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, 2020

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November 13, 2020

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, 2020 for additional discussion of the nature of actuarial calculations and more information related to participant data, economic and demographic assumptions, and benefit provisions.

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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.

This report does not fully reflect the recent and still developing impact of COVID-19, which is likely to influence demographic and investment experience, at least in the short term. We will continue to monitor these developments and their impact on the plan.

This report was prepared using our proprietary valuation model and related software which in our professional judgment has the capability to provide results that are consistent with the purposes of the valuation. We performed tests to ensure that the model reasonably represents that which is intended to be modeled.

The signing actuaries are independent of the plan sponsor. We are not aware of any relationship that would impair the objectivity of our work.

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, 2020 (Dollars in Thousands)

		2020
Actuarial Valuation Date		June 30, 2020
Measurement Date of the Net Pension Liability		June 30, 2020
Employer's Fiscal Year Ending Date (Reporting Date)		Varies by Employer
Membership		
Number of		
- Service Retirements		1,164
- Survivors		72
- Disability Retirements		207
- Deferred Retirements		3,637
- Terminated other non-vested		2,184
- Active Members		3,855
- Total		11,119
Covered Payroll	$	217,702
Net Pension Liability		
Total Pension Liability	$	814,456
Plan Fiduciary Net Position		787,322
Net Pension Liability	$	27,134
Plan Fiduciary Net Position as a Percentage of Total Pension Liability		96.67%
Net Pension Liability as a Percentage of Covered Payroll		12.46%
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*		2.45%
Last year ending June 30 in the 2021 to 2120 projection period for which projected benefit payments are fully funded		2120
Total Pension Expense/(Income)	**$**	**(50,640)**

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	$ 254	$ 9,984
Changes in assumptions	$ -	$ 54,950
Net difference between projected and actual earnings on pension plan investments	$ 19,983	$ 14,820
Total	$ 20,237	$ 79,754

* *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, 2020.

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

The total pension liability shown in this report is based on an actuarial valuation performed as of June 30, 2020 and a measurement date of June 30, 2020.

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 28 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 2.45% (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, 2020 (Dollars in Thousands)

A. Expense

1.	Service Cost	$	33,172
2.	Interest on the Total Pension Liability	$	57,354
3.	Current-Period Benefit Changes	$	-
4.	Employee Contributions (made negative for addition here)	$	(12,692)
5.	Projected Earnings on Plan Investments (made negative for addition here)	$	(56,249)
6.	Pension Plan Administrative Expense	$	332
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	$	(3,021)
9.	Recognition of Outflow (Inflow) of Resources due to assumption changes		
	Arising from Current Reporting Period	$	(494)
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	$	4,895
11.	**Increase/(Decrease) from Experience in the Current Reporting Period**	**$**	**23,297**
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	$	(1,087)
13.	Recognition of Outflow (Inflow) of Resources due to assumption changes		
	Arising from Prior Reporting Periods	$	(69,452)
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	$	(3,398)
15.	**Total Pension Expense / (Income)**	**$**	**(50,640)**

Recognition of Deferred Outflows and Inflows of Resources

Differences between expected and actual experience and changes in assumptions are recognized in pension expense using a systematic and rational method over a closed period equal to the average of the expected remaining service lives of all employees that are provided with pension through the pension plan (active employees and inactive employees) determined as of the beginning of the measurement period.

At the beginning of the current measurement period, the expected remaining service lives of all active employees in the plan was approximately 40,223 years. Additionally, the total plan membership (active employees and inactive employees) was 11,447. As a result, the average of the expected remaining service lives for purposes of recognizing the applicable deferred outflows and inflows of resources established in the current measurement period is 4.00 years.

Additionally, differences between projected and actual earnings on plan investments should be recognized in pension expense using a systematic and rational method over a closed five-year period. For this purpose, the deferred outflows and inflows of resources are recognized in the pension expense as a level dollar amount over the closed period identified above.

Statement of Outflows and Inflows Arising from Current Reporting Period
Fiscal Year Ended June 30, 2020 (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	$	(12,083)
2. Assumption Changes (gains) or losses	$	(1,977)
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	$	(3,021)
5. Outflow (Inflow) of Resources to be recognized in the current pension expense for Assumption Changes	$	(494)
6. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Liabilities	$	(3,515)
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	$	(9,062)
8. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses for Assumption Changes	$	(1,483)
9. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Liabilities	$	(10,545)

B. Outflows (Inflows) of Resources due to Assets

1. Net difference between projected and actual earnings on pension plan investments (gains) or losses	$	24,475
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	$	4,895
4. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Assets	$	19,580

Statement of Outflows and Inflows Arising from Current and Prior Reporting Periods Fiscal Year Ended June 30, 2020 (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	$ 254	$ 74,308	$ (74,054)
2. Due to Assets	$ 12,873	$ 11,376	$ 1,497
3. Total	$ 13,127	$ 85,684	$ (72,557)

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	$ 254	$ 4,362	$ (4,108)
2. Assumption Changes	$ -	$ 69,946	$ (69,946)
3. Net Difference between projected and actual earnings on pension plan investments	$ 12,873	$ 11,376	$ 1,497
4. Total	$ 13,127	$ 85,684	$ (72,557)

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	$ 254	$ 9,984	$ (9,730)
2. Assumption Changes	$ -	$ 54,950	$ (54,950)
3. Net Difference between projected and actual earnings on pension plan investments	$ 19,983	$ 14,820	$ 5,163
4. Total	$ 20,237	$ 79,754	$ (59,517)

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
2021	$ (62,985)
2022	$ (2,942)
2023	$ 1,515
2024	$ 4,895
2025	$ -
Thereafter	$ -
Total	$ (59,517)

Recognition of Deferred Outflows and Inflows of Resources
Fiscal Year Ended June 30, 2020 (Dollars in Thousands)

renn	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					
2017	$ (3,516)	4.0000	$ (879)	$ 0	0.0000
2018	1,018	4.0000	254	254	1.0000
2019	(1,846)	4.0000	(462)	(922)	2.0000
2020	(12,083)	4.0000	(3,021)	(9,062)	3.0000
Total			**$ (4,108)**	**$ (9,730)**	
Deferred Outflow (Inflow) Due to Assumption Changes					
2017	$ (66,147)	4.0000	$ (16,536)	$ 0	0.0000
2018	(209,457)	4.0000	(52,364)	(52,365)	1.0000
2019	(2,206)	4.0000	(552)	(1,102)	2.0000
2020	(1,977)	4.0000	(494)	(1,483)	3.0000
Total			**$ (69,946)**	**$ (54,950)**	
Deferred Outflow (Inflow) Due to Differences Between Projected and Actual Earnings on Plan Investments					
2016	$ 39,224	5.0000	$ 7,844	$ 0	0.0000
2017	(39,668)	5.0000	(7,933)	(7,933)	1.0000
2018	(17,216)	5.0000	(3,443)	(6,887)	2.0000
2019	671	5.0000	134	403	3.0000
2020	24,475	5.0000	4,895	19,580	4.0000
Total			**$ 1,497**	**$ 5,163**	
Deferred Outflow (Inflow) due to All Sources					
Total			**$ (72,557)**	**$ (59,517)**	

Statement of Fiduciary Net Position
(Dollars in Thousands)

	Market Value			
Assets in Trust	**June 30, 2020**		**June 30, 2019**	
Cash, equivalents, short term securities	$	34,069	$	20,842
Fixed income	$	160,323	$	151,524
Equity	$	469,467	$	463,263
Private Markets	$	123,096	$	108,365
Other	$	-	$	-
Total Assets in Trust	**$**	**786,955**	**$**	**743,994**
Assets Receivable	$	912	$	965
Amounts Payable	$	545	$	(536)
Net Position Restricted for Pensions	**$**	**787,322**	**$**	**744,423**

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

Change in Assets	Market Value	
Year Ending	**June 30, 2020**	**June 30, 2019**
1. Fund balance at market value at beginning of year	$ 744,423	$ 680,395
2. Adjustment to match beginning of year asset statement	$ -	$ -
3. Fund balance at market value at beginning of year	$ 744,423	$ 680,395
4. Contributions		
a. Member	$ 12,692	$ 12,485
b. Employer	$ 19,043	$ 18,676
c. Other sources	$ -	$ -
d. Total contributions	$ 31,735	$ 31,161
5. Investment income		
a. Investment income/(loss)	$ 32,484	$ 51,549
b. Investment expenses	$ (710)	$ (696)
c. Net subtotal	$ 31,774	$ 50,853
6. Other	$ -	$ -
7. Total additions: *(4.d.) + (5.c.) + (6.)*	**$ 63,509**	**$ 82,014**
8. Benefits Paid		
a. Annuity benefits	$ (17,569)	$ (15,381)
b. Refunds	$ (2,709)	$ (2,244)
c. Total benefits paid	$ (20,278)	$ (17,625)
9. Expenses		
a. Other	$ -	$ -
b. Administrative	$ (332)	$ (361)
c. Total expenses	$ (332)	$ (361)
10. Total deductions: *(8.c.) + (9.c.)*	**$ (20,610)**	**$ (17,986)**
11. Net increase (decrease) in net position: *(7.) + (10.)*	$ 42,899	$ 64,028
12. Net position restricted for pensions	**$ 787,322**	**$ 744,423**
13. Approximate return on market value of assets	4.2%	7.3%

SECTION C

REQUIRED SUPPLEMENTARY INFORMATION

Schedule of Changes in Net Pension Liability and Related Ratios
Current Period
Fiscal Year Ended June 30, 2020 (Dollars in Thousands)

A. Total pension liability		
1. Service Cost	$	33,172
2. Interest on the Total Pension Liability	$	57,354
3. Changes of benefit terms	$	-
4. Difference between expected and actual experience of the Total Pension Liability	$	(12,083)
5. Changes of assumptions	$	(1,977)
6. Benefit payments, including refunds of employee contributions	$	(20,278)
7. Net change in total pension liability	$	56,188
8. Total pension liability – beginning	$	758,268
9. Total pension liability – ending	**$**	**814,456**
B. Plan fiduciary net position		
1. Contributions – employer	$	19,043
2. Contributions – employee	$	12,692
3. Net investment income	$	31,774
4. Benefit payments, including refunds of employee contributions	$	(20,278)
5. Pension Plan Administrative Expense	$	(332)
6. Other	$	-
7. Net change in plan fiduciary net position	$	42,899
8. Plan fiduciary net position – beginning	$	744,423
9. Plan fiduciary net position – ending	**$**	**787,322**
C. Net pension liability	**$**	**27,134**
D. Plan fiduciary net position as a percentage of the total pension liability		**96.67%**
E. Covered-employee payroll*	**$**	**217,702**
F. Net pension liability as a percentage of covered-employee payroll		**12.46%**

** 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,	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011
Total Pension Liability										
Service Cost	$ 33,172	$ 30,362	$ 45,378	$ 49,202	$ 25,950	$ 25,098	$ 26,488			
Interest on the Total Pension Liability	$ 57,354	$ 52,741	$ 53,811	$ 47,336	$ 40,605	$ 37,043	$ 33,955			
Benefit Changes	$ -	$ -	$ (66,822)	$ -	$ -	$ -	$ -			
Experience	$ (12,083)	$ (1,846)	$ 1,018	$ (3,516)	$ 382	$ (7,892)	$ (5,327)			
Assumption Changes	$ (1,977)	$ (2,206)	$ (209,457)	$ (66,147)	$ 310,332	$ -	$ (34,168)			
Benefit Payments	$ (17,569)	$ (15,381)	$ (13,183)	$ (11,033)	$ (9,381)	$ (7,777)	$ (6,711)			
Refunds	$ (2,709)	$ (2,244)	$ (1,364)	$ (1,478)	$ (982)	$ (1,057)	$ (1,105)			
Net Change in Total Pension Liability	$ 56,188	$ 61,426	$ (190,619)	$ 14,364	$ 366,906	$ 45,415	$ 13,132			
Total Pension Liability - Beginning	$ 758,268	$ 696,842	$ 887,461	$ 873,097	$ 506,191	$ 460,776	$ 447,644			
Total Pension Liability - Ending (a)	$ 814,456	$ 758,268	$ 696,842	$ 887,461	$ 873,097	$ 506,191	$ 460,776			
Plan Fiduciary Net Position										
Employer Contributions	$ 19,043	$ 18,676	$ 17,871	$ 17,489	$ 16,490	$ 15,736	$ 15,054			
Employee Contributions	$ 12,692	$ 12,485	$ 11,956	$ 11,666	$ 11,008	$ 10,472	$ 10,030			
Pension Plan Net Investment Income	$ 31,774	$ 50,853	$ 62,962	$ 78,363	$ 209	$ 20,373	$ 69,451			
Benefit Payments	$ (17,569)	$ (15,381)	$ (13,183)	$ (11,033)	$ (9,381)	$ (7,777)	$ (6,711)			
Refunds	$ (2,709)	$ (2,244)	$ (1,364)	$ (1,478)	$ (982)	$ (1,057)	$ (1,105)			
Pension Plan Administrative Expense	$ (332)	$ (361)	$ (308)	$ (330)	$ (290)	$ (247)	$ (236)			
Other	$ -	$ -	$ 1	$ -	$ (2)	$ (1)	$ (1)			
Net Change in Plan Fiduciary Net Position	$ 42,899	$ 64,028	$ 77,935	$ 94,677	$ 17,052	$ 37,499	$ 86,482			
Plan Fiduciary Net Position - Beginning	$ 744,423	$ 680,395	$ 602,460	$ 507,783	$ 490,731	$ 453,232	$ 366,750			
Plan Fiduciary Net Position - Ending (b)	$ 787,322	$ 744,423	$ 680,395	$ 602,460	$ 507,783	$ 490,731	$ 453,232			
Net Pension Liability - Ending (a) - (b)	$ 27,134	$ 13,845	$ 16,447	$ 285,001	$ 365,314	$ 15,460	$ 7,544			
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	96.67 %	98.17 %	97.64 %	67.89 %	58.16 %	96.95 %	98.36 %			
Covered Employee Payroll	$ 217,702	$ 214,151	$ 205,077	$ 200,103	$ 188,816	$ 179,623	$ 172,041			
Net Pension Liability as a Percentage of Covered Employee Payroll	12.46 %	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
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%
2020	$ 814,456	$ 787,322	$ 27,134	96.67%	$ 217,702	12.46%

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
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
2020	$ 19,593	$ 19,043	$ 550	$ 217,702	8.75

Notes to Schedule of Contributions

Methods and Assumptions Used to Determine Contribution Rates for Fiscal Year Ending June 30, 2020:

Valuation Date	June 30, 2019
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	29 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-2018, 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, 2019 for additional detail.

Schedule of Investment Returns Multiyear

Last 10 Fiscal Years

FY Ending June 30,	Annual Return[1]
2011	
2012	
2013	
2014	
2015	
2016	
2017	
2018	
2019	
2020	

[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, 2020, 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	$ 955,957	$ 814,456	$ 701,163
Net Position Restricted for Pensions	$ 787,322	$ 787,322	$ 787,322
Net Pension Liability	**$ 168,635**	**$ 27,134**	**$ (86,159)**

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	Current Period Deferred Inflows	Current Period Pension Expense*
Balance Beginning of Year	**$ 758,268**	**$ 744,423**	**$ 13,845**			
Changes for the Year:						
Service Cost	$ 33,172		$ 33,172			$ 33,172
Interest on Total Pension Liability	57,354		57,354			57,354
Interest on Fiduciary Net Position		$ 56,249	(56,249)			(56,249)
Changes in Benefit Terms	-		-			-
Liability Experience Gains and Losses	(12,083)		(12,083)	$ -	$ 9,062	(3,021)
Changes in Assumptions	(1,977)		(1,977)	-	1,483	(494)
Contributions - Employer		19,043	(19,043)			
Contributions - Employees		12,692	(12,692)			(12,692)
Asset Gain/(Loss)		(24,475)	24,475	19,580	-	4,895
Benefit Payouts	(20,278)	(20,278)				
Administrative Expenses		(332)	332			332
Other		-	-			-
Net Changes	**$ 56,188**	**$ 42,899**	**$ 13,289**	**$ 19,580**	**$ 10,545**	**$ 23,297**
Balance End of Year	**$ 814,456**	**$ 787,322**	**$ 27,134**			

** 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	**$ 758,268**	**$ 744,423**	**$ 13,845**				
Changes for the Year:							
Service Cost	$ 33,172		$ 33,172				$ 33,172
Interest on Total Pension Liability	57,354		57,354				57,354
Interest on Fiduciary Net Position		$ 56,249	(56,249)				(56,249)
Changes in Benefit Terms	-		-				-
Liability Experience Gains and Losses	(12,083)		(12,083)	$ 254	$ 9,984	$ (1,755)	(4,108)
Changes in Assumptions	(1,977)		(1,977)	-	54,950	(122,919)	(69,946)
Contributions - Employer		19,043	(19,043)				
Contributions - Employees		12,692	(12,692)				(12,692)
Asset Gain/(Loss)		(24,475)	24,475	19,983	14,820	(17,815)	1,497
Benefit Payouts	(20,278)	(20,278)					
Administrative Expenses		(332)	332				332
Other		-	-				-
Net Changes	**$ 56,188**	**$ 42,899**	**$ 13,289**				**$ (50,640)**
Balance End of Year	**$ 814,456**	**$ 787,322**	**$ 27,134**	**$ 20,237**	**$ 79,754**	**$ (142,489)**	

** 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 7/1/2019	**3,965**	**3,374**	**2,790**	**1,053**	**199**	**66**	**11,447**
New members	587	-	-	-	-	-	**587**
Return to active	33	(11)	(22)	-	-	-	**-**
Terminated non-vested	(360)	-	360	-	-	-	**-**
Service retirements	(61)	(62)	-	123	-	-	**-**
Terminated deferred	(213)	213	-	-	-	-	**-**
Terminated refund/transfer	(82)	(61)	(467)	-	-	-	**(610)**
Deaths	(6)	(8)	(2)	(12)	(3)	-	**(31)**
New beneficiary	-	-	-	-	-	7	**7**
Disabled	(8)	-	-	-	8	-	**-**
Data correction	-	192	(475)	-	3	(1)	**(281)**
Net change	(110)	263	(606)	111	8	6	**(328)**
Members on 6/30/2020	**3,855**	**3,637**	**2,184**	**1,164**	**207**	**72**	**11,119**

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 recipients receive increases each year in January based upon 100% of the current Social Security increase, 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.
Retirement benefit	
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.
Form of payment	Same as for retirement.
Benefit increases	Same as for retirement.
Death	
Surviving spouse benefit	
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.
Surviving dependent children's benefit	
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. Beginning July 1, 2011, a member's contributions increase at 4.00% interest. Beginning July 1, 2018, a member's contributions increase at 3.00% interest. 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-2019, from a base year of 2006.
Healthy post-retirement	RP-2014 annuitant generational mortality table projected with mortality improvement scale MP-2019 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-2019 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 and beneficiaries 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 49 members reported with a salary less than $100. We used prior year salary (39 members), if available; otherwise high five salary with a 10% load to account for salary increases (9 members). If neither prior year salary or high five salary was available, we assumed a value of $43,000. There were also 55 members reported without a gender and 4 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 (30 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 (12 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 no members reported without a date of birth. There were 6 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 71 retirees as disabled retirees in this valuation.
Changes in actuarial assumptions	The mortality projection scale was changed from MP-2018 to MP-2019.

Summary of Actuarial Assumptions (Continued)

	Percentage of Members Dying Each Year*					
	Healthy Post-Retirement Mortality		Healthy Pre-Retirement Mortality		Disability Mortality	
Age in 2020	Male	Female	Male	Female	Male	Female
20	0.04%	0.02%	0.05%	0.02%	0.04%	0.02%
25	0.07	0.04	0.06	0.02	0.07	0.04
30	0.11	0.08	0.06	0.03	0.11	0.08
35	0.17	0.14	0.08	0.04	0.17	0.14
40	0.24	0.20	0.08	0.05	0.24	0.20
45	0.30	0.23	0.11	0.07	0.30	0.23
50	0.40	0.28	0.17	0.11	0.40	0.28
55	0.56	0.39	0.29	0.18	0.56	0.39
60	0.80	0.60	0.50	0.28	0.80	0.60
65	1.14	0.87	0.89	0.40	1.14	0.87
70	1.67	1.31	1.44	0.64	1.67	1.31
75	2.65	2.14	2.39	1.10	2.65	2.14
80	4.49	3.68	4.06	1.94	4.49	3.68
85	7.88	6.60	8.00	5.16	7.88	6.60
90	13.87	11.78	14.62	11.36	13.87	11.78

* *Generally, mortality rates are expected to increase as age increases. These standard mortality rates have been adjusted slightly to prevent decreasing mortality rates. The adjustment has no material effect on these results.*

	Withdrawal Rates		Rates of Disability Retirement	
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 2.45%; 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. 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
2020	$ 217,702	$ -	$ 217,702				
2021	$ 221,539	$ 7,956	$ 229,495	$ 12,916	$ 19,385	$ 51	$ 32,352
2022	$ 208,972	$ 27,982	$ 236,954	$ 12,183	$ 18,285	$ 179	$ 30,647
2023	$ 199,731	$ 44,924	$ 244,655	$ 11,644	$ 17,476	$ 288	$ 29,408
2024	$ 192,220	$ 60,386	$ 252,606	$ 11,206	$ 16,819	$ 386	$ 28,411
2025	$ 185,027	$ 75,789	$ 260,816	$ 10,787	$ 16,190	$ 485	$ 27,462
2026	$ 178,168	$ 91,124	$ 269,292	$ 10,387	$ 15,590	$ 583	$ 26,560
2027	$ 171,678	$ 106,366	$ 278,044	$ 10,009	$ 15,022	$ 681	$ 25,712
2028	$ 165,451	$ 121,630	$ 287,081	$ 9,646	$ 14,477	$ 778	$ 24,901
2029	$ 159,469	$ 136,942	$ 296,411	$ 9,297	$ 13,954	$ 876	$ 24,127
2030	$ 153,605	$ 152,439	$ 306,044	$ 8,955	$ 13,440	$ 976	$ 23,371
2031	$ 147,675	$ 168,316	$ 315,991	$ 8,609	$ 12,922	$ 1,077	$ 22,608
2032	$ 141,752	$ 184,509	$ 326,261	$ 8,264	$ 12,403	$ 1,181	$ 21,848
2033	$ 135,930	$ 200,934	$ 336,864	$ 7,925	$ 11,894	$ 1,286	$ 21,105
2034	$ 130,199	$ 217,613	$ 347,812	$ 7,591	$ 11,392	$ 1,393	$ 20,376
2035	$ 124,479	$ 234,637	$ 359,116	$ 7,257	$ 10,892	$ 1,502	$ 19,651
2036	$ 118,779	$ 252,008	$ 370,787	$ 6,925	$ 10,393	$ 1,613	$ 18,931
2037	$ 113,085	$ 269,753	$ 382,838	$ 6,593	$ 9,895	$ 1,726	$ 18,214
2038	$ 107,401	$ 287,879	$ 395,280	$ 6,261	$ 9,398	$ 1,842	$ 17,501
2039	$ 101,748	$ 306,379	$ 408,127	$ 5,932	$ 8,903	$ 1,961	$ 16,796
2040	$ 96,092	$ 325,299	$ 421,391	$ 5,602	$ 8,408	$ 2,082	$ 16,092
2041	$ 90,457	$ 344,629	$ 435,086	$ 5,274	$ 7,915	$ 2,206	$ 15,395
2042	$ 84,846	$ 364,380	$ 449,226	$ 4,947	$ 7,424	$ 2,332	$ 14,703
2043	$ 79,281	$ 384,545	$ 463,826	$ 4,622	$ 6,937	$ 2,461	$ 14,020
2044	$ 73,607	$ 405,293	$ 478,900	$ 4,291	$ 6,441	$ 2,594	$ 13,326
2045	$ 67,817	$ 426,648	$ 494,465	$ 3,954	$ 5,934	$ 2,731	$ 12,619
2046	$ 62,022	$ 448,513	$ 510,535	$ 3,616	$ 5,427	$ 2,870	$ 11,913
2047	$ 56,208	$ 470,919	$ 527,127	$ 3,277	$ 4,918	$ 3,014	$ 11,209
2048	$ 50,508	$ 493,751	$ 544,259	$ 2,945	$ 4,419	$ 3,160	$ 10,524
2049	$ 44,999	$ 516,948	$ 561,947	$ 2,623	$ 3,937	$ 3,308	$ 9,868
2050	$ 39,602	$ 540,609	$ 580,211	$ 2,309	$ 3,465	$ 3,460	$ 9,234
2051	$ 34,383	$ 564,684	$ 599,067	$ 2,005	$ 3,009	$ 3,614	$ 8,628
2052	$ 29,436	$ 589,101	$ 618,537	$ 1,716	$ 2,576	$ 3,770	$ 8,062
2053	$ 24,798	$ 613,842	$ 638,640	$ 1,446	$ 2,170	$ 3,929	$ 7,545
2054	$ 20,528	$ 638,867	$ 659,395	$ 1,197	$ 1,796	$ 4,089	$ 7,082
2055	$ 16,643	$ 664,183	$ 680,826	$ 970	$ 1,456	$ 4,251	$ 6,677
2056	$ 13,206	$ 689,747	$ 702,953	$ 770	$ 1,155	$ 4,414	$ 6,339
2057	$ 10,214	$ 715,584	$ 725,798	$ 595	$ 894	$ 4,580	$ 6,069
2058	$ 7,656	$ 741,731	$ 749,387	$ 446	$ 670	$ 4,747	$ 5,863
2059	$ 5,564	$ 768,178	$ 773,742	$ 324	$ 487	$ 4,916	$ 5,727
2060	$ 3,896	$ 794,993	$ 798,889	$ 227	$ 341	$ 5,088	$ 5,656
2061	$ 2,623	$ 822,229	$ 824,852	$ 153	$ 230	$ 5,262	$ 5,645
2062	$ 1,699	$ 849,961	$ 851,660	$ 99	$ 149	$ 5,440	$ 5,688
2063	$ 1,055	$ 878,284	$ 879,339	$ 61	$ 92	$ 5,621	$ 5,774
2064	$ 632	$ 907,286	$ 907,918	$ 37	$ 55	$ 5,807	$ 5,899
2065	$ 359	$ 937,066	$ 937,425	$ 21	$ 31	$ 5,997	$ 6,049
2066	$ 191	$ 967,700	$ 967,891	$ 11	$ 17	$ 6,193	$ 6,221
2067	$ 97	$ 999,251	$ 999,348	$ 6	$ 8	$ 6,395	$ 6,409
2068	$ 44	$ 1,031,783	$ 1,031,827	$ 3	$ 4	$ 6,603	$ 6,610
2069	$ 18	$ 1,065,343	$ 1,065,361	$ 1	$ 2	$ 6,818	$ 6,821
2070	$ 6	$ 1,099,979	$ 1,099,985	$ -	$ -	$ 7,040	$ 7,040

**Equal to total contributions (14.58% of payroll for new employees) net of normal cost and expenses (13.94% 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
2071	$ 1	$ 1,135,734	$ 1,135,735	$ -	$ -	$ 7,269	$ 7,269
2072	$ -	$ 1,172,646	$ 1,172,646	$ -	$ -	$ 7,505	$ 7,505
2073	$ -	$ 1,210,757	$ 1,210,757	$ -	$ -	$ 7,749	$ 7,749
2074	$ -	$ 1,250,107	$ 1,250,107	$ -	$ -	$ 8,001	$ 8,001
2075	$ -	$ 1,290,735	$ 1,290,735	$ -	$ -	$ 8,261	$ 8,261
2076	$ -	$ 1,332,684	$ 1,332,684	$ -	$ -	$ 8,529	$ 8,529
2077	$ -	$ 1,375,996	$ 1,375,996	$ -	$ -	$ 8,806	$ 8,806
2078	$ -	$ 1,420,716	$ 1,420,716	$ -	$ -	$ 9,093	$ 9,093
2079	$ -	$ 1,466,889	$ 1,466,889	$ -	$ -	$ 9,388	$ 9,388
2080	$ -	$ 1,514,563	$ 1,514,563	$ -	$ -	$ 9,693	$ 9,693
2081	$ -	$ 1,563,787	$ 1,563,787	$ -	$ -	$ 10,008	$ 10,008
2082	$ -	$ 1,614,610	$ 1,614,610	$ -	$ -	$ 10,334	$ 10,334
2083	$ -	$ 1,667,084	$ 1,667,084	$ -	$ -	$ 10,669	$ 10,669
2084	$ -	$ 1,721,265	$ 1,721,265	$ -	$ -	$ 11,016	$ 11,016
2085	$ -	$ 1,777,206	$ 1,777,206	$ -	$ -	$ 11,374	$ 11,374
2086	$ -	$ 1,834,965	$ 1,834,965	$ -	$ -	$ 11,744	$ 11,744
2087	$ -	$ 1,894,601	$ 1,894,601	$ -	$ -	$ 12,125	$ 12,125
2088	$ -	$ 1,956,176	$ 1,956,176	$ -	$ -	$ 12,520	$ 12,520
2089	$ -	$ 2,019,752	$ 2,019,752	$ -	$ -	$ 12,926	$ 12,926
2090	$ -	$ 2,085,394	$ 2,085,394	$ -	$ -	$ 13,347	$ 13,347
2091	$ -	$ 2,153,169	$ 2,153,169	$ -	$ -	$ 13,780	$ 13,780
2092	$ -	$ 2,223,147	$ 2,223,147	$ -	$ -	$ 14,228	$ 14,228
2093	$ -	$ 2,295,399	$ 2,295,399	$ -	$ -	$ 14,691	$ 14,691
2094	$ -	$ 2,370,000	$ 2,370,000	$ -	$ -	$ 15,168	$ 15,168
2095	$ -	$ 2,447,025	$ 2,447,025	$ -	$ -	$ 15,661	$ 15,661
2096	$ -	$ 2,526,553	$ 2,526,553	$ -	$ -	$ 16,170	$ 16,170
2097	$ -	$ 2,608,666	$ 2,608,666	$ -	$ -	$ 16,695	$ 16,695
2098	$ -	$ 2,693,448	$ 2,693,448	$ -	$ -	$ 17,238	$ 17,238
2099	$ -	$ 2,780,985	$ 2,780,985	$ -	$ -	$ 17,798	$ 17,798
2100	$ -	$ 2,871,367	$ 2,871,367	$ -	$ -	$ 18,377	$ 18,377
2101	$ -	$ 2,964,686	$ 2,964,686	$ -	$ -	$ 18,974	$ 18,974
2102	$ -	$ 3,061,038	$ 3,061,038	$ -	$ -	$ 19,591	$ 19,591
2103	$ -	$ 3,160,522	$ 3,160,522	$ -	$ -	$ 20,227	$ 20,227
2104	$ -	$ 3,263,239	$ 3,263,239	$ -	$ -	$ 20,885	$ 20,885
2105	$ -	$ 3,369,294	$ 3,369,294	$ -	$ -	$ 21,563	$ 21,563
2106	$ -	$ 3,478,796	$ 3,478,796	$ -	$ -	$ 22,264	$ 22,264
2107	$ -	$ 3,591,857	$ 3,591,857	$ -	$ -	$ 22,988	$ 22,988
2108	$ -	$ 3,708,593	$ 3,708,593	$ -	$ -	$ 23,735	$ 23,735
2109	$ -	$ 3,829,122	$ 3,829,122	$ -	$ -	$ 24,506	$ 24,506
2110	$ -	$ 3,953,568	$ 3,953,568	$ -	$ -	$ 25,303	$ 25,303
2111	$ -	$ 4,082,059	$ 4,082,059	$ -	$ -	$ 26,125	$ 26,125
2112	$ -	$ 4,214,726	$ 4,214,726	$ -	$ -	$ 26,974	$ 26,974
2113	$ -	$ 4,351,705	$ 4,351,705	$ -	$ -	$ 27,851	$ 27,851
2114	$ -	$ 4,493,135	$ 4,493,135	$ -	$ -	$ 28,756	$ 28,756
2115	$ -	$ 4,639,162	$ 4,639,162	$ -	$ -	$ 29,691	$ 29,691
2116	$ -	$ 4,789,935	$ 4,789,935	$ -	$ -	$ 30,656	$ 30,656
2117	$ -	$ 4,945,608	$ 4,945,608	$ -	$ -	$ 31,652	$ 31,652
2118	$ -	$ 5,106,340	$ 5,106,340	$ -	$ -	$ 32,681	$ 32,681
2119	$ -	$ 5,272,296	$ 5,272,296	$ -	$ -	$ 33,743	$ 33,743
2120	$ -	$ 5,443,646	$ 5,443,646	$ -	$ -	$ 34,839	$ 34,839

**Equal to total contributions (14.58% of payroll for new employees) net of normal cost and expenses (13.94% 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)
2021	$ 787,322	$ 32,352	$ 24,347	$ 310	$ 59,332	$ 854,349
2022	$ 854,349	$ 30,647	$ 27,236	$ 293	$ 64,191	$ 921,658
2023	$ 921,658	$ 29,408	$ 30,160	$ 280	$ 69,086	$ 989,712
2024	$ 989,712	$ 28,411	$ 33,119	$ 269	$ 74,045	$ 1,058,780
2025	$ 1,058,780	$ 27,462	$ 36,651	$ 259	$ 79,061	$ 1,128,393
2026	$ 1,128,393	$ 26,560	$ 40,980	$ 249	$ 84,090	$ 1,197,814
2027	$ 1,197,814	$ 25,712	$ 45,172	$ 240	$ 89,111	$ 1,267,225
2028	$ 1,267,225	$ 24,901	$ 49,550	$ 232	$ 94,126	$ 1,336,470
2029	$ 1,336,470	$ 24,127	$ 54,286	$ 223	$ 99,117	$ 1,405,205
2030	$ 1,405,205	$ 23,371	$ 59,081	$ 215	$ 104,068	$ 1,473,348
2031	$ 1,473,348	$ 22,608	$ 64,171	$ 207	$ 108,963	$ 1,540,541
2032	$ 1,540,541	$ 21,848	$ 69,353	$ 198	$ 113,784	$ 1,606,622
2033	$ 1,606,622	$ 21,105	$ 75,114	$ 190	$ 118,501	$ 1,670,924
2034	$ 1,670,924	$ 20,376	$ 80,899	$ 182	$ 123,084	$ 1,733,303
2035	$ 1,733,303	$ 19,651	$ 86,584	$ 174	$ 127,527	$ 1,793,723
2036	$ 1,793,723	$ 18,931	$ 92,526	$ 166	$ 131,813	$ 1,851,775
2037	$ 1,851,775	$ 18,214	$ 98,692	$ 158	$ 135,914	$ 1,907,053
2038	$ 1,907,053	$ 17,501	$ 104,831	$ 150	$ 139,808	$ 1,959,381
2039	$ 1,959,381	$ 16,796	$ 111,050	$ 142	$ 143,478	$ 2,008,463
2040	$ 2,008,463	$ 16,092	$ 117,147	$ 135	$ 146,908	$ 2,054,181
2041	$ 2,054,181	$ 15,395	$ 123,273	$ 127	$ 150,086	$ 2,096,262
2042	$ 2,096,262	$ 14,703	$ 129,164	$ 119	$ 153,000	$ 2,134,682
2043	$ 2,134,682	$ 14,020	$ 134,834	$ 111	$ 155,648	$ 2,169,405
2044	$ 2,169,405	$ 13,326	$ 140,572	$ 103	$ 158,016	$ 2,200,072
2045	$ 2,200,072	$ 12,619	$ 146,430	$ 95	$ 160,074	$ 2,226,240
2046	$ 2,226,240	$ 11,913	$ 152,210	$ 87	$ 161,799	$ 2,247,655
2047	$ 2,247,655	$ 11,209	$ 158,019	$ 79	$ 163,165	$ 2,263,931
2048	$ 2,263,931	$ 10,524	$ 163,503	$ 71	$ 164,159	$ 2,275,040
2049	$ 2,275,040	$ 9,868	$ 168,544	$ 63	$ 164,783	$ 2,281,084
2050	$ 2,281,084	$ 9,234	$ 173,379	$ 55	$ 165,035	$ 2,281,919
2051	$ 2,281,919	$ 8,628	$ 177,823	$ 48	$ 164,912	$ 2,277,588
2052	$ 2,277,588	$ 8,062	$ 181,648	$ 41	$ 164,426	$ 2,268,387
2053	$ 2,268,387	$ 7,545	$ 184,903	$ 35	$ 163,597	$ 2,254,591
2054	$ 2,254,591	$ 7,082	$ 187,498	$ 29	$ 162,450	$ 2,236,596
2055	$ 2,236,596	$ 6,677	$ 189,457	$ 23	$ 161,013	$ 2,214,806
2056	$ 2,214,806	$ 6,339	$ 190,742	$ 18	$ 159,319	$ 2,189,704
2057	$ 2,189,704	$ 6,069	$ 191,369	$ 14	$ 157,404	$ 2,161,794
2058	$ 2,161,794	$ 5,863	$ 191,406	$ 11	$ 155,302	$ 2,131,542
2059	$ 2,131,542	$ 5,727	$ 190,859	$ 8	$ 153,048	$ 2,099,450
2060	$ 2,099,450	$ 5,656	$ 189,746	$ 5	$ 150,680	$ 2,066,035
2061	$ 2,066,035	$ 5,645	$ 188,077	$ 4	$ 148,235	$ 2,031,834
2062	$ 2,031,834	$ 5,688	$ 185,881	$ 2	$ 145,752	$ 1,997,391
2063	$ 1,997,391	$ 5,774	$ 183,201	$ 1	$ 143,271	$ 1,963,234
2064	$ 1,963,234	$ 5,899	$ 180,080	$ 1	$ 140,828	$ 1,929,880
2065	$ 1,929,880	$ 6,049	$ 176,572	$ 1	$ 138,462	$ 1,897,818
2066	$ 1,897,818	$ 6,221	$ 172,714	$ -	$ 136,205	$ 1,867,530
2067	$ 1,867,530	$ 6,409	$ 168,538	$ -	$ 134,094	$ 1,839,495
2068	$ 1,839,495	$ 6,610	$ 164,076	$ -	$ 132,163	$ 1,814,192
2069	$ 1,814,192	$ 6,821	$ 159,351	$ -	$ 130,448	$ 1,792,110
2070	$ 1,792,110	$ 7,040	$ 154,384	$ -	$ 128,982	$ 1,773,748

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)
2071	$ 1,773,748	$ 7,269	$ 149,196	$ -	$ 127,805	$ 1,759,626
2072	$ 1,759,626	$ 7,505	$ 143,805	$ -	$ 126,953	$ 1,750,279
2073	$ 1,750,279	$ 7,749	$ 138,229	$ -	$ 126,466	$ 1,746,265
2074	$ 1,746,265	$ 8,001	$ 132,487	$ -	$ 126,386	$ 1,748,165
2075	$ 1,748,165	$ 8,261	$ 126,599	$ -	$ 126,754	$ 1,756,581
2076	$ 1,756,581	$ 8,529	$ 120,584	$ -	$ 127,617	$ 1,772,143
2077	$ 1,772,143	$ 8,806	$ 114,466	$ -	$ 129,020	$ 1,795,503
2078	$ 1,795,503	$ 9,093	$ 108,265	$ -	$ 131,010	$ 1,827,341
2079	$ 1,827,341	$ 9,388	$ 102,004	$ -	$ 133,640	$ 1,868,365
2080	$ 1,868,365	$ 9,693	$ 95,709	$ -	$ 136,960	$ 1,919,309
2081	$ 1,919,309	$ 10,008	$ 89,406	$ -	$ 141,024	$ 1,980,935
2082	$ 1,980,935	$ 10,334	$ 83,121	$ -	$ 145,889	$ 2,054,037
2083	$ 2,054,037	$ 10,669	$ 76,884	$ -	$ 151,614	$ 2,139,436
2084	$ 2,139,436	$ 11,016	$ 70,727	$ -	$ 158,259	$ 2,237,984
2085	$ 2,237,984	$ 11,374	$ 64,684	$ -	$ 165,885	$ 2,350,559
2086	$ 2,350,559	$ 11,744	$ 58,788	$ -	$ 174,559	$ 2,478,074
2087	$ 2,478,074	$ 12,125	$ 53,072	$ -	$ 184,347	$ 2,621,474
2088	$ 2,621,474	$ 12,520	$ 47,569	$ -	$ 195,320	$ 2,781,745
2089	$ 2,781,745	$ 12,926	$ 42,308	$ -	$ 207,549	$ 2,959,912
2090	$ 2,959,912	$ 13,347	$ 37,317	$ -	$ 221,110	$ 3,157,052
2091	$ 3,157,052	$ 13,780	$ 32,623	$ -	$ 236,085	$ 3,374,294
2092	$ 3,374,294	$ 14,228	$ 28,247	$ -	$ 252,555	$ 3,612,830
2093	$ 3,612,830	$ 14,691	$ 24,206	$ -	$ 270,611	$ 3,873,926
2094	$ 3,873,926	$ 15,168	$ 20,514	$ -	$ 290,347	$ 4,158,927
2095	$ 4,158,927	$ 15,661	$ 17,178	$ -	$ 311,863	$ 4,469,273
2096	$ 4,469,273	$ 16,170	$ 14,201	$ -	$ 335,268	$ 4,806,510
2097	$ 4,806,510	$ 16,695	$ 11,580	$ -	$ 360,676	$ 5,172,301
2098	$ 5,172,301	$ 17,238	$ 9,307	$ -	$ 388,214	$ 5,568,446
2099	$ 5,568,446	$ 17,798	$ 7,365	$ -	$ 418,017	$ 5,996,896
2100	$ 5,996,896	$ 18,377	$ 5,733	$ -	$ 450,232	$ 6,459,772
2101	$ 6,459,772	$ 18,974	$ 4,388	$ -	$ 485,020	$ 6,959,378
2102	$ 6,959,378	$ 19,591	$ 3,298	$ -	$ 522,553	$ 7,498,224
2103	$ 7,498,224	$ 20,227	$ 2,432	$ -	$ 563,022	$ 8,079,041
2104	$ 8,079,041	$ 20,885	$ 1,760	$ -	$ 606,632	$ 8,704,798
2105	$ 8,704,798	$ 21,563	$ 1,248	$ -	$ 653,607	$ 9,378,720
2106	$ 9,378,720	$ 22,264	$ 867	$ -	$ 704,192	$ 10,104,309
2107	$ 10,104,309	$ 22,988	$ 590	$ -	$ 758,648	$ 10,885,355
2108	$ 10,885,355	$ 23,735	$ 393	$ -	$ 817,261	$ 11,725,958
2109	$ 11,725,958	$ 24,506	$ 257	$ -	$ 880,339	$ 12,630,546
2110	$ 12,630,546	$ 25,303	$ 165	$ -	$ 948,216	$ 13,603,900
2111	$ 13,603,900	$ 26,125	$ 105	$ -	$ 1,021,250	$ 14,651,170
2112	$ 14,651,170	$ 26,974	$ 65	$ -	$ 1,099,828	$ 15,777,907
2113	$ 15,777,907	$ 27,851	$ 41	$ -	$ 1,184,367	$ 16,990,084
2114	$ 16,990,084	$ 28,756	$ 25	$ -	$ 1,275,314	$ 18,294,129
2115	$ 18,294,129	$ 29,691	$ 16	$ -	$ 1,373,152	$ 19,696,956
2116	$ 19,696,956	$ 30,656	$ 10	$ -	$ 1,478,400	$ 21,206,002
2117	$ 21,206,002	$ 31,652	$ 6	$ -	$ 1,591,615	$ 22,829,263
2118	$ 22,829,263	$ 32,681	$ 4	$ -	$ 1,713,398	$ 24,575,338
2119	$ 24,575,338	$ 33,743	$ 2	$ -	$ 1,844,392	$ 26,453,471
2120	$ 26,453,471	$ 34,839	$ 2	$ -	$ 1,985,293	$ 28,473,601

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)
2021	$ 787,322	$ 24,347	$ 24,347	$ 0	$ 23,482	$ 0	$ 23,482
2022	854,349	27,236	27,236	0	24,436	0	24,436
2023	921,658	30,160	30,160	0	25,171	0	25,171
2024	989,714	33,119	33,119	0	25,712	0	25,712
2025	1,058,784	36,651	36,651	0	26,470	0	26,470
2026	1,128,396	40,980	40,980	0	27,531	0	27,531
2027	1,197,817	45,172	45,172	0	28,230	0	28,230
2028	1,267,227	49,550	49,550	0	28,806	0	28,806
2029	1,336,472	54,286	54,286	0	29,357	0	29,357
2030	1,405,207	59,081	59,081	0	29,721	0	29,721
2031	1,473,349	64,171	64,171	0	30,029	0	30,029
2032	1,540,543	69,353	69,353	0	30,190	0	30,190
2033	1,606,624	75,114	75,114	0	30,417	0	30,417
2034	1,670,925	80,899	80,899	0	30,474	0	30,474
2035	1,733,303	86,584	86,584	0	30,340	0	30,340
2036	1,793,722	92,526	92,526	0	30,160	0	30,160
2037	1,851,774	98,692	98,692	0	29,926	0	29,926
2038	1,907,051	104,831	104,831	0	29,569	0	29,569
2039	1,959,379	111,050	111,050	0	29,138	0	29,138
2040	2,008,459	117,147	117,147	0	28,594	0	28,594
2041	2,054,178	123,273	123,273	0	27,989	0	27,989
2042	2,096,259	129,164	129,164	0	27,281	0	27,281
2043	2,134,679	134,834	134,834	0	26,492	0	26,492
2044	2,169,403	140,572	140,572	0	25,692	0	25,692
2045	2,200,069	146,430	146,430	0	24,896	0	24,896
2046	2,226,237	152,210	152,210	0	24,073	0	24,073
2047	2,247,652	158,019	158,019	0	23,248	0	23,248
2048	2,263,929	163,503	163,503	0	22,377	0	22,377
2049	2,275,038	168,544	168,544	0	21,457	0	21,457
2050	2,281,083	173,379	173,379	0	20,533	0	20,533
2051	2,281,917	177,823	177,823	0	19,590	0	19,590
2052	2,277,585	181,648	181,648	0	18,615	0	18,615
2053	2,268,383	184,903	184,903	0	17,627	0	17,627
2054	2,254,587	187,498	187,498	0	16,627	0	16,627
2055	2,236,591	189,457	189,457	0	15,629	0	15,629
2056	2,214,801	190,742	190,742	0	14,637	0	14,637
2057	2,189,699	191,369	191,369	0	13,660	0	13,660
2058	2,161,789	191,406	191,406	0	12,710	0	12,710
2059	2,131,537	190,859	190,859	0	11,789	0	11,789
2060	2,099,446	189,746	189,746	0	10,903	0	10,903
2061	2,066,031	188,077	188,077	0	10,053	0	10,053
2062	2,031,830	185,881	185,881	0	9,242	0	9,242
2063	1,997,385	183,201	183,201	0	8,474	0	8,474
2064	1,963,228	180,080	180,080	0	7,748	0	7,748
2065	1,929,874	176,572	176,572	0	7,067	0	7,067
2066	1,897,813	172,714	172,714	0	6,430	0	6,430
2067	1,867,524	168,538	168,538	0	5,837	0	5,837
2068	1,839,489	164,076	164,076	0	5,286	0	5,286
2069	1,814,187	159,351	159,351	0	4,776	0	4,776
2070	1,792,104	154,384	154,384	0	4,304	0	4,304

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)
2071	$ 1,773,742	$ 149,196	$ 149,196	$ 0	$ 3,869	$ 0	$ 3,869
2072	1,759,619	143,805	143,805	0	3,469	0	3,469
2073	1,750,272	138,229	138,229	0	3,102	0	3,102
2074	1,746,258	132,487	132,487	0	2,766	0	2,766
2075	1,748,157	126,599	126,599	0	2,458	0	2,458
2076	1,756,574	120,584	120,584	0	2,178	0	2,178
2077	1,772,136	114,466	114,466	0	1,924	0	1,924
2078	1,795,496	108,265	108,265	0	1,692	0	1,692
2079	1,827,335	102,004	102,004	0	1,483	0	1,483
2080	1,868,358	95,709	95,709	0	1,295	0	1,295
2081	1,919,301	89,406	89,406	0	1,125	0	1,125
2082	1,980,928	83,121	83,121	0	973	0	973
2083	2,054,030	76,884	76,884	0	837	0	837
2084	2,139,430	70,727	70,727	0	716	0	716
2085	2,237,978	64,684	64,684	0	609	0	609
2086	2,350,553	58,788	58,788	0	515	0	515
2087	2,478,068	53,072	53,072	0	433	0	433
2088	2,621,468	47,569	47,569	0	361	0	361
2089	2,781,739	42,308	42,308	0	298	0	298
2090	2,959,906	37,317	37,317	0	245	0	245
2091	3,157,046	32,623	32,623	0	199	0	199
2092	3,374,287	28,247	28,247	0	160	0	160
2093	3,612,823	24,206	24,206	0	128	0	128
2094	3,873,919	20,514	20,514	0	101	0	101
2095	4,158,920	17,178	17,178	0	79	0	79
2096	4,469,267	14,201	14,201	0	60	0	60
2097	4,806,503	11,580	11,580	0	46	0	46
2098	5,172,294	9,307	9,307	0	34	0	34
2099	5,568,440	7,365	7,365	0	25	0	25
2100	5,996,891	5,733	5,733	0	18	0	18
2101	6,459,766	4,388	4,388	0	13	0	13
2102	6,959,372	3,298	3,298	0	9	0	9
2103	7,498,218	2,432	2,432	0	6	0	6
2104	8,079,035	1,760	1,760	0	4	0	4
2105	8,704,792	1,248	1,248	0	3	0	3
2106	9,378,715	867	867	0	2	0	2
2107	10,104,304	590	590	0	1	0	1
2108	10,885,350	393	393	0	1	0	1
2109	11,725,952	257	257	0	0	0	0
2110	12,630,540	165	165	0	0	0	0
2111	13,603,894	105	105	0	0	0	0
2112	14,651,165	65	65	0	0	0	0
2113	15,777,902	41	41	0	0	0	0
2114	16,990,079	25	25	0	0	0	0
2115	18,294,124	16	16	0	0	0	0
2116	19,696,951	10	10	0	0	0	0
2117	21,205,997	6	6	0	0	0	0
2118	22,829,257	4	4	0	0	0	0
2119	24,575,332	2	2	0	0	0	0
2120	26,453,464	2	2	0	0	0	0
				Totals	$ 1,064,039	$ 0	$ 1,064,039

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.