Public Employees Retirement Association of Minnesota

Local Government Correctional Service Retirement Plan
GASB Statements No. 67 and No. 68 Accounting and Financial Reporting for Pensions
June 30, 2019

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November 14, 2019

Public Employees Retirement Association of Minnesota
Local Government Correctional Service Retirement Plan
St. Paul, Minnesota

Dear Trustees of the Local Government Correctional Service Retirement 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 Local Government Correctional Service Retirement Plan ("LGCSRP"), 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 Local Government Correctional Service Retirement 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

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

Bonita J. Wurst

Bonita J. Wurst, ASA, FSA, EA, 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		1,053
- Survivors		66
- Disability Retirements		199
- Deferred Retirements		3,374
- Terminated other non-vested		2,790
- Active Members		3,965
- Total		11,447
Covered Payroll	$	214,151
Net Pension Liability		
Total Pension Liability	$	758,268
Plan Fiduciary Net Position		744,423
Net Pension Liability	$	13,845
Plan Fiduciary Net Position as a Percentage of Total Pension Liability		98.17%
Net Pension Liability as a Percentage of Covered Payroll		6.47%
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)	**$**	**26,416**

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	$ 508	$ 2,263
Changes in assumptions	$ -	$ 122,919
Net difference between projected and actual earnings on pension plan investments	$ 8,381	$ 26,196
Total	$ 8,889	$ 151,378

* 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 LGCSRP 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 Statement No. 67. This information includes:

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

Required Supplementary Information

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

- sources of changes in the net pension liability;
- information about the components of the net pension liability and related ratios, including the pension plan's fiduciary net position as a percentage of the total pension liability, and the net pension liability as a percent of covered-employee payroll; and
- 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 Fidelity's "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	$	30,362
2.	Interest on the Total Pension Liability	$	52,741
3.	Current-Period Benefit Changes	$	-
4.	Employee Contributions (made negative for addition here)	$	(12,485)
5.	Projected Earnings on Plan Investments (made negative for addition here)	$	(51,524)
6.	Pension Plan Administrative Expense	$	361
7.	Other Changes in Plan Fiduciary Net Position	$	-
8.	Recognition of Outflow (Inflow) of Resources due to differences between expected and actual experience in the measurement of the Total Pension Liability		
	Arising from Current Reporting Period	$	(462)
9.	Recognition of Outflow (Inflow) of Resources due to assumption changes		
	Arising from Current Reporting Period	$	(552)
10.	Recognition of Outflow (Inflow) of Resources due to the difference between projected (7.50%) and actual earnings on Pension Plan Investments		
	Arising from Current Reporting Period	$	134
11.	**Increase/(Decrease) from Experience in the Current Reporting Period**	**$**	**18,575**
12.	Recognition of Outflow (Inflow) of Resources due to differences between expected and actual experience in the measurement of the Total Pension Liability		
	Arising from Prior Reporting Periods	$	(530)
13.	Recognition of Outflow (Inflow) of Resources due to assumption changes		
	Arising from Prior Reporting Periods	$	8,682
14.	Recognition of Outflow (Inflow) of Resources due to the difference between projected and actual earnings on Pension Plan Investments		
	Arising from Prior Reporting Periods	$	(311)
15.	**Total Pension Expense / (Income)**	**$**	**26,416**

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	$	(1,846)
2. Assumption Changes (gains) or losses	$	(2,206)
3. Recognition period for Liabilities: Average of the expected remaining service lives of all employees {in years}		4.0000
4. Outflow (Inflow) of Resources to be recognized in the current pension expense for the difference between expected and actual experience of the Total Pension Liability	$	(462)
5. Outflow (Inflow) of Resources to be recognized in the current pension expense for Assumption Changes	$	(552)
6. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Liabilities	$	(1,014)
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	$	(1,384)
8. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses for Assumption Changes	$	(1,654)
9. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Liabilities	$	(3,038)
B. Outflows (Inflows) of Resources due to Assets		
1. Net difference between projected and actual earnings on pension plan investments (gains) or losses	$	671
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	$	134
4. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Assets	$	537

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	$ 77,932	$ 70,794	$ 7,138
2. Due to Assets	$ 11,200	$ 11,377	$ (177)
3. Total	$ 89,132	$ 82,171	$ 6,961

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	$ 349	$ 1,341	$ (992)
2. Assumption Changes	$ 77,583	$ 69,453	$ 8,130
3. Net Difference between projected and actual earnings on pension plan investments	$ 11,200	$ 11,377	$ (177)
4. Total	$ 89,132	$ 82,171	$ 6,961

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	$ 508	$ 2,263	$ (1,755)
2. Assumption Changes	$ -	$ 122,919	$ (122,919)
3. Net Difference between projected and actual earnings on pension plan investments	$ 8,381	$ 26,196	$ (17,815)
4. Total	$ 8,889	$ 151,378	$ (142,489)

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	$ (73,938)
2021	$ (64,364)
2022	$ (4,322)
2023	$ 135
2024	$ -
Thereafter	$ -
Total	$ (142,489)

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					
2016	$ 382	4.0000	$ 94	$ 0	0.0000
2017	(3,516)	4.0000	(879)	(879)	1.0000
2018	1,018	4.0000	255	508	2.0000
2019	(1,846)	4.0000	(462)	(1,384)	3.0000
Total			**$ (992)**	**$ (1,755)**	
Deferred Outflow (Inflow) Due to Assumption Changes					
2016	$ 310,332	4.0000	$ 77,583	$ 0	0.0000
2017	(66,147)	4.0000	(16,537)	(16,536)	1.0000
2018	(209,457)	4.0000	(52,364)	(104,729)	2.0000
2019	(2,206)	4.0000	(552)	(1,654)	3.0000
Total			**$ 8,130**	**$ (122,919)**	
Deferred Outflow (Inflow) Due to Differences Between Projected and Actual Earnings on Plan Investments					
2015	$ 16,109	5.0000	$ 3,221	$ 0	0.0000
2016	39,224	5.0000	7,845	7,844	1.0000
2017	(39,668)	5.0000	(7,934)	(15,866)	2.0000
2018	(17,216)	5.0000	(3,443)	(10,330)	3.0000
2019	671	5.0000	134	537	4.0000
Total			**$ (177)**	**$ (17,815)**	

Statement of Fiduciary Net Position
(Dollars in Thousands)

	Market Value			
Assets in Trust		**June 30, 2019**		**June 30, 2018**
Cash, equivalents, short term securities	$	20,842	$	8,046
Fixed income	$	151,524	$	165,171
Equity	$	463,263	$	412,840
Private Markets	$	108,365	$	93,990
Other	$	-	$	-
Total Assets in Trust	**$**	**743,994**	**$**	**680,047**
Assets Receivable	$	965	$	846
Amounts Payable	$	(536)	$	(498)
Net Position Restricted for Pensions	**$**	**744,423**	**$**	**680,395**

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

Change in Assets		**Market Value**		
Year Ending			**June 30, 2019**	**June 30, 2018**
1.	Fund balance at market value at beginning of year		$ 680,395	$ 602,460
2.	Adjustment to match beginning of year asset statement		$ -	$ -
3.	Fund balance at market value at beginning of year		$ 680,395	$ 602,460
4.	Contributions			
	a. Member		$ 12,485	$ 11,956
	b. Employer		$ 18,676	$ 17,871
	c. Other sources		$ -	$ -
	d. Total contributions		$ 31,161	$ 29,827
5.	Investment income			
	a. Investment income/(loss)		$ 51,549	$ 63,662
	b. Investment expenses		$ (696)	$ (700)
	c. Net subtotal		$ 50,853	$ 62,962
6.	Other		$ -	$ 1
7.	**Total additions:** *(4.d.) + (5.c.) + (6.)*		**$ 82,014**	**$ 92,790**
8.	Benefits Paid			
	a. Annuity benefits		$ (15,381)	$ (13,183)
	b. Refunds		$ (2,244)	$ (1,364)
	c. Total benefits paid		$ (17,625)	$ (14,547)
9.	Expenses			
	a. Other		$ -	$ -
	b. Administrative		$ (361)	$ (308)
	c. Total expenses		$ (361)	$ (308)
10.	**Total deductions:** *(8.c.) + (9.c.)*		**$ (17,986)**	**$ (14,855)**
11.	Net increase (decrease) in net position: *(7.) + (10.)*		$ 64,028	$ 77,935
12.	**Net position restricted for pensions**		**$ 744,423**	**$ 680,395**
13.	Approximate return on market value of assets		7.3%	10.3%

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	$	30,362
2. Interest on the Total Pension Liability	$	52,741
3. Changes of benefit terms	$	-
4. Difference between expected and actual experience of the Total Pension Liability	$	(1,846)
5. Changes of assumptions	$	(2,206)
6. Benefit payments, including refunds of employee contributions	$	(17,625)
7. Net change in total pension liability	$	61,426
8. Total pension liability – beginning	$	696,842
9. Total pension liability – ending	**$**	**758,268**
B. Plan fiduciary net position		
1. Contributions – employer	$	18,676
2. Contributions – employee	$	12,485
3. Net investment income	$	50,853
4. Benefit payments, including refunds of employee contributions	$	(17,625)
5. Pension Plan Administrative Expense	$	(361)
6. Other	$	-
7. Net change in plan fiduciary net position	$	64,028
8. Plan fiduciary net position – beginning	$	680,395
9. Plan fiduciary net position – ending	**$**	**744,423**
C. Net pension liability	**$**	**13,845**
D. Plan fiduciary net position as a percentage of the total pension liability		**98.17%**
E. Covered-employee payroll*	**$**	**214,151**
F. Net pension liability as a percentage of covered-employee payroll		**6.47%**

** 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	$ 30,362	$ 45,378	$ 49,202	$ 25,950	$ 25,098	$ 26,488				
Interest on the Total Pension Liability	$ 52,741	$ 53,811	$ 47,336	$ 40,605	$ 37,043	$ 33,955				
Benefit Changes	$ -	$ (66,822)	$ -	$ -	$ -	$ -				
Difference between Expected and Actual Experience	$ (1,846)	$ 1,018	$ (3,516)	$ 382	$ (7,892)	$ (5,327)				
Assumption Changes	$ (2,206)	$ (209,457)	$ (66,147)	$ 310,332	$ -	$ (34,168)				
Benefit Payments	$ (15,381)	$ (13,183)	$ (11,033)	$ (9,381)	$ (7,777)	$ (6,711)				
Refunds	$ (2,244)	$ (1,364)	$ (1,478)	$ (982)	$ (1,057)	$ (1,105)				
Net Change in Total Pension Liability	$ 61,426	$ (190,619)	$ 14,364	$ 366,906	$ 45,415	$ 13,132				
Total Pension Liability - Beginning	$ 696,842	$ 887,461	$ 873,097	$ 506,191	$ 460,776	$ 447,644				
Total Pension Liability - Ending (a)	$ 758,268	$ 696,842	$ 887,461	$ 873,097	$ 506,191	$ 460,776				
Plan Fiduciary Net Position										
Employer Contributions	$ 18,676	$ 17,871	$ 17,489	$ 16,490	$ 15,736	$ 15,054				
Employee Contributions	$ 12,485	$ 11,956	$ 11,666	$ 11,008	$ 10,472	$ 10,030				
Pension Plan Net Investment Income	$ 50,853	$ 62,962	$ 78,363	$ 209	$ 20,373	$ 69,451				
Benefit Payments	$ (15,381)	$ (13,183)	$ (11,033)	$ (9,381)	$ (7,777)	$ (6,711)				
Refunds	$ (2,244)	$ (1,364)	$ (1,478)	$ (982)	$ (1,057)	$ (1,105)				
Pension Plan Administrative Expense	$ (361)	$ (308)	$ (330)	$ (290)	$ (247)	$ (236)				
Other	$ -	$ 1	$ -	$ (2)	$ (1)	$ (1)				
Net Change in Plan Fiduciary Net Position	$ 64,028	$ 77,935	$ 94,677	$ 17,052	$ 37,499	$ 86,482				
Plan Fiduciary Net Position - Beginning	$ 680,395	$ 602,460	$ 507,783	$ 490,731	$ 453,232	$ 366,750				
Plan Fiduciary Net Position - Ending (b)	$ 744,423	$ 680,395	$ 602,460	$ 507,783	$ 490,731	$ 453,232				
Net Pension Liability - Ending (a) - (b)	$ 13,845	$ 16,447	$ 285,001	$ 365,314	$ 15,460	$ 7,544				
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	98.17 %	97.64 %	67.89 %	58.16 %	96.95 %	98.36 %				
Covered Employee Payroll	$ 214,151	$ 205,077	$ 200,103	$ 188,816	$ 179,623	$ 172,041				
Net Pension Liability as a Percentage of Covered Employee Payroll	6.47 %	8.02 %	142.43 %	193.48 %	8.61 %	4.39 %				

Notes to Schedule:

N/A

Schedules of Required Supplementary Information
Schedule of 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	$ 460,776	$ 453,232	$ 7,544	98.36%	$ 172,041	4.39%
2015	$ 506,191	$ 490,731	$ 15,460	96.95%	$ 179,623	8.61%
2016	$ 873,097	$ 507,783	$ 365,314	58.16%	$ 188,816	193.48%
2017	$ 887,461	$ 602,460	$ 285,001	67.89%	$ 200,103	142.43%
2018	$ 696,842	$ 680,395	$ 16,447	97.64%	$ 205,077	8.02%
2019	$ 758,268	$ 744,423	$ 13,845	98.17%	$ 214,151	6.47%

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	$ 12,273	$ 14,170	$ (1,897)	$ 154,777	9.16%
2011	$ 12,183	$ 14,289	$ (2,106)	$ 165,077	8.66
2012	$ 12,473	$ 14,320	$ (1,847)	$ 164,340	8.71
2013	$ 14,207	$ 14,498	$ (291)	$ 164,820	8.80
2014	$ 14,606	$ 15,054	$ (448)	$ 172,041	8.75
2015	$ 13,759	$ 15,736	$ (1,977)	$ 179,623	8.76
2016	$ 16,446	$ 16,490	$ (44)	$ 188,816	8.73
2017	$ 17,269	$ 17,489	$ (220)	$ 200,103	8.74
2018	$ 19,031	$ 17,871	$ 1,160	$ 205,077	8.71
2019	$ 19,466	$ 18,676	$ 790	$ 214,151	8.72

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	3.50% to 8.50% 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 2012 valuation pursuant to an experience study of the period 2006 - 2011, prepared by a former actuary.
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 2.00% post-retirement benefit increase for all years. See separate funding report as of July 1, 2018 for additional detail.

Schedule of Investment Returns Multiyear

Last 10 Fiscal Years

FY Ending June 30,	Annual Return[1]
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:

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return (geometric)
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	100%	

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 a review 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%. The projection of cash flows used to determine this single discount rate assumed that plan member, employer, and state contributions will be made at the current statutory contribution rates. Based on these assumptions, the pension plan's fiduciary net position was projected to be available to make all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

Regarding the sensitivity of the net pension liability to changes in the single discount rate, the following presents the plan's net pension liability, calculated using a single discount rate of 7.50%, as well as what the plan's net pension liability would be if it were calculated using a single discount rate that is 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 6.50%	Current Single Discount Rate Assumption 7.50%	1% Increase 8.50%
Total Pension Liability	$ 891,982	$ 758,268	$ 651,275
Net Position Restricted for Pensions	$ 744,423	$ 744,423	$ 744,423
Net Pension Liability	**$ 147,559**	**$ 13,845**	**$ (93,148)**

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 Deferred Outflows	Deferred Inflows	Pension Expense*
Balance Beginning of Year	**$ 696,842**	**$ 680,395**	**$ 16,447**			
Changes for the Year:						
Service Cost	$ 30,362		$ 30,362			$ 30,362
Interest on Total Pension Liability	52,741		52,741			52,741
Interest on Fiduciary Net Position		$ 51,524	(51,524)			(51,524)
Changes in Benefit Terms	-		-			-
Liability Experience Gains and Losses	(1,846)		(1,846)	$ -	$ 1,384	(462)
Changes in Assumptions	(2,206)		(2,206)	-	1,654	(552)
Contributions - Employer		18,676	(18,676)			
Contributions - Employees		12,485	(12,485)			(12,485)
Asset Gain/(Loss)		(671)	671	537	-	134
Benefit Payouts	(17,625)	(17,625)				
Administrative Expenses		(361)	361			361
Other		-	-			-
Net Changes	**$ 61,426**	**$ 64,028**	**$ (2,602)**	**$ 537**	**$ 3,038**	**$ 18,575**
Balance End of Year	**$ 758,268**	**$ 744,423**	**$ 13,845**			

** 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	**$ 696,842**	**$ 680,395**	**$ 16,447**				
Changes for the Year:							
Service Cost	$ 30,362		$ 30,362				$ 30,362
Interest on Total Pension Liability	52,741		52,741				52,741
Interest on Fiduciary Net Position		$ 51,524	(51,524)				(51,524)
Changes in Benefit Terms	-		-				-
Liability Experience Gains and Losses	(1,846)		(1,846)	$ 508	$ 2,263	$ (901)	(992)
Changes in Assumptions	(2,206)		(2,206)	-	122,919	(112,583)	8,130
Contributions - Employer		18,676	(18,676)				
Contributions - Employees		12,485	(12,485)				(12,485)
Asset Gain/(Loss)		(671)	671	8,381	26,196	(18,663)	(177)
Benefit Payouts	(17,625)	(17,625)					
Administrative Expenses		(361)	361				361
Other		-	-				-
Net Changes	**$ 61,426**	**$ 64,028**	**$ (2,602)**				**$ 26,416**
Balance End of Year	**$ 758,268**	**$ 744,423**	**$ 13,845**	**$ 8,889**	**$ 151,378**	**$ (132,147)**	

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

Summary of Population Statistics

		Terminated		Recipients			
	Actives	Deferred Retirement	Other Non-Vested	Service Retirement	Disability Retirement	Survivor	Total
Members on July 1, 2018	**3,981**	**3,165**	**2,811**	**942**	**190**	**61**	**11,150**
New members	578						**578**
Return to active	34	(10)	(24)	0	0	0	**0**
Terminated non-vested	(336)	0	336	0	0	0	**0**
Service retirements	(56)	(58)	0	114	0	0	**0**
Terminated deferred	(164)	164	0	0	0	0	**0**
Terminated refund/transfer	(57)	(39)	(307)	0	0	0	**(403)**
Deaths	(6)	(5)	(6)	(4)	(2)	0	**(23)**
New beneficiary	0	0	0	0	0	4	**4**
Disabled	(9)	0	0	0	9	0	**0**
Data adjustments	0	157	(20)	1	2	1	**141**
Net change	(16)	209	(21)	111	9	5	**297**
Members on July 1, 2019	**3,965**	**3,374**	**2,790**	**1,053**	**199**	**66**	**11,447**

SECTION E

SUMMARY OF BENEFITS

Summary of Plan Provisions

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	Local government employees in covered correctional service for a county administered jail or correctional facility or in a regional correctional facility administered by multiple counties, who are directly responsible for security, custody and control of persons confined in jail or facility, who are expected to respond to incidents within the jail or facility, and who are not members of the Public Employees Police and Fire Fund.
Contributions	Shown as a percent of salary: Member 5.83% Employer 8.75% Member contributions are "picked up" according to the provisions of Internal Revenue Code 414(h).
Allowable service	Local Government Correctional Service during which member contributions were made (effective July 1, 1999). May also include certain leaves of absence, military service and periods while temporary Worker's Compensation is paid.
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.
Vesting	Hired before July 1, 2010: 100% vested after 3 years of Allowable Service; Hired after June 30, 2010: 50% vested after 5 years of Allowable Service; 60% vested after 6 years of Allowable Service; 70% vested after 7 years of Allowable Service; 80% vested after 8 years of Allowable Service; 90% vested after 9 years of Allowable Service; and 100% vested after 10 years of Allowable Service.
Retirement Normal retirement benefit	
Age/service requirement	Age 55 and vested. Proportionate Retirement Annuity is available at age 65 and one year of Allowable Service.
Amount	1.9% of Average Salary for each year of Allowable Service, pro rata for completed months, adjusted for partial vesting if applicable.

Summary of Plan Provisions (Continued)

Retirement (Concluded)	
Early Retirement	
Age/service requirement	Age 50 and vested.
Amount	Normal Retirement Benefit based on Allowable Service and Average Salary at retirement date with actuarial reduction to commencement age assuming 3% augmentation to age 55 (2.50% if hired after June 30, 2006). Augmentation adjustment is phased out over a five-year period starting July 1, 2019, resulting in no augmentation adjustment after June 30, 2024.
Form of payment	Life annuity. Actuarially equivalent options are: 25%, 50%, 75% or 100% Joint and Survivor. If a Joint and Survivor benefit is elected and the beneficiary predeceases the annuitant, the annuitant's benefit increases to the Life Annuity amount. This "bounce back" is subsidized by the plan.
Benefit increases	Benefit increases after retirement will equal 100% of the Social Security Cost of Living Adjustment, not less than 1.0% and not more than 2.5%, beginning January 1, 2019. If the funding status declines to 85% for two consecutive years or 80% for one year, the maximum increase will be lowered to 1.5%. 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.
Disability	
Duty Disability	
Age/service requirement	Member who cannot perform his duties as a direct result of a disability relating to an act of duty specific to protecting the property and personal safety of others.
Amount	47.50% of Average Salary plus 1.90% of Average Salary for each year in excess of 25 years of Allowable Service (pro rata for completed months). Payment begins at disability and ends at age 65 or earlier if disability ceases or death occurs. Benefits may be paid upon re-employment but salary plus benefit cannot exceed current salary of position held at time of disability.
Regular Disability	
Age/service requirement	At least one year of Allowable Service and a disability preventing member from performing normal duties that arise out of activities not related to covered employment or while at work, activities related to duties that do not present inherent dangers specific to occupation.

Summary of Plan Provisions (Continued)

Disability (Concluded)	
Amount	Normal Retirement Benefit based on Allowable Service (minimum of 10 years) and Average Salary at disability. Payment begins at disability and ends at age 65 or earlier if disability ceases or death occurs. Benefits may be paid upon re-employment but salary plus benefit cannot exceed current salary of position held at time of disability.
<u>Retirement benefit</u>	
Age/service requirement	Age 65 with continued disability.
Amount	Any optional annuity continues. Otherwise, the larger of the disability benefit paid before age 65 or the normal retirement benefit available at age 65, or an actuarially equivalent optional annuity.
<u>Form of payment</u>	Same as for retirement.
<u>Benefit increases</u>	Same as for retirement.
Death	
<u>Surviving spouse benefit</u>	
Age/service requirement	Vested active member at any age or vested former member age 50 or older who dies before retirement or disability benefit commences. If an active member dies, benefits may commence immediately, regardless of age.
Amount	Surviving spouse receives the 100% joint and survivor benefit using the Normal Retirement formula above. If commencement is prior to age 55, the appropriate early retirement formula described above applies except that one-half the monthly reduction factor is used from age 50 to the commencement age. In lieu of this benefit, the surviving spouse may elect a refund of contributions with interest or an actuarially equivalent term certain annuity (lump sum payable to estate at death).
Benefit increases	Same as for retirement.
<u>Surviving dependent children's benefit</u>	
Age/service requirement	If no surviving spouse, all dependent children (biological or adopted) below age 20 who are dependent for more than half of their support on deceased member.
Amount	Actuarially equivalent to surviving spouse 100% joint and survivor annuity payable to the later of age 20 or five years. The amount is to be proportionally divided among surviving children.

Summary of Plan Provisions (Continued)

Death (Concluded)	
Refund of contributions	
Age/service requirement	Active employee dies and survivor benefits paid are less than member's contributions or a former employee dies before annuity begins.
Amount	If no survivor benefits are paid, the member's contributions with 6.00% interest until June 30, 2011; 4.00% to June 30, 2018; 3.00% thereafter. If survivor benefits are paid and accumulated contributions exceed total payments to the surviving spouse and children, then the remaining contributions are paid out.
Termination	
Refund of contributions	
Age/service requirement	Termination of local government 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.
Deferred benefit	
Age/service requirement	Partially or fully vested.
Amount	Benefit computed under law in effect at termination and increased by the following percentage (augmentation), compounded annually, if termination of employment is prior to January 1, 2012: (a.) 3.00% (2.50% if hired after June 30, 2006) until the earlier of January 1 of the year following attainment of age 55 and January 1, 2012; (b.) 5.00% (2.50% if hired after June 30, 2006) thereafter until the earlier of the date the annuity begins and January 1, 2012; (c.) 1.00% from January 1, 2012 through December 31, 2018; and (d.) 0.00% thereafter. If a member terminates employment after 2011, they are not eligible for augmentation.
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 65% males, 4.88% post-retirement interest, and 7.5% pre-retirement interest. Reflecting statutory requirements, joint and survivor factors are based on an interest assumption of 6.50%.

Summary of Plan Provisions (Concluded)

Combined service annuity	Members are eligible for combined service benefits if they: (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). Other requirements for combined service include: (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. Members who meet the above requirements must have their benefit based on the following: (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	There were no changes in plan provisions since the prior valuation.

SECTION F

ACTUARIAL COST METHOD AND ACTUARIAL ASSUMPTIONS

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.

Valuation of Future Post-Retirement Benefit Increases

Benefit increases after retirement will equal 100% of the Social Security Cost of Living Adjustment, not less than 1.0% and not more than 2.5%, beginning January 1, 2019; if the funding status declines to 85% for two consecutive years or 80% for one year, the maximum increase will be lowered to 1.5%. Stochastic modeling was used to determine the assumption that benefit increases will equal 2.00% per year. This is only an assumption; actual increases will depend on actual experience.

Asset Valuation Method

Fair value of assets.

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

The following assumptions were used in valuing the liabilities and benefits under the plan. The assumptions are based on the last experience study dated February 2012, prepared by a former actuary, and a review of inflation and investment assumptions in the experience study report for the General Employees Retirement Plan, dated June 27, 2019. The mortality assumption is based on the Public Employees' Police & Fire Plan experience study dated August 30, 2016. 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.
Benefit increases after retirement	2.00% 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 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:

Year	Select Withdrawal Rates
1	25%
2	20%
3	15%

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 35.0% for vested members and 1.0% 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 active members are assumed to be married. Actual marital status is used for members in payment status.
Age of spouse	Females are assumed to be three years younger than their male spouses. 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	Married members retiring from active status are assumed to elect subsidized joint and survivor form of annuity as follows: Males: 5% elect 25% Joint & Survivor option 10% elect 50% Joint & Survivor option 10% elect 75% Joint & Survivor option 35% elect 100% Joint & Survivor option Females: 5% elect 25% Joint & Survivor option 5% elect 50% Joint & Survivor option 5% elect 75% Joint & Survivor option 5% elect 100% Joint & Survivor option Remaining married members and unmarried members are assumed to elect the Straight Life option. Members receiving deferred annuities (including current terminated deferred members) are assumed to elect a straight life annuity.
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.
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.

Summary of Actuarial Assumptions (Continued)

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, were applied: <u>Data for active members:</u> There were 111 members reported with a salary less than $100. We used prior year salary (49 members), if available; otherwise high five salary with a 10% load to account for salary increases (61 members). If neither prior year salary or high five salary was available, we assumed a value of $43,000. There were also 49 members reported without a gender and 6 members reported without a date of birth. We assumed an entry age of 30 and male gender. <u>Data for terminated members:</u> We calculated benefits for these members using the reported Average Salary and credited service. There were no members reported without Average Salary. If credited service was not reported (33 members), we used elapsed time from hire date to termination date (18 members), otherwise we assumed nine years of service. If termination date was not reported (15 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 was 1 member reported without a date of birth. We assumed a date of birth of July 1, 1976. There were 7 members reported without a gender; male was assumed. <u>Data for retired members:</u> There were no members reported without a date of birth, gender or benefit. 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 63 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)

	Percentage of Members Dying Each Year*					
	Healthy Post-Retirement Mortality		Healthy Pre-Retirement Mortality		Disability Mortality	
Age in 2019	Male	Female	Male	Female	Male	Female
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.*

	Withdrawal Rates		Disability Retirement Rates	
Age	Male	Female	Male	Female
20	14.70%	14.20%	0.04%	0.04%
25	14.70%	14.20%	0.06%	0.06%
30	9.10%	11.40%	0.10%	0.08%
35	6.00%	8.60%	0.18%	0.11%
40	4.40%	6.90%	0.23%	0.18%
45	3.40%	4.30%	0.34%	0.39%
50	2.40%	3.10%	0.55%	0.70%
55	1.40%	2.20%	0.88%	1.18%
60	0.10%	0.20%	1.41%	2.41%
65	0.00%	0.00%	1.67%	2.67%

Summary of Actuarial Assumptions (Concluded)

Age	Retirement Rate
50	3%
51	2
52	2
53	2
54	5
55	20
56	8
57	8
58	8
59	8
60	15
61	15
62	30
63	30
64	30
65	40
66	40
67	40
68	40
69	40
70+	100

Salary Scale	
Age	Increase
20	8.50%
25	7.25
30	6.25
35	5.75
40	5.25
45	4.50
50	4.50
55	4.25
60	3.75
65	3.50
70+	3.50

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 long-term expected 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 calculation, 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)

	Payroll			Projected Contributions			
Fiscal Year Ending	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*	Total Contributions
2019	$ 214,151	$ -	$ 214,151				
2020	$ 237,958	$ -	$ 237,958	$ 13,873	$ 20,821	$ -	$ 34,694
2021	$ 224,363	$ 21,329	$ 245,692	$ 13,080	$ 19,632	$ 100	$ 32,812
2022	$ 214,371	$ 39,306	$ 253,677	$ 12,498	$ 18,757	$ 185	$ 31,440
2023	$ 206,510	$ 55,411	$ 261,921	$ 12,040	$ 18,070	$ 260	$ 30,370
2024	$ 199,272	$ 71,162	$ 270,434	$ 11,618	$ 17,436	$ 334	$ 29,388
2025	$ 192,137	$ 87,086	$ 279,223	$ 11,202	$ 16,812	$ 409	$ 28,423
2026	$ 185,343	$ 102,955	$ 288,298	$ 10,805	$ 16,218	$ 484	$ 27,507
2027	$ 178,784	$ 118,883	$ 297,667	$ 10,423	$ 15,644	$ 559	$ 26,626
2028	$ 172,362	$ 134,980	$ 307,342	$ 10,049	$ 15,082	$ 634	$ 25,765
2029	$ 166,156	$ 151,174	$ 317,330	$ 9,687	$ 14,539	$ 711	$ 24,937
2030	$ 160,066	$ 167,577	$ 327,643	$ 9,332	$ 14,006	$ 788	$ 24,126
2031	$ 153,894	$ 184,398	$ 338,292	$ 8,972	$ 13,466	$ 867	$ 23,305
2032	$ 147,632	$ 201,654	$ 349,286	$ 8,607	$ 12,918	$ 948	$ 22,473
2033	$ 141,376	$ 219,262	$ 360,638	$ 8,242	$ 12,370	$ 1,031	$ 21,643
2034	$ 135,162	$ 237,197	$ 372,359	$ 7,880	$ 11,827	$ 1,115	$ 20,822
2035	$ 128,933	$ 255,528	$ 384,461	$ 7,517	$ 11,282	$ 1,201	$ 20,000
2036	$ 122,745	$ 274,211	$ 396,956	$ 7,156	$ 10,740	$ 1,289	$ 19,185
2037	$ 116,604	$ 293,253	$ 409,857	$ 6,798	$ 10,203	$ 1,378	$ 18,379
2038	$ 110,489	$ 312,688	$ 423,177	$ 6,442	$ 9,668	$ 1,470	$ 17,580
2039	$ 104,334	$ 332,596	$ 436,930	$ 6,083	$ 9,129	$ 1,563	$ 16,775
2040	$ 98,089	$ 353,041	$ 451,130	$ 5,719	$ 8,583	$ 1,659	$ 15,961
2041	$ 91,903	$ 373,889	$ 465,792	$ 5,358	$ 8,042	$ 1,757	$ 15,157
2042	$ 85,833	$ 395,097	$ 480,930	$ 5,004	$ 7,510	$ 1,857	$ 14,371
2043	$ 79,808	$ 416,753	$ 496,561	$ 4,653	$ 6,983	$ 1,959	$ 13,595
2044	$ 73,640	$ 439,059	$ 512,699	$ 4,293	$ 6,443	$ 2,064	$ 12,800
2045	$ 67,346	$ 462,016	$ 529,362	$ 3,926	$ 5,893	$ 2,171	$ 11,990
2046	$ 61,070	$ 485,496	$ 546,566	$ 3,560	$ 5,344	$ 2,282	$ 11,186
2047	$ 54,831	$ 509,498	$ 564,329	$ 3,197	$ 4,798	$ 2,395	$ 10,390
2048	$ 48,744	$ 533,926	$ 582,670	$ 2,842	$ 4,265	$ 2,509	$ 9,616
2049	$ 42,900	$ 558,707	$ 601,607	$ 2,501	$ 3,754	$ 2,626	$ 8,881
2050	$ 37,248	$ 583,911	$ 621,159	$ 2,172	$ 3,259	$ 2,744	$ 8,175
2051	$ 31,846	$ 609,501	$ 641,347	$ 1,857	$ 2,787	$ 2,865	$ 7,509
2052	$ 26,829	$ 635,361	$ 662,190	$ 1,564	$ 2,348	$ 2,986	$ 6,898
2053	$ 22,211	$ 661,501	$ 683,712	$ 1,295	$ 1,943	$ 3,109	$ 6,347
2054	$ 18,012	$ 687,920	$ 705,932	$ 1,050	$ 1,576	$ 3,233	$ 5,859
2055	$ 14,242	$ 714,633	$ 728,875	$ 830	$ 1,246	$ 3,359	$ 5,435
2056	$ 10,955	$ 741,608	$ 752,563	$ 639	$ 959	$ 3,486	$ 5,084
2057	$ 8,166	$ 768,856	$ 777,022	$ 476	$ 714	$ 3,614	$ 4,804
2058	$ 5,861	$ 796,414	$ 802,275	$ 342	$ 513	$ 3,743	$ 4,598
2059	$ 4,060	$ 824,289	$ 828,349	$ 237	$ 355	$ 3,874	$ 4,466
2060	$ 2,704	$ 852,566	$ 855,270	$ 158	$ 237	$ 4,007	$ 4,402
2061	$ 1,728	$ 881,339	$ 883,067	$ 101	$ 151	$ 4,142	$ 4,394
2062	$ 1,063	$ 910,703	$ 911,766	$ 62	$ 93	$ 4,280	$ 4,435
2063	$ 627	$ 940,772	$ 941,399	$ 37	$ 55	$ 4,422	$ 4,514
2064	$ 353	$ 971,641	$ 971,994	$ 21	$ 31	$ 4,567	$ 4,619
2065	$ 185	$ 1,003,399	$ 1,003,584	$ 11	$ 16	$ 4,716	$ 4,743
2066	$ 88	$ 1,036,112	$ 1,036,200	$ 5	$ 8	$ 4,870	$ 4,883
2067	$ 39	$ 1,069,838	$ 1,069,877	$ 2	$ 3	$ 5,028	$ 5,033
2068	$ 15	$ 1,104,633	$ 1,104,648	$ 1	$ 1	$ 5,192	$ 5,194
2069	$ 5	$ 1,140,544	$ 1,140,549	$ -	$ -	$ 5,361	$ 5,361

**Equal to total contributions (14.58% of payroll for new employees) net of normal cost and expenses (14.11% of payroll).*

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

	Payroll			Projected Contributions			
Fiscal Year Ending	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*	Total Contributions
2070	$ 1	$ 1,177,616	$ 1,177,617	$ -	$ -	$ 5,535	$ 5,535
2071	$ -	$ 1,215,889	$ 1,215,889	$ -	$ -	$ 5,715	$ 5,715
2072	$ -	$ 1,255,406	$ 1,255,406	$ -	$ -	$ 5,900	$ 5,900
2073	$ -	$ 1,296,206	$ 1,296,206	$ -	$ -	$ 6,092	$ 6,092
2074	$ -	$ 1,338,333	$ 1,338,333	$ -	$ -	$ 6,290	$ 6,290
2075	$ -	$ 1,381,829	$ 1,381,829	$ -	$ -	$ 6,495	$ 6,495
2076	$ -	$ 1,426,738	$ 1,426,738	$ -	$ -	$ 6,706	$ 6,706
2077	$ -	$ 1,473,107	$ 1,473,107	$ -	$ -	$ 6,924	$ 6,924
2078	$ -	$ 1,520,983	$ 1,520,983	$ -	$ -	$ 7,149	$ 7,149
2079	$ -	$ 1,570,415	$ 1,570,415	$ -	$ -	$ 7,381	$ 7,381
2080	$ -	$ 1,621,454	$ 1,621,454	$ -	$ -	$ 7,621	$ 7,621
2081	$ -	$ 1,674,151	$ 1,674,151	$ -	$ -	$ 7,869	$ 7,869
2082	$ -	$ 1,728,561	$ 1,728,561	$ -	$ -	$ 8,124	$ 8,124
2083	$ -	$ 1,784,739	$ 1,784,739	$ -	$ -	$ 8,388	$ 8,388
2084	$ -	$ 1,842,743	$ 1,842,743	$ -	$ -	$ 8,661	$ 8,661
2085	$ -	$ 1,902,632	$ 1,902,632	$ -	$ -	$ 8,942	$ 8,942
2086	$ -	$ 1,964,468	$ 1,964,468	$ -	$ -	$ 9,233	$ 9,233
2087	$ -	$ 2,028,313	$ 2,028,313	$ -	$ -	$ 9,533	$ 9,533
2088	$ -	$ 2,094,233	$ 2,094,233	$ -	$ -	$ 9,843	$ 9,843
2089	$ -	$ 2,162,296	$ 2,162,296	$ -	$ -	$ 10,163	$ 10,163
2090	$ -	$ 2,232,570	$ 2,232,570	$ -	$ -	$ 10,493	$ 10,493
2091	$ -	$ 2,305,129	$ 2,305,129	$ -	$ -	$ 10,834	$ 10,834
2092	$ -	$ 2,380,046	$ 2,380,046	$ -	$ -	$ 11,186	$ 11,186
2093	$ -	$ 2,457,397	$ 2,457,397	$ -	$ -	$ 11,550	$ 11,550
2094	$ -	$ 2,537,263	$ 2,537,263	$ -	$ -	$ 11,925	$ 11,925
2095	$ -	$ 2,619,724	$ 2,619,724	$ -	$ -	$ 12,313	$ 12,313
2096	$ -	$ 2,704,865	$ 2,704,865	$ -	$ -	$ 12,713	$ 12,713
2097	$ -	$ 2,792,773	$ 2,792,773	$ -	$ -	$ 13,126	$ 13,126
2098	$ -	$ 2,883,538	$ 2,883,538	$ -	$ -	$ 13,553	$ 13,553
2099	$ -	$ 2,977,253	$ 2,977,253	$ -	$ -	$ 13,993	$ 13,993
2100	$ -	$ 3,074,014	$ 3,074,014	$ -	$ -	$ 14,448	$ 14,448
2101	$ -	$ 3,173,919	$ 3,173,919	$ -	$ -	$ 14,917	$ 14,917
2102	$ -	$ 3,277,071	$ 3,277,071	$ -	$ -	$ 15,402	$ 15,402
2103	$ -	$ 3,383,576	$ 3,383,576	$ -	$ -	$ 15,903	$ 15,903
2104	$ -	$ 3,493,542	$ 3,493,542	$ -	$ -	$ 16,420	$ 16,420
2105	$ -	$ 3,607,083	$ 3,607,083	$ -	$ -	$ 16,953	$ 16,953
2106	$ -	$ 3,724,313	$ 3,724,313	$ -	$ -	$ 17,504	$ 17,504
2107	$ -	$ 3,845,353	$ 3,845,353	$ -	$ -	$ 18,073	$ 18,073
2108	$ -	$ 3,970,327	$ 3,970,327	$ -	$ -	$ 18,661	$ 18,661
2109	$ -	$ 4,099,362	$ 4,099,362	$ -	$ -	$ 19,267	$ 19,267
2110	$ -	$ 4,232,592	$ 4,232,592	$ -	$ -	$ 19,893	$ 19,893
2111	$ -	$ 4,370,151	$ 4,370,151	$ -	$ -	$ 20,540	$ 20,540
2112	$ -	$ 4,512,181	$ 4,512,181	$ -	$ -	$ 21,207	$ 21,207
2113	$ -	$ 4,658,827	$ 4,658,827	$ -	$ -	$ 21,896	$ 21,896
2114	$ -	$ 4,810,239	$ 4,810,239	$ -	$ -	$ 22,608	$ 22,608
2115	$ -	$ 4,966,571	$ 4,966,571	$ -	$ -	$ 23,343	$ 23,343
2116	$ -	$ 5,127,985	$ 5,127,985	$ -	$ -	$ 24,102	$ 24,102
2117	$ -	$ 5,294,644	$ 5,294,644	$ -	$ -	$ 24,885	$ 24,885
2118	$ -	$ 5,466,720	$ 5,466,720	$ -	$ -	$ 25,694	$ 25,694
2119	$ -	$ 5,644,389	$ 5,644,389	$ -	$ -	$ 26,529	$ 26,529

**Equal to total contributions (14.58% of payroll for new employees) net of normal cost and expenses (14.11% of payroll).*

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	$ 744,423	$ 34,694	$ 21,601	$ 405	$ 56,299	$ 813,410
2021	$ 813,410	$ 32,812	$ 24,372	$ 381	$ 61,303	$ 882,772
2022	$ 882,772	$ 31,440	$ 27,157	$ 364	$ 66,352	$ 953,043
2023	$ 953,043	$ 30,370	$ 30,017	$ 351	$ 71,478	$ 1,024,523
2024	$ 1,024,523	$ 29,388	$ 33,133	$ 339	$ 76,689	$ 1,097,128
2025	$ 1,097,128	$ 28,423	$ 36,892	$ 327	$ 81,961	$ 1,170,293
2026	$ 1,170,293	$ 27,507	$ 41,178	$ 315	$ 87,257	$ 1,243,564
2027	$ 1,243,564	$ 26,626	$ 45,433	$ 304	$ 92,564	$ 1,317,017
2028	$ 1,317,017	$ 25,765	$ 49,897	$ 293	$ 97,877	$ 1,390,469
2029	$ 1,390,469	$ 24,937	$ 54,659	$ 282	$ 103,180	$ 1,463,645
2030	$ 1,463,645	$ 24,126	$ 59,501	$ 272	$ 108,461	$ 1,536,459
2031	$ 1,536,459	$ 23,305	$ 64,672	$ 262	$ 113,701	$ 1,608,531
2032	$ 1,608,531	$ 22,473	$ 69,971	$ 251	$ 118,881	$ 1,679,663
2033	$ 1,679,663	$ 21,643	$ 75,791	$ 240	$ 123,972	$ 1,749,247
2034	$ 1,749,247	$ 20,822	$ 81,704	$ 230	$ 128,943	$ 1,817,078
2035	$ 1,817,078	$ 20,000	$ 87,537	$ 219	$ 133,786	$ 1,883,108
2036	$ 1,883,108	$ 19,185	$ 93,565	$ 209	$ 138,486	$ 1,947,005
2037	$ 1,947,005	$ 18,379	$ 99,798	$ 198	$ 143,020	$ 2,008,408
2038	$ 2,008,408	$ 17,580	$ 106,021	$ 188	$ 147,367	$ 2,067,146
2039	$ 2,067,146	$ 16,775	$ 112,352	$ 177	$ 151,510	$ 2,122,902
2040	$ 2,122,902	$ 15,961	$ 118,640	$ 167	$ 155,430	$ 2,175,486
2041	$ 2,175,486	$ 15,157	$ 124,922	$ 156	$ 159,113	$ 2,224,678
2042	$ 2,224,678	$ 14,371	$ 130,881	$ 146	$ 162,555	$ 2,270,577
2043	$ 2,270,577	$ 13,595	$ 136,627	$ 136	$ 165,757	$ 2,313,166
2044	$ 2,313,166	$ 12,800	$ 142,521	$ 125	$ 168,706	$ 2,352,026
2045	$ 2,352,026	$ 11,990	$ 148,514	$ 114	$ 171,370	$ 2,386,758
2046	$ 2,386,758	$ 11,186	$ 154,387	$ 104	$ 173,730	$ 2,417,183
2047	$ 2,417,183	$ 10,390	$ 160,209	$ 93	$ 175,768	$ 2,443,039
2048	$ 2,443,039	$ 9,616	$ 165,687	$ 83	$ 177,477	$ 2,464,362
2049	$ 2,464,362	$ 8,881	$ 170,717	$ 73	$ 178,865	$ 2,481,318
2050	$ 2,481,318	$ 8,175	$ 175,436	$ 63	$ 179,937	$ 2,493,931
2051	$ 2,493,931	$ 7,509	$ 179,649	$ 54	$ 180,704	$ 2,502,441
2052	$ 2,502,441	$ 6,898	$ 183,082	$ 46	$ 181,193	$ 2,507,404
2053	$ 2,507,404	$ 6,347	$ 185,861	$ 38	$ 181,443	$ 2,509,295
2054	$ 2,509,295	$ 5,859	$ 188,008	$ 31	$ 181,488	$ 2,508,603
2055	$ 2,508,603	$ 5,435	$ 189,533	$ 24	$ 181,365	$ 2,505,846
2056	$ 2,505,846	$ 5,084	$ 190,439	$ 19	$ 181,112	$ 2,501,584
2057	$ 2,501,584	$ 4,804	$ 190,748	$ 14	$ 180,771	$ 2,496,397
2058	$ 2,496,397	$ 4,598	$ 190,474	$ 10	$ 180,384	$ 2,490,895
2059	$ 2,490,895	$ 4,466	$ 189,601	$ 7	$ 179,999	$ 2,485,752
2060	$ 2,485,752	$ 4,402	$ 188,155	$ 5	$ 179,665	$ 2,481,659
2061	$ 2,481,659	$ 4,394	$ 186,169	$ 3	$ 179,430	$ 2,479,311
2062	$ 2,479,311	$ 4,435	$ 183,684	$ 2	$ 179,347	$ 2,479,407
2063	$ 2,479,407	$ 4,514	$ 180,751	$ 1	$ 179,466	$ 2,482,635
2064	$ 2,482,635	$ 4,619	$ 177,417	$ 1	$ 179,834	$ 2,489,670
2065	$ 2,489,670	$ 4,743	$ 173,724	$ -	$ 180,503	$ 2,501,192
2066	$ 2,501,192	$ 4,883	$ 169,703	$ -	$ 181,520	$ 2,517,892
2067	$ 2,517,892	$ 5,033	$ 165,377	$ -	$ 182,937	$ 2,540,485
2068	$ 2,540,485	$ 5,194	$ 160,774	$ -	$ 184,807	$ 2,569,712
2069	$ 2,569,712	$ 5,361	$ 155,912	$ -	$ 187,184	$ 2,606,345

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 (Dollars in Thousands) (Concluded)

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	$ 2,606,345	$ 5,535	$ 150,811	$ -	$ 190,126	$ 2,651,195
2071	$ 2,651,195	$ 5,715	$ 145,488	$ -	$ 193,692	$ 2,705,114
2072	$ 2,705,114	$ 5,900	$ 139,963	$ -	$ 197,947	$ 2,768,998
2073	$ 2,768,998	$ 6,092	$ 134,254	$ -	$ 202,955	$ 2,843,791
2074	$ 2,843,791	$ 6,290	$ 128,382	$ -	$ 208,788	$ 2,930,487
2075	$ 2,930,487	$ 6,495	$ 122,367	$ -	$ 215,519	$ 3,030,134
2076	$ 3,030,134	$ 6,706	$ 116,232	$ -	$ 223,227	$ 3,143,835
2077	$ 3,143,835	$ 6,924	$ 110,002	$ -	$ 231,992	$ 3,272,749
2078	$ 3,272,749	$ 7,149	$ 103,701	$ -	$ 241,900	$ 3,418,097
2079	$ 3,418,097	$ 7,381	$ 97,356	$ -	$ 253,044	$ 3,581,166
2080	$ 3,581,166	$ 7,621	$ 90,992	$ -	$ 265,517	$ 3,763,312
2081	$ 3,763,312	$ 7,869	$ 84,639	$ -	$ 279,421	$ 3,965,963
2082	$ 3,965,963	$ 8,124	$ 78,327	$ -	$ 294,862	$ 4,190,622
2083	$ 4,190,622	$ 8,388	$ 72,087	$ -	$ 311,950	$ 4,438,873
2084	$ 4,438,873	$ 8,661	$ 65,955	$ -	$ 330,805	$ 4,712,384
2085	$ 4,712,384	$ 8,942	$ 59,966	$ -	$ 351,549	$ 5,012,909
2086	$ 5,012,909	$ 9,233	$ 54,155	$ -	$ 374,313	$ 5,342,300
2087	$ 5,342,300	$ 9,533	$ 48,555	$ -	$ 399,235	$ 5,702,513
2088	$ 5,702,513	$ 9,843	$ 43,198	$ -	$ 426,460	$ 6,095,618
2089	$ 6,095,618	$ 10,163	$ 38,113	$ -	$ 456,142	$ 6,523,810
2090	$ 6,523,810	$ 10,493	$ 33,327	$ -	$ 488,444	$ 6,989,420
2091	$ 6,989,420	$ 10,834	$ 28,862	$ -	$ 523,542	$ 7,494,934
2092	$ 7,494,934	$ 11,186	$ 24,735	$ -	$ 561,620	$ 8,043,005
2093	$ 8,043,005	$ 11,550	$ 20,960	$ -	$ 602,878	$ 8,636,473
2094	$ 8,636,473	$ 11,925	$ 17,547	$ -	$ 647,528	$ 9,278,379
2095	$ 9,278,379	$ 12,313	$ 14,499	$ -	$ 695,797	$ 9,971,990
2096	$ 9,971,990	$ 12,713	$ 11,814	$ -	$ 747,932	$ 10,720,821
2097	$ 10,720,821	$ 13,126	$ 9,485	$ -	$ 804,195	$ 11,528,657
2098	$ 11,528,657	$ 13,553	$ 7,495	$ -	$ 864,872	$ 12,399,587
2099	$ 12,399,587	$ 13,993	$ 5,825	$ -	$ 930,269	$ 13,338,024
2100	$ 13,338,024	$ 14,448	$ 4,448	$ -	$ 1,000,719	$ 14,348,743
2101	$ 14,348,743	$ 14,917	$ 3,335	$ -	$ 1,076,581	$ 15,436,906
2102	$ 15,436,906	$ 15,402	$ 2,453	$ -	$ 1,158,244	$ 16,608,099
2103	$ 16,608,099	$ 15,903	$ 1,769	$ -	$ 1,246,127	$ 17,868,360
2104	$ 17,868,360	$ 16,420	$ 1,251	$ -	$ 1,340,685	$ 19,224,214
2105	$ 19,224,214	$ 16,953	$ 866	$ -	$ 1,442,408	$ 20,682,709
2106	$ 20,682,709	$ 17,504	$ 588	$ -	$ 1,551,825	$ 22,251,450
2107	$ 22,251,450	$ 18,073	$ 391	$ -	$ 1,669,509	$ 23,938,641
2108	$ 23,938,641	$ 18,661	$ 256	$ -	$ 1,796,075	$ 25,753,121
2109	$ 25,753,121	$ 19,267	$ 165	$ -	$ 1,932,187	$ 27,704,410
2110	$ 27,704,410	$ 19,893	$ 105	$ -	$ 2,078,559	$ 29,802,757
2111	$ 29,802,757	$ 20,540	$ 66	$ -	$ 2,235,960	$ 32,059,191
2112	$ 32,059,191	$ 21,207	$ 42	$ -	$ 2,405,218	$ 34,485,574
2113	$ 34,485,574	$ 21,896	$ 26	$ -	$ 2,587,222	$ 37,094,666
2114	$ 37,094,666	$ 22,608	$ 17	$ -	$ 2,782,931	$ 39,900,188
2115	$ 39,900,188	$ 23,343	$ 11	$ -	$ 2,993,372	$ 42,916,892
2116	$ 42,916,892	$ 24,102	$ 7	$ -	$ 3,219,653	$ 46,160,640
2117	$ 46,160,640	$ 24,885	$ 5	$ -	$ 3,462,963	$ 49,648,483
2118	$ 49,648,483	$ 25,694	$ 3	$ -	$ 3,724,581	$ 53,398,755
2119	$ 53,398,755	$ 26,529	$ 2	$ -	$ 4,005,883	$ 57,431,165

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	$ 744,423	$ 21,601	$ 21,601	$ 0	$ 20,834	$ 0	$ 20,834
2021	813,411	24,372	24,372	0	21,866	0	21,866
2022	882,773	27,157	27,157	0	22,665	0	22,665
2023	953,044	30,017	30,017	0	23,305	0	23,305
2024	1,024,523	33,133	33,133	0	23,929	0	23,929
2025	1,097,129	36,892	36,892	0	24,785	0	24,785
2026	1,170,294	41,178	41,178	0	25,734	0	25,734
2027	1,243,565	45,433	45,433	0	26,413	0	26,413
2028	1,317,017	49,897	49,897	0	26,984	0	26,984
2029	1,390,469	54,659	54,659	0	27,497	0	27,497
2030	1,463,643	59,501	59,501	0	27,844	0	27,844
2031	1,536,456	64,672	64,672	0	28,153	0	28,153
2032	1,608,528	69,971	69,971	0	28,334	0	28,334
2033	1,679,660	75,791	75,791	0	28,550	0	28,550
2034	1,749,243	81,704	81,704	0	28,630	0	28,630
2035	1,817,074	87,537	87,537	0	28,534	0	28,534
2036	1,883,103	93,565	93,565	0	28,371	0	28,371
2037	1,947,000	99,798	99,798	0	28,150	0	28,150
2038	2,008,403	106,021	106,021	0	27,818	0	27,818
2039	2,067,140	112,352	112,352	0	27,423	0	27,423
2040	2,122,895	118,640	118,640	0	26,938	0	26,938
2041	2,175,479	124,922	124,922	0	26,385	0	26,385
2042	2,224,670	130,881	130,881	0	25,715	0	25,715
2043	2,270,570	136,627	136,627	0	24,971	0	24,971
2044	2,313,160	142,521	142,521	0	24,231	0	24,231
2045	2,352,019	148,514	148,514	0	23,488	0	23,488
2046	2,386,751	154,387	154,387	0	22,714	0	22,714
2047	2,417,176	160,209	160,209	0	21,926	0	21,926
2048	2,443,030	165,687	165,687	0	21,093	0	21,093
2049	2,464,354	170,717	170,717	0	20,218	0	20,218
2050	2,481,309	175,436	175,436	0	19,327	0	19,327
2051	2,493,922	179,649	179,649	0	18,410	0	18,410
2052	2,502,431	183,082	183,082	0	17,453	0	17,453
2053	2,507,394	185,861	185,861	0	16,482	0	16,482
2054	2,509,287	188,008	188,008	0	15,509	0	15,509
2055	2,508,596	189,533	189,533	0	14,544	0	14,544
2056	2,505,839	190,439	190,439	0	13,594	0	13,594
2057	2,501,576	190,748	190,748	0	12,666	0	12,666
2058	2,496,389	190,474	190,474	0	11,765	0	11,765
2059	2,490,888	189,601	189,601	0	10,894	0	10,894
2060	2,485,745	188,155	188,155	0	10,057	0	10,057
2061	2,481,652	186,169	186,169	0	9,257	0	9,257
2062	2,479,304	183,684	183,684	0	8,496	0	8,496
2063	2,479,402	180,751	180,751	0	7,777	0	7,777
2064	2,482,629	177,417	177,417	0	7,101	0	7,101
2065	2,489,664	173,724	173,724	0	6,468	0	6,468
2066	2,501,185	169,703	169,703	0	5,878	0	5,878
2067	2,517,884	165,377	165,377	0	5,328	0	5,328
2068	2,540,477	160,774	160,774	0	4,818	0	4,818
2069	2,569,705	155,912	155,912	0	4,347	0	4,347

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

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	$ 2,606,338	$ 150,811	$ 150,811	$ 0	$ 3,911	$ 0	$ 3,911
2071	2,651,188	145,488	145,488	0	3,510	0	3,510
2072	2,705,107	139,963	139,963	0	3,141	0	3,141
2073	2,768,991	134,254	134,254	0	2,803	0	2,803
2074	2,843,784	128,382	128,382	0	2,493	0	2,493
2075	2,930,481	122,367	122,367	0	2,211	0	2,211
2076	3,030,128	116,232	116,232	0	1,953	0	1,953
2077	3,143,828	110,002	110,002	0	1,720	0	1,720
2078	3,272,741	103,701	103,701	0	1,508	0	1,508
2079	3,418,089	97,356	97,356	0	1,317	0	1,317
2080	3,581,158	90,992	90,992	0	1,145	0	1,145
2081	3,763,304	84,639	84,639	0	991	0	991
2082	3,965,954	78,327	78,327	0	853	0	853
2083	4,190,613	72,087	72,087	0	730	0	730
2084	4,438,864	65,955	65,955	0	621	0	621
2085	4,712,375	59,966	59,966	0	526	0	526
2086	5,012,901	54,155	54,155	0	442	0	442
2087	5,342,292	48,555	48,555	0	368	0	368
2088	5,702,505	43,198	43,198	0	305	0	305
2089	6,095,609	38,113	38,113	0	250	0	250
2090	6,523,800	33,327	33,327	0	203	0	203
2091	6,989,410	28,862	28,862	0	164	0	164
2092	7,494,924	24,735	24,735	0	131	0	131
2093	8,042,996	20,960	20,960	0	103	0	103
2094	8,636,464	17,547	17,547	0	80	0	80
2095	9,278,370	14,499	14,499	0	62	0	62
2096	9,971,981	11,814	11,814	0	47	0	47
2097	10,720,811	9,485	9,485	0	35	0	35
2098	11,528,647	7,495	7,495	0	26	0	26
2099	12,399,576	5,825	5,825	0	19	0	19
2100	13,338,013	4,448	4,448	0	13	0	13
2101	14,348,732	3,335	3,335	0	9	0	9
2102	15,436,896	2,453	2,453	0	6	0	6
2103	16,608,089	1,769	1,769	0	4	0	4
2104	17,868,349	1,251	1,251	0	3	0	3
2105	19,224,203	866	866	0	2	0	2
2106	20,682,698	588	588	0	1	0	1
2107	22,251,439	391	391	0	1	0	1
2108	23,938,630	256	256	0	0	0	0
2109	25,753,110	165	165	0	0	0	0
2110	27,704,399	105	105	0	0	0	0
2111	29,802,746	66	66	0	0	0	0
2112	32,059,179	42	42	0	0	0	0
2113	34,485,563	26	26	0	0	0	0
2114	37,094,655	17	17	0	0	0	0
2115	39,900,178	11	11	0	0	0	0
2116	42,916,882	7	7	0	0	0	0
2117	46,160,630	5	5	0	0	0	0
2118	49,648,473	3	3	0	0	0	0
2119	53,398,745	2	2	0	0	0	0
				Totals	$ 1,015,373	$ 0	$ 1,015,373

SECTION H

GLOSSARY OF TERMS

Glossary of Terms

Actuarial Accrued Liability (AAL)	The AAL is the difference between the actuarial present value of all benefits and the actuarial value of future normal costs. The definition comes from the fundamental equation of funding which states that the present value of all benefits is the sum of the Actuarial Accrued Liability and the present value of future normal costs. The AAL may also be referred to as "accrued liability" or "actuarial liability."
Actuarial Assumptions	These assumptions are estimates of future experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income and compensation increases. Actuarial assumptions are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (compensation increases, payroll growth, inflation and investment return) consist of an underlying real rate of return plus an assumption for a long-term average rate of inflation.
Accrued Service	Service credited under the system which was rendered before the date of the actuarial valuation.
Actuarial Equivalent	A single amount or series of amounts of equal actuarial value to another single amount or series of amounts, computed on the basis of appropriate actuarial assumptions.
Actuarial Cost Method	A mathematical budgeting procedure for allocating the dollar amount of the actuarial present value of the pension trust benefits between future normal cost and actuarial accrued liability. The actuarial cost method may also be referred to as the actuarial funding method.
Actuarial Gain (Loss)	The difference in liabilities between actual experience and expected experience during the period between two actuarial valuations is the gain (loss) on the accrued liabilities.
Actuarial Present Value (APV)	The amount of funds currently required to provide a payment or series of payments in the future. The present value is determined by discounting future 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.
Actuarial Valuation	The actuarial valuation report determines, as of the actuarial valuation date, the service cost, total pension liability, and related actuarial present value of projected benefit payments for pensions performed in conformity with Actuarial Standards of Practice unless otherwise specified by the GASB.
Actuarial Valuation Date	The date as of which an actuarial valuation is performed.
Actuarially Determined Contribution (ADC)	A calculated contribution into a defined benefit pension plan for the reporting period, most often determined based on the funding policy of the plan. Typically the Actuarially Determined Contribution has a normal cost payment and an amortization payment.

Glossary of Terms

Amortization Payment	The amortization payment is the periodic payment required to pay off an interest-discounted amount with payments of interest and principal.
Amortization Method	The method used to determine the periodic amortization payment may be a level dollar amount, or a level percent of pay amount. The period will typically be expressed in years, and the method will either be "open" (meaning, reset each year) or "closed" (the number of years remaining will decline each year).
Cost-of-Living Adjustments	Postemployment benefit changes intended to adjust benefit payments for the effects of inflation.
Cost-Sharing Multiple-Employer Defined Benefit Pension Plan (cost-sharing pension plan)	A multiple-employer defined benefit pension plan in which the pension obligations to the employees of more than one employer are pooled and pension plan assets can be used to pay the benefits of the employees of any employer that provides pensions through the pension plan.
Covered-Employee Payroll	The payroll of covered employees, which is typically only the pensionable pay (meets the statutory salary definition) and does not include pay above any pay cap.
Deferred Inflows and Outflows of Resources	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.
Discount Rate or Single Discount Rate	For GASB purposes, the discount rate is the single rate of return that results in the present value of all projected benefit payments to be equal to the sum of the funded and unfunded projected benefit payments, specifically: 1. The benefit payments to be made while the pension plans' fiduciary net position is projected to be greater than the benefit payments that are projected to be made in the period; and 2. The present value of the benefit payments not in (1) above, discounted using the municipal bond rate.
Entry Age Actuarial Cost Method or Entry Age Normal (EAN)	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

GASB	The Governmental Accounting Standards Board is an organization that exists with authority to promulgate accounting standards for state and local governmental entities.
Fiduciary Net Position	The fiduciary net position is the value of the assets of the trust.
Long-Term Expected Rate of Return	The long-term rate of return is the expected return to be earned over the entire trust portfolio based on the asset allocation of the portfolio.
Money-Weighted Rate of Return	The money-weighted rate of return is a method of calculating the returns that adjusts for the changing amounts actually invested. For purposes of GASB Statement No. 67, money-weighted rate of return is calculated as the internal rate of return on pension plan investments, net of pension plan investment expense.
Multiple-Employer Defined Benefit Pension Plan	A multiple-employer plan is a defined benefit pension plan that is used to provide pensions to the employees of more than one employer.
Municipal Bond Rate	The Municipal Bond Rate is the discount rate to be used for those benefit payments that occur after the assets of the trust have been depleted.
Net Pension Liability (NPL)	The NPL is the liability of employers and non-employer contribution entities to plan members for benefits provided through a defined benefit pension plan.
Non-Employer Contribution Entities	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.
Normal Cost	The actuarial present value of the pension trust benefits allocated to the current year by the actuarial cost method.
Other Postemployment Benefits (OPEB)	All postemployment benefits other than retirement income (such as death benefits, life insurance, disability, and long-term care) that are provided separately from a pension plan, as well as postemployment healthcare benefits regardless of the manner in which they are provided. Other postemployment benefits do not include termination benefits.
Real Rate of Return	The real rate of return is the rate of return on an investment after adjustment to eliminate inflation.
Service Cost	The service cost is the portion of the actuarial present value of projected benefit payments that is attributed to a valuation year.

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 measurement of the Total Pension Liability
9. Recognition of Outflow (Inflow) of Resources due to Assumption Changes
10. Recognition of Outflow (Inflow) of Resources due to the difference between projected and actual earnings in 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 pension liability of the plan. For purposes of the GASB Statement No. 67, the asset valuation method is equal to the market value of assets.