

ST. PAUL TEACHERS' RETIREMENT FUND ASSOCIATION
GASB STATEMENT NOS. 67 AND 68 ACCOUNTING AND
FINANCIAL REPORTING FOR PENSIONS
JUNE 30, 2016

December 19, 2016

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.

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 funding purposes of 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 System and should be considered in conjunction with that report. Please see the actuarial valuation report as of June 30, 2016 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 fairly represents the actuarial position of the St. Paul Teachers' Retirement Fund Association. 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.

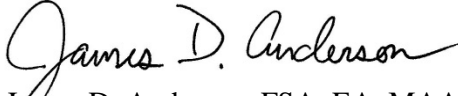
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December 19, 2016
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The signing actuaries are independent of the plan sponsor.

Bonita J. Wurst and James D. Anderson 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, MAAA

BJW/JDA:bd

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SECTION A

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY
AS OF JUNE 30, 2016 (DOLLARS IN THOUSANDS)

	<u>2016</u>	
Actuarial Valuation Date	June 30, 2016	
Measurement Date of the Net Pension Liability	June 30, 2016	
Membership		
Number of		
- Service Retirements	3,324	
- Survivors	328	
- Disability Retirements	31	
- Alternate Payees	40	
- Deferred Retirements	2,020	
- Terminated other non-vested	2,915	
- Active Members	3,534	
- Total	<u>12,192</u>	
Covered Payroll	\$ 258,787	
Net Pension Liability		
Total Pension Liability	\$ 1,592,570	
Plan Fiduciary Net Position	<u>959,666</u>	
Net Pension Liability	\$ 632,904	
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	60.26%	
Net Pension Liability as a Percentage of Covered Payroll	244.57%	
Development of the Single Discount Rate		
Single Discount Rate	8.00%	
Long-Term Expected Rate of Investment Return	8.00%	
Long-Term Municipal Bond Rate*	2.85%	
Last year ending June 30 in the 2017 to 2116 projection period within which projected benefit payments are fully funded	2116	
Total Pension Expense	\$ 51,314	
Deferred Outflows and Deferred Inflows of Resources by Source to be Recognized in Future Pension Expenses		
	Deferred Outflows	Deferred Inflows
	of Resources	of Resources
Difference between expected and actual experience	\$ -	\$ 48,504
Changes in assumptions	15,858	-
Net difference between projected and actual earnings on pension plan investments	<u>95,338</u>	<u>38,304</u>
Total	<u>\$ 111,196</u>	<u>\$ 86,808</u>

* Based on the Bond Buyer 20-Bond Index of general obligation municipal bonds as of June 30, 2016
(i.e., the weekly rate closest to but not later than the Measurement Date).

DISCUSSION

Accounting Standard

For pension plans that are administered through trusts or equivalent arrangements, Governmental Accounting Standards Board (GASB) Statement No. 67 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, 2016.

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 8.00% on the actuarial value of assets), then the following outcomes are expected:

1. The unfunded actuarial accrued liabilities will increase in the short term but will be fully amortized after approximately 40 years.
2. The funded status of the plan will continue to increase towards a 100% funded ratio.

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, 2016 and a measurement date of June 30, 2016.

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 8.00% long-term expected rate of return on pension plan investments, for the purposes of this valuation.

Had the Fund been projected to have insufficient assets to pay all projected benefits, the single discount rate would instead reflect a combination of (1) the 8.00% long-term expected rate of return on pension plan investments (for all years where a projected asset sufficiency exists), then (2) a lower tax-exempt municipal bond rate* (for all remaining years where projected asset insufficiencies exist).

* *Based on an index of 20-year general obligation bonds with an average AA credit rating as of the measurement date. That municipal bond rate, which was not used to discount any projected benefits in this valuation, was 2.85% (based on the weekly rate closest to but not later than the measurement date of the Bond Buyer 20-Year GO Index).*

Effective Date and Transition

GASB Statement Nos. 67 and 68 were effective for fiscal years beginning after June 15, 2013, and June 15, 2014 respectively.

SECTION B

FINANCIAL STATEMENTS

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

PENSION EXPENSE UNDER GASB STATEMENT NO. 68
FISCAL YEAR ENDED JUNE 30, 2016 (DOLLARS IN THOUSANDS)

A. Expense/(Income)

1. Service Cost	\$ 25,596
2. Interest on the Total Pension Liability	124,294
3. Current-Period Benefit Changes	-
4. Employee Contributions (made negative for addition here)	(18,538)
5. Projected Earnings on Plan Investments (made negative for addition here)	(78,926)
6. Pension Plan Administrative Expense	749
7. Other Changes in Plan Fiduciary Net Position	0
8. Recognition of Outflow (Inflow) of Resources due to Liabilities	(9,324)
9. Recognition of Outflow (Inflow) of Resources due to Assets	7,463
10. Total Pension Expense / (Income)	<u>\$ 51,314</u>

**STATEMENT OF OUTFLOWS AND INFLOWS ARISING FROM CURRENT
REPORTING PERIOD
FISCAL YEAR ENDED JUNE 30, 2016 (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	\$ (42,295)
2. Assumption Changes (gains) or losses	\$ -
3. Recognition period for Liabilities: Average of the expected remaining service lives of all employees {in years }	4.0000
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*	\$ (10,574)
5. Outflow (Inflow) of Resources to be recognized in the current pension expense for Assumption Changes	\$ -
6. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Liabilities	<u>\$ (10,574)</u>
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	\$ (31,721)
8. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses for Assumption Changes	\$ -
9. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Liabilities	<u>\$ (31,721)</u>

B. Outflows (Inflows) of Resources due to Assets

1. Net difference between projected and actual earnings on pension plan investments (gains) or losses	\$ 77,451
2. Recognition period for Assets {in years }	5.0000
3. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Assets	\$ 15,490
4. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Assets	\$ 61,961

* Includes impact of changes in expected timing of future COLA increases.

**STATEMENT OF OUTFLOWS AND INFLOWS ARISING FROM CURRENT AND PRIOR
REPORTING PERIODS
FISCAL YEAR ENDED JUNE 30, 2016 (DOLLARS IN THOUSANDS)**

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

	<u>Outflows of Resources</u>	<u>Inflows of Resources</u>	<u>Net Outflows of Resources</u>
1. Due to Liabilities	\$ 7,928	\$ 17,252	\$ (9,324)
2. Due to Assets	26,616	19,153	7,463
3. Total	\$ 34,544	\$ 36,405	\$ (1,861)

B. Outflows and Inflows of Resources by Source to be Recognized in Current Pension Expense

	<u>Outflows of Resources</u>	<u>Inflows of Resources</u>	<u>Net Outflows of Resources</u>
1. Differences between expected and actual experience	\$ -	\$ 17,252	\$ (17,252)
2. Assumption Changes	7,928	-	7,928
3. Net Difference between projected and actual earnings on pension plan investments	26,616	19,153	7,463
4. Total	\$ 34,544	\$ 36,405	\$ (1,861)

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

	<u>Deferred Outflows of Resources</u>	<u>Deferred Inflows of Resources</u>	<u>Net Deferred Outflows of Resources</u>
1. Differences between expected and actual experience	\$ -	\$ 48,504	\$ (48,504)
2. Assumption Changes	15,858	-	15,858
3. Net Difference between projected and actual earnings on pension plan investments	95,338	38,304	57,034
4. Total	\$ 111,196	\$ 86,808	\$ 24,388

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

<u>Year Ending June 30</u>	<u>Net Deferred Outflows of Resources</u>
2017	\$ (1,861)
2018	(1,859)
2019	12,616
2020	15,492
2021	-
Thereafter	0
Total	\$ 24,388

**STATEMENT OF FIDUCIARY NET POSITION
AS OF JUNE 30, 2016 (DOLLARS IN THOUSANDS)**

	2016
Assets	
Cash and Deposits	\$ 45,741
Receivables	
Accounts Receivable - Sale of Investments	\$ -
Accrued Interest and Other Dividends	-
Contributions	-
Accounts Receivable - Other	-
Total Receivables	\$ -
Investments	
Fixed Income	\$ 179,666
Equities	585,065
Real Estate	71,970
Other	79,380
Total Investments	\$ 916,081
Total Assets	\$ 961,822
 Liabilities	
Payables	
Accounts Payable - Purchase of Investments	\$ 2,156
Accrued Expenses	-
Accounts Payable - Other	-
Total Liabilities	\$ 2,156
 Net Position Restricted for Pensions	\$ 959,666

**STATEMENT OF CHANGES IN FIDUCIARY NET POSITION
FOR YEAR ENDED JUNE 30, 2016 (DOLLARS IN THOUSANDS)**

Additions

Contributions

Employer	\$	26,433
Employer (for Reemployed Annuitants)		130
Employee		18,538
Other		10,665
Total Contributions	\$	<u>55,766</u>

Investment Income

Net Appreciation in Fair Value of Investments	\$	(8,934)
Interest and Dividends		14,033
Less Investment Expense		(3,624)
Net Investment Income	\$	<u>1,475</u>

Other	\$	0
Total Additions	\$	<u>57,241</u>

Deductions

Benefit payments, including refunds of employee contributions	\$	111,795
Pension Plan Administrative Expense		749
Other		-
Total Deductions	\$	<u>112,544</u>

Net Increase in Net Position \$ (55,303)

Net Position Restricted for Pensions

Beginning of Year	\$	<u>1,014,969</u>
End of Year	\$	<u><u>959,666</u></u>

SECTION C

REQUIRED SUPPLEMENTARY INFORMATION

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

SCHEDULE OF CHANGES IN NET PENSION LIABILITY AND RELATED RATIOS
CURRENT PERIOD
FISCAL YEAR ENDED JUNE 30, 2016 (DOLLARS IN THOUSANDS)

A. Total pension liability	
1. Service Cost	\$ 25,596
2. Interest on the Total Pension Liability	124,294
3. Changes of benefit terms	0
4. Difference between expected and actual experience of the Total Pension Liability ⁺	(42,295)
5. Changes of assumptions	0
6. Benefit payments, including refunds of employee contributions	(111,795)
7. Net change in Total Pension Liability	\$ (4,200)
8. Total Pension Liability – Beginning	1,596,770
9. Total Pension Liability – Ending	<u><u>\$ 1,592,570</u></u>
B. Plan fiduciary net position	
1. Contributions – Employer	\$ 37,228 [^]
2. Contributions – Employee	18,538
3. Net investment income	1,475
4. Benefit payments, including refunds of employee contributions	(111,795)
5. Pension Plan Administrative Expense	(749)
6. Other	-
7. Net change in Plan Fiduciary Net Position	\$ (55,303)
8. Plan Fiduciary Net Position – Beginning	1,014,969
9. Plan Fiduciary Net Position – Ending	<u><u>\$ 959,666</u></u>
C. Net Pension Liability	<u><u>\$ 632,904</u></u>
D. Plan Fiduciary Net Position as a Percentage of the Total Pension Liability	60.26%
E. Covered-Employee payroll	\$ 258,787
F. Net pension liability as a percentage of Covered-Employee payroll	244.57%

⁺ Includes impact of changes in expected timing of future COLA increase.

[^] Includes employer contributions, supplemental contributions, and reemployed annuitant employer contributions

The covered payroll shown represents the annual compensation for active employees on which contributions to the pension plan are based and does not necessarily represent Covered Payroll as defined in GASB Statement Nos. 67 – 68.

SCHEDULES OF REQUIRED SUPPLEMENTARY INFORMATION
SCHEDULE OF CHANGES IN NET PENSION LIABILITY AND RELATED RATIOS MULTIYEAR (DOLLARS IN THOUSANDS)
Last 10 Fiscal Years (to be completed prospectively, commencing with 2014)

Fiscal year ending June 30,	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007
Total Pension Liability										
Service Cost	\$ 25,596	\$ 24,998	\$ 22,954							
Interest on the Total Pension Liability	124,294	123,108	118,503							
Benefit Changes	-	(5,677)	-							
Difference between Expected and Actual Experience	(42,295)	(17,133)	(16,257)							
Assumption Changes	-	-	39,642							
Benefit Payments	(111,167)	(108,878)	(105,742)							
Refunds	(628)	(875)	(1,103)							
Net Change in Total Pension Liability	(4,200)	15,543	57,997							
Total Pension Liability - Beginning	1,596,770	1,581,227	1,523,230							
Total Pension Liability - Ending (a)	\$ 1,592,570	\$ 1,596,770	\$ 1,581,227							
Plan Fiduciary Net Position										
Employer Contributions*	\$ 37,228	\$ 36,711	\$ 35,197							
Employee Contributions	18,538	17,567	16,564							
Pension Plan Net Investment Income	1,475	25,757	168,176							
Benefit Payments	(111,167)	(108,878)	(105,742)							
Refunds	(628)	(875)	(1,103)							
Pension Plan Administrative Expense	(749)	(748)	(739)							
Other	-	-	-							
Net Change in Plan Fiduciary Net Position	(55,303)	(30,466)	112,353							
Plan Fiduciary Net Position - Beginning	1,014,969	1,045,435	933,082							
Plan Fiduciary Net Position - Ending (b)	\$ 959,666	\$ 1,014,969	\$ 1,045,435							
Net Pension Liability - Ending (a) - (b)	632,904	581,801	535,792							
Plan Fiduciary Net Position as a Percentage of Total Pension Liability										
	60.26 %	63.56 %	66.12 %							
Covered-Employee Payroll	\$ 258,787	\$ 263,844	\$ 259,740							
Net Pension Liability as a Percentage of Covered-Employee Payroll										
	244.57 %	220.51 %	206.28 %							
Notes to Schedule:										
N/A										

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

The covered payroll shown represents the annual compensation for active employees on which contributions to the pension plan are based and does not necessarily represent Covered Payroll as defined in GASB Statement Nos. 67 – 68.

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
2007			-			
2008			-			
2009			-			
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%

The covered payroll shown represents the annual compensation for active employees on which contributions to the pension plan are based and does not necessarily represent Covered Payroll as defined in GASB Statement Nos. 67 – 68.

SCHEDULE OF CONTRIBUTIONS MULTIYEAR (DOLLARS IN THOUSANDS)
Last 10 Fiscal Years

FY Ending June 30,	Actuarially Determined Contribution	Actual Contribution*	Contribution Deficiency (Excess)	Covered Payroll	Actual Contribution as a % of Covered Payroll
2007	\$ 42,823	\$ 24,117	\$ 18,706	\$ 229,172	10.52%
2008	41,580	24,285	17,295	235,993	10.29
2009	29,007	24,844	4,163	243,166	10.22
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	39,155	37,228	1,927	258,787	14.39

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

NOTES TO SCHEDULE OF CONTRIBUTIONS

Valuation Date: June 30, 2016

Notes Actuarially determined contribution rates are calculated as of each July 1.

Methods and Assumptions Used to Determine Contribution Rates:

Actuarial Cost Method	Entry Age Normal
Amortization Method	Level Percentage of Payroll, Closed
Remaining Amortization Period	26 years
Asset Valuation Method	5-Year smoothed market; no corridor
Inflation	3.00%
Salary Increases	4.00% to 8.90%; age and service based
Investment Rate of Return	8.00%
Retirement Age	Experience-based table of rates that are specific to the type of eligibility condition. Last updated for the 2012 valuation pursuant to an experience study of the period 2006 - 2011.
Mortality	RP-2000 Combined Mortality Table, projected with scale AA to 2020, set back one year for males and set back three years for females.

Other Information:

Notes The plan is assumed to pay a 2.0% COLA beginning January 1, 2055, and a 2.5% COLA beginning January 1, 2066.
See separate funding report as of July 1, 2016 for additional detail.

SCHEDULE OF INVESTMENT RETURNS MULTIYEAR

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

FY Ending June 30,	Annual Return ¹
2007	
2008	
2009	
2010	
2011	
2012	
2013	
2014	18.50 %
2015	2.65 %
2016	0.34 %

¹ 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, 2016 was 0.34% (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

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, 2016, these best estimates are summarized in the following table:

Long-Term Expected Real Rate of Return*

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

*For purposes of these calculations, SPTRFA's assumed inflation rate is 2.75%.

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 8.00% was used to measure the total pension liability. This Single Discount Rate was based on the expected rate of return on pension plan investments of 8.00%. The projection of cash flows used to determine this Single Discount Rate assumed that plan member contributions will be made at the current contribution rate and that employer contributions will be made at rates equal to the difference between actuarially determined contribution rates and the member rate. Based on these assumptions, the pension plan's fiduciary net position was projected to be available to make all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

Regarding the sensitivity of the net pension liability to changes in the Single Discount Rate, the following presents the plan's net pension liability, calculated using a Single Discount Rate of 8.00%, as well as what the plan's net pension liability would be if it were calculated using a Single Discount Rate that is one percent lower or one percent higher:

Sensitivity of Net Pension Liability to the Single Discount Rate Assumption *(Dollars in Thousands)*

	Current Single Discount		
	1% Decrease 7.00%	Rate Assumption 8.00%	1% Increase 9.00%
Total Pension Liability	\$1,763,823	\$1,592,570	\$1,449,234
Net Position Restricted for Pensions	959,666	959,666	959,666
Net Pension Liability	\$804,157	\$632,904	\$489,568

RECONCILIATION OF MEMBERS

Summary of Changes in Participant Status During Fiscal Year Ending June 30, 2016

	Active Participants	Leave of Absence	Vested Terminated	Other Non-Vested	Retired Participants	Disabled	Survivors and Beneficiaries	Alternate Payees ²	Total
A. Number as of June 30, 2015	3,597	159	1,892	1,981	3,238	32	323	40	11,262
B. Additions	280	59	220	246	158	2	32		997
C. Deletions									
1. Retirements	(88)	(8)	(55)	(5)					(156)
2. Disability	-	(1)	(1)						(2)
3. Died with Beneficiary					(31)	(1)			(32)
4. Died without Beneficiary	(1)	(2)	(3)	(3)	(41)	(1)	(25)		(76)
5. Terminated - Deferred	(194)	(26)							(220)
6. Terminated - Not Vested	(235)	(6)							(241)
7. Refunds	(30)		(10)	(71)					(111)
8. Rehired as Active	173	(96)	(27)	(50)					0
9. Leave of Absence	(45)		(11)						(56)
10. Repayment of Refund			1						1
11. Expired Benefits							(2)		(2)
12. Disability to Retirement						(1)			(1)
D. Data Adjustments ¹	(2)		14	817					829
E. Total on June 30, 2016	3,455	79	2,020	2,915	3,324	31	328	40	12,192

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

² Includes alternate payees of both retired participants and disabled participants.

GASB RECONCILIATION (DOLLARS IN THOUSANDS)
FISCAL YEAR ENDED JUNE 30, 2016

	Total Pension Liability (a)	Plan Fiduciary Net Position (b)	Net Pension Liability (a) - (b)	Deferred Outflows	Deferred Inflows	Net Deferred Outflows Prior Year	Total Pension Expense
Balance Beginning of Year	\$ 1,596,770	\$ 1,014,969	\$ 581,801				
Changes for the Year:							
Service Cost	\$ 25,596		\$ 25,596				\$ 25,596
Interest on Total Pension Liability	124,294		124,294				124,294
Interest on Fiduciary Net Position ⁽¹⁾		\$ 78,926	(78,926)				(78,926)
Changes in Benefit Terms	-		-				-
Liability Experience Gains and Losses	(42,295)		(42,295)		\$ 48,504	\$ (23,461)	(17,252)
Changes in Assumptions				\$ 15,858		23,786	7,928
Contributions - Employer		37,228	(37,228)				-
Contributions - Employees		18,538	(18,538)				(18,538)
Asset Gain/(Loss) ⁽¹⁾		(77,451)	77,451	95,338	38,304	(12,954)	7,463
Benefit Payouts	(111,795)	(111,795)					-
Administrative Expenses		(749)	749				749
Other changes							\$ -
Net Changes	<u>\$ (4,200)</u>	<u>\$ (55,303)</u>	<u>\$ 51,103</u>	<u>\$ 111,196</u>	<u>\$ 86,808</u>	<u>\$ (12,629)</u>	<u>\$ 51,314</u>
Balance End of Year	<u>\$ 1,592,570</u>	<u>\$ 959,666</u>	<u>\$ 632,904</u>	<u>\$ 111,196</u>	<u>\$ 86,808</u>		

⁽¹⁾ The sum of these items equals the net investment income of \$1,475.

SECTION E

SUMMARY OF BENEFITS

SUMMARY OF BENEFIT PROVISIONS FOR BASIC MEMBERS

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>
2014	9.00%	9.00%	3.64%
2015	9.50%	9.50%	3.64%
2016	10.00%	9.75%	3.64%
2017	10.00%	10.00%	3.64%

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 Department of Education, who are not covered under the Social Security Act.

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.

AVERAGE SALARY

Average of the highest five 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% of Average Salary for each year of Accredited Service.

SUMMARY OF BENEFIT PROVISIONS FOR BASIC MEMBERS

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% 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.

<u>Age at Retirement</u>	<u>Under Age 62 or less than 30 years of service</u>	<u>Age 62 or older with 30 years of service</u>
55	0.5376	
56	0.5745	
57	0.6092	
58	0.6419	
59	0.6726	
60	0.7354	
61	0.7947	
62	0.8507	0.8831
63	0.9035	0.9246
64	0.9533	0.9635
65	1.0000	1.0000

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.

SUMMARY OF BENEFIT PROVISIONS FOR BASIC MEMBERS

DEFERRED RETIREMENT BENEFIT

Eligibility

5 years of Accredited Service.

Benefit

Benefit computed under law in effect at termination and payable as a normal or early retirement benefit. For members hired on or before June 30, 2006, the benefit is augmented at 3.00 percent compounded annually from the 1st of the month following termination until the January 1st after turning age 55 and then augmented at 5.00 percent compounded annually from that date to July 1, 2012. For members hired after June 30, 2006, the benefit is augmented at 2.50 percent compounded annually from the 1st of the month following termination to July 1, 2012. Augmentation for all members, regardless of hire date, changed to 2.00 percent as of July 1, 2012 for the portion of benefit deferral which occurs after June 30, 2012.

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.

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 the member's death or retirement.

Benefit

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

SUMMARY OF BENEFIT PROVISIONS FOR BASIC MEMBERS**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 before July 1, 2011, with 4.00 percent accrual thereafter.

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

If the Accrued Liability Funding Ratio, based on Actuarial Value of Assets, as determined by the two consecutive and most recent actuarial valuations are:

Less than 80 percent for two consecutive years, the COLA: 1.00 percent

Between 80 percent and 90 percent for two consecutive years, the COLA: 2.00 percent

If at least 90 percent for two consecutive years, the COLA: 2.50 percent

SUMMARY OF BENEFIT PROVISIONS FOR COORDINATED MEMBERS

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>
2014	6.50%	5.50%	3.84%
2015	7.00%	6.00%	3.84%
2016	7.50%	6.25%	3.84%
2017	7.50%	6.50%	3.84%

PARTICIPANTS

Professional educators in the public schools of the City of St. Paul, excluding charter schools, whose position requires a license from the Minnesota Department of Education, 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.

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

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 ten 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 ten 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 table listed below.

Normal retirement age:	Under Age 62 or less than 30 years of service		Age 62 or older with 30 years of service	
	65	66	65	66
Age at Retirement				
55	0.5376	0.4592		
56	0.5745	0.4992		
57	0.6092	0.5370		
58	0.6419	0.5726		
59	0.6726	0.6062		
60	0.7354	0.6726		
61	0.7947	0.7354		
62	0.8507	0.7947	0.8831	0.8389
63	0.9035	0.8507	0.9246	0.8831
64	0.9533	0.9035	0.9635	0.9246
65	1.0000	0.9533	1.0000	0.9635
66		1.0000		1.0000

SUMMARY OF BENEFIT PROVISIONS FOR COORDINATED MEMBERS**DISABILITY RETIREMENT BENEFIT*****Eligibility***

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

Benefit

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

DEFERRED RETIREMENT BENEFIT***Eligibility***

Three years of Allowable Service.

Benefit

Benefit computed under law in effect at termination and payable as a normal or early retirement benefit. For members hired on or before June 30, 2006, the benefit is augmented at 3.00 percent compounded annually from the 1st of the month following termination until the January 1st after turning age 55 and then augmented at 5.00 percent compounded annually from that date to July 1, 2012. For members hired after June 30, 2006, the benefit is augmented at 2.50 percent compounded annually from the 1st of the month following termination to July 1, 2012. Augmentation for all members, regardless of hire date, changed to 2.00 percent as of July 1, 2012 for the portion of benefit deferral which occurs after June 30, 2012.

SUMMARY OF BENEFIT PROVISIONS FOR COORDINATED MEMBERS

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% 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.

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 until July 1, 2011, with 4.00 percent accrual thereafter.

NORMAL FORM OF RETIREMENT BENEFITS

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

BENEFIT INCREASES

If the Accrued Liability Funding Ratio, based on Actuarial Value of Assets, as determined by the two consecutive and most recent actuarial valuations are:

Less than 80 percent for two consecutive years, the COLA: 1.00 percent

Between 80 percent and 90 percent for two consecutive years, the COLA: 2.00 percent

If at least 90 percent for two consecutive years, the COLA: 2.50 percent

SECTION F

ACTUARIAL COST METHOD AND ACTUARIAL ASSUMPTIONS

I. ACTUARIAL METHODS

Actuarial Cost Method

Normal cost and the allocation of benefit values between service rendered before and after the valuation date were determined using an **Individual Entry-Age Actuarial Cost Method** having the following characteristics:

- (i) the annual normal cost for each individual active member, payable from the date of employment to the date of retirement, is sufficient to accumulate the value of the member's benefit at the time of retirement; and
- (ii) each annual normal cost is a constant percentage of the member's year by year projected covered pay.

Actuarial gains/(losses), as they occur, reduce (increase) the Unfunded Actuarial Accrued Liability.

Asset Value

Fair market value.

Valuation of Future COLAs

Benefit recipients receive a future annual 1.0% COLA. If the funding ratio reaches 80% for two consecutive years, the COLA will increase to 2.0%. If the funding ratio reaches 90% for two consecutive years, the COLA will increase to 2.5%.

To determine an assumption regarding a future change in the COLA, we performed a projection of liabilities and assets based on the following methods and assumptions:

- Future investment returns of 8.00%
- Liabilities and normal cost based on statutory funding assumptions
 - Discount rate of 8.00%
 - Statutory salary increases
- Open group; stable active population (new member profile based on average new members hired in recent years)
- The COLA is assumed to be 1.00% per year until the funding ratio thresholds required to pay 2.00% or 2.50% are reached

Based on these assumptions and methods, the July 1, 2016 projection indicates that this plan is expected to attain the funding ratio threshold required to pay a 2% COLA beginning January 1, 2055; and a 2.5% COLA beginning January 1, 2066. These assumptions are reflected in our calculations.

II. CURRENT ACTUARIAL ASSUMPTIONS

The assumptions were last updated for the July 1, 2013 valuation as a result of an experience study during the five-year period of July 1, 2006 to June 30, 2011, as well as a legislated change to the investment return assumption effective July 1, 2015.

A. Demographic Assumptions

Mortality:

1. Healthy Mortality*:

- a. Male: RP-2000 Combined Mortality Table for males projected with Scale AA to 2020 set back 1 year
- b. Female: RP-2000 Combined Mortality Table for females projected with Scale AA to 2020 set back 3 years

2. Disabled Mortality:

- a. Male: RP-2000 Disabled Life Mortality Table for males
- b. Female: RP-2000 Disabled Life Mortality Table for females

* *Mortality rates were adjusted to include margin for future mortality improvement as described in the table name above.*

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

<u>Age</u>	<u>Healthy Mortality</u>		<u>Disabled Mortality</u>	
	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>
20	2	1	226	75
21	2	1	226	75
22	2	1	226	75
23	3	1	226	75
24	3	1	226	75
25	3	1	226	75
26	3	1	226	75
27	3	1	226	75
28	3	2	226	75
29	4	2	226	75
30	4	2	226	75
31	4	2	226	75
32	5	2	226	75
33	5	2	226	75
34	6	3	226	75
35	6	3	226	75
36	7	3	226	75
37	8	4	226	75
38	8	4	226	75
39	9	4	226	75
40	9	4	226	75
41	9	5	226	75
42	10	5	226	75
43	10	5	226	75
44	10	6	226	75

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

<u>Age</u>	<u>Healthy Mortality</u>		<u>Disabled Mortality</u>	
	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>
45	11	6	226	75
46	12	7	238	82
47	12	8	251	90
48	13	8	264	98
49	13	9	277	106
50	14	9	290	115
51	15	10	303	125
52	17	11	316	135
53	18	12	329	145
54	19	13	342	155
55	21	15	354	165
56	25	17	367	176
57	29	20	380	187
58	33	23	393	197
59	38	27	407	208
60	43	31	420	218
61	49	35	435	229
62	57	40	450	241
63	65	46	466	253
64	76	53	483	266
65	85	60	502	280
66	96	69	522	296
67	111	78	545	313
68	124	88	569	332
69	135	99	596	353

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	2	45	5
21	2	46	5
22	2	47	5
23	2	48	5
24	2	49	5
25	2	50	10
26	2	51	10
27	2	52	10
28	2	53	10
29	2	54	10
30	3	55	20
31	3	56	20
32	3	57	20
33	3	58	20
34	3	59	20
35	3	60	40
36	3	61	40
37	3	62	40
38	3	63	40
39	3	64	40
40	3		
41	3		
42	3		
43	3		
44	3		

Rates of Termination:

Years of Service	Number of Terminations per 1,000 Active Members	
	Male	Female
0	400	400
1	180	180
2	140	140
3	100	100
4	60	67
5	50	59
6	45	51
7	41	43
8	37	35
9	33	31
10	29	27
11	25	23
12	20	19
13	20	15
14	20	13
15 & Over	20	13

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	Male Coordinated Members Not Eligible for Rule of 90 Provision	Female Coordinated Members Not Eligible for Rule of 90 Provision
55	5,000	800	3,500	3,500	700	500
56	5,000	1,300	3,500	3,500	700	500
57	4,000	1,300	3,500	3,500	700	500
58	4,000	1,800	3,500	3,500	700	500
59	3,500	1,800	3,500	3,500	700	500
60	3,500	2,000	3,500	3,500	1,100	800
61	3,500	2,000	3,500	3,500	1,500	1,100
62	3,500	4,000	3,500	3,500	1,900	1,400
63	3,500	4,000	3,500	3,500	2,300	1,900
64	4,000	4,000	3,500	4,000	2,700	2,400
65	5,000	5,000	3,500	5,000	3,100	3,500
66	3,000	5,000	3,500	5,000	3,500	3,500
67	3,000	5,000	3,500	5,000	3,500	3,500
68	3,000	5,000	3,500	5,000	3,500	3,500
69	3,000	5,000	3,500	5,000	3,500	3,500
70 & Over	10,000	10,000	10,000	10,000	10,000	10,000

B. Economic Assumptions

- Investment Return Rate: 8.00%
- Cost-of-Living Increases: 1.00% per year through 2054; 2.00% beginning 2055; 2.50% beginning 2066.
- Wage Inflation: 4.00% per annum
- Future Salary Increases: In addition to the age-based rates shown below, during the first 15 years of employment, a service-based component of $0.20\% \times (15-T)$, where T is completed years of service, is included in the salary increase used.

Annual Salary Increases

Ultimate Rate of Annual Salary Increases		Ultimate Rate of Annual Salary Increases	
Age		Age	
<22	5.90%	45	4.75%
23	5.85	46	4.70
24	5.80	47	4.65
		48	4.60
25	5.75	49	4.55
26	5.70		
27	5.65	50	4.50
28	5.60	51	4.45
29	5.55	52	4.40
		53	4.35
30	5.50	54	4.30
31	5.45		
32	5.40	55	4.25
33	5.35	56	4.20
34	5.30	57	4.15
		58	4.10
35	5.25	59	4.05
36	5.20		
37	5.15	60 & Over	4.00
38	5.10		
39	5.05		
40	5.00		
41	4.95		
42	4.90		
43	4.85		
44	4.80		

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 current projected payroll.
Allowance for Combined Service Annuity:	7.00% load on liabilities for active members hired before July 1, 1989; 2.00% load on liabilities for active members hired after June 30, 1989; and 30.00% load on liabilities for former 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 salary information were assumed to have a final average salary of \$40,000.
Decrement Timing:	Retirement and Termination: end of valuation year – consistent with retirements and terminations occurring at the end of the school year. Death and Disability: middle of valuation year.

Valuation of Future Post-Retirement Benefit Increases:	If the plan has reached the funding ratio threshold required to pay a different benefit increase, Minnesota Statutes require the benefit increase rate to be reflected in the liability calculations. If the plan has not yet reached the funding ratio threshold required to pay a benefit increase, Minnesota Statutes require a projection to be performed to determine the expected attainment of the funding ratio thresholds, and the expected payment of benefit increases must be reflected in the liability calculations.
Supplemental Contributions:	1996 legislation provides for a variable amortization aid contribution paid annually on July 15. We assumed the annual amortization aid contribution will equal \$838,000, which was the actual contribution for the most recent fiscal year. Additionally, according to 1997 legislation, annual supplemental contributions currently equal to \$2,827,000 are scheduled to be paid on October 1. According to 2014 legislation, the State of Minnesota will make annual additional supplemental contributions of \$7,000,000 on October 1. The contributions described herein will continue until the plan is 100% funded or until June 30, 2042, whichever occurs earlier.
Projected Annual Payroll Calculation:	The census data as of July 1, 2016 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. Step 1 salary level of \$44,759; and the Projected Annual Payroll for the fiscal year ending June 30, 2016 includes this replacement salary amount.

SECTION G

CALCULATION OF THE SINGLE DISCOUNT RATE

CALCULATION OF THE SINGLE DISCOUNT RATE

GASB Statement No. 67 includes a specific requirement for the discount rate that is used for the purpose of the measurement of the Total Pension Liability. This rate considers the ability of the fund to meet benefit obligations in the future. To make this determination, employer contributions, employee contributions, benefit payments, expenses and investment returns are projected into the future. The Plan Net Position (assets) in future years can then be determined and compared to its obligation to make benefit payments in those years. As long as assets are projected to be on hand in a future year, the assumed valuation discount rate is used. In years where assets are not projected to be sufficient to meet benefit payments, the use of a municipal bond rate is required, as described in the following paragraph. As in 2015, 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 8.00%; the municipal bond rate is 2.85%; and the resulting Single Discount Rate is 8.00%.

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

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

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

The **Present Values of Projected Benefit Payments** table shows the development of the Single Discount Rate (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	Employer			Supplemental Contributions	Total Contributions
				Contributions from Current Employees	Contributions for Current Employees	Contributions on Future Payroll toward Current UAL*		
0	\$ 258,787	\$ -	\$ 258,787					
1	271,781	-	271,781	\$ 20,384	\$ 27,423	\$ -	\$ 10,665	\$ 58,472
2	262,200	20,452	282,652	19,665	27,112	1,779	10,665	59,221
3	256,210	37,748	293,958	19,216	26,492	3,284	10,665	59,657
4	251,503	54,214	305,717	18,863	26,005	4,717	10,665	60,250
5	247,232	70,713	317,945	18,542	25,564	6,152	10,665	60,923
6	243,424	87,239	330,663	18,257	25,170	7,590	10,665	61,682
7	240,469	103,421	343,890	18,035	24,864	8,998	10,665	62,562
8	237,893	119,752	357,645	17,842	24,598	10,418	10,665	63,523
9	235,330	136,621	371,951	17,650	24,333	11,886	10,665	64,534
10	232,791	154,038	386,829	17,459	24,071	13,401	10,665	65,596
11	229,916	172,386	402,302	17,244	23,773	14,998	10,665	66,680
12	226,733	191,661	418,394	17,005	23,444	16,675	10,665	67,789
13	223,015	212,115	435,130	16,726	23,060	18,454	10,665	68,905
14	218,473	234,062	452,535	16,385	22,590	20,363	10,665	70,003
15	213,110	257,527	470,637	15,983	22,036	22,405	10,665	71,089
16	206,978	282,484	489,462	15,523	21,402	24,576	10,665	72,166
17	200,051	308,990	509,041	15,004	20,685	26,882	10,665	73,236
18	192,341	337,061	529,402	14,426	19,888	29,324	10,665	74,303
19	183,989	366,589	550,578	13,799	19,024	31,893	10,665	75,381
20	175,043	397,558	572,601	13,128	18,099	34,588	10,665	76,480
21	165,799	429,706	595,505	12,435	17,144	37,384	10,665	77,628
22	156,235	463,091	619,326	11,718	16,155	40,289	10,665	78,827
23	146,393	497,706	644,099	10,979	15,137	43,300	10,665	80,081
24	136,446	533,417	669,863	10,233	14,109	46,407	10,665	81,414
25	126,310	570,347	696,657	9,473	13,060	49,620	10,665	82,818
26	116,251	608,272	724,523	8,719	12,020	52,920	10,665	84,324
27	106,125	647,379	753,504	7,959	10,973	56,322	10,665	85,919
28	95,999	687,646	783,645	7,200	9,926	59,825	-	76,951
29	85,898	729,092	814,990	6,442	8,882	63,431	-	78,755
30	75,974	771,616	847,590	5,698	7,856	67,131	-	80,685
31	66,370	815,124	881,494	4,978	6,863	70,916	-	82,757
32	57,184	859,569	916,753	4,289	5,913	74,783	-	84,985
33	48,441	904,982	953,423	3,633	5,009	78,733	-	87,375
34	40,268	951,292	991,560	3,020	4,164	82,762	-	89,946
35	32,711	998,512	1,031,223	2,453	3,382	86,871	-	92,706
36	25,805	1,046,667	1,072,472	1,935	2,668	91,060	-	95,663
37	19,866	1,095,505	1,115,371	1,490	2,054	95,309	-	98,853
38	14,749	1,145,236	1,159,985	1,106	1,525	99,636	-	102,267
39	10,439	1,195,946	1,206,385	783	1,079	104,047	-	105,909
40	7,026	1,247,614	1,254,640	527	726	108,542	-	109,795
41	4,496	1,300,330	1,304,826	337	465	113,129	-	113,931
42	2,791	1,354,228	1,357,019	209	289	117,818	-	118,316
43	1,604	1,409,696	1,411,300	120	166	122,644	-	122,930
44	820	1,466,932	1,467,752	62	85	127,623	-	127,770
45	362	1,526,100	1,526,462	27	37	132,771	-	132,835
46	126	1,587,394	1,587,520	9	13	138,103	-	138,125
47	33	1,650,988	1,651,021	2	3	143,636	-	143,641
48	-	1,717,062	1,717,062	-	-	149,384	-	149,384
49	-	1,785,744	1,785,744	-	-	155,360	-	155,360
50	-	1,857,174	1,857,174	-	-	161,574	-	161,574

* Contributions related to future employees in excess of normal cost and expenses of 9.14% 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	Employer		Future Payroll toward Current UAL*	Supplemental Contributions	Total Contributions
				Contributions from Current Employees	Contributions for Current Employees			
51	\$ -	\$ 1,931,461	\$ 1,931,461	\$ -	\$ -	\$ 168,037	\$ -	\$ 168,037
52	-	2,008,719	2,008,719	-	-	174,759	-	174,759
53	-	2,089,068	2,089,068	-	-	181,749	-	181,749
54	-	2,172,631	2,172,631	-	-	189,019	-	189,019
55	-	2,259,536	2,259,536	-	-	196,580	-	196,580
56	-	2,349,918	2,349,918	-	-	204,443	-	204,443
57	-	2,443,914	2,443,914	-	-	212,621	-	212,621
58	-	2,541,671	2,541,671	-	-	221,125	-	221,125
59	-	2,643,338	2,643,338	-	-	229,970	-	229,970
60	-	2,749,071	2,749,071	-	-	239,169	-	239,169
61	-	2,859,034	2,859,034	-	-	248,736	-	248,736
62	-	2,973,396	2,973,396	-	-	258,685	-	258,685
63	-	3,092,331	3,092,331	-	-	269,033	-	269,033
64	-	3,216,025	3,216,025	-	-	279,794	-	279,794
65	-	3,344,666	3,344,666	-	-	290,986	-	290,986
66	-	3,478,452	3,478,452	-	-	302,625	-	302,625
67	-	3,617,590	3,617,590	-	-	314,730	-	314,730
68	-	3,762,294	3,762,294	-	-	327,320	-	327,320
69	-	3,912,786	3,912,786	-	-	340,412	-	340,412
70	-	4,069,297	4,069,297	-	-	354,029	-	354,029
71	-	4,232,069	4,232,069	-	-	368,190	-	368,190
72	-	4,401,352	4,401,352	-	-	382,918	-	382,918
73	-	4,577,406	4,577,406	-	-	398,234	-	398,234
74	-	4,760,502	4,760,502	-	-	414,164	-	414,164
75	-	4,950,922	4,950,922	-	-	430,730	-	430,730
76	-	5,148,959	5,148,959	-	-	447,959	-	447,959
77	-	5,354,917	5,354,917	-	-	465,878	-	465,878
78	-	5,569,114	5,569,114	-	-	484,513	-	484,513
79	-	5,791,879	5,791,879	-	-	503,893	-	503,893
80	-	6,023,554	6,023,554	-	-	524,049	-	524,049
81	-	6,264,496	6,264,496	-	-	545,011	-	545,011
82	-	6,515,076	6,515,076	-	-	566,812	-	566,812
83	-	6,775,679	6,775,679	-	-	589,484	-	589,484
84	-	7,046,706	7,046,706	-	-	613,063	-	613,063
85	-	7,328,574	7,328,574	-	-	637,586	-	637,586
86	-	7,621,717	7,621,717	-	-	663,089	-	663,089
87	-	7,926,586	7,926,586	-	-	689,613	-	689,613
88	-	8,243,649	8,243,649	-	-	717,197	-	717,197
89	-	8,573,395	8,573,395	-	-	745,885	-	745,885
90	-	8,916,331	8,916,331	-	-	775,721	-	775,721
91	-	9,272,984	9,272,984	-	-	806,750	-	806,750
92	-	9,643,904	9,643,904	-	-	839,020	-	839,020
93	-	10,029,660	10,029,660	-	-	872,580	-	872,580
94	-	10,430,846	10,430,846	-	-	907,484	-	907,484
95	-	10,848,080	10,848,080	-	-	943,783	-	943,783
96	-	11,282,003	11,282,003	-	-	981,534	-	981,534
97	-	11,733,283	11,733,283	-	-	1,020,796	-	1,020,796
98	-	12,202,615	12,202,615	-	-	1,061,627	-	1,061,627
99	-	12,690,719	12,690,719	-	-	1,104,093	-	1,104,093
100	-	13,198,348	13,198,348	-	-	1,148,256	-	1,148,256

* Contributions related to future employees in excess of normal cost and expenses of 9.14% 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 8.00%	Projected Ending Plan Net Position
	(a)	(b)	(c)	(d)	(e)	(f)=(a)+(b)-(c)-(d)+(e)
1	\$ 959,666	\$ 58,472	\$ 115,345	\$ 734	\$ 74,513	\$ 976,572
2	976,572	59,221	118,455	708	75,774	992,404
3	992,404	59,657	121,343	692	76,945	1,006,971
4	1,006,971	60,250	123,942	679	78,032	1,020,632
5	1,020,632	60,923	126,550	668	79,050	1,033,387
6	1,033,387	61,682	128,977	657	80,005	1,045,440
7	1,045,440	62,562	130,834	649	80,931	1,057,450
8	1,057,450	63,523	132,572	642	81,862	1,069,621
9	1,069,621	64,534	134,165	635	82,813	1,082,168
10	1,082,168	65,596	135,544	629	83,805	1,095,396
11	1,095,396	66,680	137,044	621	84,847	1,109,258
12	1,109,258	67,789	138,594	612	85,939	1,123,780
13	1,123,780	68,905	140,198	602	87,082	1,138,967
14	1,138,967	70,003	142,039	590	88,268	1,154,609
15	1,154,609	71,089	144,224	575	89,477	1,170,376
16	1,170,376	72,166	146,595	559	90,688	1,186,076
17	1,186,076	73,236	149,427	540	91,876	1,201,221
18	1,201,221	74,303	152,414	519	93,013	1,215,604
19	1,215,604	75,381	155,451	497	94,088	1,229,125
20	1,229,125	76,480	158,735	473	95,085	1,241,482
21	1,241,482	77,628	162,038	448	95,990	1,252,614
22	1,252,614	78,827	165,457	422	96,794	1,262,356
23	1,262,356	80,081	168,705	395	97,497	1,270,834
24	1,270,834	81,414	171,783	368	98,107	1,278,204
25	1,278,204	82,818	174,940	341	98,629	1,284,370
26	1,284,370	84,324	177,723	314	99,074	1,289,731
27	1,289,731	85,919	180,496	287	99,457	1,294,324
28	1,294,324	76,951	183,341	259	99,362	1,287,037
29	1,287,037	78,755	185,963	232	98,748	1,278,345
30	1,278,345	80,685	188,327	205	98,037	1,268,535
31	1,268,535	82,757	190,573	179	97,247	1,257,787
32	1,257,787	84,985	192,623	154	96,394	1,246,389
33	1,246,389	87,375	194,333	131	95,510	1,234,810
34	1,234,810	89,946	195,394	109	94,644	1,223,897
35	1,223,897	92,706	196,077	88	93,853	1,214,291
36	1,214,291	95,663	196,298	70	93,193	1,206,779
37	1,206,779	98,853	195,558	54	92,747	1,202,767
38	1,202,767	102,267	193,886	40	92,626	1,203,734
39	1,203,734	105,909	191,368	28	92,946	1,211,193
40	1,211,193	109,795	189,701	19	93,761	1,225,029
41	1,225,029	113,931	187,056	12	95,134	1,247,026
42	1,247,026	118,316	183,540	8	97,204	1,278,998
43	1,278,998	122,930	179,365	4	100,106	1,322,665
44	1,322,665	127,770	174,602	2	103,976	1,379,807
45	1,379,807	132,835	169,308	1	108,954	1,452,287
46	1,452,287	138,125	163,568	-	115,185	1,542,029
47	1,542,029	143,641	157,453	-	122,821	1,651,038
48	1,651,038	149,384	151,052	-	132,018	1,781,388
49	1,781,388	155,360	144,405	-	142,941	1,935,284
50	1,935,284	161,574	137,584	-	155,764	2,115,038

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 8.00%	Projected Ending Plan Net Position
	(a)	(b)	(c)	(d)	(e)	(f)=(a)+(b)-(c)-(d)+(e)
51	\$ 2,115,038	\$ 168,037	\$ 131,224	\$ -	\$ 170,648	\$ 2,322,499
52	2,322,499	174,759	124,666	-	187,766	2,560,358
53	2,560,358	181,749	117,945	-	207,332	2,831,494
54	2,831,494	189,019	111,096	-	229,577	3,138,994
55	3,138,994	196,580	104,154	-	254,746	3,486,166
56	3,486,166	204,443	97,158	-	283,103	3,876,554
57	3,876,554	212,621	90,152	-	314,929	4,313,952
58	4,313,952	221,125	83,180	-	350,528	4,802,425
59	4,802,425	229,970	76,281	-	390,224	5,346,338
60	5,346,338	239,169	69,502	-	434,364	5,950,369
61	5,950,369	248,736	62,888	-	483,321	6,619,538
62	6,619,538	258,685	56,484	-	537,496	7,359,235
63	7,359,235	269,033	50,331	-	597,319	8,175,256
64	8,175,256	279,794	44,472	-	663,253	9,073,831
65	9,073,831	290,986	38,947	-	735,795	10,061,665
66	10,061,665	302,625	33,790	-	815,481	11,145,981
67	11,145,981	314,730	29,031	-	902,887	12,334,567
68	12,334,567	327,320	24,692	-	998,639	13,635,834
69	13,635,834	340,412	20,786	-	1,103,407	15,058,867
70	15,058,867	354,029	17,313	-	1,217,920	16,613,503
71	16,613,503	368,190	14,264	-	1,342,966	18,310,395
72	18,310,395	382,918	11,625	-	1,479,398	20,161,086
73	20,161,086	398,234	9,373	-	1,628,143	22,178,090
74	22,178,090	414,164	7,475	-	1,790,203	24,374,982
75	24,374,982	430,730	5,897	-	1,966,666	26,766,481
76	26,766,481	447,959	4,603	-	2,158,712	29,368,549
77	29,368,549	465,878	3,555	-	2,367,622	32,198,494
78	32,198,494	484,513	2,716	-	2,594,781	35,275,072
79	35,275,072	503,893	2,052	-	2,841,694	38,618,607
80	38,618,607	524,049	1,531	-	3,109,988	42,251,113
81	42,251,113	545,011	1,127	-	3,401,427	46,196,424
82	46,196,424	566,812	818	-	3,717,919	50,480,337
83	50,480,337	589,484	585	-	4,061,531	55,130,767
84	55,130,767	613,063	411	-	4,434,497	60,177,916
85	60,177,916	637,586	284	-	4,839,236	65,654,454
86	65,654,454	663,089	192	-	5,278,363	71,595,714
87	71,595,714	689,613	128	-	5,754,707	78,039,906
88	78,039,906	717,197	83	-	6,271,326	85,028,346
89	85,028,346	745,885	53	-	6,831,528	92,605,706
90	92,605,706	775,721	33	-	7,438,888	100,820,282
91	100,820,282	806,750	20	-	8,097,272	109,724,284
92	109,724,284	839,020	12	-	8,810,858	119,374,150
93	119,374,150	872,580	7	-	9,584,164	129,830,887
94	129,830,887	907,484	3	-	10,422,073	141,160,441
95	141,160,441	943,783	1	-	11,329,861	153,434,084
96	153,434,084	981,534	-	-	12,313,234	166,728,852
97	166,728,852	1,020,796	-	-	13,378,355	181,128,003
98	181,128,003	1,061,627	-	-	14,531,889	196,721,519
99	196,721,519	1,104,093	-	-	15,781,037	213,606,649
100	213,606,649	1,148,256	-	-	17,133,579	231,888,484

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 ^{^(a)-5}	(g)=(e)*vf ^{^(a)-5}	(h)=(c)/(1+sdr) ^{^(a)-5}
1	\$ 959,666	\$ 115,345	\$ 115,345	\$ -	\$ 110,991	\$ -	\$ 110,991
2	976,571	118,455	118,455	-	105,540	-	105,540
3	992,404	121,343	121,343	-	100,105	-	100,105
4	1,006,971	123,942	123,942	-	94,675	-	94,675
5	1,020,632	126,550	126,550	-	89,507	-	89,507
6	1,033,388	128,977	128,977	-	84,466	-	84,466
7	1,045,441	130,834	130,834	-	79,335	-	79,335
8	1,057,451	132,572	132,572	-	74,434	-	74,434
9	1,069,623	134,165	134,165	-	69,749	-	69,749
10	1,082,169	135,544	135,544	-	65,246	-	65,246
11	1,095,398	137,044	137,044	-	61,082	-	61,082
12	1,109,260	138,594	138,594	-	57,197	-	57,197
13	1,123,781	140,198	140,198	-	53,573	-	53,573
14	1,138,968	142,039	142,039	-	50,256	-	50,256
15	1,154,611	144,224	144,224	-	47,249	-	47,249
16	1,170,377	146,595	146,595	-	44,468	-	44,468
17	1,186,077	149,427	149,427	-	41,970	-	41,970
18	1,201,223	152,414	152,414	-	39,638	-	39,638
19	1,215,605	155,451	155,451	-	37,433	-	37,433
20	1,229,127	158,735	158,735	-	35,392	-	35,392
21	1,241,485	162,038	162,038	-	33,453	-	33,453
22	1,252,618	165,457	165,457	-	31,628	-	31,628
23	1,262,360	168,705	168,705	-	29,860	-	29,860
24	1,270,837	171,783	171,783	-	28,153	-	28,153
25	1,278,208	174,940	174,940	-	26,547	-	26,547
26	1,284,374	177,723	177,723	-	24,971	-	24,971
27	1,289,735	180,496	180,496	-	23,482	-	23,482
28	1,294,329	183,341	183,341	-	22,086	-	22,086
29	1,287,042	185,963	185,963	-	20,742	-	20,742
30	1,278,351	188,327	188,327	-	19,450	-	19,450
31	1,268,541	190,573	190,573	-	18,224	-	18,224
32	1,257,791	192,623	192,623	-	17,055	-	17,055
33	1,246,392	194,333	194,333	-	15,932	-	15,932
34	1,234,814	195,394	195,394	-	14,833	-	14,833
35	1,223,902	196,077	196,077	-	13,782	-	13,782
36	1,214,296	196,298	196,298	-	12,775	-	12,775
37	1,206,785	195,558	195,558	-	11,784	-	11,784
38	1,202,774	193,886	193,886	-	10,818	-	10,818
39	1,203,741	191,368	191,368	-	9,887	-	9,887
40	1,211,200	189,701	189,701	-	9,075	-	9,075
41	1,225,036	187,056	187,056	-	8,285	-	8,285
42	1,247,032	183,540	183,540	-	7,527	-	7,527
43	1,279,004	179,365	179,365	-	6,811	-	6,811
44	1,322,671	174,602	174,602	-	6,139	-	6,139
45	1,379,812	169,308	169,308	-	5,512	-	5,512
46	1,452,292	163,568	163,568	-	4,931	-	4,931
47	1,542,036	157,453	157,453	-	4,395	-	4,395
48	1,651,045	151,052	151,052	-	3,904	-	3,904
49	1,781,396	144,405	144,405	-	3,456	-	3,456
50	1,935,292	137,584	137,584	-	3,049	-	3,049

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^(a)-.5	(g)=(e)*vf^(a)-.5	(h)=(c)/(1+sdr)^(a)-.5
51	\$ 2,115,046	\$ 131,224	\$ 131,224	\$ -	\$ 2,692	\$ -	\$ 2,692
52	2,322,508	124,666	124,666	-	2,368	-	2,368
53	2,560,366	117,945	117,945	-	2,075	-	2,075
54	2,831,502	111,096	111,096	-	1,809	-	1,809
55	3,139,002	104,154	104,154	-	1,571	-	1,571
56	3,486,174	97,158	97,158	-	1,357	-	1,357
57	3,876,562	90,152	90,152	-	1,166	-	1,166
58	4,313,960	83,180	83,180	-	996	-	996
59	4,802,434	76,281	76,281	-	846	-	846
60	5,346,347	69,502	69,502	-	713	-	713
61	5,950,378	62,888	62,888	-	598	-	598
62	6,619,547	56,484	56,484	-	497	-	497
63	7,359,245	50,331	50,331	-	410	-	410
64	8,175,266	44,472	44,472	-	335	-	335
65	9,073,842	38,947	38,947	-	272	-	272
66	10,061,676	33,790	33,790	-	219	-	219
67	11,145,991	29,031	29,031	-	174	-	174
68	12,334,579	24,692	24,692	-	137	-	137
69	13,635,845	20,786	20,786	-	107	-	107
70	15,058,878	17,313	17,313	-	82	-	82
71	16,613,514	14,264	14,264	-	63	-	63
72	18,310,405	11,625	11,625	-	47	-	47
73	20,161,096	9,373	9,373	-	35	-	35
74	22,178,101	7,475	7,475	-	26	-	26
75	24,374,992	5,897	5,897	-	19	-	19
76	26,766,491	4,603	4,603	-	14	-	14
77	29,368,559	3,555	3,555	-	10	-	10
78	32,198,504	2,716	2,716	-	7	-	7
79	35,275,082	2,052	2,052	-	5	-	5
80	38,618,618	1,531	1,531	-	3	-	3
81	42,251,124	1,127	1,127	-	2	-	2
82	46,196,435	818	818	-	2	-	2
83	50,480,347	585	585	-	1	-	1
84	55,130,778	411	411	-	1	-	1
85	60,177,927	284	284	-	-	-	-
86	65,654,465	192	192	-	-	-	-
87	71,595,726	128	128	-	-	-	-
88	78,039,918	83	83	-	-	-	-
89	85,028,358	53	53	-	-	-	-
90	92,605,718	33	33	-	-	-	-
91	100,820,294	20	20	-	-	-	-
92	109,724,295	12	12	-	-	-	-
93	119,374,162	7	7	-	-	-	-
94	129,830,900	3	3	-	-	-	-
95	141,160,453	1	1	-	-	-	-
96	153,434,096	-	-	-	-	-	-
97	166,728,863	-	-	-	-	-	-
98	181,128,014	-	-	-	-	-	-
99	196,721,531	-	-	-	-	-	-
100	213,606,660	-	-	-	-	-	-
Totals	\$ 1,809,509	\$ -	\$ 1,809,509	\$ -	\$ 1,809,509	\$ -	\$ 1,809,509

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

GLOSSARY OF TERMS

GLOSSARY OF TERMS

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

<i>Amortization Payment</i>	The amortization payment is the periodic payment required to pay off an interest-discounted amount with payments of interest and principal.
<i>Amortization Method</i>	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).
<i>Cost-of-Living Adjustments</i>	Postemployment benefit changes intended to adjust benefit payments for the effects of inflation.
<i>Cost-Sharing Multiple-Employer Defined Benefit Pension Plan (cost-sharing pension plan)</i>	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.
<i>Covered-Employee Payroll</i>	The payroll of employees that are provided with pensions through the pension plan.
<i>Deferred Retirement Option Program (DROP)</i>	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.
<i>Deferred Inflows and Outflows</i>	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.
<i>Discount Rate</i>	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"> 1. The benefit payments to be made while the pension plans' fiduciary net position is projected to be greater than the benefit payments that are projected to be made in the period; and 2. The present value of the benefit payments not in (1) above, discounted using the municipal bond rate.

GLOSSARY OF TERMS

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

<i>Other Postemployment Benefits (OPEB)</i>	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 post-employment benefits do not include termination benefits.
<i>Real Rate of Return</i>	The real rate of return is the rate of return on an investment after adjustment to eliminate inflation.
<i>Service Cost</i>	The service cost is the portion of the actuarial present value of projected benefit payments that is attributed to a valuation year.
<i>Total Pension Expense</i>	The total pension expense is the sum of the following items that are recognized at the end of the employer's fiscal year: <ol style="list-style-type: none"> 1. Service Cost 2. Interest on the Total Pension Liability 3. Current-Period Benefit Changes 4. Employee Contributions (made negative for addition here) 5. Projected Earnings on Plan Investments (made negative for addition here) 6. Pension Plan Administrative Expense 7. Other Changes in Plan Fiduciary Net Position 8. Recognition of Outflow (Inflow) of Resources due to Liabilities 9. Recognition of Outflow (Inflow) of Resources due to Assets
<i>Total Pension Liability (TPL)</i>	The TPL is the portion of the actuarial present value of projected benefit payments that is attributed to past periods of member service.
<i>Unfunded Actuarial Accrued Liability (UAAL)</i>	The UAAL is the difference between actuarial accrued liability and valuation assets.
<i>Valuation Assets</i>	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.