	5,755,889
2105	5,755,889	39,339	-	-	389,828	6,185,056
2106	6,185,056	40,323	-	-	418,830	6,644,209
2107	6,644,209	41,331	-	-	449,856	7,135,396
2108	7,135,396	42,364	-	-	483,046	7,660,806
2109	7,660,806	43,423	-	-	518,546	8,222,775
2110	8,222,775	44,509	-	-	556,515	8,823,799
2111	8,823,799	45,621	-	-	597,121	9,466,541
2112	9,466,541	46,762	-	-	640,544	10,153,847
2113	10,153,847	47,931	-	-	686,976	10,888,754
2114	10,888,754	49,129	-	-	736,622	11,674,505
2115	11,674,505	50,357	-	-	789,701	12,514,563
2116	12,514,563	51,616	-	-	846,446	13,412,625
2117	13,412,625	52,907	-	-	907,108	14,372,640
2118	14,372,640	54,229	-	-	971,953	15,398,822
2119	15,398,822	55,585	-	-	1,041,266	16,495,673
2120	16,495,673	56,975	-	-	1,115,349	17,667,997
2121	17,667,997	58,399	-	-	1,194,528	18,920,924
2122	18,920,924	60,561	-	-	1,279,173	20,260,658

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)
2023	$ 253,971	$ 29,073	$ 29,073	$ -	$ 28,139	$ -	$ 28,139
2024	264,222	30,048	30,048	-	27,244	-	27,244
2025	273,971	31,293	31,293	-	26,579	-	26,579
2026	282,772	32,371	32,371	-	25,755	-	25,755
2027	290,818	33,290	33,290	-	24,812	-	24,812
2028	298,262	34,303	34,303	-	23,950	-	23,950
2029	304,921	35,337	35,337	-	23,112	-	23,112
2030	310,659	36,527	36,527	-	22,380	-	22,380
2031	315,229	37,472	37,472	-	21,507	-	21,507
2032	318,814	38,455	38,455	-	20,676	-	20,676
2033	321,277	39,366	39,366	-	19,827	-	19,827
2034	322,617	40,028	40,028	-	18,886	-	18,886
2035	323,058	40,574	40,574	-	17,933	-	17,933
2036	322,669	41,173	41,173	-	17,047	-	17,047
2037	321,281	41,786	41,786	-	16,207	-	16,207
2038	318,792	42,160	42,160	-	15,318	-	15,318
2039	315,448	42,377	42,377	-	14,423	-	14,423
2040	311,385	42,550	42,550	-	13,566	-	13,566
2041	306,599	42,599	42,599	-	12,723	-	12,723
2042	301,172	42,489	42,489	-	11,888	-	11,888
2043	295,263	42,296	42,296	-	11,086	-	11,086
2044	288,941	42,002	42,002	-	10,312	-	10,312
2045	282,296	41,519	41,519	-	9,549	-	9,549
2046	275,558	40,924	40,924	-	8,817	-	8,817
2047	268,869	40,180	40,180	-	8,110	-	8,110
2048	262,430	39,292	39,292	-	7,429	-	7,429
2049	256,451	38,289	38,289	-	6,781	-	6,781
2050	244,925	37,108	37,108	-	6,157	-	6,157
2051	233,925	35,768	35,768	-	5,559	-	5,559
2052	223,714	34,349	34,349	-	5,001	-	5,001
2053	214,463	32,915	32,915	-	4,489	-	4,489
2054	206,269	31,413	31,413	-	4,013	-	4,013
2055	199,309	29,835	29,835	-	3,571	-	3,571
2056	193,788	28,267	28,267	-	3,169	-	3,169
2057	189,803	26,732	26,732	-	2,808	-	2,808
2058	187,427	25,211	25,211	-	2,480	-	2,480
2059	186,765	23,698	23,698	-	2,184	-	2,184
2060	187,940	22,212	22,212	-	1,918	-	1,918
2061	191,056	20,756	20,756	-	1,679	-	1,679
2062	196,222	19,331	19,331	-	1,465	-	1,465
2063	203,551	17,940	17,940	-	1,273	-	1,273
2064	213,163	16,583	16,583	-	1,103	-	1,103
2065	225,186	15,265	15,265	-	951	-	951
2066	239,752	13,986	13,986	-	816	-	816
2067	257,001	12,751	12,751	-	697	-	697
2068	277,078	11,562	11,562	-	592	-	592
2069	300,137	10,424	10,424	-	500	-	500
2070	326,335	9,340	9,340	-	420	-	420
2071	355,840	8,313	8,313	-	350	-	350
2072	388,825	7,348	7,348	-	290	-	290

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)
2073	$ 425,473	$ 6,446	$ 6,446	$ -	$ 28,139	$ -	$ 238
2074	465,976	5,609	5,609	-	27,244	-	194
2075	510,540	4,840	4,840	-	26,579	-	157
2076	559,378	4,137	4,137	-	25,755	-	126
2077	612,724	3,502	3,502	-	24,812	-	100
2078	670,823	2,932	2,932	-	23,950	-	78
2079	733,942	2,426	2,426	-	23,112	-	61
2080	802,366	1,983	1,983	-	22,380	-	46
2081	876,401	1,598	1,598	-	21,507	-	35
2082	956,379	1,269	1,269	-	20,676	-	26
2083	1,042,658	992	992	-	19,827	-	19
2084	1,135,622	763	763	-	18,886	-	14
2085	1,235,688	576	576	-	17,933	-	10
2086	1,343,307	427	427	-	17,047	-	7
2087	1,458,964	310	310	-	16,207	-	5
2088	1,583,184	220	220	-	15,318	-	3
2089	1,716,534	153	153	-	14,423	-	2
2090	1,859,622	104	104	-	13,566	-	1
2091	2,013,104	69	69	-	12,723	-	1
2092	2,177,683	45	45	-	11,888	-	0
2093	2,354,115	28	28	-	11,086	-	0
2094	2,543,211	17	17	-	10,312	-	0
2095	2,745,837	10	10	-	9,549	-	0
2096	2,962,923	6	6	-	8,817	-	0
2097	3,195,460	3	3	-	8,110	-	0
2098	3,444,510	2	2	-	7,429	-	0
2099	3,711,206	1	1	-	6,781	-	0
2100	3,996,759	1	1	-	6,157	-	0
2101	4,302,464	-	-	-	5,559	-	0
2102	4,629,704	-	-	-	5,001	-	0
2103	4,979,953	-	-	-	4,489	-	0
2104	5,354,787	-	-	-	4,013	-	0
2105	5,755,889	-	-	-	3,571	-	0
2106	6,185,056	-	-	-	3,169	-	0
2107	6,644,209	-	-	-	2,808	-	0
2108	7,135,396	-	-	-	2,480	-	-
2109	7,660,806	-	-	-	2,184	-	-
2110	8,222,775	-	-	-	1,918	-	-
2111	8,823,799	-	-	-	1,679	-	-
2112	9,466,541	-	-	-	1,465	-	-
2113	10,153,847	-	-	-	1,273	-	-
2114	10,888,754	-	-	-	1,103	-	-
2115	11,674,505	-	-	-	951	-	-
2116	12,514,563	-	-	-	816	-	-
2117	13,412,625	-	-	-	697	-	-
2118	14,372,640	-	-	-	592	-	-
2119	15,398,822	-	-	-	500	-	-
2120	16,495,673	-	-	-	420	-	-
2121	17,667,997	-	-	-	350	-	-
2122	18,920,924	-	-	-	290	-	-
				Totals	$ 516,660	$ -	$ 516,660

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.