

# St. Paul Teachers' Retirement Fund Association

GASB Statement Nos. 67 and 68 Accounting and  
Financial Reporting for Pensions  
June 30, 2019



November 21, 2019

St. Paul Teachers' Retirement Fund Association  
1619 Dayton Avenue, Room 309  
St. Paul, Minnesota 55104-6206

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, 2019 for additional discussion of the nature of actuarial calculations and more information related to participant data, economic and demographic assumptions, and benefit provisions.

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.

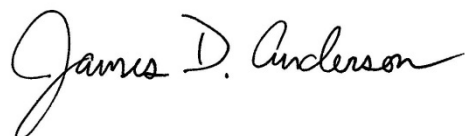
The signing actuaries are independent of the plan sponsor.

Bonita J. Wurst, James D. Anderson 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,



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



James D. Anderson, FSA, EA, FCA, MAAA



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

BJW/JDA/SLC:sc



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# SECTION A



## EXECUTIVE SUMMARY

# Executive Summary

## as of June 30, 2019 (Dollars in Thousands)

	<b>2019</b>
Actuarial Valuation Date	June 30, 2019
Measurement Date of the Net Pension Liability	June 30, 2019

### Membership

Number of	
- Service Retirements	3,632
- Survivors	347
- Disability Retirements	25
- Deferred Retirements	2,489
- Terminated other non-vested	2,742
- Active Members	3,467
- Total	12,702
Covered Payroll	\$ 268,614

### Net Pension Liability

Total Pension Liability	\$ 1,691,721
Plan Fiduciary Net Position	1,080,544
Net Pension Liability	\$ 611,177
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	63.87%
Net Pension Liability as a Percentage of Covered Payroll	227.53%

### Development of the Single Discount Rate

Single Discount Rate	7.50%
Long-Term Expected Rate of Investment Return	7.50%
Long-Term Municipal Bond Rate*	3.13%
Last year ending June 30 in the 2020 to 2119 projection period within which projected benefit payments are fully funded	2119

**Total Pension Expense** \$ 67,608

### 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	\$ 1,775	\$ 13,277
Changes in assumptions	59,281	7,685
Net difference between projected and actual earnings on pension plan investments	30,051	31,042
Total	\$ 91,107	\$ 52,004

\* 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 28, 2019.

# 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, 2019.

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 all actuarial assumptions are met (including the assumption of the plan earning 7.50%), then the following outcomes are expected:

- (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 29 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. The net pension liability and pension expense should be measured as of the pension plan's fiscal year end (measurement date) on a date that is within the employer's prior fiscal year. 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, 2019 and a measurement date of June 30, 2019.

### 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 7.50% 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 7.50% 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

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### **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, 2019 (Dollars in Thousands)

### A. Expense/(Income)

1. Service Cost, Beginning of Year	\$ 23,279
2. Interest on the Total Pension Liability	122,197
3. Current-Period Benefit Changes	-
4. Employee Contributions (made negative for addition here)	(20,626)
5. Projected Earnings on Plan Investments (made negative for addition here)	(78,409)
6. Pension Plan Administrative Expense	764
7. Other Changes in Plan Fiduciary Net Position	-
8. Recognition of Outflow (Inflow) of Resources due to Liabilities	4,108
9. Recognition of Outflow (Inflow) of Resources due to Assets	16,295
10. <b>Total Pension Expense / (Income)</b>	<b><u>\$ 67,608</u></b>

# Statement of Outflows and Inflows Arising from Current Reporting Period Fiscal Year Ended June 30, 2019 (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	\$ (9,831)
2. Assumption Changes (gains) or losses	\$ (3,037)
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	\$ (3,277)
5. Outflow (Inflow) of Resources to be recognized in the current pension expense for Assumption Changes	\$ (1,012)
6. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Liabilities	\$ (4,289)
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	\$ (6,554)
8. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses for Assumption Changes	\$ (2,025)
9. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Liabilities	\$ (8,579)

## B. Outflows (Inflows) of Resources due to Assets

1. Net difference between projected and actual earnings on pension plan investments (gains) or losses	\$ 18,200
2. Recognition period for Assets {in years}	5
3. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Assets	\$ 3,640
4. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Assets	\$ 14,560

# Statement of Outflows and Inflows Arising from Current and Prior Reporting Periods Fiscal Year Ended June 30, 2019 (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	\$ 31,417	\$ 27,309	\$ 4,108
2. Due to Assets	30,255	13,960	16,295
<b>3. Total</b>	<b>\$ 61,672</b>	<b>\$ 41,269</b>	<b>\$ 20,403</b>

## 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	\$ 1,777	\$ 20,636	\$ (18,859)
2. Assumption Changes	29,640	6,673	22,967
3. Net Difference between projected and actual earnings on pension plan investments	30,255	13,960	16,295
<b>4. Total</b>	<b>\$ 61,672</b>	<b>\$ 41,269</b>	<b>\$ 20,403</b>

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

	Deferred Outflows of Resources	Deferred Inflows of Resources	Net Deferred Outflows/ (Inflows) of Resources
1. Differences between expected and actual experience	\$ 1,775	\$ 13,277	\$ (11,502)
2. Assumption Changes	59,281	7,685	51,596
3. Net Difference between projected and actual earnings on pension plan investments	30,051	31,042	(991)
<b>4. Total</b>	<b>\$ 91,107</b>	<b>\$ 52,004</b>	<b>\$ 39,103</b>

## 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
2020	\$ 23,276
2021	11,668
2022	519
2023	3,640
2024	-
Thereafter	-
<b>Total</b>	<b>\$ 39,103</b>

## Statement of Fiduciary Net Position as of June 30, 2019 (Dollars in Thousands)

	<b>2019</b>
<b>Assets</b>	
Cash and Deposits	\$ 6,460
Receivables	
Accounts Receivable - Sale of Investments	\$ -
Accrued Interest and Other Dividends	-
Contributions	-
Accounts Receivable - Other	-
Total Receivables	\$ -
Investments	
Fixed Income	\$ 177,333
Equity	627,520
Real Assets	69,529
Cash and Cash Equivalents	82,859
Other	119,446
Total Investments	\$ 1,076,687
<b>Total Assets</b>	<b>\$ 1,083,147</b>
<b>Liabilities</b>	
Payables	
Accounts Payable - Purchase of Investments	\$ 2,603
Accrued Expenses	-
Accounts Payable - Other	-
Total Liabilities	\$ 2,603
<b>Net Position Restricted for Pensions</b>	<b>\$ 1,080,544</b>

## Statement of Changes in Fiduciary Net Position for Year Ended June 30, 2019 (Dollars in Thousands)

### Additions

#### Contributions

Employer	\$ 30,919
Employer (for Reemployed Annuitants)	397
Employee	20,626
Other	<u>15,665</u>
Total Contributions	<u>\$ 67,607</u>

#### Investment Income

Net Appreciation in Fair Value of Investments	\$ 50,918
Interest and Dividends	14,167
Less Investment Expense	<u>(4,876)</u>
Net Investment Income	<u>\$ 60,209</u>

Other	<u>0</u>
<b>Total Additions</b>	<b><u>\$ 127,816</u></b>

### Deductions

Benefit payments, including refunds of employee contributions	\$ 117,080
Pension Plan Administrative Expense	764
Other	<u>-</u>
<b>Total Deductions</b>	<b><u>\$ 117,844</u></b>

<b>Net Increase in Net Position</b>	<b>\$ 9,972</b>
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### Net Position Restricted for Pensions

Beginning of Year	<u>\$ 1,070,572</u>
End of Year	<u><u>\$ 1,080,544</u></u>

## SECTION C

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### **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, 2019 (Dollars in Thousands)

<b>A. Total pension liability</b>	
1. Service Cost	\$ 23,279
2. Interest on the Total Pension Liability	122,197
3. Changes of benefit terms	-
4. Difference between expected and actual experience of the Total Pension Liability	(9,831)
5. Changes of assumptions	(3,037)
6. Benefit payments, including refunds of employee contributions	(117,080)
7. Net change in Total Pension Liability	\$ 15,528
8. Total Pension Liability – Beginning	1,676,193
9. Total Pension Liability – Ending	<u><u>\$ 1,691,721</u></u>
<b>B. Plan fiduciary net position</b>	
1. Contributions – Employer <sup>^</sup>	\$ 46,981
2. Contributions – Employee	20,626
3. Net investment income	60,209
4. Benefit payments, including refunds of employee contributions	(117,080)
5. Pension Plan Administrative Expense	(764)
6. Other	-
7. Net change in Plan Fiduciary Net Position	\$ 9,972
8. Plan Fiduciary Net Position – Beginning	1,070,572
9. Plan Fiduciary Net Position – Ending	<u><u>\$ 1,080,544</u></u>
<b>C. Net Pension Liability</b>	<u><u>\$ 611,177</u></u>
<b>D. Plan Fiduciary Net Position as a Percentage of the Total Pension Liability</b>	<b>63.87%</b>
<b>E. Covered-Employee payroll</b>	<b>\$ 268,614</b>
<b>F. Net pension liability as a percentage of Covered-Employee payroll</b>	<b>227.53%</b>

<sup>^</sup> 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,	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
<b>Total Pension Liability</b>										
Service Cost	\$ 23,279	\$ 25,087	\$ 24,098	\$ 25,596	\$ 24,998	\$ 22,954				
Interest on the Total Pension Liability	122,197	125,256	123,820	124,294	123,108	118,503				
Benefit Changes	-	(74,376)	-	-	(5,677)	-				
Difference between Expected and Actual Experience	(9,831)	(13,445)	7,106	(42,295)	(17,133)	(16,257)				
Assumption Changes	(3,037)	118,561	(22,643)	-	-	39,642				
Benefit Payments	(116,379)	(115,298)	(112,771)	(111,167)	(108,878)	(105,742)				
Refunds	(701)	(800)	(972)	(628)	(875)	(1,103)				
<b>Net Change in Total Pension Liability</b>	15,528	64,985	18,638	(4,200)	15,543	57,997				
<b>Total Pension Liability - Beginning</b>	1,676,193	1,611,208	1,592,570	1,596,770	1,581,227	1,523,230				
<b>Total Pension Liability - Ending (a)</b>	\$ 1,691,721	\$ 1,676,193	\$ 1,611,208	\$ 1,592,570	\$ 1,596,770	\$ 1,581,227				
<b>Plan Fiduciary Net Position</b>										
Employer Contributions*	\$ 46,981	\$ 39,209	\$ 38,350	\$ 37,228	\$ 36,711	\$ 35,197				
Employee Contributions	20,626	20,112	20,146	18,538	17,567	16,564				
Pension Plan Net Investment Income	60,209	95,886	128,719	1,475	25,757	168,176				
Benefit Payments	(116,379)	(115,298)	(112,771)	(111,167)	(108,878)	(105,742)				
Refunds	(701)	(800)	(972)	(628)	(875)	(1,103)				
Pension Plan Administrative Expense	(764)	(786)	(889)	(749)	(748)	(739)				
Other	-	-	-	-	-	-				
<b>Net Change in Plan Fiduciary Net Position</b>	9,972	38,323	72,583	(55,303)	(30,466)	112,353				
<b>Plan Fiduciary Net Position - Beginning</b>	1,070,572	1,032,249	959,666	1,014,969	1,045,435	933,082				
<b>Plan Fiduciary Net Position - Ending (b)</b>	\$ 1,080,544	\$ 1,070,572	\$ 1,032,249	\$ 959,666	\$ 1,014,969	\$ 1,045,435				
<b>Net Pension Liability - Ending (a) - (b)</b>	611,177	605,621	578,959	632,904	581,801	535,792				
<b>Plan Fiduciary Net Position as a Percentage of Total Pension Liability</b>	63.87 %	63.87 %	64.07 %	60.26 %	63.56 %	66.12 %				
<b>Covered Employee Payroll</b>	\$ 268,614	\$ 263,122	\$ 264,342	\$ 258,787	\$ 263,844	\$ 259,740				
<b>Net Pension Liability as a Percentage of Covered Employee Payroll</b>	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
2010						
2011						
2012						
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%

# Schedule of Contributions Multiyear (Dollars in Thousands)

## Last 10 Fiscal Years

<b>FY Ending June 30,</b>	<b>Actuarially Determined Contribution</b>	<b>Actual Contribution*</b>	<b>Contribution Deficiency (Excess)</b>	<b>Covered Payroll</b>	<b>Actual Contribution as a % of Covered Payroll</b>
2010	\$ 30,328	\$ 25,126	\$ 5,202	\$ 239,996	10.47%
2011	33,819	25,090	8,729	239,738	10.47
2012	29,797	25,109	4,688	239,053	10.50
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

\* 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, 2019 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, 2018
Actuarial Cost Method	Entry Age Normal
Amortization Method	Level Percentage of Payroll, Closed
Remaining Amortization Period	30 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-2017 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, 2018 for additional detail.

# Schedule of Investment Returns Multiyear

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

<u>FY Ending June 30,</u>	<u>Annual Return<sup>1</sup></u>
2010	
2011	
2012	
2013	
2014	18.50 %
2015	2.65 %
2016	0.34 %
2017	13.93 %
2018	9.75 %
2019	5.73 %

<sup>1</sup> Annual money-weighted rate of return, net of investment expenses.

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, 2019 was 5.73% (net of investment expenses). The money-weighted rate of return expresses investment performance, net of investment expenses, 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

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### **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, 2019, these best estimates are summarized in the following table:

### Long-Term Expected Real Rate of Return\*

<u>Asset Class</u>	<u>Target Allocation</u>	<u>Long-Term Expected Real Rate of Return (Arithmetic)</u>
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%
<b>Total</b>	<b>100%</b>	

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

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 7.50% 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 7.50%. 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 7.50%, 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 6.50%	Current Single Discount Rate Assumption 7.50%	1% Increase 8.50%
Total Pension Liability	\$1,892,801	\$1,691,721	\$1,525,168
Net Position Restricted for Pensions	1,080,544	1,080,544	1,080,544
Net Pension Liability	<b>\$ 812,257</b>	<b>\$ 611,177</b>	<b>\$ 444,624</b>

Note that we believe the 8.5% interest rate assumption would not comply with Actuarial Standards of Practice.



## Reconciliation of Members

### Summary of Changes in Participant Status During Fiscal Year Ending June 30, 2019

	Active Participants	Leave of Absence	Vested Terminated	Other Non-Vested	Retired Participants	Disabled	Survivors and Beneficiaries	Alternate Payees <sup>2</sup>	Total
A. Number as of June 30, 2018	3,445	132	2,031	3,014	3,500	24	340	50	12,536
B. Additions	274	2	151	193	154	2	26	9	811
C. Deletions									
1. Retirements	(77)	(3)	(74)	-	-	-	-	-	(154)
2. Disability	-	(1)	(1)	-	-	-	-	-	(2)
3. Died with Beneficiary	(1)	-	(1)	-	(25)	-	-	(5)	(32)
4. Died without Beneficiary	-	-	-	-	(44)	-	(28)	-	(72)
5. Terminated - Deferred	(121)	(30)	-	-	-	-	-	-	(151)
6. Terminated - Not Vested	(187)	(5)	-	-	-	-	-	-	(192)
7. Refunds	(11)	(1)	(13)	(99)	-	-	-	-	(124)
8. Rehired as Active	103	(52)	(23)	(28)	-	-	-	-	.
9. Leave of Absence	(78)	78	-	-	-	-	-	-	.
10. Repayment of Refund	-	-	-	-	-	-	-	-	.
11. Expired Benefits	-	-	-	-	-	-	-	(2)	(2)
12. Disability to Retirement	-	-	-	-	3	(3)	-	-	.
D. Data Adjustments <sup>1</sup>	-	-	419	(338)	3	1	-	(1)	84
E. Total on June 30, 2019	3,347	120	2,489	2,742	3,591	24	338	51	12,702

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

<sup>2</sup> Includes alternate payees of retired participants (41), disabled participants (1), and survivors (9).

## GASB Reconciliation (Dollars in Thousands)

### Fiscal Year Ended June 30, 2019

	Total Pension Liability (a)	Plan Fiduciary Net Position (b)	Net Pension Liability (a) - (b)	Deferred Outflows	Deferred Inflows	Outflows Prior Year	Total Pension Expense
<b>Balance Beginning of Year</b>	\$ 1,676,193	\$ 1,070,572	\$ 605,621				
<b>Changes for the Year:</b>							
Service Cost	\$ 23,279		\$ 23,279				\$ 23,279
Interest on Total Pension Liability	122,197		122,197				122,197
Interest on Fiduciary Net Position <sup>(1)</sup>		\$ 78,409	(78,409)				(78,409)
Changes in Benefit Terms	-		-				-
Liability Experience Gains and Losses	(9,831)		(9,831)	\$ 1,775	\$ 13,277	\$ (20,530)	(18,859)
Changes in Assumptions	(3,037)		(3,037)	59,281	7,685	77,600	22,967
Contributions - Employer		46,981	(46,981)				-
Contributions - Employees		20,626	(20,626)				(20,626)
Asset Gain/(Loss) <sup>(1)</sup>		(18,200)	18,200	30,051	31,042	(2,896)	16,295
Benefit Payouts	(117,080)	(117,080)					-
Administrative Expenses		(764)	764				764
Other changes							\$ -
<b>Net Changes</b>	<u>\$ 15,528</u>	<u>\$ 9,972</u>	<u>\$ 5,556</u>				<u>\$ 67,608</u>
<b>Balance End of Year</b>	<u>\$ 1,691,721</u>	<u>\$ 1,080,544</u>	<u>\$ 611,177</u>	<u>\$ 91,107</u>	<u>\$ 52,004</u>	<u>\$ 54,174</u>	

<sup>(1)</sup> The sum of these items equals the net investment income of \$60,209.

## SECTION E

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### SUMMARY OF BENEFITS

# Summary of Benefit Provisions for Basic Members as of June 30, 2019

## **PARTICIPANTS**

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

As of July 1, 2019, 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, 2019

## AVERAGE SALARY

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

## 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 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

<u>Age at Retirement</u>	<u>RETIREMENTS PRIOR TO JULY 1, 2019</u>	<u>RETIREMENTS ON OR AFTER JULY 1, 2024</u>	<u>AGE 62 OR OLDER WITH 30 YEARS OF SERVICE</u>
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, 2019

## 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 1<sup>st</sup> of the month following termination until the January 1<sup>st</sup> 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 1<sup>st</sup> 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.

## ACTIVE SURVIVOR BENEFIT (Family Benefit)

### *Eligibility*

Active member with three 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, 2019

## **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 his 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, or prior to age 55, if 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**

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**

2019:	0.00 percent
2020:	0.00 percent
2021 and thereafter:	1.00 percent

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, 2019

## 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, 2019

## STATUTORY CONTRIBUTIONS

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

<u>Contribution after June 30,</u>	<u>Member</u>	<u>Employer Regular</u>	<u>Employer Additional</u>
2018	7.50%	7.335%	3.84%
2019	7.50%	8.170%	3.84%
2020	7.50%	8.380%	3.84%
2021	7.50%	8.590%	3.84%
2022	7.75%	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

Professional 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, 2019

## **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, 2019

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

Normal Retirement Age: Age at Retirement	<u>UNDER AGE 62 OR LESS THAN 30 YEARS OF SERVICE</u>				<u>AGE 62 OR OLDER WITH 30 YEARS OF SERVICE</u>	
	<u>RETIREMENTS PRIOR TO JULY 1, 2019</u>		<u>RETIREMENTS ON OR AFTER JULY 1, 2024</u>		<u>65</u>	<u>66</u>
	<u>65</u>	<u>66</u>	<u>65</u>	<u>66</u>		
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, 2019

## 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 1<sup>st</sup> of the month following termination until the January 1<sup>st</sup> 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 1<sup>st</sup> 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, 2019

## 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

2019:	0.00 percent
2020:	0.00 percent
2021 and thereafter:	1.00 percent

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

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### 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-2018 from 2006
  - b. Female: RP-2014 Healthy Annuitant Mortality Table for females adjusted for white collar and projected with Scale MP-2018 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-2018 from 2006
  - b. Female: RP-2014 Employee Mortality Table for females adjusted for white collar and projected with Scale MP-2018 from 2006

# Actuarial Cost Method and Actuarial Assumptions

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

<b>Age in 2019</b>	<b>Post-Retirement Mortality</b>	
	<b>Male</b>	<b>Female</b>
55	40	26
56	42	27
57	45	29
58	48	31
59	52	34
60	56	36
61	60	39
62	65	42
63	70	47
64	75	52
65	82	57
66	89	62
67	97	68
68	106	74
69	117	81
70	129	89
71	143	98
72	159	108
73	177	119
74	197	132
75	220	147
76	245	164
77	274	183
78	308	204
79	345	229
80	388	257
81	438	288
82	495	324
83	560	366
84	634	412



# Actuarial Cost Method and Actuarial Assumptions

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

<b>Age in 2019</b>	<b>Pre-Retirement Mortality</b>	
	<b>Male</b>	<b>Female</b>
30	4	2
31	4	2
32	4	3
33	5	3
34	5	3
35	5	3
36	5	3
37	5	3
38	5	4
39	5	4
40	5	4
41	6	4
42	6	5
43	6	5
44	7	5
45	7	6
46	8	6
47	9	7
48	10	8
49	11	8
50	12	9
51	13	10
52	15	11
53	16	12
54	18	14
55	20	15
56	22	17
57	25	18
58	28	20
59	31	22

# Actuarial Cost Method and Actuarial Assumptions

Rates of Disability:

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

<u>Age</u>	<u>Disability</u>	<u>Age</u>	<u>Disability</u>
20	1	45	4
21	1	46	4
22	1	47	4
23	1	48	4
24	1	49	4
25	1	50	9
26	1	51	9
27	1	52	9
28	1	53	9
29	1	54	9
30	2	55	17
31	2	56	17
32	2	57	17
33	2	58	17
34	2	59	17
35	2	60	35
36	2	61	35
37	2	62	35
38	2	63	35
39	2	64	35
40	3		
41	3		
42	3		
43	3		
44	3		

# 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	Basic Members Eligible for Rule of 90 Provision	Basic Members Not Eligible for Rule of 90 Provision	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	5,000	800	2,500	2,500	900	500
56	5,000	1,300	2,500	2,500	700	500
57	4,000	1,300	2,500	2,500	700	500
58	4,000	1,800	2,500	2,500	700	600
59	3,500	1,800	2,500	3,000	700	600
60	3,500	2,000	2,500	3,000	1,200	900
61	3,500	2,000	2,500	3,000	1,200	1,100
62	3,500	4,000	4,500	3,000	2,500	2,000
63	3,500	4,000	3,500	3,000	2,800	2,300
64	4,000	4,000	2,500	3,000	2,800	2,600
65	5,000	5,000	3,000	4,500	3,000*	4,500*
66	3,000	5,000	3,000	4,300	3,000	4,300
67	3,000	5,000	3,500	3,800	3,500	3,800
68	3,000	5,000	4,000	3,800	4,000	3,800
69	3,000	5,000	4,500	3,000	4,500	3,000
70 & Over	10,000	10,000	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.*

# Actuarial Cost Method and Actuarial Assumptions

## B. Economic Assumptions

Investment Return Rate:	7.50%
Price Inflation:	2.50% per year
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.

# Actuarial Cost Method and Actuarial Assumptions

## C. Other Assumptions

Marital Status:	It is assumed that 75% of male members and 60% of female members have an eligible spouse. The male spouse is assumed to be two years older than the female spouse. Married members are assumed to have two dependent children.
Deferred Benefit Commencement:	Basic Plan members who terminate vested are assumed to commence benefits at age 61. Coordinated Plan members are assumed to commence benefits at age 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:	Prior year administrative expenses (excluding investment expenses) are expressed as a percentage-of-payroll and then applied to projected payroll.
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.  Benefits for 1,378 deferred members were set equal to the benefit provided in 2018 increased 2% for one year of augmentation.
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:	<p>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.</p> <p>The contributions described herein will continue until the plan is 100% funded or until June 30, 2048, whichever occurs earlier.</p>
Projected Annual Payroll Calculation:	The census data as of July 1, 2019 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 \$45,659; the Projected Annual Payroll for the fiscal year ending June 30, 2020 includes this replacement salary amount.
Changes in Actuarial Assumptions Since the Prior Valuation:	The mortality improvement scale was updated from MP-2017 to MP-2018.

## **SECTION G**

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### **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. As in 2017, 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 7.50%; the municipal bond rate is 3.13%; and the resulting Single Discount Rate is 7.50%.

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)

Year	Payroll			Projected Contributions				
	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	\$ 268,614	\$ -	\$ 268,614					
1	280,595	-	280,595	\$ 21,045	\$ 33,699	\$ -	\$ 15,665	\$ 70,409
2	266,204	22,809	289,013	19,965	32,530	2,557	15,665	70,717
3	255,904	41,779	297,683	19,193	31,809	4,771	15,665	71,438
4	247,522	59,092	306,614	19,183	31,287	7,020	15,665	73,155
5	240,181	75,631	315,812	18,614	30,839	9,136	15,665	74,254
6	233,409	91,878	325,287	18,089	29,970	11,099	15,665	74,823
7	226,949	108,096	335,045	17,589	29,140	13,058	15,665	75,452
8	220,653	124,444	345,097	17,101	28,332	15,033	15,665	76,131
9	214,332	141,117	355,449	16,611	27,520	17,047	15,665	76,843
10	207,871	158,242	366,113	16,110	26,691	19,116	15,665	77,582
11	201,009	176,087	377,096	15,578	25,810	21,271	15,665	78,324
12	193,584	194,825	388,409	15,003	24,856	23,535	15,665	79,059
13	185,665	214,396	400,061	14,389	23,839	25,899	15,665	79,792
14	177,383	234,680	412,063	13,747	22,776	28,349	15,665	80,537
15	168,706	255,719	424,425	13,075	21,662	30,891	15,665	81,293
16	159,833	277,325	437,158	12,387	20,523	33,501	15,665	82,076
17	150,717	299,556	450,273	11,681	19,352	36,186	15,665	82,884
18	141,443	322,338	463,781	10,962	18,161	38,938	15,665	83,726
19	132,106	345,588	477,694	10,238	16,962	41,747	15,665	84,612
20	122,814	369,211	492,025	9,518	15,769	44,601	15,665	85,553
21	113,733	393,053	506,786	8,814	14,603	47,481	15,665	86,563
22	104,678	417,311	521,989	8,113	13,441	50,411	15,665	87,630
23	95,783	441,866	537,649	7,423	12,299	53,377	15,665	88,764
24	87,075	466,704	553,779	6,748	11,180	56,378	15,665	89,971
25	78,482	491,910	570,392	6,082	10,077	59,423	15,665	91,247
26	70,119	517,385	587,504	5,434	9,003	62,500	15,665	92,602
27	62,042	543,087	605,129	4,808	7,966	65,605	15,665	94,044
28	54,382	568,901	623,283	4,215	6,983	68,723	15,665	95,586
29	47,060	594,921	641,981	3,647	6,042	71,866	15,665	97,220
30	40,207	621,034	661,241	3,116	5,163	75,021	-	83,300
31	33,890	647,188	681,078	2,626	4,351	78,180	-	85,157
32	28,115	673,395	701,510	2,179	3,610	81,346	-	87,135
33	22,812	699,743	722,555	1,768	2,929	84,529	-	89,226
34	18,121	726,111	744,232	1,404	2,327	87,714	-	91,445
35	14,032	752,527	766,559	1,087	1,802	90,905	-	93,794
36	10,576	778,980	789,556	820	1,358	94,101	-	96,279
37	7,679	805,564	813,243	595	986	97,312	-	98,893
38	5,357	832,283	837,640	415	688	100,540	-	101,643
39	3,618	859,151	862,769	280	465	103,785	-	104,530
40	2,350	886,302	888,652	182	302	107,065	-	107,549
41	1,431	913,881	915,312	111	184	110,397	-	110,692
42	819	941,952	942,771	63	105	113,788	-	113,956
43	437	970,617	971,054	34	56	117,251	-	117,341
44	224	999,962	1,000,186	17	29	120,795	-	120,841
45	96	1,030,095	1,030,191	7	12	124,435	-	124,454
46	38	1,061,059	1,061,097	3	5	128,176	-	128,184
47	7	1,092,923	1,092,930	1	1	132,025	-	132,027
48	-	1,125,718	1,125,718	-	-	135,987	-	135,987
49	-	1,159,489	1,159,489	-	-	140,066	-	140,066
50	-	1,194,274	1,194,274	-	-	144,268	-	144,268

\* Contributions related to future employees in excess of normal cost and expenses of 8.51% of pay.

For purposes of this projection, based on GASB guidance, we assumed the statutory contribution rates would continue after the plan becomes fully funded. 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)

Year	Payroll			Projected Contributions				
	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	\$ -	\$ 1,230,102	\$ 1,230,102	\$ -	\$ -	\$ 148,596	\$ -	\$ 148,596
52	-	1,267,005	1,267,005	-	-	153,054	-	153,054
53	-	1,305,016	1,305,016	-	-	157,646	-	157,646
54	-	1,344,166	1,344,166	-	-	162,375	-	162,375
55	-	1,384,491	1,384,491	-	-	167,247	-	167,247
56	-	1,426,026	1,426,026	-	-	172,264	-	172,264
57	-	1,468,807	1,468,807	-	-	177,432	-	177,432
58	-	1,512,871	1,512,871	-	-	182,755	-	182,755
59	-	1,558,257	1,558,257	-	-	188,237	-	188,237
60	-	1,605,005	1,605,005	-	-	193,885	-	193,885
61	-	1,653,155	1,653,155	-	-	199,701	-	199,701
62	-	1,702,749	1,702,749	-	-	205,692	-	205,692
63	-	1,753,832	1,753,832	-	-	211,863	-	211,863
64	-	1,806,447	1,806,447	-	-	218,219	-	218,219
65	-	1,860,640	1,860,640	-	-	224,765	-	224,765
66	-	1,916,459	1,916,459	-	-	231,508	-	231,508
67	-	1,973,953	1,973,953	-	-	238,454	-	238,454
68	-	2,033,172	2,033,172	-	-	245,607	-	245,607
69	-	2,094,167	2,094,167	-	-	252,975	-	252,975
70	-	2,156,992	2,156,992	-	-	260,565	-	260,565
71	-	2,221,702	2,221,702	-	-	268,382	-	268,382
72	-	2,288,353	2,288,353	-	-	276,433	-	276,433
73	-	2,357,003	2,357,003	-	-	284,726	-	284,726
74	-	2,427,713	2,427,713	-	-	293,268	-	293,268
75	-	2,500,545	2,500,545	-	-	302,066	-	302,066
76	-	2,575,561	2,575,561	-	-	311,128	-	311,128
77	-	2,652,828	2,652,828	-	-	320,462	-	320,462
78	-	2,732,413	2,732,413	-	-	330,075	-	330,075
79	-	2,814,385	2,814,385	-	-	339,978	-	339,978
80	-	2,898,817	2,898,817	-	-	350,177	-	350,177
81	-	2,985,781	2,985,781	-	-	360,682	-	360,682
82	-	3,075,355	3,075,355	-	-	371,503	-	371,503
83	-	3,167,615	3,167,615	-	-	382,648	-	382,648
84	-	3,262,644	3,262,644	-	-	394,127	-	394,127
85	-	3,360,523	3,360,523	-	-	405,951	-	405,951
86	-	3,461,339	3,461,339	-	-	418,130	-	418,130
87	-	3,565,179	3,565,179	-	-	430,674	-	430,674
88	-	3,672,134	3,672,134	-	-	443,594	-	443,594
89	-	3,782,298	3,782,298	-	-	456,902	-	456,902
90	-	3,895,767	3,895,767	-	-	470,609	-	470,609
91	-	4,012,640	4,012,640	-	-	484,727	-	484,727
92	-	4,133,019	4,133,019	-	-	499,269	-	499,269
93	-	4,257,010	4,257,010	-	-	514,247	-	514,247
94	-	4,384,720	4,384,720	-	-	529,674	-	529,674
95	-	4,516,262	4,516,262	-	-	545,564	-	545,564
96	-	4,651,750	4,651,750	-	-	561,931	-	561,931
97	-	4,791,302	4,791,302	-	-	578,789	-	578,789
98	-	4,935,041	4,935,041	-	-	596,153	-	596,153
99	-	5,083,093	5,083,093	-	-	614,038	-	614,038
100	-	5,235,585	5,235,585	-	-	632,459	-	632,459

\* Contributions related to future employees in excess of normal cost and expenses of 8.51% of pay.

For purposes of this projection, based on GASB guidance, we assumed the statutory contribution rates would continue after the plan becomes fully funded. 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 7.50%	Projected Ending Plan Net Position
	(a)	(b)	(c)	(d)	(e)	(f)=(a)+(b)-(c)-(d)+(e)
1	\$ 1,080,544	\$ 70,409	\$ 117,019	\$ 758	\$ 79,297	\$ 1,112,473
2	1,112,473	70,717	121,428	719	81,542	1,142,585
3	1,142,585	71,438	124,199	691	83,726	1,172,859
4	1,172,859	73,155	126,578	668	85,973	1,204,741
5	1,204,741	74,254	128,505	648	88,334	1,238,176
6	1,238,176	74,823	130,456	630	90,791	1,272,704
7	1,272,704	75,452	132,197	613	93,341	1,308,687
8	1,308,687	76,131	133,718	596	96,009	1,346,513
9	1,346,513	76,843	134,989	579	98,826	1,386,614
10	1,386,614	77,582	136,490	561	101,806	1,428,951
11	1,428,951	78,324	137,947	543	104,956	1,473,741
12	1,473,741	79,059	139,723	523	108,277	1,520,831
13	1,520,831	79,792	141,589	501	111,768	1,570,301
14	1,570,301	80,537	143,725	479	115,428	1,622,062
15	1,622,062	81,293	145,845	456	119,261	1,676,315
16	1,676,315	82,076	147,844	432	123,286	1,733,401
17	1,733,401	82,884	149,903	407	127,522	1,793,497
18	1,793,497	83,726	151,954	382	131,986	1,856,873
19	1,856,873	84,612	153,994	357	136,697	1,923,831
20	1,923,831	85,553	155,844	332	141,687	1,994,895
21	1,994,895	86,563	157,372	307	146,998	2,070,777
22	2,070,777	87,630	158,901	283	152,674	2,151,897
23	2,151,897	88,764	160,135	259	158,755	2,239,022
24	2,239,022	89,971	161,391	235	165,288	2,332,655
25	2,332,655	91,247	162,753	212	172,308	2,433,245
26	2,433,245	92,602	163,836	189	179,863	2,541,685
27	2,541,685	94,044	164,764	168	188,016	2,658,813
28	2,658,813	95,586	165,534	147	196,830	2,785,548
29	2,785,548	97,220	166,320	127	206,367	2,922,688
30	2,922,688	83,300	167,008	109	216,115	3,054,986
31	3,054,986	85,157	167,222	92	226,099	3,198,928
32	3,198,928	87,135	167,222	76	236,968	3,355,733
33	3,355,733	89,226	167,167	62	248,808	3,526,538
34	3,526,538	91,445	166,781	49	261,715	3,712,868
35	3,712,868	93,794	165,851	38	275,811	3,916,584
36	3,916,584	96,279	164,305	29	291,238	4,139,767
37	4,139,767	98,893	162,345	21	308,146	4,384,440
38	4,384,440	101,643	159,802	14	326,691	4,652,958
39	4,652,958	104,530	156,744	10	347,049	4,947,783
40	4,947,783	107,549	153,156	6	369,405	5,271,575
41	5,271,575	110,692	149,200	4	393,951	5,627,014
42	5,627,014	113,956	144,947	2	420,885	6,016,906
43	6,016,906	117,341	140,439	1	450,418	6,444,225
44	6,444,225	120,841	135,719	1	482,770	6,912,116
45	6,912,116	124,454	130,852	-	518,174	7,423,892
46	7,423,892	128,184	125,852	-	556,878	7,983,102
47	7,983,102	132,027	120,758	-	599,148	8,593,519
48	8,593,519	135,987	115,582	-	645,266	9,259,190
49	9,259,190	140,066	110,343	-	695,534	9,984,447
50	9,984,447	144,268	105,059	-	750,278	10,773,934

For purposes of this projection, based on GASB guidance, we assumed the statutory contribution rates would continue after the plan becomes fully funded. 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 7.50%	Projected Ending Plan Net Position
	(a)	(b)	(c)	(d)	(e)	(f)=(a)+(b)-(c)-(d)+(e)
51	\$ 10,773,934	\$ 148,596	\$ 99,743	\$ -	\$ 809,845	\$ 11,632,632
52	11,632,632	153,054	94,410	-	874,607	12,565,883
53	12,565,883	157,646	89,075	-	944,967	13,579,421
54	13,579,421	162,375	83,754	-	1,021,352	14,679,394
55	14,679,394	167,247	78,465	-	1,104,224	15,872,400
56	15,872,400	172,264	73,226	-	1,194,077	17,165,515
57	17,165,515	177,432	68,056	-	1,291,442	18,566,333
58	18,566,333	182,755	62,973	-	1,396,886	20,083,001
59	20,083,001	188,237	57,996	-	1,511,022	21,724,264
60	21,724,264	193,885	53,142	-	1,634,503	23,499,510
61	23,499,510	199,701	48,431	-	1,768,034	25,418,814
62	25,418,814	205,692	43,880	-	1,912,370	27,492,996
63	27,492,996	211,863	39,508	-	2,068,322	29,733,673
64	29,733,673	218,219	35,334	-	2,236,760	32,153,318
65	32,153,318	224,765	31,372	-	2,418,621	34,765,332
66	34,765,332	231,508	27,638	-	2,614,908	37,584,110
67	37,584,110	238,454	24,147	-	2,826,700	40,625,117
68	40,625,117	245,607	20,908	-	3,055,158	43,904,974
69	43,904,974	252,975	17,928	-	3,301,529	47,441,550
70	47,441,550	260,565	15,212	-	3,567,151	51,254,054
71	51,254,054	268,382	12,763	-	3,853,467	55,363,140
72	55,363,140	276,433	10,578	-	4,162,026	59,791,021
73	59,791,021	284,726	8,653	-	4,494,493	64,561,587
74	64,561,587	293,268	6,979	-	4,852,662	69,700,538
75	69,700,538	302,066	5,544	-	5,238,460	75,235,520
76	75,235,520	311,128	4,333	-	5,653,961	81,196,276
77	81,196,276	320,462	3,328	-	6,101,399	87,614,809
78	87,614,809	330,075	2,510	-	6,583,173	94,525,547
79	94,525,547	339,978	1,856	-	7,101,867	101,965,536
80	101,965,536	350,177	1,344	-	7,660,261	109,974,630
81	109,974,630	360,682	952	-	8,261,344	118,595,704
82	118,595,704	371,503	659	-	8,908,334	127,874,882
83	127,874,882	382,648	445	-	9,604,690	137,861,775
84	137,861,775	394,127	293	-	10,354,136	148,609,745
85	148,609,745	405,951	188	-	11,160,673	160,176,181
86	160,176,181	418,130	118	-	12,028,606	172,622,799
87	172,622,799	430,674	72	-	12,962,566	186,015,967
88	186,015,967	443,594	43	-	13,967,531	200,427,049
89	200,427,049	456,902	25	-	15,048,853	215,932,779
90	215,932,779	470,609	15	-	16,212,287	232,615,660
91	232,615,660	484,727	8	-	17,464,024	250,564,403
92	250,564,403	499,269	5	-	18,810,715	269,874,382
93	269,874,382	514,247	3	-	20,259,515	290,648,141
94	290,648,141	529,674	2	-	21,818,115	312,995,928
95	312,995,928	545,564	1	-	23,494,784	337,036,275
96	337,036,275	561,931	1	-	25,298,413	362,896,618
97	362,896,618	578,789	-	-	27,238,559	390,713,966
98	390,713,966	596,153	-	-	29,325,500	420,635,619
99	420,635,619	614,038	-	-	31,570,282	452,819,939
100	452,819,939	632,459	-	-	33,984,785	487,437,183

For purposes of this projection, based on GASB guidance, we assumed the statutory contribution rates would continue after the plan becomes fully funded. 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 <sup>a</sup> ((a)-.5)	(g)=(e)*vf <sup>a</sup> ((a)-.5)	(h)=(c)/(1+sdr) <sup>a</sup> ((a)-.5)
1	\$ 1,080,544	\$ 117,019	\$ 117,019	\$ -	\$ 112,863	\$ -	\$ 112,863
2	1,112,472	121,428	121,428	-	108,945	-	108,945
3	1,142,584	124,199	124,199	-	103,656	-	103,656
4	1,172,858	126,578	126,578	-	98,272	-	98,272
5	1,204,739	128,505	128,505	-	92,807	-	92,807
6	1,238,174	130,456	130,456	-	87,643	-	87,643
7	1,272,702	132,197	132,197	-	82,616	-	82,616
8	1,308,684	133,718	133,718	-	77,737	-	77,737
9	1,346,510	134,989	134,989	-	73,001	-	73,001
10	1,386,611	136,490	136,490	-	68,663	-	68,663
11	1,428,947	137,947	137,947	-	64,554	-	64,554
12	1,473,737	139,723	139,723	-	60,823	-	60,823
13	1,520,828	141,589	141,589	-	57,336	-	57,336
14	1,570,298	143,725	143,725	-	54,140	-	54,140
15	1,622,059	145,845	145,845	-	51,106	-	51,106
16	1,676,312	147,844	147,844	-	48,192	-	48,192
17	1,733,398	149,903	149,903	-	45,454	-	45,454
18	1,793,494	151,954	151,954	-	42,861	-	42,861
19	1,856,871	153,994	153,994	-	40,406	-	40,406
20	1,923,830	155,844	155,844	-	38,039	-	38,039
21	1,994,894	157,372	157,372	-	35,732	-	35,732
22	2,070,778	158,901	158,901	-	33,562	-	33,562
23	2,151,896	160,135	160,135	-	31,463	-	31,463
24	2,239,022	161,391	161,391	-	29,497	-	29,497
25	2,332,656	162,753	162,753	-	27,671	-	27,671
26	2,433,246	163,836	163,836	-	25,912	-	25,912
27	2,541,686	164,764	164,764	-	24,240	-	24,240
28	2,658,815	165,534	165,534	-	22,655	-	22,655
29	2,785,549	166,320	166,320	-	21,174	-	21,174
30	2,922,691	167,008	167,008	-	19,778	-	19,778
31	3,054,989	167,222	167,222	-	18,422	-	18,422
32	3,198,933	167,222	167,222	-	17,137	-	17,137
33	3,355,738	167,167	167,167	-	15,936	-	15,936
34	3,526,543	166,781	166,781	-	14,790	-	14,790
35	3,712,874	165,851	165,851	-	13,681	-	13,681
36	3,916,590	164,305	164,305	-	12,608	-	12,608
37	4,139,774	162,345	162,345	-	11,589	-	11,589
38	4,384,447	159,802	159,802	-	10,611	-	10,611
39	4,652,965	156,744	156,744	-	9,682	-	9,682
40	4,947,791	153,156	153,156	-	8,800	-	8,800
41	5,271,583	149,200	149,200	-	7,975	-	7,975
42	5,627,021	144,947	144,947	-	7,207	-	7,207
43	6,016,914	140,439	140,439	-	6,496	-	6,496
44	6,444,232	135,719	135,719	-	5,839	-	5,839
45	6,912,124	130,852	130,852	-	5,237	-	5,237
46	7,423,900	125,852	125,852	-	4,686	-	4,686
47	7,983,110	120,758	120,758	-	4,182	-	4,182
48	8,593,527	115,582	115,582	-	3,724	-	3,724
49	9,259,198	110,343	110,343	-	3,307	-	3,307
50	9,984,455	105,059	105,059	-	2,929	-	2,929

For purposes of this projection, based on GASB guidance, we assumed the statutory contribution rates would continue after the plan becomes fully funded. 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 <sup>a</sup> ((a)-.5)	(g)=(e)*vf <sup>a</sup> ((a)-.5)	(h)=(c)/(1+sdr) <sup>a</sup> (a-.5)
51	\$ 10,773,943	\$ 99,743	\$ 99,743	\$ -	\$ 2,587	\$ -	\$ 2,587
52	11,632,640	94,410	94,410	-	2,278	-	2,278
53	12,565,892	89,075	89,075	-	1,999	-	1,999
54	13,579,430	83,754	83,754	-	1,748	-	1,748
55	14,679,403	78,465	78,465	-	1,524	-	1,524
56	15,872,409	73,226	73,226	-	1,323	-	1,323
57	17,165,525	68,056	68,056	-	1,144	-	1,144
58	18,566,343	62,973	62,973	-	984	-	984
59	20,083,011	57,996	57,996	-	843	-	843
60	21,724,274	53,142	53,142	-	719	-	719
61	23,499,519	48,431	48,431	-	609	-	609
62	25,418,824	43,880	43,880	-	514	-	514
63	27,493,006	39,508	39,508	-	430	-	430
64	29,733,682	35,334	35,334	-	358	-	358
65	32,153,328	31,372	31,372	-	296	-	296
66	34,765,342	27,638	27,638	-	242	-	242
67	37,584,120	24,147	24,147	-	197	-	197
68	40,625,127	20,908	20,908	-	159	-	159
69	43,904,985	17,928	17,928	-	126	-	126
70	47,441,561	15,212	15,212	-	100	-	100
71	51,254,065	12,763	12,763	-	78	-	78
72	55,363,151	10,578	10,578	-	60	-	60
73	59,791,031	8,653	8,653	-	46	-	46
74	64,561,597	6,979	6,979	-	34	-	34
75	69,700,547	5,544	5,544	-	25	-	25
76	75,235,529	4,333	4,333	-	18	-	18
77	81,196,285	3,328	3,328	-	13	-	13
78	87,614,817	2,510	2,510	-	9	-	9
79	94,525,556	1,856	1,856	-	6	-	6
80	101,965,545	1,344	1,344	-	4	-	4
81	109,974,639	952	952	-	3	-	3
82	118,595,714	659	659	-	2	-	2
83	127,874,892	445	445	-	1	-	1
84	137,861,785	293	293	-	1	-	1
85	148,609,755	188	188	-	-	-	-
86	160,176,191	118	118	-	-	-	-
87	172,622,810	72	72	-	-	-	-
88	186,015,978	43	43	-	-	-	-
89	200,427,060	25	25	-	-	-	-
90	215,932,789	15	15	-	-	-	-
91	232,615,671	8	8	-	-	-	-
92	250,564,413	5	5	-	-	-	-
93	269,874,392	3	3	-	-	-	-
94	290,648,150	2	2	-	-	-	-
95	312,995,938	1	1	-	-	-	-
96	337,036,285	1	1	-	-	-	-
97	362,896,629	-	-	-	-	-	-
98	390,713,977	-	-	-	-	-	-
99	420,635,629	-	-	-	-	-	-
100	452,819,949	-	-	-	-	-	-
<b>Totals</b>					\$ 1,884,116	\$ -	\$ 1,884,116

For purposes of this projection, based on GASB guidance, we assumed the statutory contribution rates would continue after the plan becomes fully funded. 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**

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### **GLOSSARY OF TERMS**

## Glossary of Terms

<b><i>Actuarial Accrued Liability (AAL)</i></b>	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."
<b><i>Actuarial Assumptions</i></b>	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.
<b><i>Accrued Service</i></b>	Service credited under the system which was rendered before the date of the actuarial valuation.
<b><i>Actuarial Equivalent</i></b>	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.
<b><i>Actuarial Cost Method</i></b>	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.
<b><i>Actuarial Gain (Loss)</i></b>	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.
<b><i>Actuarial Present Value (APV)</i></b>	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.
<b><i>Actuarial Valuation</i></b>	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.
<b><i>Actuarial Valuation Date</i></b>	The date as of which an actuarial valuation is performed.
<b><i>Actuarially Determined Contribution (ADC) or Annual Required Contribution (ARC)</i></b>	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

<b><i>Amortization Payment</i></b>	The amortization payment is the periodic payment required to pay off an interest-discounted amount with payments of interest and principal.
<b><i>Amortization Method</i></b>	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).
<b><i>Cost-of-Living Adjustments</i></b>	Postemployment benefit changes intended to adjust benefit payments for the effects of inflation.
<b><i>Cost-Sharing Multiple-Employer Defined Benefit Pension Plan (cost-sharing pension plan)</i></b>	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.
<b><i>Covered-Employee Payroll</i></b>	The payroll of employees that are provided with pensions through the pension plan.
<b><i>Deferred Retirement Option Program (DROP)</i></b>	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.
<b><i>Deferred Inflows and Outflows</i></b>	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.
<b><i>Discount Rate</i></b>	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: <ol style="list-style-type: none"><li>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</li><li>2. The present value of the benefit payments not in (1) above, discounted using the municipal bond rate.</li></ol>

## Glossary of Terms

<b><i>Entry Age Actuarial Cost Method (EAN)</i></b>	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 ages(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.
<b><i>GASB</i></b>	The Governmental Accounting Standards Board is an organization that exists in order to promulgate accounting standards for governmental entities.
<b><i>Fiduciary Net Position</i></b>	The fiduciary net position is the market value of the assets of the trust dedicated to the defined benefit provisions.
<b><i>Long-Term Expected Rate of Return</i></b>	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.
<b><i>Money-Weighted Rate of Return</i></b>	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.
<b><i>Multiple-Employer Defined Benefit Pension Plan</i></b>	A multiple-employer plan is a defined benefit pension plan that is used to provide pensions to the employees of more than one employer.
<b><i>Municipal Bond Rate</i></b>	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.
<b><i>Net Pension Liability (NPL)</i></b>	The NPL is the liability of employers and non-employer contributing entities to plan members for benefits provided through a defined benefit pension plan.
<b><i>Non-Employer Contributing Entities</i></b>	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.
<b><i>Normal Cost</i></b>	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

<b><i>Other Postemployment Benefits (OPEB)</i></b>	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.
<b><i>Real Rate of Return</i></b>	The real rate of return is the rate of return on an investment after adjustment to eliminate inflation.
<b><i>Service Cost</i></b>	The service cost is the portion of the actuarial present value of projected benefit payments that is attributed to a valuation year.
<b><i>Total Pension Expense</i></b>	<p>The total pension expense is the sum of the following items that are recognized at the end of the employer's fiscal year:</p> <ol style="list-style-type: none"><li>1. Service Cost</li><li>2. Interest on the Total Pension Liability</li><li>3. Current-Period Benefit Changes</li><li>4. Employee Contributions (made negative for addition here)</li><li>5. Projected Earnings on Plan Investments (made negative for addition here)</li><li>6. Pension Plan Administrative Expense</li><li>7. Other Changes in Plan Fiduciary Net Position</li><li>8. Recognition of Outflow (Inflow) of Resources due to Liabilities</li><li>9. Recognition of Outflow (Inflow) of Resources due to Assets</li></ol>
<b><i>Total Pension Liability (TPL)</i></b>	The TPL is the portion of the actuarial present value of projected benefit payments that is attributed to past periods of member service.
<b><i>Unfunded Actuarial Accrued Liability (UAAL)</i></b>	The UAAL is the difference between actuarial accrued liability and valuation assets.
<b><i>Valuation Assets</i></b>	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.