

Public Employees Retirement Association of Minnesota

Public Employees Police and Fire Plan

GASB Statements No. 67 and No. 68 Accounting and
Financial Reporting for Pensions

June 30, 2019





November 14, 2019

Public Employees Retirement Association of Minnesota
Public Employees Police and Fire Plan
St. Paul, Minnesota

Dear Trustees of the Public Employees Police and Fire Plan:

This report provides accounting and financial reporting information that is intended to comply with the Governmental Accounting Standards Board (GASB) Statements No. 67 and No. 68 for the Public Employees Police and Fire Plan ("PEPFP"), as amended by Statement No. 82. These calculations have been made on a basis that is consistent with our understanding of these accounting standards.

GASB Statement No. 67 is the accounting standard that applies to the financial reports issued by retirement systems. GASB Statement No. 68 establishes accounting and financial reporting for state and local government employers who provide their employees (including former employees) pension benefits through a trust. GASB Statement No. 82 is an amendment to Statements No. 67, No. 68, and No. 73, intended to improve consistency in the application of the accounting standards.

Our calculation of the liability associated with the benefits described in this report was performed for the purpose of providing reporting and disclosure information that satisfies the requirements of GASB Statements No. 67 and No. 68. The Net Pension Liability is not an appropriate measure for measuring the sufficiency of plan assets to cover the estimated cost of settling the employer's benefit obligations. The Net Pension Liability is not an appropriate measure for assessing the need for or amount of future employer contributions. The calculation of the plan's liability for this report may not be applicable for purposes of funding the plan. A calculation of the plan's liability for purposes other than satisfying the requirements of GASB Statements No. 67 and No. 68 may produce significantly different results. The information in this report is calculated on a total plan basis. PERA 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 Public Employees Retirement Association (PERA) only in its entirety and only with the permission of PERA. GRS is not responsible for unauthorized use of this report.

This report is based upon information, furnished to us by PERA, 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.

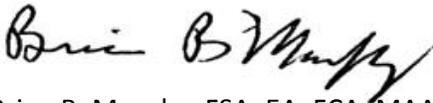
This report complements the actuarial valuation report for funding purposes that was or will be provided to the Plan and should be considered in conjunction with that report. Please see the actuarial valuation report as of June 30, 2019 for additional discussion of the nature of actuarial calculations 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 fairly represents the actuarial position of the Public Employees Police and Fire Plan as of the measurement date. All calculations have been made in conformity with generally accepted actuarial principles and practices as well as with the Actuarial Standards of Practice issued by the Actuarial Standards Board.

The signing actuaries are independent of the plan sponsor.

Brian B. Murphy and Bonita J. Wurst 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,



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



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



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SECTION A

EXECUTIVE SUMMARY

Executive Summary

as of June 30, 2019 (Dollars in Thousands)

	2019
Actuarial Valuation Date	June 30, 2019
Measurement Date of the Net Pension Liability	June 30, 2019
Employer's Fiscal Year Ending Date (Reporting Date)	Varies by Employer

Membership

Number of	
- Service Retirements	7,718
- Survivors	1,900
- Disability Retirements	1,413
- Deferred Retirements	1,620
- Terminated other non-vested	1,145
- Active Members	<u>11,763</u>
- Total	25,559
Covered Payroll	\$ 1,011,421

Net Pension Liability

Total Pension Liability	\$ 9,909,153
Plan Fiduciary Net Position	<u>\$ 8,844,552</u>
Net Pension Liability	\$ 1,064,601
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	89.26%
Net Pension Liability as a Percentage of Covered Payroll	105.26%

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 for which projected benefit payments are fully funded	2119

Total Pension Expense/ (Income) \$ 205,906

Deferred Outflows and Inflows by Source Arising from Current and Prior Periods to be Recognized in Future Pension Expenses

	Deferred Outflows of Resources	Deferred Inflows of Resources
Difference between expected and actual experience	\$ 45,203	\$ 162,043
Changes in assumptions	\$ 883,450	\$ 1,195,219
Net difference between projected and actual earnings on pension plan investments	<u>\$ 130,040</u>	<u>\$ 351,770</u>
Total	<u>\$ 1,058,693</u>	<u>\$ 1,709,032</u>

* 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.

Discussion

Accounting Standard

For pension plans that are administered through trusts or equivalent arrangements, Governmental Accounting Standards Board (GASB) Statement No. 67, *Financial Reporting for Pension Plans* establishes standards of financial reporting for separately issued financial reports and specifies the required approach for measuring the pension liability. Similarly, GASB Statement No. 68, *Accounting and Financial Reporting for Pensions* establishes standards for state and local government employers (as well as non-employer contributing entities) to account for and disclose the net pension liability, pension expense, and other information associated with providing retirement benefits to their employees (and former employees) on their basic financial statements. Governmental Accounting Standards Board (GASB) Statement No. 82, *Pension Issues*, is an amendment to Statements No. 67, No. 68, and No. 73, intended to improve consistency in the application of the accounting standards.

The following discussion provides a summary of the information that is required to be disclosed under these accounting standards. A number of these disclosure items are provided in this report. However, certain information, such as notes regarding accounting policies and investments, is not included in this report and the retirement system and/or plan sponsor will be responsible for preparing and disclosing that information to comply with these accounting standards.

Financial Statements

GASB Statement No. 68 requires state and local governmental employers to recognize the net pension liability and the pension expense on their financial statements. The net pension liability is the difference between the total pension liability and the plan's fiduciary net position. In traditional actuarial terms, this is analogous to the accrued liability less the market value of assets (not the smoothed actuarial value of assets that is often encountered in actuarial valuations performed to determine the employer's contribution requirement).

Paragraph 57 of GASB Statement No. 68 states, "Contributions to the pension plan from the employer subsequent to the measurement date of the collective net pension liability and before the end of the employer's reporting period should be reported as a deferred outflow of resources related to pensions." The information contained in this report does not incorporate any contributions made to PEPFP 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 to the employer's financial statements to disclose the total pension expense, the pension plan's liabilities and assets, and deferred outflows and inflows of resources related to pensions.

Both GASB Statements No. 67 and No. 68 require the notes to the financial statements for the employers and pension plans to include certain descriptive information about the pension plans through which the pension benefits are provided. The list of disclosure items should include:

- a description of benefits provided by the plan;
- the classes of employees and number of members covered by the pension plan;
- a description of the plan's funding policy, which includes member and employer contribution requirements;
- the pension plan's investment policies;
- the pension plan's fiduciary net position, net pension liability, and the pension plan's fiduciary net position as a percentage of the total pension liability;
- the net pension liability using a discount rate that is 1% higher and 1% lower than the current discount rate used to calculate the total pension liability and net pension liability for financial reporting purposes;
- significant assumptions and methods used to calculate the total pension liability;
- inputs to the discount rates; and
- certain information about mortality assumptions and the dates of experience studies.

Retirement systems that issue stand-alone financial statements are required to disclose additional information in accordance with GASB Statement No. 67. This information includes:

- the composition of the pension plan's Board and the authority under which benefit terms may be amended;
- a description of how fair value is determined;
- information regarding certain reserves and investments, which include concentrations of investments greater than or equal to 5%, receivables, and insurance contracts excluded from plan assets; and
- annual money-weighted rate of return.

Required Supplementary Information

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

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

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.

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.

Limitations of Funded Status Measurements

Unless otherwise indicated, a funded status measurement presented in this report is based upon the actuarial accrued liability and the market value of assets. Unless otherwise indicated, with regard to any funded status measurements presented in this report:

- (1) The measurement is inappropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations, in other words, of transferring the obligations to an unrelated third party in an arm's length market value type transaction.
- (2) The measurement is dependent upon the actuarial cost method which, in combination with the plan's amortization policy, affects the timing and amounts of future contributions. The amounts of future contributions will most certainly differ from those assumed in this report due to future actual experience differing from assumed experience based upon the actuarial assumptions. A funded status measurement in this report of 100% is not synonymous with no required future contributions. If the funded status were 100%, the plan would still require future normal cost contributions (i.e., contributions to cover the cost of the active membership accruing an additional year of service credit).
- (3) The measurement would produce a different result if the actuarial value of assets were used instead of the market value of assets.

Limitation of Project Scope

Actuarial standards do not require the actuary to evaluate the ability of the plan sponsor or other contributing entity to make required contributions to the plan when due. Such an evaluation was not within the scope of this project and is not within the actuary's domain of expertise. Consequently, the actuary performed no such evaluation.

Single Discount Rate

Projected benefit payments are required to be discounted to their actuarial present values using a single discount rate that reflects (1) a long-term expected rate of return on pension plan investments (to the extent that the plan's fiduciary net position is projected to be sufficient to pay benefits) and (2) tax-exempt municipal bond rate based on an index of 20-year general obligation bonds with an average AA credit rating as of the measurement date (to the extent that the contributions for use with the long-term expected rate of return are not met).

For the purpose of this valuation, the long-term expected rate of return on pension plan investments is 7.50%; the municipal bond rate is 3.13% (based on the weekly rate closest to but not later than the measurement date of the Fidelity "20-Year Municipal GO AA Index") and the resulting single discount rate is 7.50%.

SECTION B

FINANCIAL STATEMENTS

Statement of Pension Expense under GASB Statement No. 68

Fiscal Year Ended June 30, 2019 (Dollars in Thousands)

A. Expense

1. Service Cost	\$	209,098
2. Interest on the Total Pension Liability	\$	703,640
3. Current-Period Benefit Changes	\$	-
4. Employee Contributions (made negative for addition here)	\$	(111,762)
5. Projected Earnings on Plan Investments (made negative for addition here)	\$	(627,073)
6. Pension Plan Administrative Expense	\$	1,018
7. Other Changes in Plan Fiduciary Net Position	\$	(54)
8. Recognition of Outflow (Inflow) of Resources due to differences between expected and actual experience in the measurement of the Total Pension Liability <i>Arising from Current Reporting Period</i>	\$	2,415
9. Recognition of Outflow (Inflow) of Resources due to assumption changes <i>Arising from Current Reporting Period</i>	\$	(3,316)
10. Recognition of Outflow (Inflow) of Resources due to the difference between projected (7.50%) and actual earnings on Pension Plan Investments <i>Arising from Current Reporting Period</i>	\$	3,512
11. Increase/(Decrease) from Experience in the Current Reporting Period	\$	177,478
12. Recognition of Outflow (Inflow) of Resources due to differences between expected and actual experience in the measurement of the Total Pension Liability <i>Arising from Prior Reporting Periods</i>	\$	(89,310)
13. Recognition of Outflow (Inflow) of Resources due to assumption changes <i>Arising from Prior Reporting Periods</i>	\$	105,213
14. Recognition of Outflow (Inflow) of Resources due to the difference between projected and actual earnings on Pension Plan Investments <i>Arising from Prior Reporting Periods</i>	\$	12,525
15. Total Pension Expense / (Income)	\$	205,906

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	\$ 14,491
2. Assumption Changes (gains) or losses	\$ (19,898)
3. Recognition period for Liabilities: Average of the expected remaining service lives of all employees {in years}	6.0000
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	\$ 2,415
5. Outflow (Inflow) of Resources to be recognized in the current pension expense for Assumption Changes	<u>\$ (3,316)</u>
6. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Liabilities	\$ (901)
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	\$ 12,076
8. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses for Assumption Changes	<u>\$ (16,582)</u>
9. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Liabilities	\$ (4,506)

B. Outflows (Inflows) of Resources due to Assets

1. Net difference between projected and actual earnings on pension plan investments (gains) or losses	17,561
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	3,512
4. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Assets	14,049

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 of Resources
1. Due to Liabilities	\$ 508,268	\$ 493,266	\$ 15,002
2. Due to Assets	168,995	152,958	16,037
3. Total	\$ 677,263	\$ 646,224	\$ 31,039

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

	Outflows of Resources	Inflows of Resources	Net Outflows of Resources
1. Differences between expected and actual experience	\$ 12,553	\$ 99,448	\$ (86,895)
2. Assumption Changes	495,715	393,818	101,897
3. Net Difference between projected and actual earnings on pension plan investments	168,995	152,958	16,037
4. Total	\$ 677,263	\$ 646,224	\$ 31,039

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 of Resources
1. Differences between expected and actual experience	\$ 45,203	\$ 162,043	\$ (116,840)
2. Assumption Changes	883,450	1,195,219	(311,769)
3. Net Difference between projected and actual earnings on pension plan investments	130,040	351,770	(221,730)
4. Total	\$ 1,058,693	\$ 1,709,032	\$ (650,339)

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

Year Ending June 30	Net Deferred Outflows of Resources
2020	\$ (72,746)
2021	(151,882)
2022	(423,907)
2023	(903)
2024	(901)
Thereafter	0
Total	\$ (650,339)

Recognition of Deferred Outflows and Inflows of Resources Fiscal Year Ended June 30, 2019 (Dollars in Thousands)

Year Established	Initial Amount	Initial Recognition Period	Current Year Recognition	Remaining Recognition	Remaining Recognition Period
Deferred Outflow (Inflow) Due to Differences Between Expected and Actual Experience on Liabilities					
2014	\$ 1,813	6.0000	\$ 303	\$ 0	0.0000
2015	(221,112)	6.0000	(36,852)	(36,852)	1.0000
2016	(375,575)	6.0000	(62,596)	(125,191)	2.0000
2017	37,292	6.0000	6,215	18,647	3.0000
2018	21,720	6.0000	3,620	14,480	4.0000
2019	14,491	6.0000	2,415	12,076	5.0000
Total			\$ (86,895)	\$ (116,840)	
Deferred Outflow (Inflow) Due to Assumption Changes					
2014	\$ 323,945	6.0000	\$ 53,990	\$ 0	0.0000
2015	0	6.0000	0	0	1.0000
2016	2,650,350	6.0000	441,725	883,450	2.0000
2017	(2,300,201)	6.0000	(383,367)	(1,150,100)	3.0000
2018	(42,807)	6.0000	(7,135)	(28,537)	4.0000
2019	(19,898)	6.0000	(3,316)	(16,582)	5.0000
Total			\$ 101,897	\$ (311,769)	
Deferred Outflow (Inflow) Due to Differences Between Projected and Actual Earnings on Plan Investments					
2015	\$ 247,462	5.0000	\$ 49,493	\$ 0	0.0000
2016	579,951	5.0000	115,990	115,991	1.0000
2017	(535,516)	5.0000	(107,103)	(214,207)	2.0000
2018	(229,273)	5.0000	(45,855)	(137,563)	3.0000
2019	17,561	5.0000	3,512	14,049	4.0000
Total			\$ 16,037	\$ (221,730)	

Statement of Fiduciary Net Position (Dollars in Thousands)

Assets in Trust	Market Value	
	June 30, 2019	June 30, 2018
Cash, Equivalents, Short Term Securities	\$ 246,498	\$ 90,015
Fixed Income	\$ 1,798,789	\$ 2,060,635
Equity	\$ 5,499,553	\$ 5,150,491
SBI Alternative	\$ 1,286,444	\$ 1,172,591
Other	\$ -	\$ -
Total Assets in Trust	\$ 8,831,284	\$ 8,473,732
Assets Receivable	\$ 19,164 *	\$ 18,731 *
Amounts Payable	\$ (5,896)	\$ (5,556)
Net Position Restricted for Pensions	\$ 8,844,552	\$ 8,486,907

* Includes \$7.679 million contribution receivable (\$13.648 million in 2018) from Minneapolis to be paid July 15.

Statement of Changes in Fiduciary Net Position (Dollars in Thousands)

Change in Assets	Market Value	
	June 30, 2019	June 30, 2018
Year Ending		
1. Fund balance at market value at beginning of year	\$ 8,486,907	\$ 7,918,879
2. Contributions		
a. Member	\$ 111,762	\$ 105,479
b. Employer	\$ 174,817 *	\$ 170,781 *
c. Other sources	\$ 13,500	\$ 9,000
d. Total contributions	\$ 300,079	\$ 285,260
3. Investment income		
a. Investment income/(loss)	\$ 617,935	\$ 822,887
b. Investment expenses	\$ (8,423)	\$ (8,921)
c. Net subtotal	\$ 609,512	\$ 813,966
4. Other	\$ 54	\$ 58
5. Total additions: (2.d.) + (3.c.) + (4.)	\$ 909,645	\$ 1,099,284
6. Benefits Paid		
a. Annuity benefits	\$ (547,699)	\$ (528,468)
b. Refunds	\$ (3,283)	\$ (1,902)
c. Total benefits paid	\$ (550,982)	\$ (530,370)
7. Expenses		
a. Other	\$ -	\$ -
b. Administrative	\$ (1,018)	\$ (886)
c. Total expenses	\$ (1,018)	\$ (886)
8. Total deductions: (6.c.) + (7.c.)	\$ (552,000)	\$ (531,256)
9. Net increase (decrease) in net position: (5) + (8)	\$ 357,645	\$ 568,028
10. Net position restricted for pensions	\$ 8,844,552	\$ 8,486,907
11. Approximate return on market value of assets	7.3%	10.4%

* Includes \$7.679 million contribution receivable (\$13.648 million in 2018) from Minneapolis to be paid July 15.

SECTION C

REQUIRED SUPPLEMENTARY INFORMATION

Schedule of Changes in Net Pension Liability and Related Ratios

Current Period

Fiscal Year Ended June 30, 2019 (Dollars in Thousands)

A. Total pension liability	
1. Service cost	\$ 209,098
2. Interest on the total pension liability	\$ 703,640
3. Changes of benefit terms	\$ -
4. Difference between expected and actual experience of the total pension liability	\$ 14,491
5. Changes of assumptions	\$ (19,898)
6. Benefit payments, including refunds of employee contributions	\$ (550,982)
7. Net change in total pension liability	\$ 356,349
8. Total pension liability – beginning	\$ 9,552,804
9. Total pension liability – ending	<u>\$ 9,909,153</u>
B. Plan fiduciary net position	
1. Contributions – employer	\$ 188,317
2. Contributions – employee	\$ 111,762
3. Net investment income	\$ 609,512
4. Benefit payments, including refunds of employee contributions	\$ (550,982)
5. Pension Plan Administrative Expense	\$ (1,018)
6. Other	\$ 54
7. Net change in plan fiduciary net position	\$ 357,645
8. Plan fiduciary net position – beginning	\$ 8,486,907
9. Plan fiduciary net position – ending	<u>\$ 8,844,552</u>
C. Net pension liability	<u>\$ 1,064,601</u>
D. Plan fiduciary net position as a percentage of the total pension liability	89.26%
E. Covered-employee payroll*	\$ 1,011,421
F. Net pension liability as a percentage of covered-employee payroll	105.26%

*Assumed equal to actual member contributions divided by employee contribution rate.

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
Total Pension Liability										
Service Cost	\$ 209,098	\$ 203,131	\$ 318,401	\$ 194,352	\$ 187,959	\$ 169,124				
Interest on the Total Pension Liability	\$ 703,640	\$ 682,903	\$ 616,740	\$ 658,198	\$ 648,233	\$ 598,165				
Benefit Changes	\$ -	\$ (50,771)	\$ -	\$ -	\$ -	\$ -				
Difference between Expected and Actual Experience	\$ 14,491	\$ 21,720	\$ 37,292	\$ (375,575)	\$ (221,112)	\$ 1,813				
Assumption Changes	\$ (19,898)	\$ (42,807)	\$ (2,300,201)	\$ 2,650,350	\$ -	\$ 323,945				
Benefit Payments	\$ (547,699)	\$ (528,468)	\$ (512,379)	\$ (498,608)	\$ (481,330)	\$ (452,462)				
Refunds	\$ (3,283)	\$ (1,902)	\$ (2,119)	\$ (2,391)	\$ (1,953)	\$ (1,633)				
Net Change in Total Pension Liability	\$ 356,349	\$ 283,806	\$ (1,842,266)	\$ 2,626,326	\$ 131,797	\$ 638,952				
Total Pension Liability - Beginning	\$ 9,552,804	\$ 9,268,998	\$ 11,111,264	\$ 8,484,938	\$ 8,353,141	\$ 7,714,189				
Total Pension Liability - Ending (a)	\$ 9,909,153	\$ 9,552,804	\$ 9,268,998	\$ 11,111,264	\$ 8,484,938	\$ 8,353,141				
Plan Fiduciary Net Position										
Employer Contributions	\$ 188,317	\$ 179,781	\$ 175,329	\$ 165,065	\$ 153,317	\$ 141,632				
Employee Contributions	\$ 111,762	\$ 105,479	\$ 101,984	\$ 95,172	\$ 88,733	\$ 81,213				
Pension Plan Net Investment Income	\$ 609,512	\$ 813,966	\$ 1,058,942	\$ (8,949)	\$ 317,556	\$ 1,158,389				
Benefit Payments	\$ (547,699)	\$ (528,468)	\$ (512,379)	\$ (498,608)	\$ (481,330)	\$ (452,462)				
Refunds	\$ (3,283)	\$ (1,902)	\$ (2,119)	\$ (2,391)	\$ (1,953)	\$ (1,633)				
Pension Plan Administrative Expense	\$ (1,018)	\$ (886)	\$ (992)	\$ (906)	\$ (803)	\$ (798)				
Other	\$ 54	\$ 58	\$ 24	\$ 3	\$ 84	\$ 18				
Net Change in Plan Fiduciary Net Position	\$ 357,645	\$ 568,028	\$ 820,789	\$ (250,614)	\$ 75,604	\$ 926,359				
Plan Fiduciary Net Position - Beginning	\$ 8,486,907	\$ 7,918,879	\$ 7,098,090	\$ 7,348,704	\$ 7,273,100	\$ 6,346,741				
Plan Fiduciary Net Position - Ending (b)	\$ 8,844,552	\$ 8,486,907	\$ 7,918,879	\$ 7,098,090	\$ 7,348,704	\$ 7,273,100				
Net Pension Liability - Ending (a) - (b)	\$ 1,064,601	\$ 1,065,897	\$ 1,350,119	\$ 4,013,174	\$ 1,136,234	\$ 1,080,041				
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	89.26 %	88.84 %	85.43 %	63.88 %	86.61 %	87.07 %				
Covered Employee Payroll	\$ 1,011,421	\$ 976,657	\$ 944,296	\$ 881,222	\$ 845,076	\$ 820,333				
Net Pension Liability as a Percentage of Covered Employee Payroll	105.26 %	109.14 %	142.98 %	455.41 %	134.45 %	131.66 %				

Notes to Schedule:

N/A

Schedules of Required Supplementary Information

Schedule of the Net Pension Liability Multiyear (Dollars in Thousands)

Last 10 Fiscal Years (which may be built prospectively)

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	\$ 8,353,141	\$ 7,273,100	\$ 1,080,041	87.07%	\$ 820,333	131.66%
2015	\$ 8,484,938	\$ 7,348,704	\$ 1,136,234	86.61%	\$ 845,076	134.45%
2016	\$ 11,111,264	\$ 7,098,090	\$ 4,013,174	63.88%	\$ 881,222	455.41%
2017	\$ 9,268,998	\$ 7,918,879	\$ 1,350,119	85.43%	\$ 944,296	142.98%
2018	\$ 9,552,804	\$ 8,486,907	\$ 1,065,897	88.84%	\$ 976,657	109.14%
2019	\$ 9,909,153	\$ 8,844,552	\$ 1,064,601	89.26%	\$ 1,011,421	105.26%

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
2010	\$ 150,220	\$ 107,066	\$ 43,154	\$ 740,101	14.47%
2011	\$ 124,284	\$ 109,604	\$ 14,680	\$ 775,806	14.13
2012	\$ 152,369	\$ 121,891	\$ 30,478	\$ 794,417	15.34
2013	\$ 189,254	\$ 125,995	\$ 63,259	\$ 796,188	15.82
2014	\$ 163,985	\$ 141,632	\$ 22,353	\$ 820,333	17.27
2015	\$ 197,325	\$ 153,317	\$ 44,008	\$ 845,076	18.14
2016	\$ 189,375	\$ 165,065	\$ 24,310	\$ 881,222	18.73
2017	\$ 165,252	\$ 175,329	\$ (10,077)	\$ 944,296	18.57
2018	\$ 193,183	\$ 179,781	\$ 13,402	\$ 976,657	18.41
2019	\$ 173,459	\$ 188,317	\$ (14,858)	\$ 1,011,421	18.62

Notes to Schedule of Contributions

Methods and Assumptions Used to Determine Contribution Rates for Fiscal Year Ending June 30, 2019:

Valuation Date	June 30, 2018
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.
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	2.50%
Payroll Growth	3.25%
Salary Increases	3.25% to 12.25% including inflation
Investment Rate of Return	7.50%
Retirement Age	Experience-based table of rates that are specific to the type of eligibility condition. Last updated for the 2017 valuation pursuant to an experience study of the period 2011 - 2015.
Mortality	RP-2014 annuitant generational mortality table projected with mortality improvement scale MP-2017, from a base year of 2006. Male rates adjusted by a factor of 0.96.

Other Information:

Notes	The plan is assumed to pay a 1.00% post retirement benefit increase for all future years. See separate funding report as of July 1, 2018 for additional detail.
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Schedule of Investment Returns Multiyear

Last 10 Fiscal Years

<u>FY Ending June 30,</u>	<u>Annual Return¹</u>
2010	
2011	
2012	
2013	
2014	
2015	
2016	
2017	
2018	
2019	

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

It is our understanding that this exhibit will be prepared by PERA with assistance from the State Board of Investment. Please provide a copy of the final exhibit for our files.

SECTION D

ADDITIONAL FINANCIAL STATEMENT DISCLOSURES

Asset Allocation

Long-Term Expected Return on Plan Assets

The long-term expected rate of return on pension plan investments was determined using a building-block method. Estimates for expected future real rates of return (expected returns, net of inflation) were developed for each asset class using both long-term historical returns and long-term capital market expectation from a number of investment management and consulting organizations. The asset class estimates and the target allocations were then combined to produce a geometric, long-term expected rate of return for the portfolio. Inflation expectations were applied to derive the nominal rate of return for the portfolio. For each major asset class that is included in the pension fund's target asset allocation as of June 30, 2019, these estimates are summarized in the following table:

<u>Asset Class</u>	<u>Target Allocation</u>	<u>Long-Term Expected Real Rate of Return (geometric)</u>
Domestic Equity	36%	5.10%
International Equity	17%	5.30%
Private Markets	25%	5.90%
Fixed Income	20%	0.75%
Unallocated Cash	2%	0.00%
Total	<u>100%</u>	

The Minnesota State Board of Investment (SBI) compiled this data and the related investment notes and provided it to PERA for GASB compliance purposes. PERA furnished this information to us for inclusion within this report. We did not audit this information. We are not responsible for its accuracy or completeness.

For purposes of this valuation, the long-term expected rate of return assumption is 7.50%. This assumption is based on reviews of inflation and investment return assumptions in our experience study report for the General Employees Retirement Plan dated June 27, 2019.

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% and the municipal bond rate of 3.13%. The projection of cash flows used to determine this single discount rate assumed that plan member and employer contributions will be made at the current statutory rates. Based on these assumptions, the pension plan's fiduciary net position and future contributions were sufficient to finance 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 1-percentage-point lower or 1-percentage-point higher:

Sensitivity of Net Pension Liability to the Single Discount Rate Assumption

(Dollars in Thousands)

	1% Decrease	Current Single Discount	1% Increase
	6.50%	Rate Assumption	8.50%
		7.50%	
Total Pension Liability	\$ 11,171,572	\$ 9,909,153	\$ 8,865,153
Net Position Restricted for Pensions	\$ 8,844,552	\$ 8,844,552	\$ 8,844,552
Net Pension Liability	\$ 2,327,020	\$ 1,064,601	\$ 20,601

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

GASB Statement No. 68 Reconciliation (Dollars in Thousands)

Current Reporting Period

	Total Pension Liability (a)	Plan Fiduciary Net Position (b)	Net Pension Liability (a) - (b)	Current Period		Pension Expense*
				Deferred Outflows	Deferred Inflows	
Balance Beginning of Year	\$ 9,552,804	\$ 8,486,907	\$ 1,065,897			
Changes for the Year:						
Service Cost	\$ 209,098		\$ 209,098			\$ 209,098
Interest on Total Pension Liability	\$ 703,640		\$ 703,640			\$ 703,640
Interest on Fiduciary Net Position		\$ 627,073	\$ (627,073)			\$ (627,073)
Changes in Benefit Terms	\$ -		\$ -			\$ -
Liability Experience Gains and Losses	\$ 14,491		\$ 14,491	\$ 12,076	\$ -	\$ 2,415
Changes in Assumptions	\$ (19,898)		\$ (19,898)	\$ -	\$ 16,582	\$ (3,316)
Contributions - Employer		\$ 188,317	\$ (188,317)			
Contributions - Employees		\$ 111,762	\$ (111,762)			\$ (111,762)
Asset Gain/(Loss)		\$ (17,561)	\$ 17,561	\$ 14,049	\$ -	\$ 3,512
Benefit Payouts	\$ (550,982)	\$ (550,982)				
Administrative Expenses		\$ (1,018)	\$ 1,018			\$ 1,018
Other		\$ 54	\$ (54)			\$ (54)
Net Changes	\$ 356,349	\$ 357,645	\$ (1,296)	\$ 26,125	\$ 16,582	\$ 177,478
Balance End of Year	\$ 9,909,153	\$ 8,844,552	\$ 1,064,601			

* Pension Expense from Experience in the Current Reporting Period.

GASB Statement No. 68 Reconciliation (Dollars in Thousands)

Current and Prior Reporting Periods

	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	\$ 9,552,804	\$ 8,486,907	\$ 1,065,897				
Changes for the Year:							
Service Cost	\$ 209,098		\$ 209,098				\$ 209,098
Interest on Total Pension Liability	\$ 703,640		\$ 703,640				\$ 703,640
Interest on Fiduciary Net Position		\$ 627,073	\$ (627,073)				\$ (627,073)
Changes in Benefit Terms	\$ -		\$ -				\$ -
Liability Experience Gains and Losses	\$ 14,491		\$ 14,491	\$ 45,203	\$ 162,043	\$ (218,226)	\$ (86,895)
Changes in Assumptions	\$ (19,898)		\$ (19,898)	\$ 883,450	\$ 1,195,219	\$ (189,974)	\$ 101,897
Contributions - Employer		\$ 188,317	\$ (188,317)				
Contributions - Employees		\$ 111,762	\$ (111,762)				\$ (111,762)
Asset Gain/(Loss)		\$ (17,561)	\$ 17,561	\$ 130,040	\$ 351,770	\$ (223,254)	\$ 16,037
Benefit Payouts	\$ (550,982)	\$ (550,982)					
Administrative Expenses		\$ (1,018)	\$ 1,018				\$ 1,018
Other		\$ 54	\$ (54)				\$ (54)
Net Changes	\$ 356,349	\$ 357,645	\$ (1,296)				\$ 205,906
Balance End of Year	\$ 9,909,153	\$ 8,844,552	\$ 1,064,601	\$ 1,058,693	\$ 1,709,032	\$ (631,454)	

* Pension Expense from Experience in the Current and Prior Reporting Period.

Summary of Population Statistics

	Terminated			Recipients			Total
	Actives	Deferred Retirement	Other Non-Vested	Service Retirement	Disability Retirement	Survivor	
Members on 7/1/2018	11,673	1,580	1,188	7,534	1,347	1,875	25,197
New members	684						684
Return to active	72	(35)	(36)	0	(1)	0	0
Terminated non-vested	(106)	0	106	0	0	0	0
Service retirements	(277)	(96)	0	373	0	0	0
Terminated deferred	(181)	181	0	0	0	0	0
Terminated refund/transfer	(25)	(25)	(120)	0	0	0	(170)
Deaths	(6)	(6)	(3)	(191)	(22)	(95)	(323)
New beneficiary	0	0	0	0	0	128	128
Disabled	(71)	0	0	0	71	0	0
Data adjustments	0	21	10	2	18	(8)	43
Net change	90	40	(43)	184	66	25	362
Members on 6/30/2019	11,763	1,620	1,145	7,718	1,413	1,900	25,559

SECTION E

SUMMARY OF BENEFITS

Summary of Plan Provisions – Police & Fire Plan

Following is a summary of the major plan provisions used in the valuation of this report. PERA is solely responsible for the validity, accuracy and comprehensiveness of this information. If any of the plan provisions shown below are not accurate and complete, the valuation results may differ significantly from those shown in this report and may require a revision of this report.

Plan year	July 1 through June 30.			
Eligibility	All full-time and certain part-time police officers and fire fighters, and certain paramedics, who are not contributing to any other local retirement fund.			
Contributions	Effective as of	Member	Employer	Total
	Prior to January 1, 2019	10.80%	16.20%	27.00%
	January 1, 2019	11.30%	16.95%	28.25%
	January 1, 2020 and later	11.80%	17.70%	29.50%
	Member contributions are “picked up” according to the provisions of Internal Revenue Code 414(h).			
State contributions	<p>\$9 million paid annually on October 1 until both PERA P&F and MSRS State Patrol become 90% funded (on an actuarial value of assets basis), or July 1, 2048, if earlier.</p> <p>In addition, \$4.5 million in fiscal years 2019 and 2020, and \$9.0 million thereafter, until the plan reaches 100% funding on an actuarial value of assets basis, or July 1, 2048, if earlier.</p>			
Allowable service	Police and Fire service during which member contributions were made. May also include certain leaves of absence and military service.			
Salary	Includes amounts deducted for deferred compensation or supplemental retirement plans, net income from fees and sick leave payments funded by the employer. Excludes unused annual leaves and sick leave payments, severance payments, Workers’ Compensation benefits and employer-paid flexible spending accounts, cafeteria plans, healthcare expense accounts, day-care expenses, fringe benefits and the cost of insurance coverage.			
Average salary	Average of the five highest successive years of salary. Average Salary is based on all Allowable Service if less than five years.			

Summary of Plan Provisions – Police & Fire Plan (Continued)

Vesting	Years of Service	Vesting Percent if First Hired		
		Before 7/1/2010	After 6/30/2010 & before 7/1/2014	After 6/30/2014
	<3	0%	0%	0%
	3 – 4	100	0	0
	5	100	50	0
	6	100	60	0
	7	100	70	0
	8	100	80	0
	9	100	90	0
	10	100	100	50
	11	100	100	55
	12	100	100	60
	13	100	100	65
	14	100	100	70
	15	100	100	75
	16	100	100	80
	17	100	100	85
	18	100	100	90
	19	100	100	95
	20+	100	100	100

Summary of Plan Provisions – Police & Fire Plan (Continued)

Retirement

Normal retirement benefit

Age/service requirement Age 55 and at least partially vested. Proportionate Retirement Annuity is available at age 65 and one year of Allowable Service.

Amount 3.00% of Average Salary for each year of Allowable Service (up to 33 years if hired after June 30, 2014), pro-rata for completed months, adjusted for partial vesting if applicable. A pro-rata share of member contributions will be refunded at retirement for excess service.

Early retirement

Age/service requirement Age 50 and at least partially vested.

Amount Normal Retirement Benefit based on Allowable Service and Average Salary at retirement date and 0.10% (0.20% for members enrolled in the plan after June 30, 2007) reduction for each month the member is under age 55. If the effective date of retirement is after June 30, 2019, the reduction is 5/12% for each month that the member is under age 55 at the time of retirement. The change in early retirement factors will be phased in over a five-year period for retirements occurring between July 1, 2014 and June 30, 2019.

Form of payment Life annuity with return on death of any balance of contributions over aggregate monthly payments. Actuarially equivalent options are:

25%, 50%, 75% or 100% Joint and Survivor with bounce back feature. The Joint and Survivor options are determined on an actuarially equivalent basis, but with no actuarial reduction for the bounce back feature.

Benefit Increases Benefit recipients receive a future annual 1.00% post-retirement benefit increase.

A benefit recipient who has been receiving a benefit for at least 12 full months as of June 30 will receive a full increase. Members receiving benefits for at least one month but less than 12 full months as of June 30 will receive a pro rata increase. For retirements after May 31, 2014, the first increase will be delayed two years.

Members retired under laws in effect before July 1, 1973 receive an additional lump sum payment each year. In 1989, this lump sum payment is the greater of \$25 times each full year of Allowable Service or the difference between \$400 times each full year of Allowable Service and the sum of benefits paid from any Minnesota public pension plan plus cash payments from the Social Security Administration for the preceding fiscal year July 1, 1988 through June 30, 1989. In each following year, the lump sum payment will increase by the same percentage increase that is applied to regular annuities paid from the Fund. Effective January 1, 2002, annual lump sum payment is divided by 12 and paid as a monthly life annuity in the annuity form elected.

Summary of Plan Provisions – Police & Fire Plan (Continued)

Disability	
<u>Duty disability benefit</u>	
Age/service requirement	Physically or mentally unable to perform normal duties as a police officer or fire fighter as a direct result of an act of duty specific to protecting property and personal safety of others. Members age 55 or older with 20 or more years of Allowable Service are not eligible to apply for duty disability benefits.
Amount	60.0%, plus an additional 3.00% for each year of service in excess of 20 years, of Average Salary paid until Normal Retirement Age, or for 60 months, whichever is later. The retirement benefit is then recalculated but is never lower than the disability benefit. If a member became disabled prior to July 1, 1997 but did not commence their benefit before July 1, 1997, the benefit is calculated under the laws in effect before July 1, 1997, and an actuarial increase shall be made for the change in post-retirement interest rates from 5.00% to 6.00%.
<u>Regular disability benefit</u>	
Age/service requirement	Physically or mentally unable to perform normal duties as a police officer or fire fighter with one year of Allowable Service. Members age 55 or older with 15 or more years of Allowable Service are not eligible to apply for regular disability benefits.
Amount	45.00% of Average Salary, paid until Normal Retirement Age, or for 60 months, whichever is later. The retirement benefit is then recalculated but is never lower than the disability benefit. Benefits for total and permanent regular disability are calculated as 3.00% of Average Salary for each year of Allowable Service, with a minimum of 45.00% of Average Salary. If a member became disabled prior to July 1, 1997 but did not commence his or her benefit before July 1, 1997, the benefit payable is calculated under the laws in effect before July 1, 1997, and an actuarial increase shall be made for the change in post-retirement interest rates from 5.00% to 6.00%.
Benefit increases	Same as for retirement.
<u>Retirement benefit</u>	
Age/service requirement	Upon cessation of disability benefits.
Amount	Any optional annuity continues. Otherwise, the larger of the disability benefit paid before age 55 or the normal retirement benefit available at age 55, or an actuarially equivalent optional annuity.
Form of payment	Same as for retirement.
Benefit increases	Same as for retirement.

Summary of Plan Provisions – Police & Fire Plan (Continued)

Death

Surviving spouse benefit

Age/service requirement	Death of active member or regular disabled member with surviving spouse whose disability benefit accrued before July 1, 2007, who is vested at death (service requirement is waived if death occurs in the line of duty).
Amount	50.00% of salary (60.00% if death occurs in the line of duty after June 30, 2007) averaged over last six months. Benefit paid until spouse's death but no payments while spouse is remarried prior to July 1, 1991. If a member becomes deceased prior to July 1, 1997 and the beneficiary was not eligible to commence their survivor benefits before July 1, 1997, the benefit payable is calculated under the laws in effect before July 1, 1997, and an actuarial increase shall be made for the change in the post-retirement interest rates from 5.00% to 6.00%.
Benefit increases	Same as for retirement.

Surviving dependent children's benefit

Age/service requirement	Non-duty related death of active member or regular disabled member with eligible dependent child.
Amount	10.00% of salary averaged over last six months for each child. Family benefit minimum (including spouse's benefit) of 50.00% of salary and maximum of 70.00% of salary. Benefits paid until child marries, dies, or attains age 18 (age 23 if full-time student).

Duty disability surviving spouse benefit

Age/service requirement	Member who is totally and permanently disabled who dies before age 55 or within five years of the effective date of the disability benefit, whichever is later.
Amount	60.00% of salary averaged over last six months. Benefits paid until spouse's death but no payments while spouse is remarried prior to July 1, 1991.
Benefit increases	Same as for retirement.

Summary of Plan Provisions – Police & Fire Plan (Continued)

Death (Concluded)

Duty disability surviving dependent children's benefit

Age/service requirement Death of a member with an eligible dependent child who was disabled in the line of duty and died as a direct result of the disability.

Amount 10.00% of salary averaged over last six months for each child. Family benefit minimum (including spouse's benefit) of 60.00% of salary and maximum of 80.00% of salary. Benefits paid until child marries, dies, or attains age 18 (age 23 if full-time student).

If a member became deceased prior to July 1, 1997 and the beneficiary was not eligible to commence their survivor benefits before July 1, 1997, the benefit payable is calculated under the laws in effect before July 1, 1997, and an actuarial increase shall be made for the change in the post-retirement interest rates from 5.00% to 6.00%.

Surviving spouse optional annuity

Age/service requirement Active member dies before age 55. Benefits commence when member would have been age 55 or as early as age 50 if qualified for early retirement, benefits commence immediately if member had 30 years of service.

Amount Survivor's payment of the 100% joint and survivor benefit the member could have elected if terminated. Alternatively, spouse may elect refund of deceased's contributions with interest if there are no dependent children.

If a member became deceased prior to July 1, 1997 and the beneficiary was not eligible to commence their survivor benefits before July 1, 1997, the benefit payable is calculated under the laws in effect before July 1, 1997, and an actuarial increase shall be made for the change in the post-retirement interest rates from 5.00% to 6.00%.

Benefit increases Same as for retirement.

Summary of Plan Provisions – Police & Fire Plan (Continued)

Termination	
<u>Refund of contributions</u>	
Age/service requirement	Termination of public service.
Amount	Member's contributions with 6.00% interest through June 30, 2011, compounded daily. Beginning July 1, 2011, a member's contributions increase at 4.00% interest compounded daily. Beginning July 1, 2018, a member's contributions increase at 3.00% interest compounded daily. If a member is vested, a deferred annuity may be elected in lieu of a refund.
<u>Deferred benefit</u>	
Age/service requirement	Partially or fully vested.
Amount	<p>Benefit computed under law in effect at termination and increased by the following percentage (augmentation) compounded annually for terminations prior to 2012:</p> <ul style="list-style-type: none">(a.) 0.00% before July 1, 1971;(b.) 5.00% from July 1, 1971 to January 1, 1981;(c.) 3.00% (2.50% if hired after June 30, 2006) thereafter until the earlier of January 1 of the year following attainment of age 55 and January 1, 2012;(d.) 5.00% (2.50% if hired after June 30, 2006) thereafter until the earlier of the date the annuity begins and January 1, 2012;(e.) 1.00% from January 1, 2012 through December 31, 2018; and(f.) 0.00% from January 1, 2019, thereafter. <p>Members who terminate after 2011 will receive no future augmentation.</p> <p>If a member terminated employment prior to July 1, 1997 but was not eligible to commence their pension before July 1, 1997, the benefit payable is calculated under the laws in effect before July 1, 1997 and an actuarial increase shall be made for the change in the post-retirement interest rates from 5.00% to 6.00%.</p>
Form of payment	Same as for retirement.
Actuarial equivalent factors	Effective July 1, 2019, actuarially equivalent factors based on the RP-2014 mortality table for healthy annuitants for a member turning age 55 in 2021, reflecting projected mortality improvements using Scale MP-2017, male rates multiplied by 0.96, blended 90% males, and 6.50% interest.

Summary of Plan Provisions – Police & Fire Plan (Concluded)

Combined service annuity	<p>Members are eligible for combined service benefits if they:</p> <ul style="list-style-type: none">(a.) Meet minimum retirement age for each plan participated in and total public service meets the vesting requirements of each plan; or(b.) Have three or more years of service under PERA and the covered fund(s) (if hired prior to July 1, 2010). <p>Other requirements for combined service include:</p> <ul style="list-style-type: none">(a.) Member must have at least six months of allowable service credit in each plan worked under; and(b.) Member may not be in receipt of a benefit from another plan. <p>Members who meet the above requirements must have their benefits based on the following:</p> <ul style="list-style-type: none">(a.) Allowable service in all covered plans is combined in order to determine eligibility for early retirement.(b.) Average salary is based on the high five consecutive years during their entire service in all covered plans.
Changes in plan provisions	<p>There have been no changes in plan provisions since the prior valuation.</p>

Summary of Plan Provisions – Minneapolis Police Relief Association

Normal retirement benefit	Monthly benefits are equal to the number of units multiplied by the unit values described herein. Units are based on service, as follows:														
	<table border="1"> <thead> <tr> <th style="text-align: center;"><u>Service</u></th> <th style="text-align: center;"><u>Units</u></th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">20</td> <td style="text-align: center;">35.0 units</td> </tr> <tr> <td style="text-align: center;">21</td> <td style="text-align: center;">36.6 units</td> </tr> <tr> <td style="text-align: center;">22</td> <td style="text-align: center;">38.2 units</td> </tr> <tr> <td style="text-align: center;">23</td> <td style="text-align: center;">39.8 units</td> </tr> <tr> <td style="text-align: center;">24</td> <td style="text-align: center;">41.4 units</td> </tr> <tr> <td style="text-align: center;">25 or more</td> <td style="text-align: center;">43.0 units</td> </tr> </tbody> </table>	<u>Service</u>	<u>Units</u>	20	35.0 units	21	36.6 units	22	38.2 units	23	39.8 units	24	41.4 units	25 or more	43.0 units
<u>Service</u>	<u>Units</u>														
20	35.0 units														
21	36.6 units														
22	38.2 units														
23	39.8 units														
24	41.4 units														
25 or more	43.0 units														
	Members must be at least age 50 with 5 years of service to receive this benefit.														
Unit values	<table border="1"> <thead> <tr> <th style="text-align: center;"><u>Calendar Year</u></th> <th style="text-align: center;"><u>Unit Value</u></th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">2012</td> <td style="text-align: center;">\$ 104.651</td> </tr> <tr> <td style="text-align: center;">2013</td> <td style="text-align: center;">109.011</td> </tr> <tr> <td style="text-align: center;">2014</td> <td style="text-align: center;">114.825</td> </tr> <tr> <td style="text-align: center;">2015</td> <td style="text-align: center;">124.031</td> </tr> </tbody> </table> <p style="text-align: center;">Unit values after 2015 are assumed to increase the same percentage as the post-retirement benefit increase.</p>	<u>Calendar Year</u>	<u>Unit Value</u>	2012	\$ 104.651	2013	109.011	2014	114.825	2015	124.031				
<u>Calendar Year</u>	<u>Unit Value</u>														
2012	\$ 104.651														
2013	109.011														
2014	114.825														
2015	124.031														
Surviving spouse's benefit	Annual benefit based on 23 units for the surviving spouse of an active or retired member. Upon retirement, members may choose an alternative form of payment that provides 50%, 75%, or 100% of their benefit to their spouse after their death. The units are adjusted if one of these alternate forms is selected.														
Surviving children's benefit	Annual benefit based on 8 units for each surviving child of an active or retired member. Benefits continue to age 18 or if the child is a full-time student, to age 22. The total benefit for surviving children and spouse combined is limited to 41 units.														
Contributions	Member and employer contributions equal to 8.00% of the monthly unit value multiplied by 80 are required for each member. After 25 years of service, member contributions are paid to a separate health insurance account. Until July 15, 2018, the employer contributed annually an amount to amortize the unfunded liability by December 31, 2031. Beginning July 15, 2019, the employer will contribute \$4,489,837 each July 15 through 2031.														
Benefit increases	Benefit recipients receive a future annual 1.00% post-retirement benefit increase.														

Summary of Plan Provisions – Minneapolis Firefighters’ Relief Association

Normal retirement benefit	Monthly benefits are equal to the number of units multiplied by the unit values described herein. Units are based on service, as follows:	
	<u>Service</u>	<u>Units</u>
	15	25.0 units
	16	26.6 units
	17	28.2 units
	18	29.8 units
	19	31.4 units
	20	35.0 units
	21	36.6 units
	22	38.2 units
	23	39.8 units
	24	41.4 units
	25 or more	43.0 units
	Members must be at least age 50 with 5 years of service to receive this benefit.	
	Members may choose among alternative survivor payment forms which modify the number of units payable to the member and their spouse. A member who is single at the time of retirement and who has at least 25 years of service may choose to receive 43.3 units on the condition of a reduced survivor payment to any future spouse.	
Unit values	<u>Calendar Year</u>	<u>Unit Value</u>
	2013	100.775
	2014	104.264
	2015	124.031
	Unit values after 2015 are assumed to increase the same percentage as the post-retirement benefit increase.	
Disability benefit	Annual benefit based on 41 units for the disabled member.	
Surviving spouse’s benefit	Annual benefit based on 23 units for the surviving spouse of an active or retired member and 22 units for the surviving spouse of a disabled member. Upon retirement, members may choose an alternative form of payment that provides 50%, 75% or 100% of their benefit to their spouse after their death. The units are adjusted if one of these alternate forms is selected.	
Surviving children’s benefit	Annual benefit based on 8 units for each surviving child of an active or retired member. Benefits continue to age 18 or if the child is a full-time student, to age 22. The total benefit for surviving children and spouse combined is limited to 43 units.	
Contributions	Member and employer contributions equal to 8.00% of the monthly unit value multiplied by 80 are required for each member. After 25 years of service, member contributions are paid to a separate health insurance account.	
	Until July 15, 2018, the employer contributed annually an amount to amortize the unfunded liability by December 31, 2031. Beginning July 15, 2019, the employer will contribute \$3,188,735 each July 15 through 2031.	
Benefit increases	Benefit recipients receive a future annual 1.00% post-retirement benefit increase.	

SECTION F

**ACTUARIAL COST METHOD AND ACTUARIAL ASSUMPTIONS
USED FOR THE DETERMINATION OF TOTAL PENSION LIABILITY
AND RELATED VALUES**

Actuarial Methods Used for the Determination of Total Pension Liability and Related Values

Actuarial Cost Method

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

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

Actuarial gains/(losses), as they occur, reduce (increase) the Total Pension Liability.

Asset Valuation Method

Fair value of assets.

Summary of Actuarial Assumptions

The following assumptions were used in valuing the liabilities and benefits under the plan. The assumptions are based on the last experience study dated August 30, 2016, and a review of inflation and investment assumptions in the experience study report for the General Employees Retirement Plan dated June 27, 2019.

The Allowance for Combined Service Annuity assumptions are based on an analysis completed by the LCPR actuary and documented in a report dated October 2016.

Investment return	7.50% per annum.								
Single Discount Rate	7.50% per annum.								
Salary increases	Reported salary at valuation date increased according to the rate table, to current fiscal year and annually for each future year. Prior fiscal year salary is annualized for members with less than one year of service earned during the year.								
Inflation	2.50% per year.								
Payroll growth	3.25% per year.								
Mortality rates									
Healthy pre-retirement	RP-2014 employee generational mortality table projected with mortality improvement scale MP-2018, from a base year of 2006.								
Healthy post-retirement	RP-2014 annuitant generational mortality table projected with mortality improvement scale MP-2018 from a base year of 2006. Male rates are adjusted by a factor of 0.96.								
Disabled	RP-2014 annuitant generational mortality table projected with mortality improvement scale MP-2018 from a base year of 2006. Male rates are adjusted by a factor of 0.96.								
Notes	The RP-2014 employee mortality table as published by the Society of Actuaries (SOA) contains mortality rates for ages 18 to 80 and the annuitant mortality table contains mortality rates for ages 50 to 120. We have extended the annuitant mortality table as needed for members younger than age 50 who are receiving a benefit by deriving rates based on the employee table and the juvenile table. Similarly, we have extended the employee table as needed for members older than age 80 by deriving rates based on the annuitant table.								
Retirement	Members retiring from active status are assumed to retire according to the age related rates shown in the rate table. Members who have attained the highest assumed retirement age are assumed to retire in one year. Note that plan changes reflected in this report may ultimately result in behavior changes that are not anticipated in the current retirement rates.								
Withdrawal	Select and Ultimate rates based on actual experience. Ultimate rates after the third year are shown in the rate table. Select rates in the first three years are: <table style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: center;"><u>Year</u></th> <th style="text-align: center;"><u>Select Withdrawal Rates</u></th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">3.00%</td> </tr> <tr> <td style="text-align: center;">2</td> <td style="text-align: center;">3.00%</td> </tr> <tr> <td style="text-align: center;">3</td> <td style="text-align: center;">3.00%</td> </tr> </tbody> </table>	<u>Year</u>	<u>Select Withdrawal Rates</u>	1	3.00%	2	3.00%	3	3.00%
<u>Year</u>	<u>Select Withdrawal Rates</u>								
1	3.00%								
2	3.00%								
3	3.00%								

Summary of Actuarial Assumptions (Continued)

Disability	Age-related rates based on experience; see table of sample rates. All incidences are assumed to be duty-related.
Allowance for combined service annuity	Liabilities for former members are increased by 33.0% for vested members and 2.0% for non-vested members to account for the effect of some participants having eligibility for a Combined Service Annuity.
Administrative expenses	In the valuation year, equal to prior year administrative expenses expressed as percentage of prior year projected payroll. In each subsequent year, equal to the initial administrative expense percentage applied to payroll for the closed group.
Refund of contributions	Account balances accumulate interest until normal retirement date and are discounted back to the valuation date. 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.
Commencement of deferred benefits	Members receiving deferred annuities (including current terminated deferred members) are assumed to begin receiving benefits at age 55.
Percentage married	85% of male and 60% of female active members are assumed to be married. Actual marital status is used for members in payment status.
Age of spouse	Males are assumed to be two years older than females. For members in payment status, actual spouse date of birth is used, if provided.
Eligible children	Retiring members are assumed to have no dependent children.
Form of payment	<p>Married members retiring from active status are assumed to elect subsidized joint and survivor form of annuity as follows:</p> <p style="margin-left: 40px;">Males: 10% elect 25% Joint & Survivor option 20% elect 50% Joint & Survivor option 20% elect 75% Joint & Survivor option 35% elect 100% Joint & Survivor option</p> <p style="margin-left: 40px;">Females: 20% elect 25% Joint & Survivor option 20% elect 50% Joint & Survivor option 10% elect 75% Joint & Survivor option 20% elect 100% Joint & Survivor option</p> <p>Remaining married members and unmarried members are assumed to elect the Straight Life option.</p> <p>Members receiving deferred annuities (including current terminated deferred members) are assumed to elect a straight life annuity.</p>
Eligibility testing	Eligibility for benefits is determined based upon the age nearest birthday and service on the date the decrement is assumed to occur.
Decrement operation	Withdrawal decrements do not operate during retirement eligibility. Decrements are assumed to occur mid-fiscal year.
Service credit accruals	It is assumed that members accrue one year of service credit per year.

Summary of Actuarial Assumptions (Continued)

Pay Increases	Pay increases are assumed to happen at the beginning of the fiscal year. This is equivalent to assuming that reported earnings are pensionable earnings for the year ending on the valuation date.
Unknown data for certain members	To prepare this report, GRS has used and relied on participant data supplied by the Fund. Although GRS has reviewed the data in accordance with Actuarial Standards of Practice No. 23, GRS has not verified or audited any of the data or information provided.

In cases where submitted data was missing or incomplete, the following assumptions, based on average results for applicable members at the time of the last experience study, were applied:

Data for active members:

There were 33 members reported with a salary less than \$100. We used prior year salary (23 members), if available; otherwise high five salary with a 10% load to account for salary increases (10 members). If neither prior year salary nor high five salary was available, we assumed a value of \$60,000. Note former members of Minneapolis Fire are excluded from these salary counts as salary is not used to calculate the benefit.

There were also 139 members reported without a gender. We assumed male gender. There were 2 members reported without a date of birth. We assumed a date of birth of July 1, 1985.

Data for terminated members:

We calculated benefits for these members using the reported Average Salary and credited service. If Average Salary was not reported (1 member), we assumed a value of \$24,000. If credited service was not reported (16 members), we used elapsed time from hire date to termination date (7 members); otherwise we assumed nine years of service. If termination date was invalid or not reported (8 members), we assumed the termination date was equal to the hire date plus credited service, otherwise the valuation date. If the reported termination date occurs prior to the reported hire date, the two dates were swapped.

There were 6 members reported without a gender; male was assumed.

There were no members reported without a date of birth.

Data for retired members:

There were no members with missing or invalid dates of birth. There were 6 members reported without a gender. We assumed retirees are male and beneficiaries are female.

Summary of Actuarial Assumptions (Continued)

Unknown data for certain members (Continued)	<u>Data for retired members (Continued):</u> Because PERA reclassifies disabled members as retirees once the member reaches Normal Retirement Age, we compare the members that PERA reports as retirees to our disabled group from the last valuation. If a member was disabled in the prior valuation, we reclassify that member as a disabled retiree in this year's valuation. We reclassified 214 retirees as disabled retirees in this valuation.
Changes in actuarial assumptions	The mortality projection scale was changed from MP-2017 to MP-2018.

Summary of Actuarial Assumptions (Continued)

Age in 2019	Percentage of Members Dying Each Year*					
	Healthy Post- Retirement Mortality		Healthy Pre- Retirement Mortality		Disability Mortality	
	Males	Females	Males	Females	Males	Females
20	0.04%	0.02%	0.04%	0.02%	0.04%	0.02%
25	0.07	0.04	0.06	0.02	0.07	0.04
30	0.10	0.07	0.06	0.03	0.10	0.07
35	0.15	0.13	0.07	0.04	0.15	0.13
40	0.22	0.19	0.08	0.05	0.22	0.19
45	0.28	0.22	0.11	0.07	0.28	0.22
50	0.40	0.28	0.17	0.11	0.40	0.28
55	0.56	0.39	0.28	0.18	0.56	0.39
60	0.79	0.59	0.50	0.28	0.79	0.59
65	1.14	0.86	0.89	0.39	1.14	0.86
70	1.68	1.31	1.44	0.64	1.68	1.31
75	2.66	2.15	2.39	1.10	2.66	2.15
80	4.47	3.68	4.04	1.94	4.47	3.68
85	7.82	6.58	7.94	5.14	7.82	6.58
90	13.76	11.70	14.50	11.28	13.76	11.70

* Generally, mortality rates are expected to increase as age increases. These standard mortality rates have been adjusted slightly to prevent decreasing mortality rates. If the rates were not adjusted as described, we would not expect the valuation results to be materially different.

Age	Withdrawal Rates After Third Year		Rates of Disability Retirement	
	Males	Females	Males	Females
20	3.00%	3.00%	0.11%	0.11%
25	2.60	2.60	0.13	0.13
30	2.10	2.10	0.16	0.16
35	1.60	1.60	0.19	0.19
40	1.25	1.25	0.29	0.29
45	1.25	1.25	0.54	0.54
50	0.00	0.00	1.04	1.04
55	0.00	0.00	2.03	2.03
60	0.00	0.00	0.00	0.00

Summary of Actuarial Assumptions (Concluded)

Age	Retirement Rate	Salary Scale	
		Year	Increase
50	10.00%	1	12.25%
51	7.00	2	10.50%
52	7.00	3	8.75%
53	10.00	4	7.75%
54	10.00	5	6.25%
55	25.00	6	5.75%
56	22.50	7	5.25%
57	22.50	8	5.00%
58	22.50	9	4.75%
59	20.00	10	4.50%
60	22.50	11	4.25%
61	25.00	12	4.15%
62	30.00	13	4.05%
63	30.00	14	3.95%
64	30.00	15	3.85%
65	50.00	16	3.75%
66	50.00	17	3.75%
67	50.00	18	3.75%
68	50.00	19	3.75%
69	50.00	20	3.75%
70+	100.00	21	3.65%
		22	3.55%
		23	3.45%
		24	3.35%
		25+	3.25%

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 long-term rate of return is used. In years where assets are not projected to be sufficient to meet benefit payments, the use of a municipal bond rate is required, as described in the following paragraph.

The *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 Single Discount Rate (SDR). It breaks down the benefit payments into present values for funded and unfunded portions and shows the equivalent total at the SDR.

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

Fiscal Year Ending	Payroll			Projected Contributions						
	Payroll for Current Employees	Payroll for New Employees	Total Employee Payroll	Contributions from Current Employees	Employer Contributions for Current Employees	Contributions on Future Payroll toward current UAL*	Contributions due from Mergers	Additional State Contributions**	Total Contributions	
2019	\$ 1,011,421	\$ 0	\$ 1,011,421							
2020	1,037,888	0	1,037,888	\$ 119,876	\$ 179,866	\$ 0	\$ 7,679	\$ 13,500	\$ 320,921	
2021	1,031,118	40,502	1,071,620	121,672	182,508	3,443	7,679	18,000	333,302	
2022	1,019,200	87,247	1,106,447	120,266	180,398	7,416	7,679	18,000	333,759	
2023	1,003,464	138,943	1,142,407	118,409	177,613	11,810	7,679	18,000	333,511	
2024	984,599	194,936	1,179,535	116,183	174,274	16,570	7,679	18,000	332,706	
2025	963,270	254,600	1,217,870	113,666	170,499	21,641	7,679	18,000	331,485	
2026	939,773	317,678	1,257,451	110,893	166,340	27,003	7,679	18,000	329,915	
2027	914,487	383,831	1,298,318	107,909	161,864	32,626	7,679	18,000	328,078	
2028	887,646	452,867	1,340,513	104,742	157,113	38,494	7,679	18,000	326,028	
2029	859,823	524,257	1,384,080	101,459	152,189	44,562	7,679	18,000	323,889	
2030	830,995	598,067	1,429,062	98,057	147,086	50,836	7,679	9,000	312,658	
2031	800,750	674,757	1,475,507	94,489	141,733	57,354	7,679	9,000	310,255	
2032	769,194	754,267	1,523,461	90,765	136,147	64,113	7,679	9,000	307,704	
2033	736,023	836,950	1,572,973	86,851	130,276	71,141	0	9,000	297,268	
2034	701,349	922,746	1,624,095	82,759	124,139	78,433	0	9,000	294,331	
2035	665,219	1,011,659	1,676,878	78,496	117,744	85,991	0	0	282,231	
2036	627,658	1,103,719	1,731,377	74,064	111,095	93,816	0	0	278,975	
2037	588,735	1,198,911	1,787,646	69,471	104,206	101,907	0	0	275,584	
2038	548,527	1,297,218	1,845,745	64,726	97,089	110,263	0	0	272,078	
2039	507,564	1,398,167	1,905,731	59,893	89,839	118,844	0	0	268,576	
2040	466,067	1,501,601	1,967,668	54,996	82,494	127,636	0	0	265,126	
2041	424,310	1,607,307	2,031,617	50,069	75,103	136,621	0	0	261,793	
2042	382,706	1,714,939	2,097,645	45,159	67,739	145,770	0	0	258,668	
2043	341,574	1,824,244	2,165,818	40,306	60,459	155,061	0	0	255,826	
2044	301,578	1,934,629	2,236,207	35,586	53,379	164,443	0	0	253,408	
2045	263,057	2,045,827	2,308,884	31,041	46,561	173,895	0	0	251,497	
2046	226,068	2,157,855	2,383,923	26,676	40,014	183,418	0	0	250,108	
2047	191,116	2,270,284	2,461,400	22,552	33,828	192,974	0	0	249,354	
2048	158,756	2,382,639	2,541,395	18,733	28,100	202,524	0	0	249,357	
2049	129,658	2,494,333	2,623,991	15,300	22,950	212,018	0	0	250,268	
2050	104,119	2,605,152	2,709,271	12,286	18,429	221,438	0	0	252,153	
2051	82,103	2,715,219	2,797,322	9,688	14,532	230,794	0	0	255,014	
2052	63,699	2,824,536	2,888,235	7,516	11,275	240,086	0	0	258,877	
2053	48,726	2,933,376	2,982,102	5,750	8,624	249,337	0	0	263,711	
2054	36,770	3,042,251	3,079,021	4,339	6,508	258,591	0	0	269,438	
2055	27,290	3,151,799	3,179,089	3,220	4,830	267,903	0	0	275,953	
2056	19,819	3,262,590	3,282,409	2,339	3,508	277,320	0	0	283,167	
2057	13,983	3,375,105	3,389,088	1,650	2,475	286,884	0	0	291,009	
2058	9,497	3,489,736	3,499,233	1,121	1,681	296,628	0	0	299,430	
2059	6,191	3,606,767	3,612,958	731	1,096	306,575	0	0	308,402	
2060	3,861	3,726,518	3,730,379	456	683	316,754	0	0	317,893	
2061	2,271	3,849,345	3,851,616	268	402	327,194	0	0	327,864	
2062	1,244	3,975,550	3,976,794	147	220	337,922	0	0	338,289	
2063	635	4,105,405	4,106,040	75	112	348,959	0	0	349,146	
2064	306	4,239,180	4,239,486	36	54	360,330	0	0	360,420	
2065	138	4,377,131	4,377,269	16	24	372,056	0	0	372,096	
2066	54	4,519,477	4,519,531	6	10	384,155	0	0	384,171	
2067	18	4,666,397	4,666,415	2	3	396,644	0	0	396,649	
2068	5	4,818,069	4,818,074	1	1	409,536	0	0	409,538	
2069	1	4,974,660	4,974,661	0	-	422,846	0	0	422,846	

* Equal to contributions (ultimately 29.50% of payroll for new employees) net of normal cost and expenses (21.02% of payroll).

** State contributions equal to \$9 million are assumed to end after 10 years. Actual end date of this \$9 million annual contribution will depend on the funding status of this plan and the MSRS State Patrol Plan. Additional state contributions of \$4.5 million in fiscal years 2019 and 2020 and \$9.0 million thereafter until 100% funded are assumed to stop after 15 years.

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

Fiscal Year Ending	Payroll			Projected Contributions					
	Payroll for Current Employees	Payroll for New Employees	Total Employee Payroll	Contributions from Current Employees	Employer Contributions for Current Employees	Contributions on Future Payroll toward current UAL*	Contributions due from Mergers	Additional State Contributions**	Total Contributions
2070	\$ 0	\$ 5,136,338	\$ 5,136,338	\$ 0	\$ 0	\$ 436,589	\$ 0	\$ 0	\$ 436,589
2071	0	5,303,269	5,303,269	0	0	450,778	0	0	450,778
2072	0	5,475,625	5,475,625	0	0	465,428	0	0	465,428
2073	0	5,653,583	5,653,583	0	0	480,555	0	0	480,555
2074	0	5,837,324	5,837,324	0	0	496,173	0	0	496,173
2075	0	6,027,037	6,027,037	0	0	512,298	0	0	512,298
2076	0	6,222,916	6,222,916	0	0	528,948	0	0	528,948
2077	0	6,425,161	6,425,161	0	0	546,139	0	0	546,139
2078	0	6,633,979	6,633,979	0	0	563,888	0	0	563,888
2079	0	6,849,583	6,849,583	0	0	582,215	0	0	582,215
2080	0	7,072,194	7,072,194	0	0	601,137	0	0	601,137
2081	0	7,302,041	7,302,041	0	0	620,673	0	0	620,673
2082	0	7,539,357	7,539,357	0	0	640,845	0	0	640,845
2083	0	7,784,386	7,784,386	0	0	661,673	0	0	661,673
2084	0	8,037,379	8,037,379	0	0	683,177	0	0	683,177
2085	0	8,298,593	8,298,593	0	0	705,380	0	0	705,380
2086	0	8,568,298	8,568,298	0	0	728,305	0	0	728,305
2087	0	8,846,767	8,846,767	0	0	751,975	0	0	751,975
2088	0	9,134,287	9,134,287	0	0	776,414	0	0	776,414
2089	0	9,431,152	9,431,152	0	0	801,648	0	0	801,648
2090	0	9,737,664	9,737,664	0	0	827,701	0	0	827,701
2091	0	10,054,138	10,054,138	0	0	854,602	0	0	854,602
2092	0	10,380,898	10,380,898	0	0	882,376	0	0	882,376
2093	0	10,718,277	10,718,277	0	0	911,054	0	0	911,054
2094	0	11,066,621	11,066,621	0	0	940,663	0	0	940,663
2095	0	11,426,286	11,426,286	0	0	971,234	0	0	971,234
2096	0	11,797,640	11,797,640	0	0	1,002,799	0	0	1,002,799
2097	0	12,181,064	12,181,064	0	0	1,035,390	0	0	1,035,390
2098	0	12,576,948	12,576,948	0	0	1,069,041	0	0	1,069,041
2099	0	12,985,699	12,985,699	0	0	1,103,784	0	0	1,103,784
2100	0	13,407,734	13,407,734	0	0	1,139,657	0	0	1,139,657
2101	0	13,843,486	13,843,486	0	0	1,176,696	0	0	1,176,696
2102	0	14,293,399	14,293,399	0	0	1,214,939	0	0	1,214,939
2103	0	14,757,934	14,757,934	0	0	1,254,424	0	0	1,254,424
2104	0	15,237,567	15,237,567	0	0	1,295,193	0	0	1,295,193
2105	0	15,732,788	15,732,788	0	0	1,337,287	0	0	1,337,287
2106	0	16,244,104	16,244,104	0	0	1,380,749	0	0	1,380,749
2107	0	16,772,037	16,772,037	0	0	1,425,623	0	0	1,425,623
2108	0	17,317,128	17,317,128	0	0	1,471,956	0	0	1,471,956
2109	0	17,879,935	17,879,935	0	0	1,519,794	0	0	1,519,794
2110	0	18,461,033	18,461,033	0	0	1,569,188	0	0	1,569,188
2111	0	19,061,016	19,061,016	0	0	1,620,186	0	0	1,620,186
2112	0	19,680,499	19,680,499	0	0	1,672,842	0	0	1,672,842
2113	0	20,320,116	20,320,116	0	0	1,727,210	0	0	1,727,210
2114	0	20,980,519	20,980,519	0	0	1,783,344	0	0	1,783,344
2115	0	21,662,386	21,662,386	0	0	1,841,303	0	0	1,841,303
2116	0	22,366,414	22,366,414	0	0	1,901,145	0	0	1,901,145
2117	0	23,093,322	23,093,322	0	0	1,962,932	0	0	1,962,932
2118	0	23,843,855	23,843,855	0	0	2,026,728	0	0	2,026,728
2119	0	24,618,781	24,618,781	0	0	2,092,596	0	0	2,092,596

* Equal to contributions (ultimately 29.50% of payroll for new employees) net of normal cost and expenses (21.02% of payroll).

** State contributions equal to \$9 million are assumed to end after 10 years. Actual end date of this \$9 million annual contribution will depend on the funding status of this plan and the MSRS State Patrol Plan. Additional state contributions of \$4.5 million in fiscal years 2019 and 2020 and \$9.0 million thereafter until 100% funded are assumed to stop after 15 years.

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

Fiscal Year Ending	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)
2020	\$ 8,844,552	\$ 320,921	\$ 577,240	\$ 1,038	\$ 653,865	\$ 9,241,060
2021	9,241,060	333,302	597,654	1,031	683,308	9,658,985
2022	9,658,985	333,759	619,710	1,019	713,857	10,085,872
2023	10,085,872	333,511	643,145	1,003	745,002	10,520,237
2024	10,520,237	332,705	668,258	985	776,626	10,960,325
2025	10,960,325	331,485	694,966	963	808,605	11,404,486
2026	11,404,486	329,915	723,347	940	840,815	11,850,929
2027	11,850,929	328,078	752,366	914	873,163	12,298,890
2028	12,298,890	326,028	781,394	888	905,616	12,748,252
2029	12,748,252	323,889	809,903	860	938,191	13,199,569
2030	13,199,569	312,658	839,095	831	970,553	13,642,854
2031	13,642,854	310,255	868,618	801	1,002,624	14,086,314
2032	14,086,314	307,704	897,919	769	1,034,712	14,530,042
2033	14,530,042	297,267	927,698	736	1,066,512	14,965,387
2034	14,965,387	294,331	957,493	701	1,097,959	15,399,483
2035	15,399,483	282,231	987,715	665	1,128,959	15,822,293
2036	15,822,293	278,975	1,018,643	628	1,159,413	16,241,410
2037	16,241,410	275,584	1,049,480	589	1,189,588	16,656,513
2038	16,656,513	272,079	1,080,496	549	1,219,451	17,066,998
2039	17,066,998	268,576	1,111,336	508	1,248,974	17,472,704
2040	17,472,704	265,126	1,141,770	466	1,278,156	17,873,750
2041	17,873,750	261,793	1,171,485	424	1,307,019	18,270,653
2042	18,270,653	258,668	1,200,192	383	1,335,616	18,664,362
2043	18,664,362	255,825	1,227,460	342	1,364,037	19,056,422
2044	19,056,422	253,409	1,253,008	302	1,392,413	19,448,934
2045	19,448,934	251,497	1,277,096	263	1,420,896	19,843,968
2046	19,843,968	250,108	1,299,691	226	1,449,642	20,243,801
2047	20,243,801	249,353	1,320,345	191	1,478,842	20,651,460
2048	20,651,460	249,357	1,338,410	159	1,508,752	21,071,000
2049	21,071,000	250,267	1,352,677	130	1,539,727	21,508,187
2050	21,508,187	252,153	1,362,712	104	1,572,217	21,969,741
2051	21,969,741	255,014	1,368,489	82	1,606,727	22,462,911
2052	22,462,911	258,877	1,369,467	64	1,643,822	22,996,079
2053	22,996,079	263,711	1,365,615	49	1,684,130	23,578,256
2054	23,578,256	269,438	1,357,496	37	1,728,303	24,218,464
2055	24,218,464	275,953	1,345,874	27	1,776,987	24,925,503
2056	24,925,503	283,167	1,331,172	20	1,830,823	25,708,301
2057	25,708,301	291,009	1,313,678	14	1,890,465	26,576,083
2058	26,576,083	299,429	1,293,636	9	1,956,597	27,538,464
2059	27,538,464	308,401	1,271,168	6	2,029,934	28,605,625
2060	28,605,625	317,893	1,246,460	4	2,111,230	29,788,284
2061	29,788,284	327,864	1,219,748	2	2,201,280	31,097,678
2062	31,097,678	338,289	1,191,222	1	2,300,919	32,545,663
2063	32,545,663	349,147	1,161,065	1	2,411,028	34,144,772
2064	34,144,772	360,421	1,129,467	0	2,532,540	35,908,266
2065	35,908,266	372,097	1,096,613	0	2,666,442	37,850,192
2066	37,850,192	384,172	1,062,645	0	2,813,782	39,985,501
2067	39,985,501	396,649	1,027,672	0	2,975,677	42,330,155
2068	42,330,155	409,537	991,789	0	3,153,322	44,901,225
2069	44,901,225	422,846	955,085	0	3,347,994	47,716,980

For purposes of this projection, we assumed the current fixed rate contribution 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)

Fiscal Year Ending	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)
2070	\$ 47,716,980	\$ 436,589	\$ 917,644	\$ 0	\$ 3,561,060	\$ 50,796,985
2071	50,796,985	450,778	879,548	0	3,793,986	54,162,201
2072	54,162,201	465,428	840,877	0	4,048,341	57,835,093
2073	57,835,093	480,555	801,714	0	4,325,806	61,839,740
2074	61,839,740	496,173	762,147	0	4,628,187	66,201,953
2075	66,201,953	512,298	722,267	0	4,957,415	70,949,399
2076	70,949,399	528,948	682,175	0	5,315,563	76,111,735
2077	76,111,735	546,139	641,978	0	5,704,851	81,720,747
2078	81,720,747	563,888	601,793	0	6,127,660	87,810,502
2079	87,810,502	582,215	561,746	0	6,586,542	94,417,513
2080	94,417,513	601,137	521,974	0	7,084,229	101,580,905
2081	101,580,905	620,673	482,624	0	7,623,651	109,342,605
2082	109,342,605	640,845	443,858	0	8,207,949	117,747,541
2083	117,747,541	661,673	405,853	0	8,840,485	126,843,846
2084	126,843,846	683,177	368,799	0	9,524,865	136,683,089
2085	136,683,089	705,380	332,894	0	10,264,948	147,320,523
2086	147,320,523	728,305	298,342	0	11,064,871	158,815,357
2087	158,815,357	751,975	265,336	0	11,929,071	171,231,067
2088	171,231,067	776,414	234,055	0	12,862,301	184,635,727
2089	184,635,727	801,648	204,653	0	13,869,662	199,102,384
2090	199,102,384	827,701	177,258	0	14,956,630	214,709,457
2091	214,709,457	854,602	151,968	0	16,129,082	231,541,173
2092	231,541,173	882,376	128,852	0	17,393,334	249,688,031
2093	249,688,031	911,054	107,951	0	18,756,174	269,247,308
2094	269,247,308	940,663	89,274	0	20,224,898	290,323,595
2095	290,323,595	971,234	72,802	0	21,807,352	313,029,379
2096	313,029,379	1,002,799	58,484	0	23,511,975	337,485,669
2097	337,485,669	1,035,390	46,233	0	25,347,848	363,822,674
2098	363,822,674	1,069,041	35,927	0	27,324,742	392,180,530
2099	392,180,530	1,103,784	27,415	0	29,453,174	422,710,073
2100	422,710,073	1,139,657	20,522	0	31,744,465	455,573,673
2101	455,573,673	1,176,696	15,055	0	34,210,800	490,946,114
2102	490,946,114	1,214,939	10,815	0	36,865,297	529,015,535
2103	529,015,535	1,254,424	7,601	0	39,722,076	569,984,434
2104	569,984,434	1,295,193	5,225	0	42,796,332	614,070,734
2105	614,070,734	1,337,287	3,513	0	46,104,418	661,508,926
2106	661,508,926	1,380,749	2,311	0	49,663,927	712,551,291
2107	712,551,291	1,425,623	1,491	0	53,493,787	767,469,210
2108	767,469,210	1,471,956	946	0	57,614,357	826,554,577
2109	826,554,577	1,519,794	593	0	62,047,534	890,121,312
2110	890,121,312	1,569,188	370	0	66,816,866	958,506,996
2111	958,506,996	1,620,186	232	0	71,947,675	1,032,074,625
2112	1,032,074,625	1,672,842	148	0	77,467,190	1,111,214,509
2113	1,111,214,509	1,727,210	97	0	83,404,685	1,196,346,307
2114	1,196,346,307	1,783,344	66	0	89,791,638	1,287,921,223
2115	1,287,921,223	1,841,303	47	0	96,661,891	1,386,424,370
2116	1,386,424,370	1,901,145	35	0	104,051,831	1,492,377,311
2117	1,492,377,311	1,962,932	26	0	112,000,577	1,606,340,794
2118	1,606,340,794	2,026,728	21	0	120,550,188	1,728,917,689
2119	1,728,917,689	2,092,596	16	0	129,745,880	1,860,756,149

For purposes of this projection, we assumed the current fixed rate contribution 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)

Fiscal Year Ending	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}
2020	\$ 8,844,552	\$ 577,240	\$ 577,240	\$ 0	\$ 556,739	\$ 0	\$ 556,739
2021	9,241,061	597,654	597,654	0	536,212	0	536,212
2022	9,658,985	619,710	619,710	0	517,211	0	517,211
2023	10,085,872	643,145	643,145	0	499,320	0	499,320
2024	10,520,236	668,258	668,258	0	482,621	0	482,621
2025	10,960,325	694,966	694,966	0	466,893	0	466,893
2026	11,404,485	723,347	723,347	0	452,055	0	452,055
2027	11,850,928	752,366	752,366	0	437,387	0	437,387
2028	12,298,889	781,394	781,394	0	422,570	0	422,570
2029	12,748,251	809,903	809,903	0	407,429	0	407,429
2030	13,199,568	839,095	839,095	0	392,665	0	392,665
2031	13,642,853	868,618	868,618	0	378,122	0	378,122
2032	14,086,314	897,919	897,919	0	363,606	0	363,606
2033	14,530,042	927,698	927,698	0	349,456	0	349,456
2034	14,965,387	957,493	957,493	0	335,516	0	335,516
2035	15,399,483	987,715	987,715	0	321,959	0	321,959
2036	15,822,293	1,018,643	1,018,643	0	308,875	0	308,875
2037	16,241,410	1,049,480	1,049,480	0	296,023	0	296,023
2038	16,656,513	1,080,496	1,080,496	0	283,509	0	283,509
2039	17,066,998	1,111,336	1,111,336	0	271,257	0	271,257
2040	17,472,704	1,141,770	1,141,770	0	259,242	0	259,242
2041	17,873,750	1,171,485	1,171,485	0	247,431	0	247,431
2042	18,270,652	1,200,192	1,200,192	0	235,809	0	235,809
2043	18,664,362	1,227,460	1,227,460	0	224,341	0	224,341
2044	19,056,423	1,253,008	1,253,008	0	213,033	0	213,033
2045	19,448,936	1,277,096	1,277,096	0	201,980	0	201,980
2046	19,843,969	1,299,691	1,299,691	0	191,212	0	191,212
2047	20,243,801	1,320,345	1,320,345	0	180,699	0	180,699
2048	20,651,460	1,338,410	1,338,410	0	170,392	0	170,392
2049	21,071,001	1,352,677	1,352,677	0	160,193	0	160,193
2050	21,508,189	1,362,712	1,362,712	0	150,123	0	150,123
2051	21,969,743	1,368,489	1,368,489	0	140,241	0	140,241
2052	22,462,913	1,369,467	1,369,467	0	130,550	0	130,550
2053	22,996,080	1,365,615	1,365,615	0	121,100	0	121,100
2054	23,578,258	1,357,496	1,357,496	0	111,982	0	111,982
2055	24,218,466	1,345,874	1,345,874	0	103,277	0	103,277
2056	24,925,506	1,331,172	1,331,172	0	95,022	0	95,022
2057	25,708,304	1,313,678	1,313,678	0	87,231	0	87,231
2058	26,576,085	1,293,636	1,293,636	0	79,907	0	79,907
2059	27,538,467	1,271,168	1,271,168	0	73,041	0	73,041
2060	28,605,628	1,246,460	1,246,460	0	66,625	0	66,625
2061	29,788,287	1,219,748	1,219,748	0	60,648	0	60,648
2062	31,097,681	1,191,222	1,191,222	0	55,098	0	55,098
2063	32,545,666	1,161,065	1,161,065	0	49,956	0	49,956
2064	34,144,775	1,129,467	1,129,467	0	45,206	0	45,206
2065	35,908,269	1,096,613	1,096,613	0	40,829	0	40,829
2066	37,850,194	1,062,645	1,062,645	0	36,804	0	36,804
2067	39,985,503	1,027,672	1,027,672	0	33,109	0	33,109
2068	42,330,157	991,789	991,789	0	29,724	0	29,724
2069	44,901,228	955,085	955,085	0	26,627	0	26,627

Single Discount Rate Development

Present Values of Projected Benefits (Concluded)

(Dollars in Thousands)

Fiscal Year Ending	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)})
2070	\$ 47,716,984	\$ 917,644	\$ 917,644	\$ 0	\$ 23,798	\$ 0	\$ 23,798
2071	50,796,989	879,548	879,548	0	21,219	0	21,219
2072	54,162,204	840,877	840,877	0	18,871	0	18,871
2073	57,835,096	801,714	801,714	0	16,737	0	16,737
2074	61,839,743	762,147	762,147	0	14,801	0	14,801
2075	66,201,955	722,267	722,267	0	13,048	0	13,048
2076	70,949,401	682,175	682,175	0	11,464	0	11,464
2077	76,111,736	641,978	641,978	0	10,035	0	10,035
2078	81,720,749	601,793	601,793	0	8,751	0	8,751
2079	87,810,504	561,746	561,746	0	7,599	0	7,599
2080	94,417,514	521,974	521,974	0	6,568	0	6,568
2081	101,580,906	482,624	482,624	0	5,649	0	5,649
2082	109,342,606	443,858	443,858	0	4,833	0	4,833
2083	117,747,542	405,853	405,853	0	4,111	0	4,111
2084	126,843,847	368,799	368,799	0	3,475	0	3,475
2085	136,683,090	332,894	332,894	0	2,918	0	2,918
2086	147,320,524	298,342	298,342	0	2,432	0	2,432
2087	158,815,359	265,336	265,336	0	2,012	0	2,012
2088	171,231,070	234,055	234,055	0	1,651	0	1,651
2089	184,635,731	204,653	204,653	0	1,343	0	1,343
2090	199,102,387	177,258	177,258	0	1,082	0	1,082
2091	214,709,460	151,968	151,968	0	863	0	863
2092	231,541,176	128,852	128,852	0	681	0	681
2093	249,688,034	107,951	107,951	0	531	0	531
2094	269,247,311	89,274	89,274	0	408	0	408
2095	290,323,599	72,802	72,802	0	310	0	310
2096	313,029,383	58,484	58,484	0	231	0	231
2097	337,485,673	46,233	46,233	0	170	0	170
2098	363,822,680	35,927	35,927	0	123	0	123
2099	392,180,536	27,415	27,415	0	87	0	87
2100	422,710,079	20,522	20,522	0	61	0	61
2101	455,573,679	15,055	15,055	0	41	0	41
2102	490,946,120	10,815	10,815	0	28	0	28
2103	529,015,542	7,601	7,601	0	18	0	18
2104	569,984,441	5,225	5,225	0	12	0	12
2105	614,070,742	3,513	3,513	0	7	0	7
2106	661,508,934	2,311	2,311	0	4	0	4
2107	712,551,299	1,491	1,491	0	3	0	3
2108	767,469,218	946	946	0	2	0	2
2109	826,554,585	593	593	0	1	0	1
2110	890,121,321	370	370	0	1	0	1
2111	958,507,005	232	232	0	0	0	0
2112	1,032,074,634	148	148	0	0	0	0
2113	1,111,214,518	97	97	0	0	0	0
2114	1,196,346,316	66	66	0	0	0	0
2115	1,287,921,231	47	47	0	0	0	0
2116	1,386,424,378	35	35	0	0	0	0
2117	1,492,377,320	26	26	0	0	0	0
2118	1,606,340,803	21	21	0	0	0	0
2119	1,728,917,698	16	16	0	0	0	0
Totals					\$ 11,886,836	\$ 0	\$ 11,886,836

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 benefit payments at predetermined rates of interest to reflect the expected effects of the time value (present value) of money and the probabilities of payment.
<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 performed in conformity with Actuarial Standards of Practice unless otherwise specified by the GASB.
<i>Actuarial Valuation Date</i>	The date as of which an actuarial valuation is performed.
<i>Actuarially Determined Contribution (ADC)</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 covered employees, which is typically only the pensionable pay (meets the statutory salary definition) and does not include pay above any pay cap.
<i>Deferred Inflows and Outflows of Resources</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 or Single 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; and2. The present value of the benefit payments not in (1) above, discounted using the municipal bond rate.
<i>Entry Age Actuarial Cost Method or Entry Age Normal (EAN)</i>	The EAN is a funding method for allocating the costs of the plan between the normal cost and the accrued liability. The actuarial present value of the projected benefits of each individual included in an actuarial valuation is allocated on a level basis (either level dollar or level percent of pay) over the earnings or service of the individual between entry age and assumed exit age(s). The portion of the actuarial present value allocated to a valuation year is the normal cost. The portion of this actuarial present value not provided for at a valuation date by the actuarial present value of future normal costs is the actuarial accrued liability. The sum of the accrued liability plus the present value of all future normal costs is the present value of all benefits.

Glossary of Terms

<i>GASB</i>	The Governmental Accounting Standards Board is an organization that exists with authority to promulgate accounting standards for state and local governmental entities.
<i>Fiduciary Net Position</i>	The fiduciary net position is the value of the net assets of the trust restricted for pension benefits.
<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 contribution entities to plan members for benefits provided through a defined benefit pension plan.
<i>Non-Employer Contribution Entities</i>	Non-employer contribution entities are entities that make contributions to a pension plan that is used to provide pensions to the employees of other entities. For purposes of the GASB Accounting Statements No. 67 and No. 68 plan members are not considered non-employer contribution entities.
<i>Normal Cost</i>	The actuarial present value of the pension trust benefits allocated to the current year by the actuarial cost method.
<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 postemployment 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.

Glossary of Terms

Total Pension Expense

The total pension expense is the sum of the following items that are recognized at the end of the employer's fiscal year:

1. Service Cost
2. Interest on the Total Pension Liability
3. Current-Period Changes in Benefit Terms
4. Employee Contributions
5. Projected Earnings on Plan Investments
6. Pension Plan Administrative Expense
7. Other Changes in Plan Fiduciary Net Position
8. Recognition of Outflow (Inflow) of Resources due to the difference between expected and actual in measurement of the Total Pension Liability
9. Recognition of Outflows (Inflow) of Resources due to Assumption Changes
10. Recognition of Outflow (Inflow) of Resources due to the difference between projected and actual earnings on pension plan investments

Total Pension Liability (TPL)

The TPL is the portion of the actuarial present value of projected benefit payments that is attributed to past periods of member service.

Unfunded Actuarial Accrued Liability (UAAL)

The UAAL is the difference between actuarial accrued liability and valuation assets.

Valuation Assets

The valuation assets are the plan fiduciary net position used in determining the net position liability of the plan. For purposes of the GASB Statement No. 67, the asset valuation method is equal to the market value of assets.