St. Paul Teachers' Retirement Fund Association

GASB Statement Nos. 67 and 68 Accounting and Financial Reporting for Pensions

June 30, 2023

GRS

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October 20, 2023

St. Paul Teachers' Retirement Fund Association
2550 University Avenue W, Suite 312N
St. Paul, Minnesota 55114

Dear Trustees:

This report provides accounting and financial reporting information that is intended to comply with the Governmental Accounting Standards Board (GASB) Statement Nos. 67 and 68 for the St. Paul Teachers' Retirement Fund Association ("SPTRFA" or "Fund"). These calculations have been made on a basis that is consistent with our understanding of these Statements.

GASB Statement No. 67 is the accounting standard that applies to the stand-alone 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 Statements No. 67, No. 68, and No. 73, intended to improve consistency in the application of accounting statements.

Our calculation of the liability associated with the benefits described in this report was performed for the purpose of providing reporting and disclosure information that satisfies the requirements of GASB Statement Nos. 67 and 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 is not applicable for purposes of funding the plan.* A calculation of the plan's liability for purposes other than satisfying the requirements of GASB Statement No. 67 may produce significantly different results. The information in this report is calculated on a total plan basis. The Fund is responsible for preparing the Schedule of Employer Allocations and the Schedule of Pension Amounts by Employer. This report may be provided to parties other than the St. Paul Teachers' Retirement Fund Association only in its entirety and only with the permission of the Board. GRS is not responsible for unauthorized use of this report.

This report is based upon information, furnished to us by the Fund, 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 Fund and should be considered in conjunction with that report. Please see the actuarial funding 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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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.

To the best of our knowledge, the information contained within this report is accurate and represents the actuarial position of the St. Paul Teachers' Retirement Fund Association according to the disclosed assumptions. 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.

The signing actuaries are independent of the plan sponsor.

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

Respectfully submitted,
Gabriel, Roeder, Smith & Company

Bonita J. Wurst

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

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

BJW/SLC:rmn

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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		3,905
- Survivors		381
- Disability Retirements		24
- Deferred Retirements		2,611
- Terminated other non-vested		3,007
- Active Members		3,456
- Total		13,384
Covered Payroll	$	296,674
Net Pension Liability		
Total Pension Liability	$	1,891,617
Plan Fiduciary Net Position		1,216,753
Net Pension Liability	$	674,864
Plan Fiduciary Net Position as a Percentage of Total Pension Liability		64.32%
Net Pension Liability as a Percentage of Covered Payroll		227.48%
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%
Last year ending June 30 in the 2024 to 2123 projection period within which projected benefit payments are fully funded		2123
Total Pension Expense	$	130,473

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

		Deferred Outflows of Resources		Deferred Inflows of Resources
Difference between expected and actual experience	$	-	$	14,661
Changes in assumptions		34,001		15,698
Net difference between projected and actual earnings on pension plan investments		129,563		116,613
Total	$	163,564	$	146,972

** Fixed-income municipal bonds with 20 years to maturity that include only federally tax-exempt municipal bonds as reported in Fidelity Index's '20-Year Municipal GO AA Index' as of June 30, 2023.*

Discussion

Accounting Standard

For pension plans that are administered through trusts or equivalent arrangements, Governmental Accounting Standards Board (GASB) Statement No. 67 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 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 or local governments 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." There were no contributions made to SPTRFA 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 liability and investment experience.

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

Notes to Financial Statements

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

GASB Statement Nos. 67 and 68 require the notes of the financial statements for the employers and pension plans to include certain additional information. The list of disclosure items should include:

- A description of benefits provided by the plan;
- The type 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 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.

Required Supplementary Information

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

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

Measurement of the Net Pension Liability

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

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

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

(1) The normal cost of the plan is expected to remain approximately level as a percent of pay;
(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.

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. This rate differs depending on whether or not the Fund has a projected sufficiency of assets to pay benefits.

Due to the projected sufficiency of assets to pay benefits, the single discount rate is equal to the 7.00% long-term expected rate of return on pension plan investments, for the purposes of this valuation.

Had the Fund been projected to have insufficient assets to pay all projected benefits, the single discount rate would instead reflect a combination of (1) the 7.00% long-term expected rate of return on pension plan investments (for all years where a projected asset sufficiency exists), then (2) a lower tax-exempt municipal bond rate* (for all remaining years where projected asset insufficiencies exist).

* *Source: 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.*

SECTION B

FINANCIAL STATEMENTS

Note – Section B is intended to assist in preparation of the financial statements of the St. Paul Teachers' Retirement Fund Association. Financial statements are the responsibility of management, subject to the auditor's review.

Statement of Pension Expense under GASB Statement No. 68
Fiscal Year Ended June 30, 2023 (Dollars in Thousands)

A. Expense/(Income)

1.	Service Cost	$ 28,846
2.	Interest on the Total Pension Liability	126,124
3.	Current-Period Benefit Changes	50,908
4.	Employee Contributions (made negative for addition here)	(22,420)
5.	Projected Earnings on Plan Investments (made negative for addition here)	(79,131)
6.	Pension Plan Administrative Expense	1,193
7.	Other Changes in Plan Fiduciary Net Position	-
8.	Recognition of Outflow (Inflow) of Resources due to Liabilities	20,400
9.	Recognition of Outflow (Inflow) of Resources due to Assets	4,553
10.	**Total Pension Expense / (Income)**	**$ 130,473**

Recognition of Deferred Outflows and Inflows of Resources

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 41,991 years. Additionally, the total plan membership (active employees and inactive employees) was 13,210. 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 3.0000 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 5-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	$	(16,123)
2. Assumption Changes (gains) or losses	$	(23,547)
3. Recognition period for Liabilities: Average of the expected remaining service lives of all employees {in years}		3
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	$	(5,374)
5. Outflow (Inflow) of Resources to be recognized in the current pension expense for Assumption Changes	$	(7,849)
6. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Liabilities	$	(13,223)
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	$	(10,749)
8. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses for Assumption Changes	$	(15,698)
9. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Liabilities	$	(26,447)
B. Outflows (Inflows) of Resources due to Assets		
1. Net difference between projected and actual earnings on pension plan investments (gains) or losses	$	(31,166)
2. Recognition period for Assets {in years}		5
3. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Assets	$	(6,233)
4. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Assets	$	(24,933)

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	$ 40,781	$ 20,381	$ 20,400
2. Due to Assets	56,627	52,074	4,553
3. Total	$ 97,408	$ 72,455	$ 24,953

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	$ 6,779	$ 9,285	$ (2,506)
2. Assumption Changes	34,002	11,096	22,906
3. Net Difference between projected and actual earnings on pension plan investments	56,627	52,074	4,553
4. Total	$ 97,408	$ 72,455	$ 24,953

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	$ -	$ 14,661	$ (14,661)
2. Assumption Changes	34,001	15,698	18,303
3. Net Difference between projected and actual earnings on pension plan investments	129,563	116,613	12,950
4. Total	$ 163,564	$ 146,972	$ 16,592

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	$ 17,780
2025	(27,009)
2026	32,055
2027	(6,234)
2028	-
Thereafter	-
Total	$ 16,592

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					
2021	$ 20,339	3.0000	$ 6,779	$ -	0.0000
2022	(11,734)	3.0000	(3,911)	(3,912)	1.0000
2023	(16,123)	3.0000	(5,374)	(10,749)	2.0000
Total			**$ (2,506)**	**$ (14,661)**	
Deferred Outflow (Inflow) due to Assumption Changes					
2021	$ (9,741)	3.0000	$ (3,247)	$ -	0.0000
2022	102,005	3.0000	34,002	34,001	1.0000
2023	(23,547)	3.0000	(7,849)	(15,698)	2.0000
Total			**$ 22,906**	**$ 18,303**	
Deferred Outflow (Inflow) due to Differences between Projected and Actual Earnings on Plan Investments					
2019	$ 18,200	5.0000	$ 3,640	$ -	0.0000
2020	73,490	5.0000	14,698	14,698	1.0000
2021	(229,203)	5.0000	(45,841)	(91,680)	2.0000
2022	191,443	5.0000	38,289	114,865	3.0000
2023	(31,166)	5.0000	(6,233)	(24,933)	4.0000
Total			**$ 4,553**	**$ 12,950**	
Deferred Outflow (Inflow) due to All Sources					
Total			**$ 24,953**	**$ 16,592**	

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

		2023
Assets		
Cash and Deposits	$	9,692
Receivables*	$	7,051
Investments		
Fixed Income	$	169,178
Equity		714,327
Real Assets		79,692
Cash and Cash Equivalents		56,541
Other		187,133
Total Investments	$	1,206,871
Total Assets	$	1,223,614
Liabilities		
Payables		
Accounts Payable - Purchase of Investments	$	6,861
Accrued Expenses		-
Accounts Payable - Other		-
Total Liabilities	$	6,861
Net Position Restricted for Pensions	$	1,216,753

* Accounts Receivable

Employer contribution	$	438
Employee contribution		229
Service Purchases Receivable		55
Pensions Receivable		37
State Contributions		838
Real Estate Income Receivable		60
Commission Recapture Receivable		1,196
Interest receivable		202
Dividend receivable		-
Misc. Receivable		-
Sales of securities		3,996
Total accounts receivable	$	7,051

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

Additions		
Contributions		
Employer	$	38,586
Employer (for Reemployed Annuitants)		437
Employee		22,420
Other		15,665
Total Contributions	$	77,108
Investment Income		
Net Appreciation in Fair Value of Investments	$	99,221
Interest and Dividends		15,599
Less Investment Expense		(4,523)
Net Investment Income	$	110,297
Other		-
Total Additions	$	187,405
Deductions		
Benefit payments, including refunds of employee contributions	$	123,886
Pension Plan Administrative Expense		1,193
Other		-
Total Deductions	$	125,079
Net Increase in Net Position	$	62,326
Net Position Restricted for Pensions		
Beginning of Year	$	1,154,427
End of Year	$	1,216,753

SECTION C

REQUIRED SUPPLEMENTARY INFORMATION

Note – Section C is intended to assist in preparation of the financial statements of the St. Paul Teachers' Retirement Fund Association. Financial statements are the responsibility of management, subject to the auditor's review.

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	$	28,846
2. Interest on the Total Pension Liability		126,124
3. Changes of benefit terms		50,908
4. Difference between expected and actual experience of the Total Pension Liability		(16,123)
5. Changes of assumptions		(23,547)
6. Benefit payments, including refunds of employee contributions		(123,886)
7. Net change in Total Pension Liability	$	42,322
8. Total Pension Liability – Beginning		1,849,295
9. Total Pension Liability – Ending	**$**	**1,891,617**
B. Plan Fiduciary Net Position		
1. Contributions – Employer^	$	54,688
2. Contributions – Employee		22,420
3. Net investment income		110,297
4. Benefit payments, including refunds of employee contributions		(123,886)
5. Pension Plan Administrative Expense		(1,193)
6. Other		-
7. Net change in Plan Fiduciary Net Position	$	62,326
8. Plan Fiduciary Net Position – Beginning		1,154,427
9. Plan Fiduciary Net Position – Ending	**$**	**1,216,753**
C. Net Pension Liability	**$**	**674,864**
D. Plan Fiduciary Net Position as a Percentage of the Total Pension Liability		**64.32%**
E. Covered-Employee payroll	**$**	**296,674**
F. Net pension liability as a percentage of Covered-Employee payroll		**227.48%**

^ *Includes employer contributions, supplemental contributions, and reemployed annuitant employer contributions.*

Schedules of Required Supplementary Information
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	$ 28,846	$ 24,863	$ 23,777	$ 23,120	$ 23,279	$ 25,087	$ 24,098	$ 25,596	$ 24,998	$ 22,954
Interest on the Total Pension Liability	126,124	126,096	123,262	123,300	122,197	125,256	123,820	124,294	123,108	118,503
Benefit Changes	50,908	-	-	-	-	(74,376)	-		(5,677)	-
Difference between Expected and Actual Experience	(16,123)	(11,734)	20,339	(22,742)	(9,831)	(13,445)	7,106	(42,295)	(17,133)	(16,257)
Assumption Changes	(23,547)	102,005	(9,741)	(5,601)	(3,037)	118,561	(22,643)			39,642
Benefit Payments	(122,347)	(120,672)	(118,665)	(117,306)	(116,379)	(115,298)	(112,771)	(111,167)	(108,878)	(105,742)
Refunds	(1,539)	(884)	(587)	(1,256)	(701)	(800)	(972)	(628)	(875)	(1,103)
Net Change in Total Pension Liability	42,322	119,674	38,385	(485)	15,528	64,985	18,638	(4,200)	15,543	57,997
Total Pension Liability - Beginning	1,849,295	1,729,621	1,691,236	1,691,721	1,676,193	1,611,208	1,592,570	1,596,770	1,581,227	1,523,230
Total Pension Liability - Ending (a)	$ 1,891,617	$ 1,849,295	$ 1,729,621	$ 1,691,236	$ 1,691,721	$ 1,676,193	$1,611,208	$ 1,592,570	$ 1,596,770	$1,581,227
Plan Fiduciary Net Position										
Employer Contributions*	$ 54,688	$ 54,735	$ 50,916	$ 49,804	$ 46,981	$ 39,209	$ 38,350	$ 37,228	$ 36,711	$ 35,197
Employee Contributions	22,420	23,099	21,334	20,889	20,626	20,112	20,146	18,538	17,567	16,564
Pension Plan Net Investment Income	110,297	(95,988)	305,232	5,726	60,209	95,886	128,719	1,475	25,757	168,176
Benefit Payments	(122,347)	(120,672)	(118,665)	(117,306)	(116,379)	(115,298)	(112,771)	(111,167)	(108,878)	(105,742)
Refunds	(1,539)	(884)	(587)	(1,256)	(701)	(800)	(972)	(628)	(875)	(1,103)
Pension Plan Administrative Expense	(1,193)	(927)	(779)	(788)	(764)	(786)	(889)	(749)	(748)	(739)
Other	-	-	-	-	-	-	-	-	-	-
Net Change in Plan Fiduciary Net Position	62,326	(140,637)	257,451	(42,931)	9,972	38,323	72,583	(55,303)	(30,466)	112,353
Plan Fiduciary Net Position - Beginning	1,154,427	1,295,064	1,037,613	1,080,544	1,070,572	1,032,249	959,666	1,014,969	1,045,435	933,082
Plan Fiduciary Net Position - Ending (b)	$ 1,216,753	$ 1,154,427	$ 1,295,064	$ 1,037,613	$ 1,080,544	$ 1,070,572	$1,032,249	$ 959,666	$ 1,014,969	$1,045,435
Net Pension Liability - Ending (a) - (b)	674,864	694,868	434,557	653,623	611,177	605,621	578,959	632,904	581,801	535,792
Plan Fiduciary Net Position as a Percentage										
of Total Pension Liability	64.32 %	62.43 %	74.88 %	61.35 %	63.87 %	63.87 %	64.07 %	60.26 %	63.56 %	66.12 %
Covered Employee Payroll	$ 296,674	$ 304,227	$ 279,916	$ 274,667	$ 268,614	$ 263,122	$ 264,342	$ 258,787	$ 263,844	$ 259,740
Net Pension Liability as a Percentage										
of Covered Employee Payroll	227.48 %	228.40 %	155.25 %	237.97 %	227.53 %	230.17 %	219.02 %	244.57 %	220.51 %	206.28 %

Notes to Schedule:

N/A

* *Includes employer contributions, supplemental contributions, and reemployed annuitant employer contributions.*

Schedules of Required Supplementary Information
Schedule of the Net Pension Liability Multiyear
(Dollars in Thousands)

Last 10 Fiscal Years

FY Ending June 30,	Total Pension Liability	Plan Net Position	Net Pension Liability	Plan Net Position as a % of Total Pension Liability	Covered Payroll	Net Pension Liability as a % of Covered Payroll
2014	$ 1,581,227	$ 1,045,435	$ 535,792	66.12%	$ 259,740	206.28%
2015	1,596,770	1,014,969	581,801	63.56%	263,844	220.51%
2016	1,592,570	959,666	632,904	60.26%	258,787	244.57%
2017	1,611,208	1,032,249	578,959	64.07%	264,342	219.02%
2018	1,676,193	1,070,572	605,621	63.87%	263,122	230.17%
2019	1,691,721	1,080,544	611,177	63.87%	268,614	227.53%
2020	1,691,236	1,037,613	653,623	61.35%	274,667	237.97%
2021	1,729,621	1,295,064	434,557	74.88%	279,916	155.25%
2022	1,849,295	1,154,427	694,868	62.43%	304,227	228.40%
2023	1,891,617	1,216,753	674,864	64.32%	296,674	227.48%

Schedule of Contributions Multiyear
(Dollars in Thousands)

Last 10 Fiscal Years

FY Ending June 30,	Actuarially Determined Contribution	Actual Contribution*	Contribution Deficiency (Excess)	Covered Payroll	Actual Contribution as a % of Covered Payroll
2014	$ 40,916	$ 35,197	$ 5,719	$ 259,740	13.55%
2015	40,320	36,711	3,609	263,844	13.91
2016	39,068	37,228	1,840	258,787	14.39
2017	39,172	38,350	822	264,342	14.51
2018	38,196	39,209	(1,013)	263,122	14.90
2019	37,233	46,981	(9,748)	268,614	17.49
2020	39,181	49,804	(10,623)	274,667	18.13
2021	39,072	50,916	(11,844)	279,916	18.19
2022	39,298	54,735	(15,437)	304,227	17.99
2023	36,796	54,688	(17,892)	296,674	18.43

* *Includes employer contributions, supplemental contributions, and reemployed annuitant employer contributions.*

Notes to Schedule of Contributions

Methods and Assumptions Used to Determine Fiscal Year Ending June 30, 2023 Contribution Rates Reported in this Schedule:

Notes	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.
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	2.5%
Salary Increases	3.00% to 9.00%; service based
Investment Rate of Return	7.5%
Retirement Age	Experience-based table of rates that are specific to the type of eligibility condition. Last updated for the 2018 valuation pursuant to an experience study of the period 2011 - 2016.
Mortality	RP-2014 annuitant generational mortality table, projected with scale MP-2021 from a base year of 2006, white collar adjustment, set back two years for females.

Other Information:

Notes	See separate funding report as of July 1, 2022 for additional detail.

Schedule of Investment Returns Multiyear

Last 10 Fiscal Years

FY Ending June 30,	Annual Return[1]
2014	18.50 %
2015	2.65 %
2016	0.34 %
2017	13.93 %
2018	9.75 %
2019	5.73 %
2020	0.10 %
2021	32.65 %
2022	(9.37)%
2023	9.43 %

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

The St. Paul Teachers' Retirement Fund Association compiled this data and the related investment notes and furnished this information for inclusion within this report. We did not audit this information. We are not responsible for its accuracy or completeness.

Rate of Return

The Association's money-weighted rate of return for the year ending June 30, 2023 was 9.43% (net of fees). The money-weighted rate of return expresses investment performance, net of fees, adjusted for the actual cash flows that took place during the performance period.

Section D

Notes to Financial Statements

Note – Section D is intended to assist in preparation of the financial statements of the St. Paul Teachers' Retirement Fund Association. Financial statements are the responsibility of management, subject to the auditor's review.

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 in which expected future real rates of return (expected returns, net of pension plan investment expense and inflation) are developed for each major asset class. These real rates of return are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation. For each major asset class that is included in the pension plan's target asset allocation as of June 30, 2023, these best estimates are summarized in the following table:

Long-Term Expected Real Rate of Return*

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return (Arithmetic)
Domestic Equity	35%	6.55%
International Equity	20%	6.98%
Fixed Income	20%	3.45%
Real Assets	11%	3.90%
Private Equity & Alternatives	9%	7.47%
Opportunistic	5%	6.08%
Total	**100%**	

** For purposes of these calculations, SPTRFA's assumed inflation rate is 2.50%.*

The St. Paul Teachers' Retirement Fund Association compiled this data and the related investment notes and furnished this information for inclusion within this report. We did not audit this information. We are not responsible for its accuracy or completeness.

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 plan member contributions will be made at the current contribution rate and that employer contributions will be made at rates equal to the difference between actuarially determined contribution rates and the member rate. Based on these assumptions, the pension plan's fiduciary net position was 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 plan's net pension liability, calculated using a Single Discount Rate of 7.00%, as well as what the plan's net pension liability would be if it were calculated using a Single Discount Rate that is one percent lower or one percent higher:

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	$2,127,478	$1,891,617	$1,696,614
Net Position Restricted for Pensions	1,216,753	1,216,753	1,216,753
Net Pension Liability	**$ 910,725**	**$ 674,864**	**$ 479,861**

Note that we believe the 8.0% interest rate assumption does not comply with Actuarial Standards of Practice.

Reconciliation of Members

Summary of Changes in Participant Status
During Fiscal Year Ending June 30, 2023

	Active Participants	Leave of Absence	Vested Terminated	Other Non-Vested	Retired Participants	Disableds	Survivors and Beneficiaries	Alternate Payees[2]	Total
A. Number as of June 30, 2022	3,400	128	2,514	2,915	3,813	21	365	54	13,210
B. Additions	262	8	215	131	120	3	33	4	776
C. Deletions									
1. Retirements	(46)	(3)	(71)						(120)
2. Disability	-	(1)	(2)						(3)
3. Died with Beneficiary	-	-	-	-	(33)				(33)
4. Died without Beneficiary	-	-	-		(48)		(25)	-	(73)
5. Terminated - Deferred	(190)	(25)							(215)
6. Terminated - Not Vested	(126)	(5)							(131)
7. Refunds	(6)	(3)	(32)	(78)					(119)
8. Rehired as Active	118	(55)	(21)	(42)					-
9. Leave of Absence	(52)	52							-
10. Repayment of Refund									-
11. Expired Benefits							(2)		(2)
12. Disability to Retirement					1	(1)			-
D. Data Adjustments[1]			8	81	5				94
E. Total on June 30, 2023	3,360	96	2,611	3,007	3,858	23	371	58	13,384

1 Includes members not valued in prior valuation who repaid refunds or otherwise restored prior service.

2 Includes alternate payees of retired participants (47), disabled participants (1), and survivors (10).

GASB Reconciliation (Dollars in Thousands)
Fiscal Year Ended June 30, 2023

	Total Pension Liability (a)	Plan Fiduciary Net Position (b)	Net Pension Liability (a) - (b)	Deferred Outflows	Deferred Inflows	Outflows Prior Year	Total Pension Expense
Balance Beginning of Year	**$ 1,849,295**	**$ 1,154,427**	**$ 694,868**				
Changes for the Year:							
Service Cost	$ 28,846		$ 28,846				$ 28,846
Interest on Total Pension Liability	126,124		126,124				126,124
Interest on Fiduciary Net Position [1]		$ 79,131	(79,131)				(79,131)
Changes in Benefit Terms	50,908		50,908				50,908
Liability Experience Gains and Losses	(16,123)		(16,123)	$ -	$ 14,661	$ (1,044)	(2,506)
Changes in Assumptions	(23,547)		(23,547)	34,001	15,698	64,756	22,906
Contributions - Employer		54,688	(54,688)				
Contributions - Employees		22,420	(22,420)				(22,420)
Asset Gain/(Loss) [1]		31,166	(31,166)	129,563	116,613	48,669	4,553
Benefit Payouts	(123,886)	(123,886)					
Administrative Expenses		(1,193)	1,193				1,193
Other changes							
Net Changes	**$ 42,322**	**$ 62,326**	**$ (20,004)**				**$ 130,473**
Balance End of Year	**$ 1,891,617**	**$ 1,216,753**	**$ 674,864**	**$ 163,564**	**$ 146,972**	**$ 112,381**	

[1] *The sum of these items equals the net investment income of $110,297.*

SECTION E

SUMMARY OF BENEFITS

Summary of Benefit Provisions for Basic Members as of July 1, 2023

PARTICIPANTS

Licensed Educators first employed prior to July 1, 1978 by schools in the City of St. Paul or St. Paul College whose position requires a license from the Minnesota Professional Educator Licensing and Standards Board, who are not covered under the Social Security Act.

As of July 1, 2023, there are no remaining active Basic Members.

ACCREDITED SERVICE

Service which has been verified and accredited by the Association for the purpose of determining contributions and benefits (may include service earned while working outside of St. Paul Public Schools, previous St. Paul service, military service and governmental service).

ALLOWABLE ST. PAUL SERVICE

Service earned as a licensed educator in the St. Paul Public Schools, in the St. Paul College, or as an employee of the Association. Also includes service credited after receipt of payment as required, for licensed educators on leave.

SALARY

Total compensation earned during a school year (July 1 to June 30) excluding lump sum payments for unused leave at termination and employer-paid insurance coverage.

Summary of Benefit Provisions for Basic Members as of July 1, 2023

AVERAGE SALARY

Average of the highest 5 years of salary during the last 10 years of St. Paul service while making contributions.

NORMAL RETIREMENT BENEFIT

Eligibility

Attainment of age 65 and 5 years of Accredited Service.

Benefit

2.50 percent of Average Salary for each year of Accredited Service.

EARLY RETIREMENT BENEFIT

Eligibility

Attainment of age 55 and 5 years of Accredited Service.

Benefit

The greater of the following benefits:

- 2.00 percent of Average Salary per year of Accredited Service, subject to a maximum of 40 years with a 0.25 percent reduction for each month the member is under age 65. If the member has 25 years of Accredited Service, the reduction is taken from age 60, therefore no reduction is required if the member is age 60 or older. No reduction is taken if age plus years of Accredited Service totals at least 90.
- 2.50 percent of Average Salary per year of Accredited Service, subject to a maximum of 40 years, reduced for each month the member is under age 65 using linear interpolation of the table listed below. The ultimate factors shown below for retirements on or after July 1, 2024 will be phased-in over a 60-month period starting July 1, 2019.

Age at Retirement	Retirements Prior to July 1, 2019	Retirements on or after July 1, 2024
55	0.5376	0.4200
56	0.5745	0.4600
57	0.6092	0.5000
58	0.6419	0.5400
59	0.6726	0.5800
60	0.7354	0.6500
61	0.7947	0.7200
62	0.8507	0.7900
63	0.9035	0.8600
64	0.9533	0.9300
65	1.0000	1.0000

Summary of Benefit Provisions for Basic Members as of July 1, 2023

DISABILITY RETIREMENT BENEFIT

Eligibility

Total and permanent disablement before attaining age 65 and 5 years of Accredited Service.

Benefit

If the member is under age 65, 75 percent of the member's annual contract salary less any Social Security and Workers' Compensation benefits payable until age 65. At age 65, a normal retirement benefit is calculated using the projected service and average salary as if the member had continued to teach in their position held at the time of disability. Members age 65 or older at time of disability receive a normal retirement benefit.

DEFERRED RETIREMENT BENEFIT

Eligibility

5 years of Accredited Service.

Benefit

Benefit computed under law in effect at termination and payable as a normal or early retirement benefit. For members hired on or before June 30, 2006, the benefit is augmented at 3.00 percent compounded annually from the 1st of the month following termination until the January 1st after turning age 55 and then augmented at 5.00 percent compounded annually from that date to July 1, 2012. For members hired after June 30, 2006, the benefit is augmented at 2.50 percent compounded annually from the 1st of the month following termination to July 1, 2012. Augmentation for all members, regardless of hire date, changed to 2.00 percent as of July 1, 2012 for the portion of benefit deferral which occurs after June 30, 2012 to June 30, 2019. After June 30, 2019, benefits are not augmented.

PRE-RETIREMENT SURVIVOR BENEFIT (Family Benefit)

Eligibility

Active member with five years of Accredited Service.

Benefit

- Children's Benefit: 25 percent of the maximum Bachelor of Arts salary for the year in which the member died for each eligible child up to a maximum of two. Benefits are paid until the child attains age 18, or 22 for full-time students.
- Spousal Benefit: 15 percent of the maximum Bachelor of Arts salary for an eligible spouse who has legal custody of an eligible child. Spousal benefits cease when the spouse remarries, dies, or elects the regular survivor benefit. Electing the regular survivor benefit does not disqualify the child from receiving the family benefit.

Summary of Benefit Provisions for Basic Members as of July 1, 2023

SURVIVOR BENEFIT (Active or Retired Member)

Eligibility

Active member or retired member with five years of Accredited Service. A surviving spouse must have been married to the member for three years at the earlier of death or retirement.

Benefit

Retirement benefit earned at the time of death or retirement, whichever is earlier, reduced by the use of 100 percent joint survivorship tables, based on the ages of the member and survivor at the time of retirement.

REFUND OF CONTRIBUTIONS

Eligibility

Termination or death where no annuity is payable.

Benefit

Member contributions with 6.00 percent interest accrued through June 30, 2011, 4.00 percent interest accrued through June 30, 2018, and 3.00 percent interest thereafter.

REEMPLOYED ANNUITANTS

The School District shall make the regular employer contribution and additional employer contribution, plus a supplemental contribution equal to 2.5 percent of salary, on behalf of any retired member who is reemployed by the School District. Reemployed annuitants do not accrue additional benefits.

NORMAL FORM OF RETIREMENT BENEFITS

Unreduced annuity payments made until the death of the member, with a 100 percent Joint and Survivor adjusted pension payable to the surviving beneficiary.

BENEFIT INCREASES

1.0 percent per year on January 1.

An additional one-time, non-compounding benefit increase of 3.0 percent, 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.

For retirements on and after July 1, 2024, the first benefit increase is delayed until the retiree reaches Normal Retirement Age (not applicable to Rule of 90 retirees, Rule of 62/30 retirees, disability benefit recipients, or survivors).

Summary of Benefit Provisions for Basic Members as of July 1, 2023

CHANGES IN PLAN PROVISIONS

A one-time, non-compounding benefit increase of 3.00 percent will be payable in a lump sum for calendar year 2024 by March 31, 2024.

Summary of Benefit Provisions for Coordinated Members as of June 30, 2023

STATUTORY CONTRIBUTIONS

Statutory contribution rates for members and their employers are shown as a percent-of-pay below.

Contribution after June 30,	Member	Employer Regular	Employer Additional
2022	7.50%	8.80%	3.84%
2023	7.75%	9.00%	3.84%
2025	9.00%	9.75%	3.84%

SUPPLEMENTAL CONTRIBUTIONS

1996 legislation provides for a variable amortization aid contribution paid annually on July 15. The actual contribution during the past fiscal year was $838,000.

Annual supplemental contributions of $14,827,000 will be contributed by the State of Minnesota each October 1. The contributions will continue until the plan is 100% funded or until June 30, 2048, whichever occurs earlier.

2023 legislation provides for a one-time state aid contribution in the amount of $15,746,887, to be paid on October 1, 2023.

PARTICIPANTS

Licensed educators in the public schools of the City of St. Paul, excluding charter schools, whose position requires a license from the Minnesota Professional Educator Licensing and Standards Board, and who are covered under the Social Security Act and make contributions to the St. Paul Teachers' Retirement Fund Association, are covered under the Coordinated Plan.

ALLOWABLE SERVICE

Service earned as a licensed educator in the St. Paul Public Schools, in the St. Paul College, or in certain charter schools, or as an employee of the Association. Also includes service credited after receipt of payment as required, for licensed educators on leave. Service is granted on a proportional basis for part-time teachers.

Summary of Benefit Provisions for Coordinated Members as of June 30, 2023

SALARY

Total compensation excluding lump sum payments for unused leave at termination and employer-paid insurance coverage.

AVERAGE SALARY

Average of the highest five successive years of salary while making contributions. In cases where the Allowable Service is less than five years, Average Salary is based on the Allowable Service years.

NORMAL RETIREMENT BENEFIT

Eligibility

Three years of Allowable Service. The eligibility age is 65 for those hired before July 1, 1989. The eligibility age is the earlier of eligibility for full Social Security retirement benefits to a maximum of age 66 for those hired on or after July 1, 1989 and retired prior to July 1, 2025. Beginning July 1, 2025, the eligibility age is 65 for all members. A Proportionate Retirement Annuity is available at Normal Retirement Age with one year of Allowable Service.

Benefit

1.70 percent of Average Salary for each year of Allowable Service rendered before July 1, 2015 and 1.90 percent of Average Salary for each year of Allowable Service rendered after June 30, 2015.

Summary of Benefit Provisions for Coordinated Members as of June 30, 2023

EARLY RETIREMENT BENEFIT

Eligibility

Attainment of age 55 and 3 years of Allowable Service.

Benefit

Members hired before July 1, 1989 are eligible for the greater of the following benefits. Members hired after July 1, 1989 are eligible for the benefits shown in item (b):

a) For the first 10 years of Allowable Service, 1.20 percent of Average Salary for each year of Allowable Service rendered prior to July 1, 2015, plus 1.40 percent of Average Salary for each year of Allowable Service rendered after June 30, 2015. Additionally, for each subsequent year of Allowable Service in excess of 10 years, 1.70 percent of Average Salary for each year rendered prior to July 1, 2015, plus 1.90 percent of Average Salary for each year rendered after June 30, 2015. There is a reduction of 0.25 percent for each month the member is under age 65, or under age 62 with 30 years of Allowable Service. No reduction applies if the age plus years of service totals at least 90.

b) 1.70 percent of Average Salary per year of Allowable Service rendered before July 1, 2015 and 1.90 percent of Average Salary for each year of service rendered after June 30, 2015 reduced for each month the member is under the Normal Retirement Age using linear interpolation of the factors in the tables listed below. The ultimate factors shown below for retirements on or after July 1, 2024 will be phased in over a sixty-month period starting July 1, 2019. Effective July 1, 2023, no reduction applies if the member is at least age 62 with at least 30 years of service.

	Under Age 62 or Less than 30 Years of Service				Prior to July 1, 2023	
	Retirements Prior to July 1, 2019		Retirements on or after July 1, 2024		Age 62 or Older with 30 Years of Service	
Normal Retirement Age:	**65**	**66**	**65**	**66**	**65**	**66**
Age at Retirement						
55	0.5376	0.4592	0.4200	0.3500		
56	0.5745	0.4992	0.4600	0.3900		
57	0.6092	0.5370	0.5000	0.4300		
58	0.6419	0.5726	0.5400	0.4700		
59	0.6726	0.6062	0.5800	0.5100		
60	0.7354	0.6726	0.6500	0.5800		
61	0.7947	0.7354	0.7200	0.6500		
62	0.8507	0.7947	0.7900	0.7200	0.8831	0.8389
63	0.9035	0.8507	0.8600	0.7900	0.9246	0.8831
64	0.9533	0.9035	0.9300	0.8600	0.9635	0.9246
65	1.0000	0.9533	1.0000	0.9300	1.0000	0.9635
66		1.0000		1.0000		1.0000

Summary of Benefit Provisions for Coordinated Members as of June 30, 2023

DISABILITY RETIREMENT BENEFIT

Eligibility

Total and permanent disablement and three years of Allowable Service with service earned within the current fiscal year and at least two years of Allowable Service since the last interruption in service.

Benefit

Calculated as a normal retirement benefit payable for life without reduction for early commencement. At normal retirement age, the benefit converts from a disability benefit to a retirement benefit. The disability benefit is reduced by any Workers' Compensation benefits payable.

DEFERRED RETIREMENT BENEFIT

Eligibility

Three years of Allowable Service.

Benefit

Benefit computed under law in effect at termination and payable as a normal or early retirement benefit. For members hired on or before June 30, 2006, the benefit is augmented at 3.00 percent compounded annually from the 1st of the month following termination until the January 1st after turning age 55 and then augmented at 5.00 percent compounded annually from that date to July 1, 2012. For members hired after June 30, 2006, the benefit is augmented at 2.50 percent compounded annually from the 1st of the month following termination to July 1, 2012. Augmentation for all members, regardless of hire date, changed to 2.00 percent as of July 1, 2012 for the portion of benefit deferral which occurs after June 30, 2012 to June 30, 2019. After June 30, 2019, benefits are not augmented.

SURVIVOR BENEFIT (Active Members)

Eligibility

Active member with three years of Allowable service. A surviving spouse is defined as the person legally married to the member at the time of death. If none, a dependent child who is the legal child of the member, who is less than 20 years of age and unmarried.

Benefit

Retirement benefit earned at the time of death with choices for either a reduced for 100 percent joint survivorship, or 5-, 10-, 15-, or 20-year term certain. The benefit is available immediately upon application. Actuarial reductions assuming 2.5 percent augmentation for the calculation of the survivorship portion of a 100 percent joint and survivor benefit are actuarially determined based on the member's and survivor's ages at the death of the member.

Early retirement reductions apply to the survivor benefit based on the member's age when deceased. If the deceased member had not yet attained age 55 at time of death, the additional early retirement reduction from age 55 to the age of the member at death applies at only one-half of the actuarial rate.

Summary of Benefit Provisions for Coordinated Members as of June 30, 2023

REFUND OF CONTRIBUTIONS

Eligibility

Termination or death where no annuity is payable or a refund of contributions is chosen in lieu of an annuity.

Benefit

Member contributions with 6.00 percent interest accrued through June 30, 2011, 4.00 percent interest accrued through June 30, 2018, and 3.00 percent interest thereafter.

REEMPLOYED ANNUITANTS

The School District shall make the regular employer contribution and additional employer contribution, plus a supplemental contribution equal to 2.5 percent of salary, on behalf of any retired member who is reemployed by the School District. Reemployed annuitants do not accrue additional benefits.

NORMAL FORM OF RETIREMENT BENEFITS

Straight life annuity. Actuarially equivalent options are available to provide post-retirement beneficiary or survivor benefits.

BENEFIT INCREASES

1.0 percent per year on January 1.

An additional one-time, non-compounding benefit increase of 1.5 percent, 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.

For retirements on and after July 1, 2024, the first benefit increase is delayed until the retiree reaches Normal Retirement Age (not applicable to Rule of 90 retirees, Rule of 62/30 retirees, disability benefit recipients, or survivors).

CHANGES IN PLAN PROVISIONS

Member contributions will increase from 7.50% of pay to 7.75% of pay effective July 1, 2023, and from 7.75% of pay to 9.00% of pay effective July 1, 2025. Employer contributions will increase from 8.80% to 9.00% of pay effective July 1, 2023, and from 9.00% to 9.75% of pay effective July 1, 2025.

An additional one-time direct state aid contribution of $15.7 million will be contributed to the Plan on October 1, 2023.

The Normal Retirement will change to age 65 for members hired after July 1, 1989, effective July 1, 2025.

Benefits at age 62 and 30 years of service are unreduced, effective July 1, 2023.

A one-time, non-compounding benefit increase of 1.5 percent will be payable in a lump sum for calendar year 2024 by March 31, 2024.

SECTION F

ACTUARIAL COST METHOD AND ACTUARIAL ASSUMPTIONS

Actuarial Cost Method and Actuarial Assumptions

I. 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:

1) 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
2) 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 Unfunded Actuarial Accrued Liability.

II. Current Actuarial Assumptions

Assumptions are based on an experience study for the five-year period of July 1, 2016 to June 30, 2021, as well as a legislated change to the investment return assumption effective July 1, 2023.

A. Demographic Assumptions

Mortality:

1. Healthy and Disabled Annuitant Mortality:
   a. Male: Pub-2010 Male Healthy Teacher Retiree Mortality Table, adjusted for mortality improvements using projection scale MP-2021 from 2010. Rates are multiplied by a factor of 1.03.
   b. Female: Pub-2010 Female Healthy Teacher Retiree Mortality Table, adjusted for mortality improvements using projection scale MP-2021 from 2010. Rates are multiplied by a factor of 1.03.
2. Employee Mortality:
   a. Male: Pub-2010 Male Healthy Teacher Employee Mortality Table, adjusted for mortality improvements using projection scale MP-2021 from 2010.
   b. Female: Pub-2010 Female Healthy Teacher Employee Mortality Table, adjusted for mortality improvements using projection scale MP-2021 from 2010.

Actuarial Cost Method and Actuarial Assumptions

Deaths Expressed as the Number of Occurrences per 10,000:

Age in 2023	Post-Retirement Mortality Male	Female
55	22	20
56	24	22
57	27	24
58	30	26
59	34	28
60	38	31
61	42	33
62	46	35
63	51	38
64	56	41
65	61	44
66	67	47
67	74	51
68	82	56
69	91	62
70	102	69
71	114	78
72	128	88
73	144	100
74	163	115
75	185	131
76	210	151
77	239	174
78	272	200
79	310	230
80	353	264
81	402	303
82	458	347
83	523	398
84	597	455
85	681	520
86	775	594
87	881	676
88	999	769
89	1130	873
90	1274	989
91	1432	1120
92	1600	1263
93	1778	1420
94	1963	1587

Actuarial Cost Method and Actuarial Assumptions

Deaths Expressed as the Number of Occurrences per 10,000:

Age in 2023	Pre-Retirement Mortality Male	Female
25	2	1
26	2	1
27	2	1
28	3	1
29	3	2
30	3	2
31	3	2
32	4	2
33	4	2
34	4	3
35	5	3
36	5	3
37	5	3
38	5	3
39	6	4
40	6	4
41	6	4
42	6	4
43	7	4
44	7	4
45	7	5
46	8	5
47	8	5
48	9	6
49	10	6
50	10	7
51	11	7
52	12	8
53	14	9
54	15	10
55	16	11
56	18	12
57	20	13
58	22	14
59	24	15
60	27	17
61	30	18
62	33	20
63	36	22
64	40	24

Actuarial Cost Method and Actuarial Assumptions

Rates of Disability:

Disability Expressed as the Number of Occurrences per 10,000:

Age	Disability	Age	Disability
20	1	45	4
21	1	46	4
22	1	47	4
23	1	48	4
24	1	49	4
25	1	50	6
26	1	51	6
27	1	52	6
28	1	53	6
29	1	54	6
30	2	55	12
31	2	56	12
32	2	57	12
33	2	58	12
34	2	59	12
35	2	60	20
36	2	61	20
37	2	62	20
38	2	63	20
39	2	64	20
40	2		
41	2		
42	2		
43	2		
44	2		

Actuarial Cost Method and Actuarial Assumptions

Rates of Termination:

Year	Number of Terminations per 1,000 Active Members	
	Male	Female
1	450	450
2	235	200
3	160	120
4	75	95
5	65	75
6	55	70
7	40	60
8	35	50
9	30	50
10	30	50
11	30	40
12	30	30
13	30	25
14	25	20
15 & Over	25	20

Rates of Retirement:

Retirements Expressed as the Number of Occurrences per 10,000:

Age	Male Coordinated Members Eligible for Rule of 90 Provision	Female Coordinated Members Eligible for Rule of 90 Provision	Male Coordinated Members Not Eligible for Rule of 90 Provision	Female Coordinated Members Not Eligible for Rule of 90 Provision
<55	2,500	3,500	0	0
55	2,500	3,500	500	500
56	3,500	3,000	500	500
57	3,000	2,000	500	500
58	2,500	2,500	700	500
59	2,500	3,000	700	700
60	2,500	3,000	1,200	900
61	3,000	3,000	800	1,000
62	5,000	3,500	2,000	1,800
63	3,000	3,000	2,500	2,100
64	2,500	2,500	2,500	2,100
65	10,000	10,000	3,000	4,500
66	10,000	10,000	3,500*	5,000*
67	10,000	10,000	4,000	4,500
68	10,000	10,000	3,500	3,000
69	10,000	10,000	3,500	2,500
70 & Over	10,000	10,000	10,000	10,000

**2,800 for male members and 3,200 for female members hired after June 30, 1989 with a Normal Retirement Age equal to 66.*

Note: members reaching age 62 and 30 years of service prior to age 65 are assumed to retire at the same rate as Rule of 90 retirements.

B. Economic Assumptions

Investment Return Rate:	7.00%
Single Discount Rate:	7.00%
Price Inflation:	2.50% per year
Payroll Growth (Wage Inflation):	2.50% per year
Future Salary Increases:	Service-based rates shown below:

Annual Salary Increases

Year	Ultimate Rate of Annual Salary Increases	Year	Ultimate Rate of Annual Salary Increases
1	8.00%	21	2.70%
2	6.75%	22	2.50%
3	6.50%	23 & Over	2.50%
4	6.25%		
5	6.00%		
6	5.75%		
7	5.50%		
8	5.25%		
9	5.00%		
10	4.75%		
11	4.50%		
12	4.25%		
13	4.00%		
14	3.75%		
15	3.50%		
16	3.40%		
17	3.30%		
18	3.20%		
19	3.10%		
20	2.90%		

Asset Value: The actuarial value of assets is smoothed by using a five-year average market value.

Actuarial Cost Method and Actuarial Assumptions

C. *Other Assumptions*

Marital Status:	It is assumed that 75% of male members and 60% of female members have an eligible spouse. The male spouse is assumed to be two years older than the female spouse. Married members are assumed to have two dependent children.
Deferred Benefit Commencement:	Basic Plan members who terminate vested are assumed to commence benefits at age 61. Coordinated Plan members are assumed to commence benefits at age 63. If the member is already past the assumed deferral age, the member is assumed to commence benefits one year from the valuation date.
Administrative Expenses:	In the valuation year, equal to prior year administrative expenses expressed as a percent 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:	All employees withdrawing after becoming eligible for a deferred benefit take the larger of their contributions accumulated with interest or the value of their deferred benefit. Account balances for deferred members accumulate interest until the assumed benefit commencement date and are discounted back to the valuation date.
Allowance for Combined Service Annuity:	20.0% load on liabilities for former, vested members. 9.0% load on liabilities for former, non-vested members.
Missing Salary and Salary Minimums:	Active members with reported salaries of $100 or less were assumed to have the average non-zero active salary. Active members with salaries less than those reported at the prior valuation date are valued using their prior salary amount. Active members who have been hired within one year of the valuation date have had their pay annualized by dividing by months of service credited, not to exceed the average non-zero active salary. For members on leave of absence at valuation date who were not on leave at the prior valuation date, the prior year's valuation pay was used.
Missing Data for Deferred Vested Members:	Deferred vested members without a reported benefit and without salary information were assumed to have a final average salary of $40,000.
Decrement Timing:	Retirement and Termination: end of valuation year – consistent with retirements and terminations occurring at the end of the school year. Death and Disability: middle of valuation year.
Eligibility Testing:	Eligibility for benefits is determined based upon the age nearest birthday and service nearest whole year on the date the decrement is assumed to occur.

Actuarial Cost Method and Actuarial Assumptions

Service Credit Accruals:	It is assumed that members accrue one year of service credit per year. Exact fractional service is used to determine the amount of benefit payable.
Supplemental Contributions:	1996 legislation provides for a variable amortization aid contribution paid annually on July 15. We assumed the annual amortization aid contribution will equal $838,000, which was the actual contribution for the most recent fiscal year. Additionally, annual supplemental contributions equal to $14,827,000 are scheduled to be paid each October 1. The contributions described herein will continue until the plan is 100% funded or until June 30, 2048, whichever occurs earlier.
Projected Annual Payroll Calculation:	The census data as of July 1, 2023 reflects retirements and terminations occurring during the months of May and June; however, it does not necessarily reflect the replacements hired to fill their positions who may have hire dates in August and September. We assumed that May and June retirements are replaced by members coming in at the B.A. entry salary level of $49,181; the Projected Annual Payroll for the fiscal year ending June 30, 2024 includes this replacement salary amount.
Changes in Actuarial Assumptions Since the Prior Valuation:	The assumed wage inflation assumption was changed from 3.0% to 2.5%. Additional demographic assumption changes, as recommended in the most recent experience study, dated December 8, 2022: • The base mortality table was changed from RP-2014 mortality table with adjustments to Pub-2010 for Teachers, with adjustments, and future improvement projected using MP-2021. • Revised rates of retirement which generally result in more expected normal retirements and fewer early retirements. • Revised rates of termination are generally lower, especially after the first year of employment for males and females. • Reduced rates of disability. • Retirement age assumption for Coordinated deferred members was changed from age 62 to age 63. • Revised merit and seniority salary increase rates are 19 basis points lower in total. When combined with the change in wage inflation, gross salary increase rates are 69 basis points lower in total. Members reaching age 62 with 30 years of service prior to age 65 are assumed to retire at the same rate as Rule of 90 unreduced retirements.

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 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 assumed valuation discount rate is used. 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 plan is projected to have sufficient assets to pay all benefits.

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 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%; and the resulting SDR is 7.00%.

The tables in this section provide background for the development of the SDR.

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 SDR. It breaks down the benefit payments into present values for funded and unfunded portions and shows the equivalent total using the SDR.

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

	Payroll			Projected Contributions				
Year	Payroll for Current Employees	Payroll for New Employees	Total Employee Payroll	Contributions from Current Employees	Employer Contributions for Current Employees	Employer Contributions on Future Payroll toward Current UAL*	Supplemental Contributions**	Total Contributions
0	$ 296,674	$ -	$ 296,674					
1	304,195	-	304,195	$ 23,575	$ 39,059	$ -	$ 31,365	$ 93,999
2	290,368	21,431	311,799	22,504	37,283	2,216	15,665	77,668
3	280,605	38,989	319,594	25,254	38,134	4,811	15,665	83,864
4	272,372	55,212	327,584	24,513	37,015	6,813	15,665	84,006
5	264,292	71,482	335,774	23,786	35,917	8,821	15,665	84,189
6	256,912	87,256	344,168	23,122	34,914	10,767	15,665	84,468
7	249,346	103,426	352,772	22,441	33,886	12,763	15,665	84,755
8	240,990	120,602	361,592	21,689	32,751	14,882	15,665	84,987
9	232,494	138,137	370,631	20,924	31,596	17,046	15,665	85,231
10	223,770	156,127	379,897	20,139	30,410	19,266	15,665	85,480
11	214,917	174,478	389,395	19,343	29,207	21,531	15,665	85,746
12	205,857	193,273	399,130	18,527	27,976	23,850	15,665	86,018
13	196,409	212,699	409,108	17,677	26,692	26,247	15,665	86,281
14	187,058	232,277	419,335	16,835	25,421	28,663	15,665	86,584
15	177,293	252,526	429,819	15,956	24,094	31,162	15,665	86,877
16	167,972	272,592	440,564	15,117	22,827	33,638	15,665	87,247
17	158,736	292,842	451,578	14,286	21,572	36,137	15,665	87,660
18	149,319	313,549	462,868	13,439	20,292	38,692	15,665	88,088
19	139,913	334,527	474,440	12,592	19,014	41,281	15,665	88,552
20	130,204	356,097	486,301	11,718	17,695	43,942	-	73,355
21	120,058	378,400	498,458	10,805	16,316	46,695	-	73,816
22	109,972	400,948	510,920	9,897	14,945	49,477	-	74,319
23	100,084	423,609	523,693	9,008	13,601	52,273	-	74,882
24	90,492	446,293	536,785	8,144	12,298	55,073	-	75,515
25	81,017	469,187	550,204	7,292	11,010	57,898	-	76,200
26	71,932	492,028	563,960	6,474	9,776	60,716	-	76,966
27	63,340	514,719	578,059	5,701	8,608	63,516	-	77,825
28	55,316	537,194	592,510	4,978	7,517	66,290	-	78,785
29	47,267	560,056	607,323	4,254	6,424	69,111	-	79,789
30	39,509	582,997	622,506	3,556	5,369	71,942	-	80,867
31	32,706	605,363	638,069	2,944	4,445	74,702	-	82,091
32	26,627	627,393	654,020	2,396	3,619	77,420	-	83,435
33	21,338	649,033	670,371	1,920	2,900	80,091	-	84,911
34	16,801	670,329	687,130	1,512	2,283	82,719	-	86,514
35	12,813	691,495	704,308	1,153	1,741	85,331	-	88,225
36	9,550	712,366	721,916	860	1,298	87,906	-	90,064
37	6,691	733,273	739,964	602	909	90,486	-	91,997
38	4,565	753,898	758,463	411	620	93,031	-	94,062
39	2,957	774,468	777,425	266	402	95,569	-	96,237
40	1,826	795,034	796,860	164	248	98,107	-	98,519
41	1,098	815,684	816,782	99	149	100,655	-	100,903
42	625	836,576	837,201	56	85	103,233	-	103,374
43	340	857,791	858,131	31	46	105,851	-	105,928
44	178	879,407	879,585	16	24	108,519	-	108,559
45	73	901,501	901,574	7	10	111,245	-	111,262
46	32	924,081	924,113	3	4	114,032	-	114,039
47	6	947,210	947,216	1	1	116,886	-	116,888
48	2	970,895	970,897	-	-	119,808	-	119,808
49	-	995,169	995,169	-	-	122,804	-	122,804
50	-	1,020,048	1,020,048	-	-	125,874	-	125,874

* *Contributions related to future employees in excess of normal cost and expenses of 10.25% of pay.*

** *Supplemental contributions are equal to $15,665,000 until the earlier of 100% funding (on an AVA basis), or June 30, 2048; this contribution is assumed to end after 20 years. An additional one-time $15.7 million direct state aid contribution is included for FYE June 30, 2024.*

For purposes of this projection, based on GASB guidance, we assumed the statutory contribution rates would continue after the plan becomes fully funded unless noted otherwise. If we reflected a decrease in contribution rates due to full funding, future assets and contributions would be less than what is shown herein.

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

	Payroll			Projected Contributions				
Year	Payroll for Current Employees	Payroll for New Employees	Total Employee Payroll	Contributions from Current Employees	Employer Contributions for Current Employees	Employer Contributions on Future Payroll toward Current UAL*	Supplemental Contributions	Total Contributions
51	$ -	$ 1,045,550	$ 1,045,550	$ -	$ -	$ 129,021	$ -	$ 129,021
52	-	1,071,688	1,071,688	-	-	132,246	-	132,246
53	-	1,098,481	1,098,481	-	-	135,552	-	135,552
54	-	1,125,943	1,125,943	-	-	138,941	-	138,941
55	-	1,154,091	1,154,091	-	-	142,415	-	142,415
56	-	1,182,943	1,182,943	-	-	145,975	-	145,975
57	-	1,212,517	1,212,517	-	-	149,625	-	149,625
58	-	1,242,830	1,242,830	-	-	153,365	-	153,365
59	-	1,273,901	1,273,901	-	-	157,199	-	157,199
60	-	1,305,748	1,305,748	-	-	161,129	-	161,129
61	-	1,338,392	1,338,392	-	-	165,158	-	165,158
62	-	1,371,852	1,371,852	-	-	169,286	-	169,286
63	-	1,406,148	1,406,148	-	-	173,519	-	173,519
64	-	1,441,302	1,441,302	-	-	177,857	-	177,857
65	-	1,477,334	1,477,334	-	-	182,303	-	182,303
66	-	1,514,268	1,514,268	-	-	186,861	-	186,861
67	-	1,552,124	1,552,124	-	-	191,532	-	191,532
68	-	1,590,927	1,590,927	-	-	196,320	-	196,320
69	-	1,630,701	1,630,701	-	-	201,228	-	201,228
70	-	1,671,468	1,671,468	-	-	206,259	-	206,259
71	-	1,713,255	1,713,255	-	-	211,416	-	211,416
72	-	1,756,086	1,756,086	-	-	216,701	-	216,701
73	-	1,799,988	1,799,988	-	-	222,119	-	222,119
74	-	1,844,988	1,844,988	-	-	227,672	-	227,672
75	-	1,891,113	1,891,113	-	-	233,363	-	233,363
76	-	1,938,390	1,938,390	-	-	239,197	-	239,197
77	-	1,986,850	1,986,850	-	-	245,177	-	245,177
78	-	2,036,521	2,036,521	-	-	251,307	-	251,307
79	-	2,087,435	2,087,435	-	-	257,589	-	257,589
80	-	2,139,620	2,139,620	-	-	264,029	-	264,029
81	-	2,193,111	2,193,111	-	-	270,630	-	270,630
82	-	2,247,939	2,247,939	-	-	277,396	-	277,396
83	-	2,304,137	2,304,137	-	-	284,331	-	284,331
84	-	2,361,741	2,361,741	-	-	291,439	-	291,439
85	-	2,420,784	2,420,784	-	-	298,725	-	298,725
86	-	2,481,304	2,481,304	-	-	306,193	-	306,193
87	-	2,543,336	2,543,336	-	-	313,848	-	313,848
88	-	2,606,920	2,606,920	-	-	321,694	-	321,694
89	-	2,672,093	2,672,093	-	-	329,736	-	329,736
90	-	2,738,895	2,738,895	-	-	337,980	-	337,980
91	-	2,807,367	2,807,367	-	-	346,429	-	346,429
92	-	2,877,552	2,877,552	-	-	355,090	-	355,090
93	-	2,949,490	2,949,490	-	-	363,967	-	363,967
94	-	3,023,228	3,023,228	-	-	373,066	-	373,066
95	-	3,098,808	3,098,808	-	-	382,393	-	382,393
96	-	3,176,278	3,176,278	-	-	391,953	-	391,953
97	-	3,255,685	3,255,685	-	-	401,752	-	401,752
98	-	3,337,078	3,337,078	-	-	411,795	-	411,795
99	-	3,420,505	3,420,505	-	-	422,090	-	422,090
100	-	3,506,017	3,506,017	-	-	432,643	-	432,643

* *Contributions related to future employees in excess of normal cost and expenses of 10.25% of pay.*

** *Supplemental contributions are equal to $15,665,000 until the earlier of 100% funding (on an AVA basis), or June 30, 2048; this contribution is assumed to end after 20 years.*

For purposes of this projection, based on GASB guidance, we assumed the statutory contribution rates would continue after the plan becomes fully funded unless noted otherwise. If we reflected a decrease in contribution rates due to full funding, future assets and contributions would be less than what is shown herein.

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

Year	Projected Beginning Plan 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)
1	$ 1,216,753	$ 93,999	$ 126,669	$ 1,156	$ 84,009	$ 1,266,936
2	1,266,936	77,668	127,521	1,103	86,932	1,302,912
3	1,302,912	83,864	129,632	1,066	89,592	1,345,670
4	1,345,670	84,006	131,284	1,035	92,535	1,389,892
5	1,389,892	84,189	133,267	1,004	95,569	1,435,379
6	1,435,379	84,468	135,026	976	98,704	1,482,549
7	1,482,549	84,755	137,082	948	101,946	1,531,220
8	1,531,220	84,987	139,371	916	105,283	1,581,203
9	1,581,203	85,231	141,844	883	108,706	1,632,413
10	1,632,413	85,480	144,459	850	112,211	1,684,795
11	1,684,795	85,746	147,251	817	115,791	1,738,264
12	1,738,264	86,018	149,911	782	119,453	1,793,042
13	1,793,042	86,281	152,535	746	123,208	1,849,250
14	1,849,250	86,584	154,996	711	127,069	1,907,196
15	1,907,196	86,877	157,708	674	131,044	1,966,735
16	1,966,735	87,247	160,008	638	135,146	2,028,482
17	2,028,482	87,660	162,304	603	139,405	2,092,640
18	2,092,640	88,088	164,359	567	143,841	2,159,643
19	2,159,643	88,552	166,496	532	148,475	2,229,642
20	2,229,642	73,355	168,438	495	152,787	2,286,851
21	2,286,851	73,816	170,751	456	156,729	2,346,189
22	2,346,189	74,319	173,159	418	160,818	2,407,749
23	2,407,749	74,882	175,335	380	165,073	2,471,989
24	2,471,989	75,515	177,441	344	169,521	2,539,240
25	2,539,240	76,200	179,576	308	174,180	2,609,736
26	2,609,736	76,966	181,573	273	179,073	2,683,929
27	2,683,929	77,825	183,496	241	184,231	2,762,248
28	2,762,248	78,785	184,954	210	189,697	2,845,566
29	2,845,566	79,789	186,449	180	195,514	2,934,240
30	2,934,240	80,867	187,996	150	201,706	3,028,667
31	3,028,667	82,091	189,050	124	208,323	3,129,907
32	3,129,907	83,435	189,446	101	215,443	3,239,238
33	3,239,238	84,911	189,357	81	223,150	3,357,861
34	3,357,861	86,514	188,475	64	231,540	3,487,376
35	3,487,376	88,225	187,096	49	240,713	3,629,169
36	3,629,169	90,064	185,193	36	250,768	3,784,772
37	3,784,772	91,997	182,787	25	261,809	3,955,766
38	3,955,766	94,062	179,808	17	273,953	4,143,956
39	4,143,956	96,237	175,931	11	287,335	4,351,586
40	4,351,586	98,519	171,540	7	302,099	4,580,657
41	4,580,657	100,903	166,487	4	318,389	4,833,458
42	4,833,458	103,374	161,088	2	336,356	5,112,098
43	5,112,098	105,928	155,390	1	356,145	5,418,780
44	5,418,780	108,559	149,478	1	377,907	5,755,767
45	5,755,767	111,262	143,415	-	401,798	6,125,412
46	6,125,412	114,039	137,208	-	427,982	6,530,225
47	6,530,225	116,888	130,914	-	456,633	6,972,832
48	6,972,832	119,808	124,544	-	487,936	7,456,032
49	7,456,032	122,804	118,129	-	522,083	7,982,790
50	7,982,790	125,874	111,684	-	559,284	8,556,264

For purposes of this projection, based on GASB guidance, we assumed the statutory contribution rates would continue after the plan becomes fully funded unless noted otherwise. If we reflected a decrease in contribution rates due to full funding, future assets and contributions would be less than what is shown herein.

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

Year	Projected Beginning Plan 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)
51	$ 8,556,264	$ 129,021	$ 105,228	$ -	$ 599,757	$ 9,179,814
52	9,179,814	132,246	98,780	-	643,739	9,857,019
53	9,857,019	135,552	92,358	-	691,478	10,591,691
54	10,591,691	138,941	85,985	-	743,241	11,387,888
55	11,387,888	142,415	79,685	-	799,311	12,249,929
56	12,249,929	145,975	73,483	-	859,990	13,182,411
57	13,182,411	149,625	67,405	-	925,598	14,190,229
58	14,190,229	153,365	61,479	-	996,478	15,278,593
59	15,278,593	157,199	55,730	-	1,072,993	16,453,055
60	16,453,055	161,129	50,187	-	1,155,531	17,719,528
61	17,719,528	165,158	44,875	-	1,244,506	19,084,317
62	19,084,317	169,286	39,820	-	1,340,357	20,554,140
63	20,554,140	173,519	35,044	-	1,443,555	22,136,170
64	22,136,170	177,857	30,570	-	1,554,600	23,838,057
65	23,838,057	182,303	26,417	-	1,674,028	25,667,971
66	25,667,971	186,861	22,596	-	1,802,410	27,634,646
67	27,634,646	191,532	19,119	-	1,940,358	29,747,417
68	29,747,417	196,320	15,989	-	2,088,524	32,016,272
69	32,016,272	201,228	13,205	-	2,247,609	34,451,904
70	34,451,904	206,259	10,762	-	2,418,360	37,065,761
71	37,065,761	211,416	8,647	-	2,601,581	39,870,111
72	39,870,111	216,701	6,844	-	2,798,129	42,878,097
73	42,878,097	222,119	5,332	-	3,008,926	46,103,810
74	46,103,810	227,672	4,085	-	3,234,960	49,562,357
75	49,562,357	233,363	3,075	-	3,477,289	53,269,934
76	53,269,934	239,197	2,272	-	3,737,048	57,243,907
77	57,243,907	245,177	1,646	-	4,015,453	61,502,891
78	61,502,891	251,307	1,168	-	4,313,809	66,066,839
79	66,066,839	257,589	811	-	4,633,514	70,957,131
80	70,957,131	264,029	551	-	4,976,065	76,196,674
81	76,196,674	270,630	366	-	5,343,067	81,810,005
82	81,810,005	277,396	237	-	5,736,237	87,823,401
83	87,823,401	284,331	150	-	6,157,417	94,264,999
84	94,264,999	291,439	92	-	6,608,575	101,164,921
85	101,164,921	298,725	56	-	7,091,821	108,555,411
86	108,555,411	306,193	33	-	7,609,413	116,470,984
87	116,470,984	313,848	19	-	8,163,767	124,948,580
88	124,948,580	321,694	11	-	8,757,469	134,027,732
89	134,027,732	329,736	6	-	9,393,287	143,750,749
90	143,750,749	337,980	3	-	10,074,182	154,162,908
91	154,162,908	346,429	2	-	10,803,324	165,312,659
92	165,312,659	355,090	1	-	11,584,105	177,251,853
93	177,251,853	363,967	-	-	12,420,154	190,035,974
94	190,035,974	373,066	-	-	13,315,355	203,724,395
95	203,724,395	382,393	-	-	14,273,865	218,380,653
96	218,380,653	391,953	-	-	15,300,132	234,072,738
97	234,072,738	401,752	-	-	16,398,916	250,873,406
98	250,873,406	411,795	-	-	17,575,308	268,860,509
99	268,860,509	422,090	-	-	18,834,759	288,117,358
100	288,117,358	432,643	-	-	20,183,102	308,733,103

For purposes of this projection, based on GASB guidance, we assumed the statutory contribution rates would continue after the plan becomes fully funded unless notes otherwise. If we reflected a decrease in contribution rates due to full funding, future assets and contributions would be less than what is shown herein.

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

Year	Projected Beginning Plan 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)
1	$ 1,216,753	$ 126,669	$ 126,669	$ -	$ 122,455	$ -	$ 122,455
2	1,266,936	127,521	127,521	-	115,214	-	115,214
3	1,302,912	129,632	129,632	-	109,459	-	109,459
4	1,345,671	131,284	131,284	-	103,602	-	103,602
5	1,389,894	133,267	133,267	-	98,287	-	98,287
6	1,435,382	135,026	135,026	-	93,069	-	93,069
7	1,482,552	137,082	137,082	-	88,305	-	88,305
8	1,531,223	139,371	139,371	-	83,906	-	83,906
9	1,581,206	141,844	141,844	-	79,808	-	79,808
10	1,632,416	144,459	144,459	-	75,963	-	75,963
11	1,684,798	147,251	147,251	-	72,365	-	72,365
12	1,738,266	149,911	149,911	-	68,853	-	68,853
13	1,793,044	152,535	152,535	-	65,474	-	65,474
14	1,849,252	154,996	154,996	-	62,179	-	62,179
15	1,907,198	157,708	157,708	-	59,127	-	59,127
16	1,966,738	160,008	160,008	-	56,065	-	56,065
17	2,028,485	162,304	162,304	-	53,149	-	53,149
18	2,092,644	164,359	164,359	-	50,301	-	50,301
19	2,159,647	166,496	166,496	-	47,622	-	47,622
20	2,229,647	168,438	168,438	-	45,025	-	45,025
21	2,286,856	170,751	170,751	-	42,657	-	42,657
22	2,346,194	173,159	173,159	-	40,429	-	40,429
23	2,407,755	175,335	175,335	-	38,259	-	38,259
24	2,471,995	177,441	177,441	-	36,186	-	36,186
25	2,539,246	179,576	179,576	-	34,225	-	34,225
26	2,609,742	181,573	181,573	-	32,342	-	32,342
27	2,683,934	183,496	183,496	-	30,546	-	30,546
28	2,762,253	184,954	184,954	-	28,775	-	28,775
29	2,845,572	186,449	186,449	-	27,110	-	27,110
30	2,934,246	187,996	187,996	-	25,546	-	25,546
31	3,028,673	189,050	189,050	-	24,009	-	24,009
32	3,129,911	189,446	189,446	-	22,485	-	22,485
33	3,239,242	189,357	189,357	-	21,004	-	21,004
34	3,357,865	188,475	188,475	-	19,539	-	19,539
35	3,487,380	187,096	187,096	-	18,127	-	18,127
36	3,629,173	185,193	185,193	-	16,769	-	16,769
37	3,784,775	182,787	182,787	-	15,468	-	15,468
38	3,955,770	179,808	179,808	-	14,221	-	14,221
39	4,143,960	175,931	175,931	-	13,004	-	13,004
40	4,351,589	171,540	171,540	-	11,850	-	11,850
41	4,580,660	166,487	166,487	-	10,748	-	10,748
42	4,833,462	161,088	161,088	-	9,719	-	9,719
43	5,112,104	155,390	155,390	-	8,762	-	8,762
44	5,418,786	149,478	149,478	-	7,877	-	7,877
45	5,755,773	143,415	143,415	-	7,063	-	7,063
46	6,125,417	137,208	137,208	-	6,316	-	6,316
47	6,530,230	130,914	130,914	-	5,632	-	5,632
48	6,972,836	124,544	124,544	-	5,007	-	5,007
49	7,456,037	118,129	118,129	-	4,439	-	4,439
50	7,982,795	111,684	111,684	-	3,922	-	3,922

For purposes of this projection, based on GASB guidance, we assumed the statutory contribution rates would continue after the plan becomes fully funded unless noted otherwise. If we reflected a decrease in contribution rates due to full funding, future assets and contributions would be less than what is shown herein.

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

Year	Projected Beginning Plan 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)
51	$ 8,556,269	$ 105,228	$ 105,228	$ -	$ 3,453	$ -	$ 3,453
52	9,179,819	98,780	98,780	-	3,030	-	3,030
53	9,857,024	92,358	92,358	-	2,647	-	2,647
54	10,591,697	85,985	85,985	-	2,304	-	2,304
55	11,387,894	79,685	79,685	-	1,995	-	1,995
56	12,249,934	73,483	73,483	-	1,719	-	1,719
57	13,182,416	67,405	67,405	-	1,474	-	1,474
58	14,190,233	61,479	61,479	-	1,256	-	1,256
59	15,278,598	55,730	55,730	-	1,064	-	1,064
60	16,453,060	50,187	50,187	-	896	-	896
61	17,719,533	44,875	44,875	-	749	-	749
62	19,084,322	39,820	39,820	-	621	-	621
63	20,554,146	35,044	35,044	-	511	-	511
64	22,136,175	30,570	30,570	-	416	-	416
65	23,838,061	26,417	26,417	-	336	-	336
66	25,667,976	22,596	22,596	-	269	-	269
67	27,634,650	19,119	19,119	-	213	-	213
68	29,747,421	15,989	15,989	-	166	-	166
69	32,016,276	13,205	13,205	-	128	-	128
70	34,451,908	10,762	10,762	-	98	-	98
71	37,065,766	8,647	8,647	-	73	-	73
72	39,870,116	6,844	6,844	-	54	-	54
73	42,878,102	5,332	5,332	-	39	-	39
74	46,103,814	4,085	4,085	-	28	-	28
75	49,562,361	3,075	3,075	-	20	-	20
76	53,269,938	2,272	2,272	-	14	-	14
77	57,243,911	1,646	1,646	-	9	-	9
78	61,502,895	1,168	1,168	-	6	-	6
79	66,066,843	811	811	-	4	-	4
80	70,957,135	551	551	-	3	-	3
81	76,196,679	366	366	-	2	-	2
82	81,810,010	237	237	-	1	-	1
83	87,823,406	150	150	-	1	-	1
84	94,265,003	92	92	-	-	-	-
85	101,164,925	56	56	-	-	-	-
86	108,555,415	33	33	-	-	-	-
87	116,470,989	19	19	-	-	-	-
88	124,948,585	11	11	-	-	-	-
89	134,027,738	6	6	-	-	-	-
90	143,750,756	3	3	-	-	-	-
91	154,162,914	2	2	-	-	-	-
92	165,312,666	1	1	-	-	-	-
93	177,251,859	-	-	-	-	-	-
94	190,035,979	-	-	-	-	-	-
95	203,724,400	-	-	-	-	-	-
96	218,380,659	-	-	-	-	-	-
97	234,072,744	-	-	-	-	-	-
98	250,873,411	-	-	-	-	-	-
99	268,860,514	-	-	-	-	-	-
100	288,117,363	-	-	-	-	-	-
				Totals	$ 2,155,864	$ -	$ 2,155,864

For purposes of this projection, based on GASB guidance, we assumed the statutory contribution rates would continue after the plan becomes fully funded unless noted otherwise. If we reflected a decrease in contribution rates due to full funding, future assets and contributions would be less than what is shown herein.

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 payments at predetermined rates of interest and 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.
Actuarial Valuation Date	The date as of which an actuarial valuation is performed.
Actuarially Determined Contribution (ADC) or Annual Required Contribution (ARC)	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 Payment	The amortization payment is the periodic payment required to pay off an interest-discounted amount with payments of interest and principal.
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).
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 employees that are provided with pensions through the pension plan.
Deferred Inflows and Outflows	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.
Deferred Retirement Option Program (DROP)	A program that permits a plan member to elect a calculation of benefit payments based on service credits and salary, as applicable, as of the DROP entry date. The plan member continues to provide service to the employer and is paid for the service by the employer after the DROP entry date; however, the pensions that would have been paid to the plan member are credited to an individual member account within the defined benefit pension plan until the end of the DROP period. Other variations for DROP exist and will be more fully detailed in the plan provision section of the valuation report.
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.

Glossary of Terms

Entry Age Actuarial Cost Method (EAN)	The EAN is a cost 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.
Fiduciary Net Position	The fiduciary net position is the market value of the assets of the trust dedicated to the defined benefit provisions.
GASB	The Governmental Accounting Standards Board is an organization that exists in order to promulgate accounting standards for 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, plan members are not considered non-employer contributing entities.
Normal Cost	The portion of the actuarial present value allocated to a valuation year is called the normal cost. For purposes of application to the requirements of this Statement, the term normal cost is the equivalent of service cost.

Glossary of Terms

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.
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 Benefit Changes 4. Employee Contributions (made negative for addition here) 5. Projected Earnings on Plan Investments (made negative for addition here) 6. Pension Plan Administrative Expense 7. Other Changes in Plan Fiduciary Net Position 8. Recognition of Outflow (Inflow) of Resources due to Liabilities 9. Recognition of Outflow (Inflow) of Resources due to Assets
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 assets used in determining the unfunded liability of the plan. For purposes of GASB Statement Nos. 67 and 68, the valuation assets are equal to the market value of assets.