

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, 2017





November 10, 2017

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 ("LGCSR"), 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 statements.

Our calculation of the liability associated with the benefits described in this report was performed for the purpose of providing reporting and disclosure information that satisfies the requirements of GASB 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 obligation. The Net Pension Liability is not an appropriate measure for assessing the need for or amount of future employer contributions. The calculation of the plan's liability for this report 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 Statement 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.

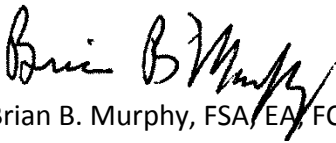
This report complements the actuarial valuation report for funding purposes that was or will be provided to the System and should be considered in conjunction with that report. Please see the actuarial valuation report as of June 30, 2017 for additional discussion of the nature of actuarial calculations and more information related to participant data, economic and demographic assumptions, and benefit provisions.

To the best of our knowledge, the information contained within this report is accurate and fairly represents the actuarial position of the Local Government Correctional Service Retirement Plan as of the measurement date. All calculations have been made in conformity with generally accepted actuarial principles and practices as well as with the Actuarial Standards of Practice issued by the Actuarial Standards Board.

The signing actuaries are independent of the plan sponsor.

Brian B. Murphy and Bonita J. Wurst are Members of the American Academy of Actuaries (MAAA) and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

Respectfully submitted,



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



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



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SECTION A

EXECUTIVE SUMMARY

Executive Summary

as of June 30, 2017 (Dollars in Thousands)

	2017
Actuarial Valuation Date	June 30, 2017
Measurement Date of the Net Pension Liability	June 30, 2017
Employer's Fiscal Year Ending Date (Reporting Date)	Varies by Employer

Membership

Number of	
- Service Retirements	853
- Survivors	54
- Disability Retirements	178
- Deferred Retirements	2,933
- Terminated other non-vested	2,624
- Active Members	3,842
- Total	10,484
Covered Payroll	\$ 200,103

Net Pension Liability

Total Pension Liability	\$ 887,461
Plan Fiduciary Net Position	602,460
Net Pension Liability	\$ 285,001
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	67.89%
Net Pension Liability as a Percentage of Covered Payroll	142.43%

Development of the Single Discount Rate

Single Discount Rate	5.96%
Long-Term Expected Rate of Investment Return	7.50%
Long-Term Municipal Bond Rate*	3.56%
Last year ending June 30 in the 2018 to 2117 projection period for which projected benefit payments are fully funded	2061

Total Pension Expense/ (Income) \$ 90,095

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	\$ 190	\$ 4,609
Changes in assumptions	\$ 155,166	\$ 49,610
Net difference between projected and actual earnings on pension plan investments	\$ 29,977	\$ 39,694
Total	\$ 185,333	\$ 93,913

* Source: Fixed-income municipal bonds with 20 years to maturity that include only federally tax-exempt municipal bonds as reported in Fidelity Index's "20-Year Municipal GO AA Index" as of June 30, 2017. In describing this index, Fidelity notes that the municipal curves are constructed using option-adjusted analytics of a diverse population of over 10,000 tax-exempt securities.

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 LGCSRPP subsequent to the measurement date of June 30, 2017.

The pension expense recognized each fiscal year is equal to the change in the net pension liability from the beginning of the year to the end of the year, adjusted for deferred recognition of the liability and investment experience.

Pension plans that prepare their own, stand-alone financial statements are required to present two financial statements – a Statement of Fiduciary Net Position and a Statement of Changes in Fiduciary Net Position in accordance with GASB Statement No. 67. The *Statement of Fiduciary Net Position* presents the assets and liabilities of the pension plan at the end of the pension plan's reporting period. The *Statement of Changes in Fiduciary Net Position* presents the additions, such as contributions and investment income, and deductions, such as benefit payments and expenses, and net increase or decrease in the fiduciary net position.

Notes to Financial Statements

GASB Statement No. 68 requires the notes to the employer's financial statements to disclose the total pension expense, the pension plan's liabilities and assets, and deferred outflows and inflows of resources related to pensions.

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

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

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

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

Required Supplementary Information

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

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

Timing of the Valuation

An actuarial valuation to determine the total pension liability is required to be performed at least every two years. The net pension liability and pension expense should be measured as of the pension plan's fiscal year end (measurement date) on a date that is within the employer's prior fiscal year. If the actuarial valuation used to determine the total pension liability is not calculated as of the measurement date, the total pension liability is required to be rolled forward from the actuarial valuation date to the measurement date.

The total pension liability shown in this report is based on an actuarial valuation performed as of June 30, 2017 and a measurement date of June 30, 2017.

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

1. The employer normal cost as a percentage of pay is expected to remain approximately level as a percentage of payroll.
2. The unfunded actuarial accrued liabilities will increase and not be eliminated.
3. The funded status of the plan will decrease.
4. The plan may eventually become insolvent and unable to pay benefits.

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 actuarial 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 market value of assets were used instead of the actuarial value of assets, unless the market value of assets is used in the measurement.

Limitation of Project Scope

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

Single Discount Rate

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

For the purpose of this valuation, the long-term expected rate of return on pension plan investments is 7.50%; the municipal bond rate is 3.56 % (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 5.96%. The long-term expected rate of return is based on reviews of inflation and investment assumptions, dated September 11, 2014 and September 11, 2017, and a recent asset liability study obtained by the Minnesota State Board of Investment.

SECTION B

FINANCIAL STATEMENTS

Statement of Pension Expense Under GASB Statement No. 68

Fiscal Year Ended June 30, 2017 (Dollars in Thousands)

A. Expense

1. Service Cost		\$	49,202
2. Interest on the Total Pension Liability		\$	47,336
3. Current-Period Benefit Changes		\$	-
4. Employee Contributions (made negative for addition here)		\$	(11,666)
5. Projected Earnings on Plan Investments (made negative for addition here)		\$	(38,695)
6. Pension Plan Administrative Expense		\$	330
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			
<i>Arising from Current Reporting Period</i>		\$	(879)
9. Recognition of Outflow (Inflow) of Resources due to assumption changes			
<i>Arising from Current Reporting Period</i>		\$	(16,537)
10. Recognition of Outflow (Inflow) of Resources due to the difference between projected (7.50%) and actual earnings on Pension Plan Investments			
<i>Arising from Current Reporting Period</i>		\$	(7,934)
11. Increase/(Decrease) from Experience in the Current Reporting Period		\$	21,157
12. Recognition of Outflow (Inflow) of Resources due to differences between expected and actual experience in the measurement of the Total Pension Liability			
<i>Arising from Prior Reporting Periods</i>		\$	(3,209)
13. Recognition of Outflow (Inflow) of Resources due to assumption changes			
<i>Arising from Prior Reporting Periods</i>		\$	69,041
14. Recognition of Outflow (Inflow) of Resources due to the difference between projected and actual earnings on Pension Plan Investments			
<i>Arising from Prior Reporting Periods</i>		\$	3,106
15. Total Pension Expense / (Income)		\$	90,095

Statement of Outflows and Inflows Arising from Current Reporting Period Fiscal Year Ended June 30, 2017 (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	\$	(3,516)
2. Assumption Changes (gains) or losses	\$	(66,147)
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	\$	(879)
5. Outflow (Inflow) of Resources to be recognized in the current pension expense for Assumption Changes	\$	(16,537)
6. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Liabilities	\$	(17,416)
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	\$	(2,637)
8. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses for Assumption Changes	\$	(49,610)
9. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Liabilities	\$	(52,247)

B. Outflows (Inflows) of Resources due to Assets

1. Net difference between projected and actual earnings on pension plan investments (gains) or losses	\$	(39,668)
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	\$	(7,934)
4. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Assets	\$	(31,734)

Statement of Outflows and Inflows Arising from Current and Prior Reporting Periods Fiscal Year Ended June 30, 2017 (Dollars in Thousands)

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

	Outflows of Resources	Inflows of Resources	Net Outflows of Resources
1. Due to Liabilities	\$ 77,679	\$ 29,263	\$ 48,416
2. Due to Assets	\$ 11,067	\$ 15,895	\$ (4,828)
3. Total	\$ 88,746	\$ 45,158	\$ 43,588

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	\$ 96	\$ 4,184	\$ (4,088)
2. Assumption Changes	\$ 77,583	\$ 25,079	\$ 52,504
3. Net Difference between projected and actual earnings on pension plan investments	\$ 11,067	\$ 15,895	\$ (4,828)
4. Total	\$ 88,746	\$ 45,158	\$ 43,588

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	\$ 190	\$ 4,609	\$ (4,419)
2. Assumption Changes	\$ 155,166	\$ 49,610	\$ 105,556
3. Net Difference between projected and actual earnings on pension plan investments	\$ 29,977	\$ 39,694	\$ (9,717)
4. Total	\$ 185,333	\$ 93,913	\$ 91,420

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
2018	\$ 53,464
2019	\$ 63,395
2020	\$ (17,506)
2021	\$ (7,933)
2022	\$ -
Thereafter	\$ -
Total	\$ 91,420

Statement of Fiduciary Net Position (Dollars in Thousands)

Assets in Trust	Market Value	
	June 30, 2017	June 30, 2016
Cash, equivalents, short term securities	\$ 15,461	\$ 11,243
Fixed income	\$ 116,764	\$ 125,331
Equity	\$ 390,993	\$ 306,438
SBI Alternative	\$ 79,019	\$ 64,984
Other	\$ -	\$ -
Total Assets in Trust	\$ 602,237	\$ 507,996
Assets Receivable	\$ 718	\$ 234
Amounts Payable	\$ (495)	\$ (447)
Net Position Restricted for Pensions	\$ 602,460	\$ 507,783

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

Change in Assets	Market Value	
Year Ending	June 30, 2017	June 30, 2016
1. Fund balance at market value at beginning of year	\$ 507,783	\$ 490,731
2. Adjustment to match beginning of year asset statement	\$ -	\$ -
3. Fund balance at market value at beginning of year	\$ 507,783	\$ 490,731
4. Contributions		
a. Member	\$ 11,666	\$ 11,008
b. Employer	\$ 17,489	\$ 16,490
c. Other sources	\$ -	\$ -
d. Total contributions	\$ 29,155	\$ 27,498
5. Investment income		
a. Investment income/(loss)	\$ 78,973	\$ 870
b. Investment expenses	\$ (610)	\$ (661)
c. Net subtotal	\$ 78,363	\$ 209
6. Other	\$ -	\$ (2)
7. Total additions: (4.d.) + (5.c.) + (6.)	\$ 107,518	\$ 27,705
8. Benefits Paid		
a. Annuity benefits	\$ (11,033)	\$ (9,381)
b. Refunds	\$ (1,478)	\$ (982)
c. Total benefits paid	\$ (12,511)	\$ (10,363)
9. Expenses		
a. Other	\$ -	\$ -
b. Administrative	\$ (330)	\$ (290)
c. Total expenses	\$ (330)	\$ (290)
10. Total deductions: (8.c.) + (9.c.)	\$ (12,841)	\$ (10,653)
11. Net increase (decrease) in net position: (7.) + (10.)	\$ 94,677	\$ 17,052
12. Net position restricted for pensions	\$ 602,460	\$ 507,783
13. Approximate return on market value of assets	15.1%	0.0%

SECTION C

REQUIRED SUPPLEMENTARY INFORMATION

Schedule of Changes in Net Pension Liability and Related Ratios

Current Period

Fiscal Year Ended June 30, 2017 (Dollars in Thousands)

A. Total pension liability	
1. Service Cost	\$ 49,202
2. Interest on the Total Pension Liability	\$ 47,336
3. Changes of benefit terms	\$ -
4. Difference between expected and actual experience of the Total Pension Liability	\$ (3,516)
5. Changes of assumptions	\$ (66,147)
6. Benefit payments, including refunds of employee contributions	\$ (12,511)
7. Net change in total pension liability	\$ 14,364
8. Total pension liability – beginning	\$ 873,097
9. Total pension liability – ending	<u><u>\$ 887,461</u></u>
B. Plan fiduciary net position	
1. Contributions – employer	\$ 17,489
2. Contributions – employee	\$ 11,666
3. Net investment income	\$ 78,363
4. Benefit payments, including refunds of employee contributions	\$ (12,511)
5. Pension Plan Administrative Expense	\$ (330)
6. Other	\$ -
7. Net change in plan fiduciary net position	\$ 94,677
8. Plan fiduciary net position – beginning	\$ 507,783
9. Plan fiduciary net position – ending	<u><u>\$ 602,460</u></u>
C. Net pension liability	<u><u>\$ 285,001</u></u>
D. Plan fiduciary net position as a percentage of the total pension liability	67.89%
E. Covered-employee payroll*	\$ 200,103
F. Net pension liability as a percentage of covered employee payroll	142.43%

* 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,	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008
Total Pension Liability										
Service Cost	\$ 49,202	\$ 25,950	\$ 25,098	\$ 26,488						
Interest on the Total Pension Liability	\$ 47,336	\$ 40,605	\$ 37,043	33,955						
Benefit Changes	\$ -	\$ -	\$ -	0						
Experience	\$ (3,516)	\$ 382	\$ (7,892)	(5,327)						
Assumption Changes	\$ (66,147)	\$ 310,332	\$ -	(34,168)						
Benefit Payments	\$ (11,033)	\$ (9,381)	\$ (7,777)	(6,711)						
Refunds	\$ (1,478)	\$ (982)	\$ (1,057)	(1,105)						
Net Change in Total Pension Liability	\$ 14,364	\$ 366,906	\$ 45,415	13,132						
Total Pension Liability - Beginning	\$ 873,097	\$ 506,191	\$ 460,776	447,644						
Total Pension Liability - Ending (a)	\$ 887,461	\$ 873,097	\$ 506,191	\$ 460,776						
Plan Fiduciary Net Position										
Employer Contributions	\$ 17,489	\$ 16,490	\$ 15,736	\$ 15,054						
Employee Contributions	\$ 11,666	\$ 11,008	\$ 10,472	10,030						
Pension Plan Net Investment Income	\$ 78,363	\$ 209	\$ 20,373	69,451						
Benefit Payments	\$ (11,033)	\$ (9,381)	\$ (7,777)	(6,711)						
Refunds	\$ (1,478)	\$ (982)	\$ (1,057)	(1,105)						
Pension Plan Administrative Expense	\$ (330)	\$ (290)	\$ (247)	(236)						
Other	\$ -	\$ (2)	\$ (1)	(1)						
Net Change in Plan Fiduciary Net Position	\$ 94,677	\$ 17,052	\$ 37,499	86,482						
Plan Fiduciary Net Position - Beginning	\$ 507,783	\$ 490,731	\$ 453,232	366,750						
Plan Fiduciary Net Position - Ending (b)	\$ 602,460	\$ 507,783	\$ 490,731	\$ 453,232						
Net Pension Liability - Ending (a) - (b)	\$ 285,001	\$ 365,314	\$ 15,460	7,544						
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	67.89 %	58.16 %	96.95 %	98.36 %						
Covered Employee Payroll	\$ 200,103	\$ 188,816	\$ 179,623	\$ 172,041						
Net Pension Liability as a Percentage of Covered Employee Payroll	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
2008						
2009						
2010						
2011						
2012						
2013						
2014	\$ 460,776	\$ 453,232	\$ 7,544	98.36%	\$ 172,041	4.39%
2015	\$ 506,191	\$ 490,731	\$ 15,460	96.95%	\$ 179,623	8.61%
2016	\$ 873,097	\$ 507,783	\$ 365,314	58.16%	\$ 188,816	193.48%
2017	\$ 887,461	\$ 602,460	\$ 285,001	67.89%	\$ 200,103	142.43%

Schedule of Contributions Multiyear (Dollars in Thousands)

Last 10 Fiscal Years

<u>FY Ending June 30,</u>	<u>Actuarially Determined Contribution</u>	<u>Actual Contribution</u>	<u>Contribution Deficiency (Excess)</u>	<u>Covered Payroll</u>	<u>Actual Contribution as a % of Covered Payroll</u>
2008	\$ 10,153	\$ 13,388	\$ (3,235)	\$ 154,202	8.68%
2009	\$ 11,469	\$ 14,124	\$ (2,655)	\$ 154,650	9.13
2010	\$ 12,273	\$ 14,170	\$ (1,897)	\$ 154,777	9.16
2011	\$ 12,183	\$ 14,289	\$ (2,106)	\$ 165,077	8.66
2012	\$ 12,473	\$ 14,320	\$ (1,847)	\$ 164,340	8.71
2013	\$ 14,207	\$ 14,498	\$ (291)	\$ 164,820	8.80
2014	\$ 14,606	\$ 15,054	\$ (448)	\$ 172,041	8.75
2015	\$ 13,759	\$ 15,736	\$ (1,977)	\$ 179,623	8.76
2016	\$ 16,446	\$ 16,490	\$ (44)	\$ 188,816	8.73
2017	\$ 17,269	\$ 17,489	\$ (220)	\$ 200,103	8.74

Notes to Schedule of Contributions

Methods and Assumptions Used to Determine Contribution Rates for Fiscal Year Ending June 30, 2017:

Valuation Date:	June 30
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	15 years
Asset Valuation Method	5-Year smoothed market; no corridor
Inflation	2.75%
Payroll Growth	3.50%
Salary Increases	3.75% to 8.75% including inflation
Investment Rate of Return	8.00%
Retirement Age	Experience-based table of rates that are specific to the type of eligibility condition. Last updated for the 2012 valuation pursuant to an experience study of the period 2006 - 2011, prepared by a former actuary.
Mortality	RP-2000 annuitant generational mortality table, projected with scale AA, white collar adjustment.

Other Information:

Notes	The plan is assumed to pay a 2.50% post-retirement benefit increase for all years. See separate funding report as of July 1, 2016 for additional detail.
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Schedule of Investment Returns Multiyear

Last 10 Fiscal Years

<u>FY Ending June 30,</u>	<u>Annual Return¹</u>
2008	
2009	
2010	
2011	
2012	
2013	
2014	
2015	
2016	
2017	

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. Best 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, 2017, these best estimates are summarized in the following table:

<u>Asset Class</u>	<u>Target Allocation</u>	<u>Long-Term Expected Real Rate of Return (geometric)</u>
Domestic Stocks	39.00%	5.10%
International Stocks	19.00%	5.30%
Bonds	20.00%	0.75%
Alternative Assets	20.00%	5.90%
Unallocated Cash	2.00%	0.00%
Total	<u>100.00%</u>	

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

For purposes of this valuation, the long-term expected rate of return assumption is 7.50%. This assumption is based on reviews of inflation and investment return assumptions dated September 11, 2014, and September 11, 2017, and a recent asset liability study obtained by the SBI.

Single Discount Rate

A single discount rate of 5.96% was used to measure the total pension liability. This single discount rate was based on the expected rate of return on pension plan investments of 7.50% and the municipal bond rate of 3.56%. The projection of cash flows used to determine this single discount rate assumed that plan member and employer contributions will be made at the current statutory contribution rates. Based on these assumptions, the pension plan's fiduciary net position and future contributions were sufficient to finance the benefit payments through the year ending June 30, 2061. As a result, the long-term expected rate of return on pension plan investments was applied to projected benefit payments through the year ending June 30, 2061, and the municipal bond rate was applied to all benefit payments after the point of asset depletion.

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 5.96%, as well as what the plan's net pension liability would be if it were calculated using a single discount rate that is

1-percentage-point lower or 1-percentage-point higher:

Sensitivity of Net Pension Liability to the Single Discount Rate Assumption

(Dollars in Thousands)

	1% Decrease	Current Single Discount	1% Increase
	4.96%	Rate Assumption	6.96%
		5.96%	
Total Pension Liability	\$ 1,072,106	\$ 887,461	\$ 743,343
Net Position Restricted for Pensions	\$ 602,460	\$ 602,460	\$ 602,460
Net Pension Liability	\$ 469,646	\$ 285,001	\$ 140,883

GASB Statement No. 68 Reconciliation (Dollars in Thousands) Current Reporting Period

	Total Pension Liability (a)	Plan Fiduciary Net Position (b)	Net Pension Liability (a) - (b)	Current Period		
				Deferred Outflows	Deferred Inflows	Pension Expense*
Balance Beginning of Year	\$ 873,097	\$ 507,783	\$ 365,314			
Changes for the Year:						
Service Cost	\$ 49,202		\$ 49,202			\$ 49,202
Interest on Total Pension Liability	47,336		47,336			47,336
Interest on Fiduciary Net Position		\$ 38,695	(38,695)			(38,695)
Changes in Benefit Terms						
Liability Experience Gains and Losses	(3,516)		(3,516)	\$ -	\$ 2,637	(879)
Changes in Assumptions	(66,147)		(66,147)	-	49,610	(16,537)
Contributions - Employer		17,489	(17,489)			
Contributions - Employees		11,666	(11,666)			(11,666)
Asset Gain/(Loss)		39,668	(39,668)	-	31,734	(7,934)
Benefit Payouts	(12,511)	(12,511)				
Administrative Expenses		(330)	330			330
Other		-	-			-
Net Changes	<u>\$ 14,364</u>	<u>\$ 94,677</u>	<u>\$ (80,313)</u>	<u>\$ -</u>	<u>\$ 83,981</u>	<u>\$ 21,157</u>
Balance End of Year	<u>\$ 887,461</u>	<u>\$ 602,460</u>	<u>\$ 285,001</u>			

* 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	\$ 873,097	\$ 507,783	\$ 365,314				
Changes for the Year:							
Service Cost	\$ 49,202		\$ 49,202				\$ 49,202
Interest on Total Pension Liability	47,336		47,336				47,336
Interest on Fiduciary Net Position		\$ 38,695	(38,695)				(38,695)
Changes in Benefit Terms							
Liability Experience Gains and Losses	(3,516)		(3,516)	\$ 190	\$ 4,609	\$ (4,991)	(4,088)
Changes in Assumptions	(66,147)		(66,147)	155,166	49,610	224,207	52,504
Contributions - Employer		17,489	(17,489)				
Contributions - Employees		11,666	(11,666)				(11,666)
Asset Gain/(Loss)		39,668	(39,668)	29,977	39,694	25,123	(4,828)
Benefit Payouts	(12,511)	(12,511)					
Administrative Expenses		(330)	330				330
Other		-	-				-
Net Changes	\$ 14,364	\$ 94,677	\$ (80,313)				\$ 90,095
Balance End of Year	\$ 887,461	\$ 602,460	\$ 285,001	\$ 185,333	\$ 93,913	\$ 244,339	

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

Summary of Population Statistics

	Terminated			Recipients			Total
	Actives	Deferred Retirement	Other Non-Vested	Service Retirement	Disability Retirement	Survivor	
Members on July 1, 2016	3,827	2,755	2,359	749	169	49	9,908
New members	610						610
Return to active	30	(12)	(18)	0	0	0	0
Terminated non-vested	(330)	0	330	0	0	0	0
Service retirements	(70)	(45)	0	115	0	0	0
Terminated deferred	(159)	159	0	0	0	0	0
Terminated refund/transfer	(54)	(34)	(29)	0	0	0	(117)
Deaths	(5)	(6)	(2)	(9)	(3)	0	(25)
New beneficiary	0	0	0	0	0	4	4
Disabled	(7)	0	0	0	7	0	0
Data adjustments	0	116	(16)	(2)	5	1	104
Net change	15	178	265	104	9	5	576
Members on July 1, 2017	3,842	2,933	2,624	853	178	54	10,484

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:	
	<u>Member</u>	5.83%
	<u>Employer</u>	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		
	<u>Normal retirement benefit</u>	
	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.

Summary of Plan Provisions (Continued)

Retirement (Continued)

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).

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 received a post-retirement benefit increase of 1.00% on January 1, 2013 and January 1, 2014. Because the actuarial accrued liability funding ratio (on a market value of assets basis) reached 90% for two consecutive years, the benefit increase reverted to 2.50% on January 1, 2015. If the funding ratio declines to less than 80% for one year or less than 85% for two consecutive years, the benefit increase will decrease to 1.00%.

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

Summary of Plan Provisions (Continued)

Death (Continued)	
Amount	If no survivor benefits are paid, the member's contributions with 6.00% interest until June 30, 2011; 4.00% interest 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.
<hr/>	
Termination	
<u>Refund of contributions</u>	
Age/service requirement	Termination of local government service.
Amount	If member terminated before July 1, 2011, member's contributions with 6.00% interest compounded annually until June 30, 2011; 4.00% interest thereafter. If member terminated after June 30, 2011, member's contributions credited with 4% interest compounded annually.
<u>Deferred benefit</u>	
Age/service requirement	A deferred annuity may be elected in lieu of a refund if vested. 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; and (c.) 1.00% from January 1, 2012 thereafter. If a member terminates employment after 2011, they are not eligible for augmentation.
<u>Form of payment</u>	Same as for retirement.
<hr/>	
Actuarially equivalent factors	Actuarially equivalent factors based on the RP-2000 mortality table for healthy annuitants, white collar adjustment, projected to 2026 using scale AA, no setbacks, blended 65% males, 6.00% post-retirement interest, and 8.50% pre-retirement interest. The post-retirement interest rate assumption will change to 6.50% on the earlier of the effective date of the next mortality adjustment or July 1, 2017.

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 are 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 have been no changes in plan provisions since the previous 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 recipients receive a future annual 2.50% post-retirement benefit increase. If the funding ratio declines to less than 80% for one year or less than 85% for two consecutive years, the benefit increase will decrease to 1.00%.

Based on the assumptions and methods in this report, this plan is assumed to pay the 2.50% benefit increases indefinitely.

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, reviews of inflation and investment assumptions, dated September 11, 2014 and September 11, 2017, and a recent asset liability study obtained by the State Board of Investment. 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	5.96% per annum.								
Benefit increases after retirement	2.50% per annum.								
Salary increases	Reported salary at valuation date increased according to the rate table, to current fiscal year and annually for each future year. Prior fiscal year salary is annualized for members with less than one year of service earned during the year.								
Inflation	2.50% per year.								
Payroll growth	3.25% per year.								
Mortality rates									
Healthy pre-retirement	RP-2014 employee generational mortality table projected with mortality improvement scale MP-2016, from a base year of 2006.								
Healthy post-retirement	RP-2014 annuitant generational mortality table projected with mortality improvement scale MP-2016 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-2016 from a base year of 2006. Male rates are adjusted by a factor of 0.96.								
	The RP-2014 employee mortality table as published by the Society of Actuaries (SOA) contains mortality rates for ages 18 to 80 and the annuitant mortality table contains mortality rates for ages 50 to 120. We have extended the annuitant mortality table as needed for members younger than age 50 who are receiving a benefit by deriving rates based on the employee table and the juvenile table. Similarly, we have extended the employee table as needed for members older than age 80 by deriving rates based on the annuitant table.								
Retirement	Members retiring from active status are assumed to retire according to the age related rates shown in the rate table. Members who have attained the highest assumed retirement age are assumed to retire in one year.								
Withdrawal	Select and Ultimate rates based on actual experience. Ultimate rates after the third year are shown in rate table. Select rates in the first three years are:								
	<table> <thead> <tr> <th style="text-decoration: underline;">Year</th> <th style="text-decoration: underline;">Select Withdrawal Rates</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">25%</td> </tr> <tr> <td style="text-align: center;">2</td> <td style="text-align: center;">20%</td> </tr> <tr> <td style="text-align: center;">3</td> <td style="text-align: center;">15%</td> </tr> </tbody> </table>	Year	Select Withdrawal Rates	1	25%	2	20%	3	15%
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	<p>Married members retiring from active status are assumed to elect subsidized joint and survivor form of annuity as follows:</p> <p style="margin-left: 40px;">Males: 5% elect 25% Joint & Survivor option 10% elect 50% Joint & Survivor option 10% elect 75% Joint & Survivor option 35% elect 100% Joint & Survivor option</p> <p style="margin-left: 40px;">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</p> <p>Remaining married members and unmarried members are assumed to elect the Straight Life option.</p> <p>Members receiving deferred annuities (including current terminated deferred members) are assumed to elect a straight life annuity.</p>
Eligibility testing	Eligibility for benefits is determined based upon the age nearest birthday and service on the date the decrement is assumed to occur.
Decrement operation	Withdrawal decrements do not operate during retirement eligibility. Decrement 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 were applied:

Data for active members:

There were 68 members reported with a salary less than \$100. We used prior year salary (47 members), if available; otherwise high five salary with a 10% load to account for salary increases (21 members). If neither prior year salary or high five salary was available, we assumed a value of \$35,000.

There were also 43 members reported without a gender and 1 member reported without a date of birth. We assumed an entry age of 31 and male gender.

Data for terminated members:

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 (26 members), we used elapsed time from hire date to termination date (16 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 3 members reported without a gender; male was assumed.

Data for retired members:

There were no members reported without a date of birth, gender or benefit.

There were 8 members that were active last year, and retirement eligible, and not on the retiree data file this year. At the direction of PERA, we included these members in the 2017 valuation as retirees with an estimated life only monthly 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 valuation, we reclassify that member as a disabled retiree in this year's valuation. We reclassified 54 retirees as disabled retirees in this valuation.

Summary of Actuarial Assumptions (Continued)

Changes in actuarial assumptions

The base mortality table for healthy annuitants was changed from the RP-2000 fully generational table to the RP-2014 fully generational table (with a base year of 2006), with male rates adjusted by a factor of 0.96. The mortality improvement scale was changed from Scale AA to Scale MP-2016, and is applied to healthy and disabled members. The base mortality table for disabled annuitants was changed from the RP-2000 disabled mortality table to the RP-2014 disabled annuitant mortality table (with future mortality improvement according to MP-2016).

The Combined Service Annuity (CSA) load was 30% for vested and non-vested, deferred members. The CSA has been changed to 35% for vested members and 1% for non-vested members.

The Single Discount Rate was changed from 5.31% per annum to 5.96% per annum.

Summary of Actuarial Assumptions (Continued)

Percentage of Members Dying Each Year*

Age in 2017	Healthy Post- Retirement Mortality		Healthy Pre- Retirement Mortality		Disability Mortality	
	Male	Female	Male	Female	Male	Female
	20	0.03%	0.02%	0.04%	0.02%	0.03%
25	0.05	0.03	0.05	0.02	0.05	0.03
30	0.08	0.06	0.05	0.02	0.08	0.06
35	0.12	0.11	0.06	0.03	0.12	0.11
40	0.18	0.17	0.07	0.04	0.18	0.17
45	0.26	0.21	0.10	0.07	0.26	0.21
50	0.39	0.27	0.17	0.11	0.39	0.27
55	0.55	0.38	0.28	0.17	0.55	0.38
60	0.77	0.56	0.48	0.26	0.77	0.56
65	1.10	0.84	0.86	0.39	1.10	0.84
70	1.65	1.31	1.42	0.64	1.65	1.31

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

Age	Withdrawal Rates		Disability Retirement	
	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	Salary Scale	
		Age	Increase
50	3%	20	8.50%
51	2	25	7.25
52	2	30	6.25
53	2	35	5.75
54	5	40	5.25
55	20	45	4.50
56	8	50	4.50
57	8	55	4.25
58	8	60	3.75
59	8	65	3.50
60	15	70+	3.50
61	15		
62	30		
63	30		
64	30		
65	40		
66	40		
67	40		
68	40		
69	40		
70+	100		

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 “risk-free” rate is required, as described in the following paragraph.

The *Single Discount Rate* (SDR) is equivalent to applying these two rates to the benefits that are projected to be paid during the different time periods. The SDR reflects (1) the long-term expected rate of return on pension plan investments (during the period in which the fiduciary net position is projected to be sufficient to pay benefits) and (2) tax-exempt municipal bond rate based on an index of 20-year general obligation bonds with an average AA credit rating as of the measurement date (to the extent that the contributions for use with the long-term expected rate of return are not met).

For the purpose of this calculation, the expected rate of return on pension plan investments is 7.50%; the municipal bond rate is 3.56%; and **the resulting single discount rate is 5.96%**.

Benefit payments projected to occur up through June 30, 2061 were fully funded and benefit payments projected to occur in the year ended June 30, 2062 were partially funded. Assets were projected to be fully depleted by the fiscal year ending June 30, 2063. Benefit payments were discounted using 7.50%, the long-term expected rate of return on pension plan investments, as long as assets were sufficient to fund the benefit payments. Beginning in the July 1, 2061 to June 30, 2062 fiscal year, when benefit payments exceed the Plan’s Fiduciary Net Position, benefit payments were discounted at 3.56%, the municipal bond rate. An equivalent single discount rate was determined that produced approximately the same present value of projected benefits when applied to all years of projected benefits as the present value of projected benefits using 7.50% through the point of asset depletion and 3.56% after. For more information on the calculation of the equivalent present value of projected benefits, see pages 38 through 39 of this report.

The tables in this section provide background for the development of the single discount rate.

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

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

The **Present Values of Projected Benefit Payments** table shows the development of the Single Discount Rate (SDR). It breaks down the benefit payments into present values for funded and unfunded portions and shows the equivalent total at the SDR.

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

Fiscal Year Ending	Payroll			Projected Contributions			
	Payroll for Current Employees	Payroll for New Employees	Total Employee Payroll	Contributions from Current Employees	Employer Contributions for Current Employees	Contributions on Future Payroll Toward Current UAL*	Total Contributions
2017	\$ 200,103	\$ -	\$ 200,103				
2018	\$ 208,037	\$ -	\$ 208,037	\$ 12,129	\$ 18,203	\$ -	\$ 30,332
2019	\$ 196,579	\$ 18,219	\$ 214,798	\$ 11,461	\$ 17,201	\$ -	\$ 28,662
2020	\$ 187,940	\$ 33,839	\$ 221,779	\$ 10,957	\$ 16,445	\$ -	\$ 27,402
2021	\$ 180,882	\$ 48,104	\$ 228,986	\$ 10,545	\$ 15,827	\$ -	\$ 26,372
2022	\$ 174,222	\$ 62,207	\$ 236,429	\$ 10,157	\$ 15,244	\$ -	\$ 25,401
2023	\$ 167,896	\$ 76,216	\$ 244,112	\$ 9,788	\$ 14,691	\$ -	\$ 24,479
2024	\$ 161,846	\$ 90,200	\$ 252,046	\$ 9,436	\$ 14,161	\$ -	\$ 23,597
2025	\$ 155,773	\$ 104,465	\$ 260,238	\$ 9,082	\$ 13,630	\$ -	\$ 22,712
2026	\$ 149,911	\$ 118,784	\$ 268,695	\$ 8,740	\$ 13,117	\$ -	\$ 21,857
2027	\$ 144,166	\$ 133,262	\$ 277,428	\$ 8,405	\$ 12,614	\$ -	\$ 21,019
2028	\$ 138,471	\$ 147,973	\$ 286,444	\$ 8,073	\$ 12,116	\$ -	\$ 20,189
2029	\$ 132,926	\$ 162,828	\$ 295,754	\$ 7,750	\$ 11,631	\$ -	\$ 19,381
2030	\$ 127,422	\$ 177,944	\$ 305,366	\$ 7,429	\$ 11,149	\$ -	\$ 18,578
2031	\$ 121,834	\$ 193,456	\$ 315,290	\$ 7,103	\$ 10,661	\$ -	\$ 17,764
2032	\$ 116,171	\$ 209,366	\$ 325,537	\$ 6,773	\$ 10,165	\$ -	\$ 16,938
2033	\$ 110,497	\$ 225,620	\$ 336,117	\$ 6,442	\$ 9,669	\$ -	\$ 16,111
2034	\$ 104,862	\$ 242,179	\$ 347,041	\$ 6,113	\$ 9,175	\$ -	\$ 15,288
2035	\$ 99,265	\$ 259,055	\$ 358,320	\$ 5,787	\$ 8,686	\$ -	\$ 14,473
2036	\$ 93,719	\$ 276,246	\$ 369,965	\$ 5,464	\$ 8,200	\$ -	\$ 13,664
2037	\$ 88,227	\$ 293,762	\$ 381,989	\$ 5,144	\$ 7,720	\$ -	\$ 12,864
2038	\$ 82,783	\$ 311,621	\$ 394,404	\$ 4,826	\$ 7,244	\$ -	\$ 12,070
2039	\$ 77,279	\$ 329,943	\$ 407,222	\$ 4,505	\$ 6,762	\$ -	\$ 11,267
2040	\$ 71,704	\$ 348,752	\$ 420,456	\$ 4,180	\$ 6,274	\$ -	\$ 10,454
2041	\$ 66,206	\$ 367,915	\$ 434,121	\$ 3,860	\$ 5,793	\$ -	\$ 9,653
2042	\$ 60,840	\$ 387,390	\$ 448,230	\$ 3,547	\$ 5,324	\$ -	\$ 8,871
2043	\$ 55,575	\$ 407,223	\$ 462,798	\$ 3,240	\$ 4,863	\$ -	\$ 8,103
2044	\$ 50,317	\$ 427,522	\$ 477,839	\$ 2,933	\$ 4,403	\$ -	\$ 7,336
2045	\$ 45,080	\$ 448,288	\$ 493,368	\$ 2,628	\$ 3,945	\$ -	\$ 6,573
2046	\$ 39,898	\$ 469,505	\$ 509,403	\$ 2,326	\$ 3,491	\$ -	\$ 5,817
2047	\$ 34,810	\$ 491,148	\$ 525,958	\$ 2,029	\$ 3,046	\$ -	\$ 5,075
2048	\$ 29,960	\$ 513,092	\$ 543,052	\$ 1,747	\$ 2,621	\$ -	\$ 4,368
2049	\$ 25,486	\$ 535,215	\$ 560,701	\$ 1,486	\$ 2,230	\$ -	\$ 3,716
2050	\$ 21,433	\$ 557,491	\$ 578,924	\$ 1,250	\$ 1,875	\$ -	\$ 3,125
2051	\$ 17,744	\$ 579,995	\$ 597,739	\$ 1,034	\$ 1,553	\$ -	\$ 2,587
2052	\$ 14,400	\$ 602,766	\$ 617,166	\$ 840	\$ 1,260	\$ -	\$ 2,100
2053	\$ 11,399	\$ 625,824	\$ 637,223	\$ 665	\$ 997	\$ -	\$ 1,662
2054	\$ 8,745	\$ 649,188	\$ 657,933	\$ 510	\$ 765	\$ -	\$ 1,275
2055	\$ 6,465	\$ 672,851	\$ 679,316	\$ 377	\$ 566	\$ -	\$ 943
2056	\$ 4,601	\$ 696,793	\$ 701,394	\$ 268	\$ 403	\$ -	\$ 671
2057	\$ 3,161	\$ 721,028	\$ 724,189	\$ 184	\$ 277	\$ -	\$ 461
2058	\$ 2,089	\$ 745,636	\$ 747,725	\$ 122	\$ 183	\$ -	\$ 305
2059	\$ 1,327	\$ 770,699	\$ 772,026	\$ 77	\$ 116	\$ -	\$ 193
2060	\$ 810	\$ 796,307	\$ 797,117	\$ 47	\$ 71	\$ -	\$ 118
2061	\$ 473	\$ 822,551	\$ 823,024	\$ 28	\$ 41	\$ -	\$ 69
2062	\$ 260	\$ 849,512	\$ 849,772	\$ 15	\$ 23	\$ -	\$ 38
2063	\$ 132	\$ 877,257	\$ 877,389	\$ 8	\$ 12	\$ -	\$ 20
2064	\$ 61	\$ 905,844	\$ 905,905	\$ 4	\$ 5	\$ -	\$ 9
2065	\$ 26	\$ 935,320	\$ 935,346	\$ 2	\$ 2	\$ -	\$ 4
2066	\$ 10	\$ 965,735	\$ 965,745	\$ 1	\$ 1	\$ -	\$ 2
2067	\$ 3	\$ 997,129	\$ 997,132	\$ -	\$ -	\$ -	\$ -

*Contributions related to future employees in excess of normal cost and expenses of 15.18% of pay.

Single Discount Rate Development

Projection of Contributions (Dollars in Thousands) (Concluded)

Fiscal Year Ending	Payroll			Projected Contributions			Total Contributions
	Payroll for Current Employees	Payroll for New Employees	Total Employee Payroll	Contributions from Current Employees	Employer Contributions for Current Employees	Contributions on Future Payroll UAL*	
2068	\$ 1	\$ 1,029,538	\$ 1,029,539	\$ -	\$ -	\$ -	-
2069	\$ -	\$ 1,062,999	\$ 1,062,999	\$ -	\$ -	\$ -	-
2070	\$ -	\$ 1,097,546	\$ 1,097,546	\$ -	\$ -	\$ -	-
2071	\$ -	\$ 1,133,216	\$ 1,133,216	\$ -	\$ -	\$ -	-
2072	\$ -	\$ 1,170,046	\$ 1,170,046	\$ -	\$ -	\$ -	-
2073	\$ -	\$ 1,208,072	\$ 1,208,072	\$ -	\$ -	\$ -	-
2074	\$ -	\$ 1,247,335	\$ 1,247,335	\$ -	\$ -	\$ -	-
2075	\$ -	\$ 1,287,873	\$ 1,287,873	\$ -	\$ -	\$ -	-
2076	\$ -	\$ 1,329,729	\$ 1,329,729	\$ -	\$ -	\$ -	-
2077	\$ -	\$ 1,372,945	\$ 1,372,945	\$ -	\$ -	\$ -	-
2078	\$ -	\$ 1,417,566	\$ 1,417,566	\$ -	\$ -	\$ -	-
2079	\$ -	\$ 1,463,637	\$ 1,463,637	\$ -	\$ -	\$ -	-
2080	\$ -	\$ 1,511,205	\$ 1,511,205	\$ -	\$ -	\$ -	-
2081	\$ -	\$ 1,560,319	\$ 1,560,319	\$ -	\$ -	\$ -	-
2082	\$ -	\$ 1,611,030	\$ 1,611,030	\$ -	\$ -	\$ -	-
2083	\$ -	\$ 1,663,388	\$ 1,663,388	\$ -	\$ -	\$ -	-
2084	\$ -	\$ 1,717,448	\$ 1,717,448	\$ -	\$ -	\$ -	-
2085	\$ -	\$ 1,773,265	\$ 1,773,265	\$ -	\$ -	\$ -	-
2086	\$ -	\$ 1,830,896	\$ 1,830,896	\$ -	\$ -	\$ -	-
2087	\$ -	\$ 1,890,401	\$ 1,890,401	\$ -	\$ -	\$ -	-
2088	\$ -	\$ 1,951,839	\$ 1,951,839	\$ -	\$ -	\$ -	-
2089	\$ -	\$ 2,015,273	\$ 2,015,273	\$ -	\$ -	\$ -	-
2090	\$ -	\$ 2,080,770	\$ 2,080,770	\$ -	\$ -	\$ -	-
2091	\$ -	\$ 2,148,395	\$ 2,148,395	\$ -	\$ -	\$ -	-
2092	\$ -	\$ 2,218,218	\$ 2,218,218	\$ -	\$ -	\$ -	-
2093	\$ -	\$ 2,290,310	\$ 2,290,310	\$ -	\$ -	\$ -	-
2094	\$ -	\$ 2,364,745	\$ 2,364,745	\$ -	\$ -	\$ -	-
2095	\$ -	\$ 2,441,599	\$ 2,441,599	\$ -	\$ -	\$ -	-
2096	\$ -	\$ 2,520,951	\$ 2,520,951	\$ -	\$ -	\$ -	-
2097	\$ -	\$ 2,602,882	\$ 2,602,882	\$ -	\$ -	\$ -	-
2098	\$ -	\$ 2,687,475	\$ 2,687,475	\$ -	\$ -	\$ -	-
2099	\$ -	\$ 2,774,818	\$ 2,774,818	\$ -	\$ -	\$ -	-
2100	\$ -	\$ 2,865,000	\$ 2,865,000	\$ -	\$ -	\$ -	-
2101	\$ -	\$ 2,958,112	\$ 2,958,112	\$ -	\$ -	\$ -	-
2102	\$ -	\$ 3,054,251	\$ 3,054,251	\$ -	\$ -	\$ -	-
2103	\$ -	\$ 3,153,514	\$ 3,153,514	\$ -	\$ -	\$ -	-
2104	\$ -	\$ 3,256,003	\$ 3,256,003	\$ -	\$ -	\$ -	-
2105	\$ -	\$ 3,361,824	\$ 3,361,824	\$ -	\$ -	\$ -	-
2106	\$ -	\$ 3,471,083	\$ 3,471,083	\$ -	\$ -	\$ -	-
2107	\$ -	\$ 3,583,893	\$ 3,583,893	\$ -	\$ -	\$ -	-
2108	\$ -	\$ 3,700,370	\$ 3,700,370	\$ -	\$ -	\$ -	-
2109	\$ -	\$ 3,820,632	\$ 3,820,632	\$ -	\$ -	\$ -	-
2110	\$ -	\$ 3,944,802	\$ 3,944,802	\$ -	\$ -	\$ -	-
2111	\$ -	\$ 4,073,008	\$ 4,073,008	\$ -	\$ -	\$ -	-
2112	\$ -	\$ 4,205,381	\$ 4,205,381	\$ -	\$ -	\$ -	-
2113	\$ -	\$ 4,342,056	\$ 4,342,056	\$ -	\$ -	\$ -	-
2114	\$ -	\$ 4,483,173	\$ 4,483,173	\$ -	\$ -	\$ -	-
2115	\$ -	\$ 4,628,876	\$ 4,628,876	\$ -	\$ -	\$ -	-
2116	\$ -	\$ 4,779,314	\$ 4,779,314	\$ -	\$ -	\$ -	-
2117	\$ -	\$ 4,934,642	\$ 4,934,642	\$ -	\$ -	\$ -	-

*Contributions related to future employees in excess of normal cost and expenses of 15.18% of pay.

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)
2018	\$ 602,460	\$ 30,332	\$ 16,104	\$ 333	\$ 45,696	\$ 662,051
2019	\$ 662,051	\$ 28,662	\$ 18,442	\$ 315	\$ 50,019	\$ 721,975
2020	\$ 721,975	\$ 27,402	\$ 20,954	\$ 301	\$ 54,374	\$ 782,496
2021	\$ 782,496	\$ 26,372	\$ 23,694	\$ 289	\$ 58,775	\$ 843,660
2022	\$ 843,660	\$ 25,401	\$ 26,722	\$ 279	\$ 63,215	\$ 905,275
2023	\$ 905,275	\$ 24,479	\$ 30,130	\$ 269	\$ 67,678	\$ 967,033
2024	\$ 967,033	\$ 23,597	\$ 33,703	\$ 259	\$ 72,146	\$ 1,028,814
2025	\$ 1,028,814	\$ 22,712	\$ 37,640	\$ 249	\$ 76,602	\$ 1,090,239
2026	\$ 1,090,239	\$ 21,857	\$ 42,065	\$ 240	\$ 81,015	\$ 1,150,806
2027	\$ 1,150,806	\$ 21,019	\$ 46,644	\$ 231	\$ 85,358	\$ 1,210,308
2028	\$ 1,210,308	\$ 20,189	\$ 51,319	\$ 222	\$ 89,619	\$ 1,268,575
2029	\$ 1,268,575	\$ 19,381	\$ 56,254	\$ 213	\$ 93,778	\$ 1,325,267
2030	\$ 1,325,267	\$ 18,578	\$ 61,387	\$ 204	\$ 97,811	\$ 1,380,065
2031	\$ 1,380,065	\$ 17,764	\$ 66,847	\$ 195	\$ 101,690	\$ 1,432,477
2032	\$ 1,432,477	\$ 16,938	\$ 72,404	\$ 186	\$ 105,387	\$ 1,482,212
2033	\$ 1,482,212	\$ 16,111	\$ 78,407	\$ 177	\$ 108,866	\$ 1,528,605
2034	\$ 1,528,605	\$ 15,288	\$ 84,506	\$ 168	\$ 112,090	\$ 1,571,309
2035	\$ 1,571,309	\$ 14,473	\$ 90,588	\$ 159	\$ 115,040	\$ 1,610,075
2036	\$ 1,610,075	\$ 13,664	\$ 96,863	\$ 150	\$ 117,687	\$ 1,644,413
2037	\$ 1,644,413	\$ 12,864	\$ 103,336	\$ 141	\$ 119,994	\$ 1,673,794
2038	\$ 1,673,794	\$ 12,070	\$ 109,721	\$ 132	\$ 121,934	\$ 1,697,945
2039	\$ 1,697,945	\$ 11,267	\$ 116,178	\$ 124	\$ 123,478	\$ 1,716,388
2040	\$ 1,716,388	\$ 10,454	\$ 122,604	\$ 115	\$ 124,595	\$ 1,728,718
2041	\$ 1,728,718	\$ 9,653	\$ 128,921	\$ 106	\$ 125,258	\$ 1,734,602
2042	\$ 1,734,602	\$ 8,871	\$ 134,934	\$ 97	\$ 125,450	\$ 1,733,892
2043	\$ 1,733,892	\$ 8,103	\$ 140,710	\$ 89	\$ 125,156	\$ 1,726,352
2044	\$ 1,726,352	\$ 7,336	\$ 146,406	\$ 81	\$ 124,353	\$ 1,711,554
2045	\$ 1,711,554	\$ 6,573	\$ 152,011	\$ 72	\$ 123,009	\$ 1,689,053
2046	\$ 1,689,053	\$ 5,817	\$ 157,459	\$ 64	\$ 121,093	\$ 1,658,440
2047	\$ 1,658,440	\$ 5,075	\$ 162,733	\$ 56	\$ 118,576	\$ 1,619,302
2048	\$ 1,619,302	\$ 4,368	\$ 167,609	\$ 48	\$ 115,435	\$ 1,571,448
2049	\$ 1,571,448	\$ 3,716	\$ 171,854	\$ 41	\$ 111,666	\$ 1,514,935
2050	\$ 1,514,935	\$ 3,125	\$ 175,394	\$ 34	\$ 107,276	\$ 1,449,908
2051	\$ 1,449,908	\$ 2,587	\$ 178,324	\$ 28	\$ 102,271	\$ 1,376,414
2052	\$ 1,376,414	\$ 2,100	\$ 180,679	\$ 23	\$ 96,655	\$ 1,294,467
2053	\$ 1,294,467	\$ 1,662	\$ 182,503	\$ 18	\$ 90,426	\$ 1,204,034
2054	\$ 1,204,034	\$ 1,275	\$ 183,813	\$ 14	\$ 83,581	\$ 1,105,063
2055	\$ 1,105,063	\$ 943	\$ 184,606	\$ 10	\$ 76,116	\$ 997,506
2056	\$ 997,506	\$ 671	\$ 184,847	\$ 7	\$ 68,031	\$ 881,354
2057	\$ 881,354	\$ 461	\$ 184,522	\$ 5	\$ 59,324	\$ 756,612
2058	\$ 756,612	\$ 305	\$ 183,653	\$ 3	\$ 49,994	\$ 623,255
2059	\$ 623,255	\$ 193	\$ 182,264	\$ 2	\$ 40,040	\$ 481,222
2060	\$ 481,222	\$ 118	\$ 180,390	\$ 1	\$ 29,454	\$ 330,403
2061	\$ 330,403	\$ 69	\$ 178,067	\$ 1	\$ 18,226	\$ 170,630
2062	\$ 170,630	\$ 38	\$ 175,328	\$ -	\$ 6,343	\$ 1,683
2063	\$ 1,683	\$ 20	\$ 172,203	\$ -	\$ -	\$ -
2064	\$ -	\$ 9	\$ 168,712	\$ -	\$ -	\$ -
2065	\$ -	\$ 4	\$ 164,875	\$ -	\$ -	\$ -
2066	\$ -	\$ 2	\$ 160,715	\$ -	\$ -	\$ -
2067	\$ -	\$ -	\$ 156,248	\$ -	\$ -	\$ -

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)
2068	\$ -	\$ -	\$ 151,491	\$ -	\$ -	\$ -
2069	\$ -	\$ -	\$ 146,460	\$ -	\$ -	\$ -
2070	\$ -	\$ -	\$ 141,175	\$ -	\$ -	\$ -
2071	\$ -	\$ -	\$ 135,656	\$ -	\$ -	\$ -
2072	\$ -	\$ -	\$ 129,927	\$ -	\$ -	\$ -
2073	\$ -	\$ -	\$ 124,011	\$ -	\$ -	\$ -
2074	\$ -	\$ -	\$ 117,935	\$ -	\$ -	\$ -
2075	\$ -	\$ -	\$ 111,728	\$ -	\$ -	\$ -
2076	\$ -	\$ -	\$ 105,419	\$ -	\$ -	\$ -
2077	\$ -	\$ -	\$ 99,039	\$ -	\$ -	\$ -
2078	\$ -	\$ -	\$ 92,622	\$ -	\$ -	\$ -
2079	\$ -	\$ -	\$ 86,201	\$ -	\$ -	\$ -
2080	\$ -	\$ -	\$ 79,810	\$ -	\$ -	\$ -
2081	\$ -	\$ -	\$ 73,484	\$ -	\$ -	\$ -
2082	\$ -	\$ -	\$ 67,260	\$ -	\$ -	\$ -
2083	\$ -	\$ -	\$ 61,174	\$ -	\$ -	\$ -
2084	\$ -	\$ -	\$ 55,264	\$ -	\$ -	\$ -
2085	\$ -	\$ -	\$ 49,567	\$ -	\$ -	\$ -
2086	\$ -	\$ -	\$ 44,119	\$ -	\$ -	\$ -
2087	\$ -	\$ -	\$ 38,951	\$ -	\$ -	\$ -
2088	\$ -	\$ -	\$ 34,089	\$ -	\$ -	\$ -
2089	\$ -	\$ -	\$ 29,554	\$ -	\$ -	\$ -
2090	\$ -	\$ -	\$ 25,364	\$ -	\$ -	\$ -
2091	\$ -	\$ -	\$ 21,529	\$ -	\$ -	\$ -
2092	\$ -	\$ -	\$ 18,059	\$ -	\$ -	\$ -
2093	\$ -	\$ -	\$ 14,956	\$ -	\$ -	\$ -
2094	\$ -	\$ -	\$ 12,218	\$ -	\$ -	\$ -
2095	\$ -	\$ -	\$ 9,837	\$ -	\$ -	\$ -
2096	\$ -	\$ -	\$ 7,797	\$ -	\$ -	\$ -
2097	\$ -	\$ -	\$ 6,080	\$ -	\$ -	\$ -
2098	\$ -	\$ -	\$ 4,659	\$ -	\$ -	\$ -
2099	\$ -	\$ -	\$ 3,506	\$ -	\$ -	\$ -
2100	\$ -	\$ -	\$ 2,590	\$ -	\$ -	\$ -
2101	\$ -	\$ -	\$ 1,876	\$ -	\$ -	\$ -
2102	\$ -	\$ -	\$ 1,333	\$ -	\$ -	\$ -
2103	\$ -	\$ -	\$ 929	\$ -	\$ -	\$ -
2104	\$ -	\$ -	\$ 637	\$ -	\$ -	\$ -
2105	\$ -	\$ -	\$ 429	\$ -	\$ -	\$ -
2106	\$ -	\$ -	\$ 286	\$ -	\$ -	\$ -
2107	\$ -	\$ -	\$ 189	\$ -	\$ -	\$ -
2108	\$ -	\$ -	\$ 125	\$ -	\$ -	\$ -
2109	\$ -	\$ -	\$ 83	\$ -	\$ -	\$ -
2110	\$ -	\$ -	\$ 56	\$ -	\$ -	\$ -
2111	\$ -	\$ -	\$ 39	\$ -	\$ -	\$ -
2112	\$ -	\$ -	\$ 27	\$ -	\$ -	\$ -
2113	\$ -	\$ -	\$ 20	\$ -	\$ -	\$ -
2114	\$ -	\$ -	\$ 15	\$ -	\$ -	\$ -
2115	\$ -	\$ -	\$ 11	\$ -	\$ -	\$ -
2116	\$ -	\$ -	\$ 9	\$ -	\$ -	\$ -
2117	\$ -	\$ -	\$ 7	\$ -	\$ -	\$ -

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}
2018	\$ 602,460	\$ 16,104	\$ 16,104	\$ 0	\$ 15,532	\$ 0	\$ 15,644
2019	662,051	18,442	18,442	0	16,546	0	16,909
2020	721,974	20,954	20,954	0	17,489	0	18,131
2021	782,495	23,694	23,694	0	18,396	0	19,349
2022	843,659	26,722	26,722	0	19,299	0	20,594
2023	905,275	30,130	30,130	0	20,242	0	21,914
2024	967,033	33,703	33,703	0	21,063	0	23,134
2025	1,028,813	37,640	37,640	0	21,882	0	24,383
2026	1,090,239	42,065	42,065	0	22,748	0	25,717
2027	1,150,806	46,644	46,644	0	23,465	0	26,913
2028	1,210,309	51,319	51,319	0	24,016	0	27,945
2029	1,268,576	56,254	56,254	0	24,488	0	28,909
2030	1,325,268	61,387	61,387	0	24,858	0	29,773
2031	1,380,066	66,847	66,847	0	25,181	0	30,597
2032	1,432,478	72,404	72,404	0	25,371	0	31,277
2033	1,482,213	78,407	78,407	0	25,558	0	31,965
2034	1,528,605	84,506	84,506	0	25,624	0	32,514
2035	1,571,310	90,588	90,588	0	25,552	0	32,894
2036	1,610,076	96,863	96,863	0	25,416	0	33,194
2037	1,644,414	103,336	103,336	0	25,222	0	33,420
2038	1,673,795	109,721	109,721	0	24,912	0	33,489
2039	1,697,946	116,178	116,178	0	24,538	0	33,466
2040	1,716,389	122,604	122,604	0	24,089	0	33,330
2041	1,728,721	128,921	128,921	0	23,563	0	33,077
2042	1,734,605	134,934	134,934	0	22,941	0	32,672
2043	1,733,895	140,710	140,710	0	22,254	0	32,155
2044	1,726,354	146,406	146,406	0	21,539	0	31,574
2045	1,711,557	152,011	152,011	0	20,804	0	30,939
2046	1,689,055	157,459	157,459	0	20,046	0	30,246
2047	1,658,442	162,733	162,733	0	19,272	0	29,501
2048	1,619,305	167,609	167,609	0	18,465	0	28,676
2049	1,571,451	171,854	171,854	0	17,611	0	27,748
2050	1,514,939	175,394	175,394	0	16,720	0	26,727
2051	1,449,911	178,324	178,324	0	15,813	0	25,645
2052	1,376,417	180,679	180,679	0	14,904	0	24,522
2053	1,294,469	182,503	182,503	0	14,005	0	23,377
2054	1,204,035	183,813	183,813	0	13,121	0	22,220
2055	1,105,063	184,606	184,606	0	12,258	0	21,061
2056	997,506	184,847	184,847	0	11,418	0	19,902
2057	881,354	184,522	184,522	0	10,603	0	18,750
2058	756,611	183,653	183,653	0	9,816	0	17,612
2059	623,254	182,264	182,264	0	9,063	0	16,496
2060	481,221	180,390	180,390	0	8,344	0	15,408
2061	330,401	178,067	178,067	0	7,662	0	14,354
2062	170,628	175,328	170,628	4,700	6,829	991	13,338
2063	1,680	172,203	1,680	170,523	63	34,717	12,364
2064	0	168,712	0	168,712	0	33,168	11,432
2065	0	164,875	0	164,875	0	31,299	10,543
2066	0	160,715	0	160,715	0	29,461	9,699
2067	0	156,248	0	156,248	0	27,657	8,899

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})
2068	\$ -	\$ 151,491	\$ -	\$ 151,491	\$ -	\$ 25,893	\$ 8,143
2069	0	146,460	0	146,460	0	24,173	7,430
2070	0	141,175	0	141,175	0	22,500	6,759
2071	0	135,656	0	135,656	0	20,877	6,129
2072	0	129,927	0	129,927	0	19,308	5,540
2073	0	124,011	0	124,011	0	17,795	4,991
2074	0	117,935	0	117,935	0	16,342	4,479
2075	0	111,728	0	111,728	0	14,949	4,005
2076	0	105,419	0	105,419	0	13,620	3,566
2077	0	99,039	0	99,039	0	12,356	3,162
2078	0	92,622	0	92,622	0	11,158	2,791
2079	0	86,201	0	86,201	0	10,028	2,451
2080	0	79,810	0	79,810	0	8,965	2,142
2081	0	73,484	0	73,484	0	7,971	1,861
2082	0	67,260	0	67,260	0	7,045	1,608
2083	0	61,174	0	61,174	0	6,187	1,380
2084	0	55,264	0	55,264	0	5,397	1,177
2085	0	49,567	0	49,567	0	4,674	996
2086	0	44,119	0	44,119	0	4,018	837
2087	0	38,951	0	38,951	0	3,425	697
2088	0	34,089	0	34,089	0	2,895	576
2089	0	29,554	0	29,554	0	2,423	471
2090	0	25,364	0	25,364	0	2,008	382
2091	0	21,529	0	21,529	0	1,646	306
2092	0	18,059	0	18,059	0	1,333	242
2093	0	14,956	0	14,956	0	1,066	189
2094	0	12,218	0	12,218	0	841	146
2095	0	9,837	0	9,837	0	654	111
2096	0	7,797	0	7,797	0	500	83
2097	0	6,080	0	6,080	0	377	61
2098	0	4,659	0	4,659	0	279	44
2099	0	3,506	0	3,506	0	203	31
2100	0	2,590	0	2,590	0	145	22
2101	0	1,876	0	1,876	0	101	15
2102	0	1,333	0	1,333	0	69	10
2103	0	929	0	929	0	47	7
2104	0	637	0	637	0	31	4
2105	0	429	0	429	0	20	3
2106	0	286	0	286	0	13	2
2107	0	189	0	189	0	8	1
2108	0	125	0	125	0	5	1
2109	0	83	0	83	0	3	0
2110	0	56	0	56	0	2	0
2111	0	39	0	39	0	1	0
2112	0	27	0	27	0	1	0
2113	0	20	0	20	0	1	0
2114	0	15	0	15	0	1	0
2115	0	11	0	11	0	0	0
2116	0	9	0	9	0	0	0
2117	0	7	0	7	0	0	0
Totals					\$ 858,599	\$ 428,648	\$ 1,287,247

SECTION H

GLOSSARY OF TERMS

Glossary of Terms

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

Glossary of Terms

<i>Amortization Payment</i>	The amortization payment is the periodic payment required to pay off an interest-discounted amount with payments of interest and principal.
<i>Amortization Method</i>	The method used to determine the periodic amortization payment may be a level dollar amount, or a level percent of pay amount. The period will typically be expressed in years, and the method will either be “open” (meaning, reset each year) or “closed” (the number of years remaining will decline each year).
<i>Cost-of-Living Adjustments</i>	Postemployment benefit changes intended to adjust benefit payments for the effects of inflation.
<i>Cost-Sharing Multiple-Employer Defined Benefit Pension Plan (cost-sharing pension plan)</i>	A multiple-employer defined benefit pension plan in which the pension obligations to the employees of more than one employer are pooled and pension plan assets can be used to pay the benefits of the employees of any employer that provides pensions through the pension plan.
<i>Covered-Employee Payroll</i>	The payroll of covered employees, which is typically only the pensionable pay (meets the statutory salary definition) and does not include pay above any pay cap.
<i>Deferred Inflows and Outflows of Resources</i>	The deferred inflows and outflows of pension resources are amounts used under GASB Statement No. 68 in developing the annual pension expense. Deferred inflows and outflows arise with differences between expected and actual experiences; changes of assumptions. The portion of these amounts not included in pension expense should be included in the deferred inflows or outflows of resources.
<i>Discount Rate or Single Discount Rate</i>	For GASB purposes, the discount rate is the single rate of return that results in the present value of all projected benefit payments to be equal to the sum of the funded and unfunded projected benefit payments, specifically: <ol style="list-style-type: none">1. The benefit payments to be made while the pension plans’ fiduciary net position is projected to be greater than the benefit payments that are projected to be made in the period; and2. The present value of the benefit payments not in (1) above, discounted using the municipal bond rate.
<i>Entry Age Actuarial Cost Method or Entry Age Normal (EAN)</i>	The EAN is a funding method for allocating the costs of the plan between the normal cost and the accrued liability. The actuarial present value of the projected benefits of each individual included in an actuarial valuation is allocated on a level basis (either level dollar or level percent of pay) over the earnings or service of the individual between entry age and assumed exit ages(s). The portion of the actuarial present value allocated to a valuation year is the normal cost. The portion of this actuarial present value not provided for at a valuation date by the actuarial present value of future normal costs is the actuarial accrued liability. The sum of the accrued liability plus the present value of all future normal costs is the present value of all benefits.

Glossary of Terms

<i>GASB</i>	The Governmental Accounting Standards Board is an organization that exists with authority to promulgate accounting standards for state and local governmental entities.
<i>Fiduciary Net Position</i>	The fiduciary net position is the value of the assets of the trust.
<i>Long-Term Expected Rate of Return</i>	The long-term rate of return is the expected return to be earned over the entire trust portfolio based on the asset allocation of the portfolio.
<i>Money-Weighted Rate of Return</i>	The money-weighted rate of return is a method of calculating the returns that adjusts for the changing amounts actually invested. For purposes of GASB Statement No. 67, money-weighted rate of return is calculated as the internal rate of return on pension plan investments, net of pension plan investment expense.
<i>Multiple-Employer Defined Benefit Pension Plan</i>	A multiple-employer plan is a defined benefit pension plan that is used to provide pensions to the employees of more than one employer.
<i>Municipal Bond Rate</i>	The Municipal Bond Rate is the discount rate to be used for those benefit payments that occur after the assets of the trust have been depleted.
<i>Net Pension Liability (NPL)</i>	The NPL is the liability of employers and non-employer contribution entities to plan members for benefits provided through a defined benefit pension plan.
<i>Non-Employer Contribution Entities</i>	Non-employer contribution entities are entities that make contributions to a pension plan that is used to provide pensions to the employees of other entities. For purposes of the GASB Accounting Statements No. 67 and No. 68 plan members are not considered non-employer contribution entities.
<i>Normal Cost</i>	The actuarial present value of the pension trust benefits allocated to the current year by the actuarial cost method.
<i>Other Postemployment Benefits (OPEB)</i>	All postemployment benefits other than retirement income (such as death benefits, life insurance, disability, and long-term care) that are provided separately from a pension plan, as well as postemployment healthcare benefits regardless of the manner in which they are provided. Other post-employment benefits do not include termination benefits.
<i>Real Rate of Return</i>	The real rate of return is the rate of return on an investment after adjustment to eliminate inflation.
<i>Service Cost</i>	The service cost is the portion of the actuarial present value of projected benefit payments that is attributed to a valuation year.

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.