St. Paul Teachers' Retirement Fund Association

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

June 30, 2022

| P: 800.521.0498 | www.grsconsulting.com

February 8, 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, 2022 for additional discussion of the nature of actuarial calculations and more information related to participant data, economic and demographic assumptions, and benefit provisions.

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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.

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

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

Sheryl Christensen

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

BJW/SLC:ah

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SECTION A

EXECUTIVE SUMMARY

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

	2022
Actuarial Valuation Date	June 30, 2022
Measurement Date of the Net Pension Liability	June 30, 2022
Membership	
Number of	
- Service Retirements	3,856
- Survivors	375
- Disability Retirements	22
- Deferred Retirements	2,514
- Terminated other non-vested	2,915
- Active Members	3,528
- Total	13,210
Covered Payroll	$ 304,227
Net Pension Liability	
Total Pension Liability	$ 1,849,295
Plan Fiduciary Net Position	1,154,427
Net Pension Liability	$ 694,868
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	62.43%
Net Pension Liability as a Percentage of Covered Payroll	228.40%
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*	3.69%
Last year ending June 30 in the 2023 to 2122 projection period within which projected benefit payments are fully funded	2122
Total Pension Expense	$ 65,174

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	$ 6,779	$ 7,823
Changes in assumptions	68,003	3,247
Net difference between projected and actual earnings on pension plan investments	186,190	137,521
Total	$ 260,972	$ 148,591

** 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, 2022.*

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, 2022.

The pension expense recognized each fiscal year is equal to the change in the net pension liability from the beginning of the year to the end of the year, adjusted for deferred recognition of the 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 26 years; and
(3) The unfunded liability will grow initially as a dollar amount before beginning to decline.

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

Timing of the Valuation

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

The total pension liability shown in this report is based on an actuarial valuation performed as of June 30, 2022 and a measurement date of June 30, 2022.

Single Discount Rate

Projected benefit payments are required to be discounted to their actuarial present values using a single discount rate. 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, 2022 (Dollars in Thousands)

A. Expense/(Income)

1.	Service Cost	$ 24,863
2.	Interest on the Total Pension Liability	126,096
3.	Current-Period Benefit Changes	-
4.	Employee Contributions (made negative for addition here)	(23,099)
5.	Projected Earnings on Plan Investments (made negative for addition here)	(95,455)
6.	Pension Plan Administrative Expense	927
7.	Other Changes in Plan Fiduciary Net Position	-
8.	Recognition of Outflow (Inflow) of Resources due to Liabilities	24,177
9.	Recognition of Outflow (Inflow) of Resources due to Assets	7,665
10.	**Total Pension Expense / (Income)**	**$ 65,174**

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 40,495 years. Additionally, the total plan membership (active employees and inactive employees) was 12,927. 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, 2022 (Dollars in Thousands)

A. Outflows (Inflows) of Resources due to Liabilities

1. Difference between expected and actual experience of the Total Pension Liability (gains) or losses	$	(11,734)
2. Assumption Changes (gains) or losses	$	102,005
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	$	(3,911)
5. Outflow (Inflow) of Resources to be recognized in the current pension expense for Assumption Changes	$	34,002
6. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Liabilities	$	30,091
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	$	(7,823)
8. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses for Assumption Changes	$	68,003
9. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Liabilities	$	60,180

B. Outflows (Inflows) of Resources due to Assets

1. Net difference between projected and actual earnings on pension plan investments (gains) or losses	$	191,443
2. Recognition period for Assets {in years}		5
3. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Assets	$	38,289
4. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Assets	$	153,154

Statement of Outflows and Inflows Arising from Current and Prior Reporting Periods Fiscal Year Ended June 30, 2022 (Dollars in Thousands)

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

	Outflows of Resources	Inflows of Resources	Net Outflows/(Inflows) of Resources
1. Due to Liabilities	$ 40,782	$ 16,605	$ 24,177
2. Due to Assets	56,627	48,962	7,665
3. Total	$ 97,409	$ 65,567	$ 31,842

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	$ 6,780	$ 11,491	$ (4,711)
2. Assumption Changes	34,002	5,114	28,888
3. Net Difference between projected and actual earnings on pension plan investments	56,627	48,962	7,665
4. Total	$ 97,409	$ 65,567	$ 31,842

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	$ 6,779	$ 7,823	$ (1,044)
2. Assumption Changes	68,003	3,247	64,756
3. Net Difference between projected and actual earnings on pension plan investments	186,190	137,521	48,669
4. Total	$ 260,972	$ 148,591	$ 112,381

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

Year Ending June 30	Net Deferred Outflows/ (Inflows) of Resources
2023	$ 44,409
2024	37,236
2025	(7,552)
2026	38,288
2027	-
Thereafter	-
Total	$ 112,381

Recognition of Deferred Outflows and Inflows of Resources
Fiscal Year Ended June 30, 2022 (Dollars in Thousands)

Year Established	Initial Amount	Initial Recognition Period	Current Year Recognition	Remaining Recognition	Remaining Recognition Period
Deferred Outflow (Inflow) due to Differences between Expected and Actual Experience on Liabilities					
2020	$ (22,742)	3.0000	$ (7,580)	$ -	0.0000
2021	20,339	3.0000	6,780	6,779	1.0000
2022	(11,734)	3.0000	(3,911)	(7,823)	2.0000
Total			**$ (4,711)**	**$ (1,044)**	
Deferred Outflow (Inflow) due to Assumption Changes					
2020	$ (5,601)	3.0000	$ (1,867)	$ -	0.0000
2021	(9,741)	3.0000	(3,247)	(3,247)	1.0000
2022	102,005	3.0000	34,002	68,003	2.0000
Total			**$ 28,888**	**$ 64,756**	
Deferred Outflow (Inflow) due to Differences between Projected and Actual Earnings on Plan Investments					
2018	$ (15,609)	5.0000	$ (3,121)	$ -	0.0000
2019	18,200	5.0000	3,640	3,640	1.0000
2020	73,490	5.0000	14,698	29,396	2.0000
2021	(229,203)	5.0000	(45,841)	(137,521)	3.0000
2022	191,443	5.0000	38,289	153,154	4.0000
Total			**$ 7,665**	**$ 48,669**	
Deferred Outflow (Inflow) due to All Sources					
Total			**$ 31,842**	**$ 112,381**	

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

		2022
Assets		
Cash and Deposits	$	23,031
Receivables*	$	3,593
Investments		
Fixed Income	$	146,455
Equity		675,455
Real Assets		65,604
Cash and Cash Equivalents		68,297
Other		173,118
Total Investments	$	1,128,929
Total Assets	$	1,155,553
Liabilities		
Payables		
Accounts Payable - Purchase of Investments	$	1,126
Accrued Expenses		-
Accounts Payable - Other		-
Total Liabilities	$	1,126
Net Position Restricted for Pensions	$	1,154,427

* Accounts Receivable

Employer Contribution	$	354
Employee Contribution		187
Service Purchases Receivable		59
Pensions Receivable		52
State Contributions		838
Real Estate Income Receivable		259
Commission Recapture Receivable		1
Interest Receivable		111
Dividend Receivable		872
Misc. Receivable		1
Sale of Securities		859
Total Accounts Receivable	$	3,593

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

Additions		
Contributions		
Employer	$	38,731
Employer (for Reemployed Annuitants)		339
Employee		23,099
Other		15,665
Total Contributions	$	77,834
Investment Income		
Net Appreciation in Fair Value of Investments	$	(112,052)
Interest and Dividends		19,049
Less Investment Expense		(2,985)
Net Investment Income	$	(95,988)
Other		-
Total Additions	$	(18,154)
Deductions		
Benefit payments, including refunds of employee contributions	$	121,556
Pension Plan Administrative Expense		927
Other		-
Total Deductions	$	122,483
Net Increase in Net Position	$	(140,637)
Net Position Restricted for Pensions		
Beginning of Year	$	1,295,064
End of Year	$	1,154,427

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, 2022 (Dollars in Thousands)

A. Total Pension Liability		
1. Service Cost	$	24,863
2. Interest on the Total Pension Liability		126,096
3. Changes of benefit terms		-
4. Difference between expected and actual experience of the Total Pension Liability		(11,734)
5. Changes of assumptions		102,005
6. Benefit payments, including refunds of employee contributions		(121,556)
7. Net change in Total Pension Liability	$	119,674
8. Total Pension Liability – Beginning		1,729,621
9. Total Pension Liability – Ending	**$**	**1,849,295**
B. Plan Fiduciary Net Position		
1. Contributions – Employer^	$	54,735
2. Contributions – Employee		23,099
3. Net investment income		(95,988)
4. Benefit payments, including refunds of employee contributions		(121,556)
5. Pension Plan Administrative Expense		(927)
6. Other		-
7. Net change in Plan Fiduciary Net Position	$	(140,637)
8. Plan Fiduciary Net Position – Beginning		1,295,064
9. Plan Fiduciary Net Position – Ending	**$**	**1,154,427**
C. Net Pension Liability	**$**	**694,868**
D. Plan Fiduciary Net Position as a Percentage of the Total Pension Liability		**62.43%**
E. Covered-Employee payroll	**$**	**304,227**
F. Net pension liability as a percentage of Covered-Employee payroll		**228.40%**

^ *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 (which may be built prospectively)

Fiscal year ending June 30,	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
Total Pension Liability										
Service Cost	$ 24,863	$ 23,777	$ 23,120	$ 23,279	$ 25,087	$ 24,098	$ 25,596	$ 24,998	$ 22,954	
Interest on the Total Pension Liability	126,096	123,262	123,300	122,197	125,256	123,820	124,294	123,108	118,503	
Benefit Changes	-	-	-	-	(74,376)	-	-	(5,677)	-	
Difference between Expected and Actual Experience	(11,734)	20,339	(22,742)	(9,831)	(13,445)	7,106	(42,295)	(17,133)	(16,257)	
Assumption Changes	102,005	(9,741)	(5,601)	(3,037)	118,561	(22,643)	-	-	39,642	
Benefit Payments	(120,672)	(118,665)	(117,306)	(116,379)	(115,298)	(112,771)	(111,167)	(108,878)	(105,742)	
Refunds	(884)	(587)	(1,256)	(701)	(800)	(972)	(628)	(875)	(1,103)	
Net Change in Total Pension Liability	119,674	38,385	(485)	15,528	64,985	18,638	(4,200)	15,543	57,997	
Total Pension Liability - Beginning	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)	$ 1,849,295	$ 1,729,621	$ 1,691,236	$ 1,691,721	$ 1,676,193	$ 1,611,208	###########	$ 1,596,770	$ 1,581,227	
Plan Fiduciary Net Position										
Employer Contributions*	$ 54,735	$ 50,916	$ 49,804	$ 46,981	$ 39,209	$ 38,350	$ 37,228	$ 36,711	$ 35,197	
Employee Contributions	23,099	21,334	20,889	20,626	20,112	20,146	18,538	17,567	16,564	
Pension Plan Net Investment Income	(95,988)	305,232	5,726	60,209	95,886	128,719	1,475	25,757	168,176	
Benefit Payments	(120,672)	(118,665)	(117,306)	(116,379)	(115,298)	(112,771)	(111,167)	(108,878)	(105,742)	
Refunds	(884)	(587)	(1,256)	(701)	(800)	(972)	(628)	(875)	(1,103)	
Pension Plan Administrative Expense	(927)	(779)	(788)	(764)	(786)	(889)	(749)	(748)	(739)	
Other	-	-	-	-	-	-	-	-	-	
Net Change in Plan Fiduciary Net Position	(140,637)	257,451	(42,931)	9,972	38,323	72,583	(55,303)	(30,466)	112,353	
Plan Fiduciary Net Position - Beginning	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)	$ 1,154,427	$ 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)	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	62.43 %	74.88 %	61.35 %	63.87 %	63.87 %	64.07 %	60.26 %	63.56 %	66.12 %	
Covered Employee Payroll	$ 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	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 (to be completed prospectively, commencing with 2014)

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
2013						
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%

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
2013	$ 41,424	$ 26,445	$ 14,979	$ 247,432	10.69%
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

** 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, 2022 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, 2021
Actuarial Cost Method	Entry Age Normal
Amortization Method	Level Percentage of Payroll, Closed
Remaining Amortization Period	27 years
Asset Valuation Method	5-Year smoothed market; no corridor
Inflation	2.5%
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-2020 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, 2021 for additional detail.

Schedule of Investment Returns Multiyear

Last 10 Fiscal Years (to be completed prospectively, commencing with 2014)

FY Ending June 30,	Annual Return[1]
2013	
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)%

[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, 2022 was -9.37% (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.

10-Year Schedule of Money-Weighted Investment Return

This schedule is presented to illustrate the requirement to show information for 10 years. However, until a full 10-year trend is compiled, SPTRFA will present information for those years for which information is available.

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, 2022, 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	$2,077,901	$1,849,295	$1,660,408
Net Position Restricted for Pensions	1,154,427	1,154,427	1,154,427
Net Pension Liability	**$ 923,474**	**$ 694,868**	**$ 505,981**

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, 2022

	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, 2021	3,294	105	2,414	2,941	3,741	21	359	52	12,927
B. Additions	408	7	157	204	150	1	29	3	959
C. Deletions									
1. Retirements	(78)	(1)	(68)						(147)
2. Disability	(1)	-	-						(1)
3. Died with Beneficiary	(4)	(1)	(5)	(12)	(29)				(51)
4. Died without Beneficiary					(50)		(23)	(1)	(74)
5. Terminated - Deferred	(139)	(18)							(157)
6. Terminated - Not Vested	(103)	(3)							(106)
7. Refunds	(13)	-	(27)	(62)					(102)
8. Rehired as Active	116	(41)	(36)	(78)					(39)
9. Leave of Absence	(80)	80							-
10. Repayment of Refund									-
11. Expired Benefits									-
12. Disability to Retirement					1	(1)			-
D. Data Adjustments[1]			79	(78)					1
E. Total on June 30, 2022	3,400	128	2,514	2,915	3,813	21	365	54	13,210

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

[2] *Includes alternate payees of retired participants (43), disabled participants (1), and survivors (10).*

GASB Reconciliation (Dollars in Thousands)
Fiscal Year Ended June 30, 2022

	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	**$ 1,729,621**	**$ 1,295,064**	**$ 434,557**				
Changes for the Year:							
Service Cost	$ 24,863		$ 24,863				$ 24,863
Interest on Total Pension Liability	126,096		126,096				126,096
Interest on Fiduciary Net Position [1]		$ 95,455	(95,455)				(95,455)
Changes in Benefit Terms							
Liability Experience Gains and Losses	(11,734)		(11,734)	$ 6,779	$ 7,823	$ 5,979	(4,711)
Changes in Assumptions	102,005		102,005	68,003	3,247	(8,361)	28,888
Contributions - Employer		54,735	(54,735)				
Contributions - Employees		23,099	(23,099)				(23,099)
Asset Gain/(Loss) [1]		(191,443)	191,443	186,190	137,521	(135,109)	7,665
Benefit Payouts	(121,556)	(121,556)					
Administrative Expenses		(927)	927				927
Other changes							
Net Changes	**$ 119,674**	**$ (140,637)**	**$ 260,311**				**$ 65,174**
Balance End of Year	**$ 1,849,295**	**$ 1,154,427**	**$ 694,868**	**$ 260,972**	**$ 148,591**	**$ (137,491)**	

[1] *The sum of these items equals the net investment income of -$95,988.*

SECTION E

SUMMARY OF BENEFITS

Summary of Benefit Provisions for Basic Members as of June 30, 2022

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.

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 June 30, 2022

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 for retirements on or after July 1, 2024 will be phased in over a 60-month period starting July 1, 2019.

UNDER AGE 62 OR LESS THAN 30 YEARS OF SERVICE

Age at Retirement	RETIREMENTS PRIOR TO JULY 1, 2019	RETIREMENTS ON OR AFTER JULY 1, 2024	AGE 62 OR OLDER WITH 30 YEARS OF SERVICE
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	0.8831
63	0.9035	0.8600	0.9246
64	0.9533	0.9300	0.9635
65	1.0000	1.0000	1.0000

Summary of Benefit Provisions for Basic Members as of June 30, 2022

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 June 30, 2022

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 & Survivor adjusted pension payable to the surviving beneficiary.

BENEFIT INCREASES

1.00 percent per year on January 1.

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 June 30, 2022

CHANGES IN PLAN PROVISIONS

There have been no changes in plan provisions since the prior valuation.

Summary of Benefit Provisions for Coordinated Members as of June 30, 2022

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
2019	7.50%	8.170%	3.84%
2020	7.50%	8.380%	3.84%
2021	7.50%	8.590%	3.84%
2022	7.50%	8.800%	3.84%
2023	7.75%	9.000%	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.

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, 2022

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 and 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. 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, 2022

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 for retirements on or after July 1, 2024 will be phased in over a sixty-month period starting July 1, 2019.

	UNDER AGE 62 OR LESS THAN 30 YEARS OF SERVICE					
	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, 2022

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, 2022

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

1.00 percent per year on January 1.

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

There have been no changes in plan provisions since the prior valuation.

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

The assumptions were last updated for the July 1, 2018 valuation. Assumptions are based on an experience study for the five-year period of July 1, 2011 to June 30, 2016, as well as a legislated change to the investment return assumption effective July 1, 2018. Note that the significant plan changes effective July 1, 2018 may ultimately result in behavior changes not anticipated in the actuarial assumptions.

A. Demographic Assumptions

Mortality:

1. Healthy and Disabled Annuitant Mortality:
    a. Male: RP-2014 Healthy Annuitant Mortality Table for males adjusted for white collar and projected with Scale MP-2021 from 2006
    b. Female: RP-2014 Healthy Annuitant Mortality Table for females adjusted for white collar and projected with Scale MP-2021 from 2006, set back 2 years
2. Employee Mortality:
    a. Male: RP-2014 Employee Mortality Table for males adjusted for white collar and projected with Scale MP-2021 from 2006
    b. Female: RP-2014 Employee Mortality Table for females adjusted for white collar and projected with Scale MP-2021 from 2006

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

Age in 2022	Post-Retirement Mortality Male	Post-Retirement Mortality Female
55	39	24
56	42	26
57	44	28
58	48	31
59	51	33
60	55	36
61	60	39
62	65	42
63	70	47
64	76	52
65	82	57
66	89	62
67	97	67
68	106	72
69	116	79
70	127	86
71	141	94
72	156	104
73	173	115
74	192	127
75	214	142
76	239	158
77	268	177
78	301	198
79	338	223
80	381	251
81	431	282
82	488	319
83	553	360
84	629	407
85	714	462
86	811	523
87	921	594
88	1044	674
89	1182	765
90	1335	866
91	1498	979
92	1668	1105
93	1841	1243
94	2016	1388

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

	Pre-Retirement Mortality	
Age in 2022	**Male**	**Female**
25	4	2
26	4	2
27	4	2
28	4	2
29	4	2
30	5	2
31	5	3
32	5	3
33	5	3
34	6	3
35	6	3
36	6	4
37	6	4
38	6	4
39	6	4
40	6	4
41	7	5
42	7	5
43	7	5
44	8	5
45	8	6
46	9	6
47	10	7
48	10	7
49	11	8
50	12	9
51	13	10
52	15	11
53	16	12
54	18	13
55	20	14
56	22	16
57	24	18
58	27	19
59	31	21
60	35	23
61	39	25
62	44	27
63	50	29
64	56	31

Actuarial Cost Method and Actuarial Assumptions

Rates of Disability:

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

Age	Disability
20	1
21	1
22	1
23	1
24	1
25	1
26	1
27	1
28	1
29	1
30	2
31	2
32	2
33	2
34	2
35	2
36	2
37	2
38	2
39	2
40	3
41	3
42	3
43	3
44	3

Age	Disability
45	4
46	4
47	4
48	4
49	4
50	9
51	9
52	9
53	9
54	9
55	17
56	17
57	17
58	17
59	17
60	35
61	35
62	35
63	35
64	35

Actuarial Cost Method and Actuarial Assumptions

Rates of Termination:

Year	Number of Terminations per 1,000 Active Members: Male	Female
1	400	400
2	260	220
3	160	150
4	110	120
5	80	100
6	50	85
7	48	70
8	45	55
9	43	45
10	40	40
11	38	38
12	35	35
13	33	30
14	30	25
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	2,500	0	0
55	2,500	2,500	900	500
56	2,500	2,500	700	500
57	2,500	2,500	700	500
58	2,500	2,500	700	600
59	2,500	3,000	700	600
60	2,500	3,000	1,200	900
61	2,500	3,000	1,200	1,100
62	4,500	3,000	2,500	2,000
63	3,500	3,000	2,800	2,300
64	2,500	3,000	2,800	2,600
65	10,000	10,000	3,000*	4,500*
66	10,000	10,000	3,000	4,300
67	10,000	10,000	3,500	3,800
68	10,000	10,000	4,000	3,800
69	10,000	10,000	4,500	3,000
70 & Over	10,000	10,000	10,000	10,000

**2,800 for male members and 3,000 for female members hired after June 30, 1989 with a Normal Retirement Age equal to 66.*

B. Economic Assumptions

Investment Return Rate: 7.00%

Single Discount Rate: 7.00%

Price Inflation: 2.50% per year

Payroll Growth (Wage Inflation): 3.00% 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	9.00%	21	3.40%
2	8.00%	22	3.20%
3	7.00%	23 & Over	3.00
4	6.80%		
5	6.60%		
6	6.40%		
7	6.20%		
8	6.00%		
9	5.75%		
10	5.50%		
11	5.25%		
12	5.00%		
13	4.75%		
14	4.50%		
15	4.25%		
16	4.00%		
17	3.90%		
18	3.80%		
19	3.70%		
20	3.60%		

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

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 62. 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, 2022 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 $48,216; the Projected Annual Payroll for the fiscal year ending June 30, 2023 includes this replacement salary amount.
Changes in Actuarial Assumptions Since the Prior Valuation:	The Single Discount Rate and the Investment Return Rate were changed from 7.50% to 7.00%. The mortality improvement scale was updated from MP-2020 to MP-2021.

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 3.69%; and the resulting Single Discount Rate is 7.00%.

The tables in this section provide background for the development of the Single Discount Rate.

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

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

The **Present Values of Projected Benefit Payments** table shows the development of the 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	$ 304,227	$ -	$ 304,227					
1	310,032	-	310,032	$ 23,252	$ 39,188	$ -	$ 15,665	$ 78,105
2	294,787	24,546	319,333	22,846	37,851	2,722	15,665	79,084
3	284,645	44,268	328,913	22,060	36,548	4,909	15,665	79,182
4	275,949	62,831	338,780	21,386	35,432	6,968	15,665	79,451
5	268,266	80,678	348,944	20,791	34,445	8,947	15,665	79,848
6	261,127	98,285	359,412	20,237	33,529	10,900	15,665	80,331
7	254,417	115,777	370,194	19,717	32,667	12,840	15,665	80,889
8	247,566	133,734	381,300	19,186	31,788	14,831	15,665	81,470
9	240,248	152,491	392,739	18,619	30,848	16,911	15,665	82,043
10	232,496	172,025	404,521	18,018	29,853	19,078	15,665	82,614
11	224,294	192,363	416,657	17,383	28,799	21,333	15,665	83,180
12	215,624	213,533	429,157	16,711	27,686	23,681	15,665	83,743
13	206,658	235,373	442,031	16,016	26,535	26,103	15,665	84,319
14	197,330	257,962	455,292	15,293	25,337	28,608	15,665	84,903
15	187,744	281,207	468,951	14,550	24,106	31,186	15,665	85,507
16	177,897	305,123	483,020	13,787	22,842	33,838	15,665	86,132
17	167,999	329,511	497,510	13,020	21,571	36,543	15,665	86,799
18	158,208	354,227	512,435	12,261	20,314	39,284	15,665	87,524
19	148,358	379,451	527,809	11,498	19,049	42,081	15,665	88,293
20	138,437	405,206	543,643	10,729	17,775	44,937	15,665	89,106
21	128,483	431,469	559,952	9,957	16,497	47,850	15,665	89,969
22	118,442	458,309	576,751	9,179	15,208	50,826	-	75,213
23	108,477	485,576	594,053	8,407	13,928	53,850	-	76,185
24	98,609	513,266	611,875	7,642	12,661	56,921	-	77,224
25	89,175	541,056	630,231	6,911	11,450	60,003	-	78,364
26	79,918	569,220	649,138	6,194	10,261	63,127	-	79,582
27	71,077	597,535	668,612	5,508	9,126	66,267	-	80,901
28	62,672	625,998	688,670	4,857	8,047	69,423	-	82,327
29	54,751	654,580	709,331	4,243	7,030	72,593	-	83,866
30	47,157	683,453	730,610	3,655	6,055	75,795	-	85,505
31	39,930	712,599	752,529	3,095	5,127	79,027	-	87,249
32	33,300	741,805	775,105	2,581	4,276	82,266	-	89,123
33	27,293	771,065	798,358	2,115	3,504	85,511	-	91,130
34	21,889	800,419	822,308	1,696	2,811	88,766	-	93,273
35	17,124	829,854	846,978	1,327	2,199	92,031	-	95,557
36	13,116	859,271	872,387	1,016	1,684	95,293	-	97,993
37	9,759	888,800	898,559	756	1,253	98,568	-	100,577
38	6,980	918,535	925,515	541	896	101,866	-	103,303
39	4,808	948,473	953,281	373	617	105,186	-	106,176
40	3,213	978,666	981,879	249	413	108,534	-	109,196
41	2,018	1,009,318	1,011,336	156	259	111,933	-	112,348
42	1,210	1,040,466	1,041,676	94	155	115,388	-	115,637
43	695	1,072,231	1,072,926	54	89	118,910	-	119,053
44	365	1,104,749	1,105,114	28	47	122,517	-	122,592
45	177	1,138,090	1,138,267	14	23	126,214	-	126,251
46	66	1,172,349	1,172,415	5	8	130,014	-	130,027
47	23	1,207,565	1,207,588	2	3	133,919	-	133,924
48	1	1,243,814	1,243,815	-	-	137,939	-	137,939
49	-	1,281,130	1,281,130	-	-	142,077	-	142,077
50	-	1,319,564	1,319,564	-	-	146,340	-	146,340

* *Contributions related to future employees in excess of normal cost and expenses of 9.50% 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 21 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 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	$ -	$ 1,359,151	$ 1,359,151	$ -	$ -	$ 150,730	$ -	$ 150,730
52	-	1,399,925	1,399,925	-	-	155,252	-	155,252
53	-	1,441,923	1,441,923	-	-	159,909	-	159,909
54	-	1,485,181	1,485,181	-	-	164,707	-	164,707
55	-	1,529,736	1,529,736	-	-	169,648	-	169,648
56	-	1,575,628	1,575,628	-	-	174,737	-	174,737
57	-	1,622,897	1,622,897	-	-	179,979	-	179,979
58	-	1,671,584	1,671,584	-	-	185,379	-	185,379
59	-	1,721,731	1,721,731	-	-	190,940	-	190,940
60	-	1,773,383	1,773,383	-	-	196,668	-	196,668
61	-	1,826,585	1,826,585	-	-	202,568	-	202,568
62	-	1,881,382	1,881,382	-	-	208,645	-	208,645
63	-	1,937,824	1,937,824	-	-	214,905	-	214,905
64	-	1,995,958	1,995,958	-	-	221,352	-	221,352
65	-	2,055,837	2,055,837	-	-	227,992	-	227,992
66	-	2,117,512	2,117,512	-	-	234,832	-	234,832
67	-	2,181,038	2,181,038	-	-	241,877	-	241,877
68	-	2,246,469	2,246,469	-	-	249,133	-	249,133
69	-	2,313,863	2,313,863	-	-	256,607	-	256,607
70	-	2,383,279	2,383,279	-	-	264,306	-	264,306
71	-	2,454,777	2,454,777	-	-	272,235	-	272,235
72	-	2,528,420	2,528,420	-	-	280,402	-	280,402
73	-	2,604,273	2,604,273	-	-	288,814	-	288,814
74	-	2,682,401	2,682,401	-	-	297,478	-	297,478
75	-	2,762,873	2,762,873	-	-	306,403	-	306,403
76	-	2,845,760	2,845,760	-	-	315,595	-	315,595
77	-	2,931,132	2,931,132	-	-	325,063	-	325,063
78	-	3,019,066	3,019,066	-	-	334,814	-	334,814
79	-	3,109,638	3,109,638	-	-	344,859	-	344,859
80	-	3,202,927	3,202,927	-	-	355,205	-	355,205
81	-	3,299,015	3,299,015	-	-	365,861	-	365,861
82	-	3,397,986	3,397,986	-	-	376,837	-	376,837
83	-	3,499,925	3,499,925	-	-	388,142	-	388,142
84	-	3,604,923	3,604,923	-	-	399,786	-	399,786
85	-	3,713,071	3,713,071	-	-	411,780	-	411,780
86	-	3,824,463	3,824,463	-	-	424,133	-	424,133
87	-	3,939,197	3,939,197	-	-	436,857	-	436,857
88	-	4,057,373	4,057,373	-	-	449,963	-	449,963
89	-	4,179,094	4,179,094	-	-	463,462	-	463,462
90	-	4,304,467	4,304,467	-	-	477,365	-	477,365
91	-	4,433,601	4,433,601	-	-	491,686	-	491,686
92	-	4,566,609	4,566,609	-	-	506,437	-	506,437
93	-	4,703,607	4,703,607	-	-	521,630	-	521,630
94	-	4,844,715	4,844,715	-	-	537,279	-	537,279
95	-	4,990,057	4,990,057	-	-	553,397	-	553,397
96	-	5,139,758	5,139,758	-	-	569,999	-	569,999
97	-	5,293,951	5,293,951	-	-	587,099	-	587,099
98	-	5,452,770	5,452,770	-	-	604,712	-	604,712
99	-	5,616,353	5,616,353	-	-	622,854	-	622,854
100	-	5,784,843	5,784,843	-	-	641,539	-	641,539

* *Contributions related to future employees in excess of normal cost and expenses of 9.50% 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 21 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	$ 1,154,427	$ 78,105	$ 122,897	$ 961	$ 79,236	$ 1,187,910
2	1,187,910	79,084	126,312	914	81,497	1,221,265
3	1,221,265	79,182	128,431	882	83,764	1,254,898
4	1,254,898	79,451	130,413	855	86,060	1,289,141
5	1,289,141	79,848	132,141	832	88,412	1,324,428
6	1,324,428	80,331	133,713	809	90,845	1,361,082
7	1,361,082	80,889	135,327	789	93,375	1,399,230
8	1,399,230	81,470	136,913	767	96,012	1,439,032
9	1,439,032	82,043	138,771	745	98,755	1,480,314
10	1,480,314	82,614	140,810	721	101,595	1,522,992
11	1,522,992	83,180	143,127	695	104,523	1,566,873
12	1,566,873	83,743	145,364	668	107,538	1,612,122
13	1,612,122	84,319	147,596	641	110,649	1,658,853
14	1,658,853	84,903	149,871	612	113,863	1,707,136
15	1,707,136	85,507	152,199	582	117,185	1,757,047
16	1,757,047	86,132	154,584	551	120,619	1,808,663
17	1,808,663	86,799	156,873	521	124,177	1,862,245
18	1,862,245	87,524	158,765	490	127,889	1,918,403
19	1,918,403	88,293	160,724	460	131,780	1,977,292
20	1,977,292	89,106	162,437	429	135,873	2,039,405
21	2,039,405	89,969	164,182	398	140,191	2,104,985
22	2,104,985	75,213	166,132	367	144,208	2,157,907
23	2,157,907	76,185	167,940	336	147,885	2,213,701
24	2,213,701	77,224	169,762	306	151,765	2,272,622
25	2,272,622	78,364	171,399	276	155,873	2,335,184
26	2,335,184	79,582	173,100	248	160,237	2,401,655
27	2,401,655	80,901	174,852	220	164,876	2,472,360
28	2,472,360	82,327	176,256	194	169,827	2,548,064
29	2,548,064	83,866	177,395	170	175,141	2,629,506
30	2,629,506	85,505	178,701	146	180,854	2,717,018
31	2,717,018	87,249	180,010	124	186,995	2,811,128
32	2,811,128	89,123	180,738	103	193,623	2,913,033
33	2,913,033	91,130	181,222	85	200,810	3,023,666
34	3,023,666	93,273	181,110	68	208,632	3,144,393
35	3,144,393	95,557	180,464	53	217,184	3,276,617
36	3,276,617	97,993	179,260	41	226,566	3,421,875
37	3,421,875	100,577	177,465	30	236,885	3,581,842
38	3,581,842	103,303	175,106	22	248,258	3,758,275
39	3,758,275	106,176	171,960	15	260,816	3,953,292
40	3,953,292	109,196	168,248	10	274,699	4,168,929
41	4,168,929	112,348	163,990	6	290,048	4,407,329
42	4,407,329	115,637	159,319	4	307,010	4,670,653
43	4,670,653	119,053	154,306	2	325,733	4,961,131
44	4,961,131	122,592	149,034	1	346,370	5,281,058
45	5,281,058	126,251	143,538	1	369,080	5,632,850
46	5,632,850	130,027	137,878	-	394,030	6,019,029
47	6,019,029	133,924	132,071	-	421,396	6,442,278
48	6,442,278	137,939	126,170	-	451,365	6,905,412
49	6,905,412	142,077	120,186	-	484,132	7,411,435
50	7,411,435	146,340	114,150	-	519,908	7,963,533

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	$ 7,963,533	$ 150,730	$ 108,078	$ -	$ 558,915	$ 8,565,100
52	8,565,100	155,252	101,985	-	601,390	9,219,757
53	9,219,757	159,909	95,890	-	647,586	9,931,362
54	9,931,362	164,707	89,810	-	697,773	10,704,032
55	10,704,032	169,648	83,766	-	752,238	11,542,152
56	11,542,152	174,737	77,781	-	811,287	12,450,395
57	12,450,395	179,979	71,878	-	875,248	13,433,744
58	13,433,744	185,379	66,080	-	944,467	14,497,510
59	14,497,510	190,940	60,413	-	1,019,317	15,647,354
60	15,647,354	196,668	54,900	-	1,100,193	16,889,315
61	16,889,315	202,568	49,567	-	1,187,517	18,229,833
62	18,229,833	208,645	44,441	-	1,281,739	19,675,776
63	19,675,776	214,905	39,546	-	1,383,338	21,234,473
64	21,234,473	221,352	34,906	-	1,492,829	22,913,748
65	22,913,748	227,992	30,545	-	1,610,756	24,721,951
66	24,721,951	234,832	26,481	-	1,737,706	26,668,008
67	26,668,008	241,877	22,731	-	1,874,301	28,761,455
68	28,761,455	249,133	19,305	-	2,021,210	31,012,493
69	31,012,493	256,607	16,211	-	2,179,147	33,432,036
70	33,432,036	264,306	13,449	-	2,348,875	36,031,768
71	36,031,768	272,235	11,015	-	2,531,212	38,824,200
72	38,824,200	280,402	8,901	-	2,727,036	41,822,737
73	41,822,737	288,814	7,090	-	2,937,286	45,041,747
74	45,041,747	297,478	5,563	-	3,162,967	48,496,629
75	48,496,629	306,403	4,296	-	3,405,159	52,203,895
76	52,203,895	315,595	3,262	-	3,665,020	56,181,248
77	56,181,248	325,063	2,434	-	3,943,789	60,447,666
78	60,447,666	334,814	1,782	-	4,242,796	65,023,494
79	65,023,494	344,859	1,279	-	4,563,467	69,930,541
80	69,930,541	355,205	900	-	4,907,329	75,192,175
81	75,192,175	365,861	620	-	5,276,020	80,833,436
82	80,833,436	376,837	417	-	5,671,293	86,881,149
83	86,881,149	388,142	275	-	6,095,027	93,364,043
84	93,364,043	399,786	177	-	6,549,233	100,312,885
85	100,312,885	411,780	111	-	7,036,067	107,760,621
86	107,760,621	424,133	68	-	7,557,835	115,742,521
87	115,742,521	436,857	41	-	8,117,007	124,296,344
88	124,296,344	449,963	24	-	8,716,226	133,462,509
89	133,462,509	463,462	13	-	9,358,322	143,284,280
90	143,284,280	477,365	8	-	10,046,325	153,807,962
91	153,807,962	491,686	4	-	10,783,476	165,083,120
92	165,083,120	506,437	2	-	11,573,244	177,162,799
93	177,162,799	521,630	1	-	12,419,345	190,103,773
94	190,103,773	537,279	1	-	13,325,751	203,966,802
95	203,966,802	553,397	-	-	14,296,718	218,816,917
96	218,816,917	569,999	-	-	15,336,797	234,723,713
97	234,723,713	587,099	-	-	16,450,861	251,761,673
98	251,761,673	604,712	-	-	17,644,124	270,010,509
99	270,010,509	622,854	-	-	18,922,167	289,555,530
100	289,555,530	641,539	-	-	20,290,962	310,488,031

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	$ 1,154,427	$ 122,897	$ 122,897	$ -	$ 118,809	$ -	$ 118,809
2	1,187,909	126,312	126,312	-	114,121	-	114,121
3	1,221,265	128,431	128,431	-	108,445	-	108,445
4	1,254,898	130,413	130,413	-	102,915	-	102,915
5	1,289,141	132,141	132,141	-	97,456	-	97,456
6	1,324,428	133,713	133,713	-	92,165	-	92,165
7	1,361,082	135,327	135,327	-	87,174	-	87,174
8	1,399,231	136,913	136,913	-	82,426	-	82,426
9	1,439,033	138,771	138,771	-	78,080	-	78,080
10	1,480,315	140,810	140,810	-	74,044	-	74,044
11	1,522,993	143,127	143,127	-	70,338	-	70,338
12	1,566,874	145,364	145,364	-	66,764	-	66,764
13	1,612,122	147,596	147,596	-	63,355	-	63,355
14	1,658,853	149,871	149,871	-	60,122	-	60,122
15	1,707,137	152,199	152,199	-	57,062	-	57,062
16	1,757,048	154,584	154,584	-	54,165	-	54,165
17	1,808,664	156,873	156,873	-	51,371	-	51,371
18	1,862,246	158,765	158,765	-	48,589	-	48,589
19	1,918,403	160,724	160,724	-	45,971	-	45,971
20	1,977,293	162,437	162,437	-	43,421	-	43,421
21	2,039,406	164,182	164,182	-	41,016	-	41,016
22	2,104,987	166,132	166,132	-	38,788	-	38,788
23	2,157,909	167,940	167,940	-	36,645	-	36,645
24	2,213,704	169,762	169,762	-	34,620	-	34,620
25	2,272,626	171,399	171,399	-	32,667	-	32,667
26	2,335,187	173,100	173,100	-	30,833	-	30,833
27	2,401,658	174,852	174,852	-	29,107	-	29,107
28	2,472,363	176,256	176,256	-	27,421	-	27,421
29	2,548,067	177,395	177,395	-	25,793	-	25,793
30	2,629,509	178,701	178,701	-	24,283	-	24,283
31	2,717,020	180,010	180,010	-	22,861	-	22,861
32	2,811,130	180,738	180,738	-	21,452	-	21,452
33	2,913,035	181,222	181,222	-	20,102	-	20,102
34	3,023,669	181,110	181,110	-	18,775	-	18,775
35	3,144,396	180,464	180,464	-	17,484	-	17,484
36	3,276,620	179,260	179,260	-	16,231	-	16,231
37	3,421,879	177,465	177,465	-	15,018	-	15,018
38	3,581,846	175,106	175,106	-	13,849	-	13,849
39	3,758,280	171,960	171,960	-	12,710	-	12,710
40	3,953,296	168,248	168,248	-	11,622	-	11,622
41	4,168,932	163,990	163,990	-	10,587	-	10,587
42	4,407,333	159,319	159,319	-	9,613	-	9,613
43	4,670,658	154,306	154,306	-	8,701	-	8,701
44	4,961,136	149,034	149,034	-	7,854	-	7,854
45	5,281,063	143,538	143,538	-	7,070	-	7,070
46	5,632,854	137,878	137,878	-	6,347	-	6,347
47	6,019,032	132,071	132,071	-	5,681	-	5,681
48	6,442,281	126,170	126,170	-	5,073	-	5,073
49	6,905,415	120,186	120,186	-	4,516	-	4,516
50	7,411,439	114,150	114,150	-	4,008	-	4,008

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	$ 7,963,538	$ 108,078	$ 108,078	$ -	$ 3,547	$ -	$ 3,547
52	8,565,105	101,985	101,985	-	3,128	-	3,128
53	9,219,762	95,890	95,890	-	2,749	-	2,749
54	9,931,368	89,810	89,810	-	2,406	-	2,406
55	10,704,037	83,766	83,766	-	2,097	-	2,097
56	11,542,157	77,781	77,781	-	1,820	-	1,820
57	12,450,400	71,878	71,878	-	1,572	-	1,572
58	13,433,748	66,080	66,080	-	1,351	-	1,351
59	14,497,514	60,413	60,413	-	1,154	-	1,154
60	15,647,358	54,900	54,900	-	980	-	980
61	16,889,320	49,567	49,567	-	827	-	827
62	18,229,838	44,441	44,441	-	693	-	693
63	19,675,781	39,546	39,546	-	576	-	576
64	21,234,478	34,906	34,906	-	475	-	475
65	22,913,753	30,545	30,545	-	389	-	389
66	24,721,957	26,481	26,481	-	315	-	315
67	26,668,014	22,731	22,731	-	253	-	253
68	28,761,462	19,305	19,305	-	201	-	201
69	31,012,501	16,211	16,211	-	157	-	157
70	33,432,044	13,449	13,449	-	122	-	122
71	36,031,775	11,015	11,015	-	93	-	93
72	38,824,207	8,901	8,901	-	71	-	71
73	41,822,744	7,090	7,090	-	53	-	53
74	45,041,753	5,563	5,563	-	39	-	39
75	48,496,636	4,296	4,296	-	28	-	28
76	52,203,901	3,262	3,262	-	20	-	20
77	56,181,254	2,434	2,434	-	14	-	14
78	60,447,672	1,782	1,782	-	9	-	9
79	65,023,500	1,279	1,279	-	6	-	6
80	69,930,547	900	900	-	4	-	4
81	75,192,181	620	620	-	3	-	3
82	80,833,442	417	417	-	2	-	2
83	86,881,154	275	275	-	1	-	1
84	93,364,048	177	177	-	1	-	1
85	100,312,891	111	111	-	-	-	-
86	107,760,626	68	68	-	-	-	-
87	115,742,527	41	41	-	-	-	-
88	124,296,350	24	24	-	-	-	-
89	133,462,515	13	13	-	-	-	-
90	143,284,285	8	8	-	-	-	-
91	153,807,968	4	4	-	-	-	-
92	165,083,126	2	2	-	-	-	-
93	177,162,804	1	1	-	-	-	-
94	190,103,778	1	1	-	-	-	-
95	203,966,807	-	-	-	-	-	-
96	218,816,922	-	-	-	-	-	-
97	234,723,718	-	-	-	-	-	-
98	251,761,679	-	-	-	-	-	-
99	270,010,515	-	-	-	-	-	-
100	289,555,536	-	-	-	-	-	-
				Totals	$ 2,102,675	$ -	$ 2,102,675

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.