Public Employees Retirement Association of Minnesota

General Employees Retirement Plan
GASB Statements No. 67 and No. 68 Accounting and Financial Reporting for Pensions
June 30, 2017

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November 10, 2017

Public Employees Retirement Association of Minnesota
General Employees Retirement Plan
St. Paul, Minnesota

Dear Trustees of the General Employees 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 General Employees Retirement Plan ("GERP"), 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 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 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 General Employees Retirement Plan as of the measurement date. All calculations have been made in conformity with generally accepted actuarial principles and practices as well as with the Actuarial Standards of Practice issued by the Actuarial Standards Board.

The signing actuaries are independent of the plan sponsor.

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

Respectfully submitted,

Brian B. Murphy

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

Bonita J. Wurst

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		85,777
- Survivors		8,645
- Disability Retirements		3,779
- Deferred Retirements		52,274
- Terminated other non-vested		138,335
- Active Members		152,867
- Total		441,677
Covered Payroll	$	6,156,985
Net Pension Liability		
Total Pension Liability	$	26,484,513
Plan Fiduciary Net Position	$	20,100,579
Net Pension Liability	$	6,383,934
Plan Fiduciary Net Position as a Percentage of Total Pension Liability		75.90%
Net Pension Liability as a Percentage of Covered Payroll		103.69%
Development of the Single Discount Rate		
Single Discount Rate		7.50%
Long-Term Expected Rate of Investment Return		7.50%
Long-Term Municipal Bond Rate*		3.56%
Last year ending June 30 in the 2018 to 2117 projection period for which projected benefit payments are fully-funded		2117
Total Pension Expense/ (Income)	$	826,929

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	$ 210,395	$ 410,694
Changes in assumptions	$ 1,059,869	$ 639,990
Net difference between projected and actual earnings on pension plan investments	$ 1,125,175	$ 1,401,258
Total	$ 2,395,439	$ 2,451,942

* *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 establishes standards of financial reporting for separately issued financial reports and specifies the required approach for measuring the pension liability. Similarly, GASB Statement No. 68 establishes standards for state and local government employers (as well as non-employer contributing entities) to account for and disclose the net pension liability, pension expense, and other information associated with providing retirement benefits to their employees (and former employees) on their basic financial statements. 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 or local governments to recognize the net pension liability and the pension expense on their financial statements. The net pension liability is the difference between the total pension liability and the plan's fiduciary net position. In traditional actuarial terms, this is analogous to the accrued liability less the market value of assets (not the smoothed actuarial value of assets that is often encountered in actuarial valuations performed to determine the employer's contribution requirement).

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

Both GASB Statement No. 67 and No. 68 require the notes of the financial statements for the employers and pension plans, to include certain additional information. The list of disclosure items should include:

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

Retirement systems that issue stand-alone financial statements are required to disclose additional information in accordance with 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 market 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 funded status of the plan is expected to increase gradually toward a 100% funded ratio.

The projections in this report are strictly for the purpose of determining the GASB single discount rate and are different from a funding projection for the ongoing plan.

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 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 the Fidelity "20-Year Municipal GO AA Index"); and the resulting single discount rate is 7.50%. 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	$	471,706
2. Interest on the Total Pension Liability	$	1,921,869
3. Current-Period Benefit Changes	$	-
4. Employee Contributions (made negative for addition here)	$	(400,204)
5. Projected Earnings on Plan Investments (made negative for addition here)	$	(1,327,972)
6. Pension Plan Administrative Expense	$	11,292
7. Other Changes in Plan Fiduciary Net Position	$	(651)
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	$	70,132
9. Recognition of Outflow (Inflow) of Resources due to assumption changes		
Arising from Current Reporting Period	$	(213,330)
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	$	(270,986)
11. **Increase/(Decrease) from Experience in Current Reporting Period**	**$**	**261,856**
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	$	(224,865)
13. Recognition of Outflow (Inflow) of Resources due to assumption changes		
Arising from Prior Reporting Periods	$	691,311
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	$	98,627
15. Total Pension Expense / (Income)	**$**	**826,929**

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	$	280,527
2. Assumption Changes (gains) or losses	$	(853,320)
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	$	70,132
5. Outflow (Inflow) of Resources to be recognized in the current pension expense for Assumption Changes	$	(213,330)
6. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Liabilities	$	(143,198)
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	$	210,395
8. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses for Assumption Changes	$	(639,990)
9. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Liabilities	$	(429,595)
B. Outflows (Inflows) of Resources due to Assets		
1. Net difference between projected and actual earnings on pension plan investments (gains) or losses	$	(1,354,929)
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	$	(270,986)
4. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Assets	$	(1,083,943)

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	$ 785,473	$ 462,225	$ 323,248
2. Due to Assets	$ 415,942	$ 588,301	$ (172,359)
3. Total	$ 1,201,415	$ 1,050,526	$ 150,889

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	$ 94,162	$ 248,895	$ (154,733)
2. Assumption Changes	$ 691,311	$ 213,330	$ 477,981
3. Net Difference between projected and actual earnings on pension plan investments	$ 415,942	$ 588,301	$ (172,359)
4. Total	$ 1,201,415	$ 1,050,526	$ 150,889

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	$ 210,395	$ 410,694	$ (200,299)
2. Assumption Changes	$ 1,059,869	$ 639,990	$ 419,879
3. Net Difference between projected and actual earnings on pension plan investments	$ 1,125,175	$ 1,401,258	$ (276,083)
4. Total	$ 2,395,439	$ 2,451,942	$ (56,503)

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	$ (34,517)
2019	$ 369,896
2020	$ (120,897)
2021	$ (270,985)
2022	$ -
Thereafter	$ -
Total	$ (56,503)

Statement of Fiduciary Net Position
as of June 30, 2017 (Dollars in Thousands)

	Market Value			
Assets in Trust	**June 30, 2017**		**June 30, 2016**	
Cash, equivalents, short term securities	$ 491,850		$ 371,576	
Fixed income	$ 3,895,018		$ 4,437,241	
Equity	$ 13,042,724		$ 10,849,195	
SBI Alternative	$ 2,635,922		$ 2,300,707	
Other	$ 6,906		$ 7,014	
Total Assets in Trust	**$ 20,072,420**		**$ 17,965,733**	
Assets Receivable	$ 40,865	*	$ 41,539	**
Amounts Payable	$ (12,706)		$ (12,363)	
Net Position Restricted for Pensions	**$ 20,100,579**		**$ 17,994,909**	

* *Includes $31 million Employer Supplemental Contribution to be paid in July and December 2017.*
** *Includes $31 million Employer Supplemental Contribution paid in July and December 2016.*

Statement of Changes in Fiduciary Net Position for Year Ended June 30, 2017 (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	$ 17,994,909		$ 18,581,795	
2.	Adjustment to match restated PERA fund balance	$ 240		$ -	
3.	Fund balance at market value at beginning of year, as restated	$ 17,995,149		$ 18,581,795	
4.	Contributions				
	a. Member	$ 400,204		$ 375,291	
	b. Employer	$ 477,888	*	$ 459,978	**
	c. Other sources	$ 6,000		$ 6,000	
	d. Total contributions	$ 884,092		$ 841,269	
5.	Investment income				
	a. Investment income/(loss)	$ 2,703,723		$ 3,160	
	b. Investment expenses	$ (20,822)		$ (24,011)	
	c. Net subtotal	$ 2,682,901		$ (20,851)	
6.	Other	$ 411		$ 431	
7.	**Total additions:** *(4.d.) + (5.c.) + (6.)*	**$ 3,567,404**		**$ 820,849**	
8.	Benefits Paid				
	a. Annuity benefits	$ (1,413,448)		$ (1,359,176)	
	b. Refunds	$ (37,234)		$ (37,209)	
	c. Total benefits paid	$ (1,450,682)		$ (1,396,385)	
9.	Expenses				
	a. Other	$ -		$ -	
	b. Administrative	$ (11,292)		$ (11,350)	
	c. Total expenses	$ (11,292)		$ (11,350)	
10.	**Total deductions:** *(8.c.) + (9.c.)*	**$ (1,461,974)**		**$ (1,407,735)**	
11.	Net increase (decrease) in net position: *(7) + (10)*	$ 2,105,430		$ (586,886)	
12.	**Transfer between funds**	**$ -**		$ -	
13.	**Net position restricted for pensions**	**$ 20,100,579**		**$ 17,994,909**	
14.	Approximate return on market value of assets	15.1%		-0.2%	

* *Includes $31 million Employer Supplemental Contribution to be paid in July and December 2017.*

** *Includes $31 million Employer Supplemental Contribution paid in July and December 2016.*

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	$	471,706
2. Interest on the Total Pension Liability	$	1,921,869
3. Changes of benefit terms	$	-
4. Difference between expected and actual experience of the Total Pension Liability*	$	280,527
5. Changes of assumptions	$	(853,320)
6. Benefit payments, including refunds of employee contributions	$	(1,450,682)
7. Net change in total pension liability	$	370,100
8. Total pension liability – beginning July 1, 2016	$	26,114,413
9. Total pension liability – ending June 30, 2017	**$**	**26,484,513**
B. Plan fiduciary net position		
1. Contributions – employer	$	483,888
2. Contributions – employee	$	400,204
3. Net investment income	$	2,682,901
4. Benefit payments, including refunds of employee contributions	$	(1,450,682)
5. Pension Plan Administrative Expense	$	(11,292)
6. Other**	$	651
7. Net change in plan fiduciary net position	$	2,105,670
8. Plan fiduciary net position – beginning July 1, 2016	$	17,994,909
9. Plan fiduciary net position – ending June 30, 2017	**$**	**20,100,579**
C. Net pension liability	**$**	**6,383,934**
D. Plan fiduciary net position as a percentage of the total pension liability		**75.90%**
E. Covered-employee payroll^	**$**	**6,156,985**
F. Net pension liability as a percentage of covered-employee payroll		**103.69%**

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

** *Includes $411 of other income and $240 due to PERA's restatement of the June 30, 2016 end of year plan fiduciary net position.*

^ *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	$ 471,706	$ 434,551	$ 421,602	$ 388,391						
Interest on the Total Pension Liability	$ 1,921,869	$ 1,839,388	$ 1,712,534	$ 1,591,756						
Benefit Changes	$ -	$ -	$ 1,147,198	$ -						
Experience	$ 280,527	$ (647,197)	$ (348,383)	$ 96,123						
Assumption Changes	$ (853,320)	$ 2,119,742	$ -	$ 645,499						
Benefit Payments	$ (1,413,448)	$ (1,359,176)	$ (1,235,303)	$ (1,109,866)						
Refunds	$ (37,234)	$ (37,209)	$ (35,655)	$ (38,264)						
Net Change in Total Pension Liability	$ 370,100	$ 2,350,099	$ 1,661,993	$ 1,573,639						
Total Pension Liability - Beginning	$ 26,114,413	$ 23,764,314	$ 22,102,321	$ 20,528,682						
Total Pension Liability - Ending (a)	$ 26,484,513	$ 26,114,413	$ 23,764,314	$ 22,102,321						
Plan Fiduciary Net Position										
Employer Contributions	$ 483,888	$ 465,978	$ 435,115	$ 382,251						
Employee Contributions	$ 400,204	$ 375,291	$ 353,765	$ 334,495						
Pension Plan Net Investment Income	$ 2,682,901	$ (20,851)	$ 777,504	$ 2,760,854						
Benefit Payments	$ (1,413,448)	$ (1,359,176)	$ (1,235,303)	$ (1,109,866)						
Refunds	$ (37,234)	$ (37,209)	$ (35,655)	$ (38,264)						
Pension Plan Administrative Expense	$ (11,292)	$ (11,350)	$ (10,367)	$ (9,861)						
Other*	$ 651	$ 431	$ 891,914	$ 605						
Net Change in Plan Fiduciary Net Position	$ 2,105,670	$ (586,886)	$ 1,176,973	$ 2,320,214						
Plan Fiduciary Net Position - Beginning	$ 17,994,909	$ 18,581,795	$ 17,404,822	$ 15,084,608						
Plan Fiduciary Net Position - Ending (b)	$ 20,100,579	$ 17,994,909	$ 18,581,795	$ 17,404,822						
Net Pension Liability - Ending (a) - (b)	$ 6,383,934	$ 8,119,504	$ 5,182,519	$ 4,697,499						
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	75.90 %	68.91 %	78.19 %	78.75 %						
Covered-employee payroll	$ 6,156,985	$ 5,773,708	$ 5,549,255	$ 5,351,920						
Net Pension Liability as a Percentage of covered-employee payroll	103.69 %	140.63 %	93.39 %	87.77 %						

Notes to Schedule:

N/A

** Includes $411 of other income and $240 due to PERA's restatement of the June 30, 2016 end of year plan fiduciary net position.*

Schedules of Required Supplementary Information
Schedule of the Net Pension Liability Multiyear
(Dollars in Thousands)

Last 10 Fiscal Years (which may be built prospectively)

FY Ending June 30,	Total Pension Liability	Plan Net Position	Net Pension Liability	Plan Net Position as a % of Total Pension Liability	Covered Payroll	Net Pension Liability as a % of Covered Payroll
2008			$ -			
2009			$ -			
2010			$ -			
2011			$ -			
2012			$ -			
2013			$ -			
2014	$ 22,102,321	$ 17,404,822	$ 4,697,499	78.75%	$ 5,351,920	87.77%
2015	$ 23,764,314	$ 18,581,795	$ 5,182,519	78.19%	$ 5,549,255	93.39%
2016	$ 26,114,413	$ 17,994,909	$ 8,119,504	68.91%	$ 5,773,708	140.63%
2017	$ 26,484,513	$ 20,100,579	$ 6,383,934	75.90%	$ 6,156,985	103.69%

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
2008	$ 374,522	$ 303,304	$ 71,218	$ 4,722,432	6.42%
2009	$ 381,151	$ 328,603	$ 52,548	$ 4,778,708	6.88
2010	$ 443,548	$ 342,678	$ 100,870	$ 4,804,627	7.13
2011	$ 321,782	$ 357,596	$ (35,814)	$ 5,079,429	7.04
2012	$ 371,295	$ 368,037	$ 3,258	$ 5,142,592	7.16
2013	$ 430,773	$ 372,652	$ 58,121	$ 5,246,928	7.10
2014	$ 476,321	$ 382,251	$ 94,070	$ 5,351,920	7.14
2015	$ 523,017	$ 435,115	$ 87,902	$ 5,549,255	7.84
2016	$ 542,151	$ 465,978	$ 76,173	$ 5,773,708	8.07
2017	$ 615,083	$ 483,888	$ 131,195	$ 6,156,985	7.86

Notes to Schedule of Contributions

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

Valuation Date:	June 30, 2016
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
Actuarial Cost Method	Entry Age Normal
Amortization Method	Level Percentage of Payroll, Closed
Remaining Amortization Period	17 years
Asset Valuation Method	5-year smoothed market; no corridor
Inflation	2.75%
Payroll Growth	3.50%
Salary Increases	3.50% to 11.50% 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 2016 valuation pursuant to an experience study of the period 2008 - 2015.
Mortality	RP-2014 annuitant generational mortality table, projected with scale MP-2015 from a base year of 2014, white collar adjustment, set forward two years for males and rates adjusted by a factor of 0.90 for females.

Other Information:

Notes	The plan is assumed to pay a 2.5% post retirement benefit increase beginning January 1, 2053. See separate funding report as of July 1, 2016 for additional detail.

Schedule of Investment Returns Multiyear

Last 10 Fiscal Years

FY Ending June 30,	Annual Return[1]
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:

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return (geometric)
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	100.00%	

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 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	$ 30,002,535	$ 26,484,513	$ 23,604,374
Net Position Restricted for Pensions	$ 20,100,579	$ 20,100,579	$ 20,100,579
Net Pension Liability	**$ 9,901,956**	**$ 6,383,934**	**$ 3,503,794**

In interpreting the above results users should be aware that we do not consider 8.5% to be a reasonable assumption.

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	**$ 26,114,413**	**$ 17,994,909**	**$ 8,119,504**			
Changes for the Year:						
Service Cost	$ 471,706		$ 471,706			$ 471,706
Interest on Total Pension Liability	$ 1,921,869		$ 1,921,869			$ 1,921,869
Interest on Fiduciary Net Position		$ 1,327,972	$ (1,327,972)			$ (1,327,972)
Changes in Benefit Terms	$ -		$ -			$ -
Liability Experience Gains and Losses	$ 280,527		$ 280,527	$ 210,395		$ 70,132
Changes in Assumptions	$ (853,320)		$ (853,320)		$ 639,990	$ (213,330)
Contributions - Employer		$ 483,888	$ (483,888)			
Contributions - Employees		$ 400,204	$ (400,204)			$ (400,204)
Asset Gain/(Loss)		$ 1,354,929	$ (1,354,929)		$ 1,083,943	$ (270,986)
Benefit Payouts	$ (1,450,682)	$ (1,450,682)	$ -			$ -
Administrative Expenses		$ (11,292)	$ 11,292			$ 11,292
Other		$ 651	$ (651)			$ (651)
Net Changes	**$ 370,100**	**$ 2,105,670**	**$ (1,735,570)**	**$ 210,395**	**$ 1,723,933**	**$ 261,856**
Balance End of Year	**$ 26,484,513**	**$ 20,100,579**	**$ 6,383,934**			

** 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	**$ 26,114,413**	**$ 17,994,909**	**$ 8,119,504**				
Changes for the Year:							
Service Cost	$ 471,706		$ 471,706				$ 471,706
Interest on Total Pension Liability	$ 1,921,869		$ 1,921,869				$ 1,921,869
Interest on Fiduciary Net Position		$ 1,327,972	$ (1,327,972)				$ (1,327,972)
Changes in Benefit Terms	$ -		$ -				$ -
Liability Experience Gains and Losses	$ 280,527		$ 280,527	$ 210,395	$ 410,694	$ (635,559)	$ (154,733)
Changes in Assumptions	$ (853,320)		$ (853,320)	$ 1,059,869	$ 639,990	$ 1,751,180	$ 477,981
Contributions - Employer		$ 483,888	$ (483,888)				
Contributions - Employees		$ 400,204	$ (400,204)				$ (400,204)
Asset Gain/(Loss)		$ 1,354,929	$ (1,354,929)	$ 1,125,175	$ 1,401,258	$ 906,487	$ (172,359)
Benefit Payouts	$ (1,450,682)	$ (1,450,682)	$ -				
Administrative Expenses		$ (11,292)	$ 11,292				$ 11,292
Other		$ 651	$ (651)				$ (651)
Net Changes	**$ 370,100**	**$ 2,105,670**	**$ (1,735,570)**				**$ 826,929**
Balance End of Year	**$ 26,484,513**	**$ 20,100,579**	**$ 6,383,934**	**$ 2,395,439**	**$ 2,451,942**	**$ 2,022,108**	

** 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
GERP Members on 7/1/2016	**148,745**	**52,516**	**132,416**	**81,911**	**3,830**	**8,547**	**427,965**
New members	18,849	0	0	0	0	0	**18,849**
Return to active	3,007	(914)	(2,093)	0	0	0	**0**
Terminated non-vested	(8,102)	0	8,102	0	0	0	**0**
Service retirements	(3,286)	(2,750)	0	6,036	0	0	**0**
Terminated deferred	(3,813)	3,813	0	0	0	0	**0**
Terminated refund/transfer	(2,243)	(970)	(1,361)	0	0	0	**(4,574)**
Deaths	(194)	(128)	(299)	(2,247)	(183)	(522)	**(3,573)**
New beneficiary	0	0	0	0	0	642	**642**
Disabled	(99)	0	0	0	99	0	**0**
Data adjustments	3	707	1,570	77	33	(22)	**2,368**
Net change	4,122	(242)	5,919	3,866	(51)	98	**13,712**
GERP Members on 6/30/2017	**152,867**	**52,274**	**138,335**	**85,777**	**3,779**	**8,645**	**441,677**

SECTION E

SUMMARY OF BENEFITS

Summary of Plan Provisions - Basic

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	A public employee who is not covered under the Social Security Act. General exceptions are employees covered by other public funds, certain part-time employees and full-time students under age 23.
Contributions	Shown as a percent of salary: Member 9.10% of salary Employer 11.78% of salary Member contributions are "picked up" according to the provisions of Internal Revenue Code 414(h).
Allowable service	Service during which member contributions were made. May also include certain leaves of absence and military service.
Salary	Includes amounts deducted for deferred compensation or supplemental retirement plans, net income from fees and sick leave payments funded by the employer. Excludes unused annual leaves and sick leave payments, severance payments, Workers' Compensation benefits and employer-paid flexible spending accounts and employer-paid deferred compensation deposits, 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 annual 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: 100% vested after 5 years of Allowable Service. (Not applicable since all Basic members were hired before 1968.)
Retirement	
Normal retirement benefit	
Age/service requirement	Age 65 and vested. Proportionate retirement annuity is available at age 65 and one year of Allowable Service.
Amount	2.70% of Average Salary for each year of Allowable Service.
Early retirement benefit	
Age/service requirement	(a.) Age 55 and vested. (b.) Any age with 30 years of Allowable Service. (c.) Rule of 90: Age plus Allowable Service totals 90.

Retirement (Continued)

Early retirement benefit (Continued)

Age/service requirement	The greater of (a) or (b):
Amount	(a.) 2.20% of Average Salary for each of the first ten years of Allowable Service and 2.70% of Average Salary for each subsequent year with reduction of 0.25% for each month if the Member is under age 65 at time of retirement and has less than 30 years of Allowable Service or if the Member is under age 62 and has 30 or more years of Allowable Service. No reduction if age plus years of Allowable Service totals 90. (b.) 2.70% of Average Salary for each year of Allowable Service assuming augmentation to age 65 at 3.00% per year and actuarial reduction for each month the Member is under age 65.
Form of payment	Life annuity with return on death of any balance of contributions over aggregate monthly payments. Actuarially equivalent options are: 25%, 50%, 75% or 100% Joint and Survivor. 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 a future annual 1.00% post-retirement benefit increase. If the funding ratio reaches 90% for two consecutive years, the benefit increase will revert to 2.50%. If, after reverting to a 2.50% benefit increase, 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. Members retired under laws in effect before July 1, 1973 receive an additional lump sum payment each year. In 1989, this lump sum payment is the greater of $25 times each full year of Allowable Service or the difference between $400 times each full year of Allowable Service and the sum of benefits paid from any Minnesota public pension plan plus cash payments from the Social Security Administration for the preceding fiscal year July 1, 1988 through June 30, 1989. In each following year, the lump sum payment will increase by the same percentage increase that is applied to regular annuities paid from the fund. Effective January 1, 2002, annual lump sum payment is divided by 12 and paid as a monthly life annuity in the annuity form elected.

Summary of Plan Provisions – Basic (Continued)

Disability

<u>Disability benefit</u>

Age/service requirement	Total and permanent disability before normal retirement age if vested. Since all remaining active Basic members are over normal retirement age, none are eligible for disability benefits.
Amount	Normal Retirement benefit based on Allowable Service and Average Salary at disability without reduction for commencement before Normal Retirement Age. Supplemental benefit of $25 per month payable to the later of the normal retirement age or the five-year anniversary of commencement of disability. The disability benefit is reduced to that amount which, when added to Workers' Compensation, does not exceed the salary the disabled Member received as of the date of the disability or the salary currently payable for the same employment position substantially similar to the one the person held as of the date of the disability, whichever is greater. If a member becomes disabled prior to July 1, 1997 but did not commence his or her benefit before July 1, 1997, the benefit payable is calculated under the laws in effect at the time the Member became disabled and an actuarial increase shall be made for the change in the post-retirement interest rates from 5.00% to 6.00%. Payments stop earlier if disability ceases. If death occurs prior to age 65, or within five years of disability, the surviving spouse can receive a refund or a survivor benefit. Dependent children are entitled to dependent child benefits subject to the 70.00% family maximum. Payments revert to a retirement annuity at normal retirement age. Benefits may be reduced on resumption of partial employment.
Form of payment	Same as for retirement.
Benefit increases	Same as for retirement.

<u>Retirement after disability</u>

Age/service requirement	Normal retirement age.
Amount	Any optional annuity continues. Otherwise, the larger of the disability benefit paid before normal retirement age or the normal retirement benefit available at normal retirement age, or an actuarially equivalent optional annuity.
Benefit increases	Same as for retirement.

Summary of Plan Provisions - Basic (Continued)

Death	
Surviving spouse benefit	
Age/service requirement	Active Member with 18 months of Allowable Service or while Member is receiving a disability benefit.
Amount	50.00% of salary averaged over last six months. Family benefit is maximum of 70.00% and minimum of 50.00% of average salary. Benefit paid until spouse's death but no payments while spouse is remarried prior to July 1, 1991. If a member becomes deceased prior to July 1, 1997 and the beneficiary was not eligible to commence their survivor benefit as of July 1, 1997, the benefit payable is calculated under the laws in effect before July 1, 1997, and an actuarial increase shall be made for the change in the post-retirement interest rates from 5.00% to 6.00%. Surviving spouse optional annuity may be elected in lieu of this benefit.
Benefit increases	Same as for retirement.
Surviving dependent children's benefit	
Age/service requirement	Active Member with 18 months of Allowable Service or while Member is receiving a disability benefit.
Amount	10.00% of salary averaged over last six months for each child. Family benefit minimum (including spouse's benefit) of 50.00% of salary and maximum of 70.00% of average salary. Benefits paid until child marries, dies, or attains age 18 (age 22 if full-time student). If a member becomes deceased prior to July 1, 1997 and the beneficiary was not eligible to commence their survivor benefit before July 1, 1997, the benefit payable is calculated under the laws in effect before July 1, 1997, and an actuarial increase shall be made for the change in the post-retirement interest rates from 5.00% to 6.00%.
Benefit increases	Same as for retirement.

Summary of Plan Provisions - Basic (Continued)

Death (Continued)	
Surviving spouse optional annuity	
Age/service requirement	Member or former Member who dies before retirement benefits commence and other survivor annuity is waived by spouse.
Amount	Survivor's payment of the 100% joint and survivor benefit the Member could have elected if terminated or an actuarial equivalent term certain annuity. If commencement is prior to age 65 (age 62 if 30 years of service), the benefit is reduced the same as early retirement with half the applicable reduction factor used from age 55 to the actual commencement age. If no surviving spouse, then an actuarial equivalent dependent child benefit is paid to age 20 or for five years if longer. If a member becomes deceased prior to July 1, 1997 and the beneficiary was not eligible to commence their survivor benefit as of July 1, 1997, the benefit payable is calculated under the laws in effect before July 1, 1997, and an actuarial increase shall be made for the change in the post-retirement interest rates from 5.00% to 6.00%.
Benefit increases	Same as for retirement.
Refund of contributions with interest	
Age/service requirement	Member dies before receiving any retirement benefits and survivor benefits are not payable.
Amount	The excess of the Member's contributions with 6.00% interest until June 30, 2011; 4.00% interest thereafter over any disability or survivor benefits paid.
Termination	
Refund of contributions	
Age/service requirement	Termination of public service.
Amount	If member terminated before July 1, 2011, member's contributions credited with 6% interest compounded annually prior to July 1, 2011 and 4% interest thereafter. If member terminated after June 30, 2011, member's contributions credited with 4% interest compounded annually. A deferred annuity may be elected in lieu of a refund if three or more years of Allowable Service.

Summary of Plan Provisions - Basic (Continued)

Termination (Continued)	
Deferred benefit	
Age/service requirement	Fully vested.
Amount	Benefit computed under law in effect at termination and increased by the following "augmentation" percentage compounded annually for terminations prior to 2012: (a.) 0.00% before July 1, 1971; (b.) 5.00% from July 1, 1971 to January 1, 1981; (c.) 3.00% thereafter until the earlier of January 1 of the year following attainment of age 55 and January 1, 2012; (d.) 5.00% thereafter until the earlier of the date the annuity begins and January 1, 2012; and (e.) 1.00% from January 1, 2012 thereafter. Members who terminate after 2011 will receive no future augmentation. Members active with a public employer the day prior to the privatization of the employer become vested immediately and receive enhanced augmentation (unless the enhancement results in a net loss to the Plan). Amount is payable at a normal or early retirement. Augmentation equals 2.00% compounded annually, unless the enhancement results in a net loss to the Plan, in which case augmentation equals 1.00% compounded annually. If privatization occurred prior to January 1, 2011, augmentation occurs at the rate of 4.00% compounded annually through the year the Member turns age 55 and 6.00% thereafter until the annuity begins. If privatization occurred prior to January 1, 2007 (or January 1, 2008 for Hutchinson Area Health Care), augmentation occurs at the rate of 5.50% compounded annually through the year the Member turns age 55 and 7.50% thereafter until the annuity begins. If a member terminated employment prior to July 1, 1997 but was not eligible to commence their pension before July 1, 1997, the benefit payable is calculated under the laws in effect before July 1, 1997 and an actuarial increase shall be made for the change in the post-retirement interest rates from 5.00% to 6.00%.
Form of payment	Same as for retirement.
Optional form conversion factors	Actuarially equivalent factors based on the RP-2000 mortality table for healthy annuitants, white collar adjustment, projected to 2025, females set back two years and no setback for males, blended 45% males, 7.50% post-retirement interest, and 8.50% pre-retirement interest.

Summary of Plan Provisions - Basic (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; and (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 to plan provisions since the previous valuation.

Summary of Plan Provisions - Coordinated

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	A public employee who is covered under the Social Security Act. General exceptions are employees covered by other public funds, certain part-time employees and full-time students under age 23. City managers and persons holding certain elective office positions may choose to become Members.	
Contributions	Shown as a percent of salary:	
Effective date	**Member**	**Employer**
January 1, 2015	6.50%	7.50%
	Member contributions are "picked up" according to the provisions of Internal Revenue Code 414(h).	
Allowable service	Service during which member contributions are deducted. May also include certain leaves of absence and military service.	
Salary	Includes amounts deducted for deferred compensation or supplemental retirement plans, net income from fees and sick leave payments funded by the employer. Excludes unused annual leave and sick leave payments, severance payments, Workers' Compensation benefits and employer-paid flexible spending accounts and employer-paid deferred compensation deposits, 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 annual salary. Average salary is based on all Allowable Service if less than five years.	
Vesting	Hired before July 1, 2010: 100% vested after three years of Allowable Service. Hired after June 30, 2010: 100% vested after five years of Allowable Service.	
Retirement		
Normal retirement benefit		
Age/service requirement	First hired before July 1, 1989: (a.) Age 65 and vested. (b.) Proportionate retirement annuity is available at age 65 and one year of Allowable Service.	
Amount	1.70% of Average Salary for each year of Allowable Service.	

Summary of Plan Provisions – Coordinated (Continued)

Retirement (Continued)

Normal retirement benefit (Continued)

Age/service requirement	First hired after June 30, 1989: (a.) The greater of age 65 or the age eligible for full Social Security retirement benefits but no later than age 66 and vested. (b.) Proportionate Retirement Annuity is available at normal retirement age and one year of Allowable Service.
Amount	1.70% of Average Salary for each year of Allowable Service.

Early retirement benefit

Age/service requirement	First hired before July 1, 1989: (a.) Age 55 and vested. (b.) Any age with 30 years of Allowable Service. (c.) Rule of 90: Age plus Allowable Service totals 90. First hired after June 30, 1989: (a.) Age 55 and vested.
Amount	First hired before July 1, 1989: The greater of (a) or (b): (a.) 1.20% of Average Salary for each of the first ten years of Allowable Service and 1.70% of Average Salary for each subsequent year with reduction of 0.25% for each month the Member is under age 65 at time of retirement or under age 62 if 30 years of Allowable Service. No reduction if age plus years of Allowable Service totals 90. (b.) 1.70% of Average Salary for each year of Allowable Service assuming augmentation to age 65 at 3.00% per year and actuarial reduction for each month the Member is under age 65. First hired after June 30, 1989: (a.) 1.70% of Average Salary for each year of Allowable Service assuming augmentation to normal retirement age at 3.00% per year (2.50% if hired after June 30, 2006) and actuarial reduction for each month the Member is under normal retirement age.
Form of payment	Life annuity with return on death of any balance of contributions over aggregate monthly payments. Actuarially equivalent options are: 25%, 50%, 75% or 100% Joint and Survivor. 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.

Summary of Plan Provisions – Coordinated (Continued)

Retirement (Continued)

Benefit increases	Benefit recipients receive a future annual 1.00% post-retirement benefit increase. If the funding ratio reaches 90% for two consecutive years, the benefit increase will revert to 2.50%. If, after reverting to a 2.50% benefit increase, 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. Members retired under laws in effect before July 1, 1973 receive an additional lump sum payment each year. In 1989, this lump sum payment is $25 times each full year of Allowable Service. In each following year, the lump sum payment will increase by the same percentage increase that is applied to regular annuities paid from the fund.

Disability

Disability benefit

Age/service requirement	Total and permanent disability before normal retirement age if vested.
Amount	Normal Retirement benefit based on Allowable Service and Average Salary at disability without reduction for commencement before normal retirement age. The disability benefit is reduced to that amount which, when added to Workers' Compensation, does not exceed the salary the disabled Member received as of the date of the disability or the salary currently payable for the same employment position substantially similar to the one the person held as of the date of the disability, whichever is greater. If a Member becomes disabled prior to July 1, 1997 but did not commence his or her benefit before July 1, 1997, the benefit payable is calculated under the laws in effect before July 1, 1997, and an actuarial increase shall be made for the change in the post-retirement interest rates from 5.00% to 6.00%. Payments stop if disability ceases or death occurs. Payments change to a retirement annuity at normal retirement age. Benefits may be reduced on resumption of partial employment.
Form of payment	Same as for retirement.
Benefit increases	Same as for retirement.

Summary of Plan Provisions – Coordinated (Continued)

Disability (Continued)	
Retirement after disability	
Age/service requirement	Normal retirement age.
Amount	Any optional annuity continues. Otherwise, the larger of the disability benefit paid before normal retirement age or the normal retirement benefit available at normal retirement age, or an actuarially equivalent optional annuity.
Benefit increases	Same as for retirement.
Death	
Surviving spouse optional annuity	
Age/service requirement	Member or former Member who dies before retirement or disability benefits commence.
Amount	Survivor's payment of the 100% joint and survivor benefit the Member could have elected if terminated or an actuarial equivalent term certain annuity. If commencement is prior to age 65 (age 62 if 30 years of service), the benefit is reduced the same as early retirement with half the applicable reduction factor used from age 55 to the actual commencement age. If no surviving spouse, then an actuarial equivalent dependent child benefit is paid to age 20 or for five years if longer. If a member becomes deceased prior to July 1, 1997 and the beneficiary was not eligible to commence their survivor benefit before July 1, 1997, the benefit payable is calculated under the laws in effect before July 1, 1997, and an actuarial increase shall be made for the change in the post-retirement interest rates from 5.00% to 6.00%.
Benefit increases	Same as for retirement.
Refund of contributions	
Age/service requirement	Member dies before receiving any retirement benefits and survivor benefits are not payable.
Amount	The excess of the Member's contributions with 6.00% interest until June 30, 2011; 4.00% interest thereafter over any disability or survivor benefits paid.
Termination	
Refund of contributions	
Age/service requirement	Termination of public service.
Amount	If member terminated before July 1, 2011, member's contributions credited with 6.00% interest compounded annually prior to July 1, 2011 and 4.00% interest thereafter. If member terminated after June 30, 2011, member's contributions credited with 4.00% interest compounded annually. A deferred annuity may be elected in lieu of a refund if vested.

Termination (Continued)	
Deferred benefit	
Age/service requirement	Fully vested.
Amount	Benefit computed under law in effect at termination and increased by the following percentage (augmentation) compounded annually for terminations prior to 2012: (a.) 0.00% before July 1, 1971; (b.) 5.00% from July 1, 1971 to January 1, 1981; (c.) 3.00% (2.50% if hired after June 30, 2006) thereafter until the earlier of January 1 of the year following attainment of age 55 and January 1, 2012; (d.) 5.00% (2.50% if hired after June 30, 2006) thereafter until the earlier of the date the annuity begins and January 1, 2012; or (e.) 1.00% from January 1, 2012 to when the benefit begins. Members who terminate after 2011 will receive no future augmentation. Members active with a public employer the day prior to the privatization of the employer become vested immediately and receive enhanced augmentation (unless the enhancement results in a net loss to the Plan). Amount is payable at a normal or early retirement. Augmentation equals 2.00% compounded annually, unless the enhancement results in a net loss to the Plan, in which case augmentation equals 1.00% compounded annually. If privatization occurred prior to January 1, 2011, augmentation occurs at the rate of 4.00% compounded annually through the year the Member turns age 55 and 6.00% thereafter until the annuity begins. If privatization occurred prior to January 1, 2007 (or January 1, 2008 for Hutchinson Area Health Care), augmentation occurs at the rate of 5.50% compounded annually through the year the Member turns age 55 and 7.50% thereafter until the annuity begins. If a member terminated employment prior to July 1, 1997 but was not eligible to commence their pension before July 1, 1997, the benefit payable is calculated under the laws in effect before July 1, 1997 and an actuarial increase shall be made for the change in the post-retirement interest rates from 5.00% to 6.00%.
Form of payment	Same as for retirement.
Actuarial equivalent factors	Actuarially equivalent factors based on the RP-2000 mortality table for healthy annuitants, white collar adjustment, projected to 2025, females set back two years and no set back for males, blended 45% males, 7.50% post-retirement interest and 8.50% pre-retirement interest. The post-retirement interest rate 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 – Coordinated (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; and (b.) Average salary is based on the high five consecutive years during their entire service in all covered plans.
Contribution Stabilizer	The following is a summary of contribution stabilizer provisions in Minnesota Statute 353.27: • If a contribution sufficiency of more than 1.00% exists, member and employer contributions may be adjusted by the Board of Directors to a level necessary to maintain a 1.00% sufficiency. Member and employer contributions may not be less than the sum of normal cost and administrative expenses. • If a contribution deficiency of at least 0.50% exists, the member and employer contribution rates may be increased by the Board of Directors to eliminate the deficiency. • Any adjustment to the contribution rates must be reported to the Legislative Commission on Pensions and Retirement (LCPR) by January 15 following the most recent valuation report. If the LCPR does not recommend against or alter the change in rates, the adjustment becomes effective on the salary paid after the next January 1st.
Changes in Plan Provisions	There have been no changes to plan provisions since the previous valuation.

Summary of Plan Provisions – Minneapolis Employees Retirement Fund (MERF)

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/employee rule	An employee of the City of Minneapolis, the Metropolitan Airports Commission, the Met Council/Environmental Services, the Municipal Employees Retirement Fund, and Special School District No. 1 if covered prior to July 1, 1978. Employees covered July 1, 1978 or later are covered by the Public Employees Retirement Association (PERA) Plan. Effective July 1, 1992, licensed peace officers and firefighters who are employed by the Metropolitan Airports Commission and covered by the Minneapolis Employees Retirement Fund will receive the greater of retirement, disability, or survivor benefits under: a) The Minneapolis Employees Retirement Fund; or b) The Public Employees Retirement Association (PERA) Police & Fire Plan.
Full consolidation	The MERF Division fully merged with PERA's General Employees Retirement Plan, effective January 1, 2015. Upon consolidation, state and employer contributions were revised as shown herein
Contributions	
Member	9.75% of salary
Employer	9.75% of salary (Employer Regular Contributions) Employer Regular and Additional Contributions will be paid as long as there are active members. Employer Supplemental Contribution equals $31,000,000 in calendar years 2017 and 2018 and 21,000,000 in calendar years 2019 to 2031.
Contribution allocation	Employer Supplemental Contributions are allocated to the employers in proportion to their share of the actuarial accrued liability of MERF on July 1, 2009, as follows:

Employer	Allocation
City of Minneapolis	54.78%
Minneapolis Park Board	10.33%
Met Council	1.74%
Metropolitan Airport Commission	5.76%
Municipal Building Commission	1.08%
Minneapolis School District No. 1	23.04%
Hennepin County	3.17%
MnSCU	0.10%
Total	100.00%

Summary of Plan Provisions – Minneapolis Employees Retirement Fund (MERF) (Continued)

State contributions	The State's contribution equals $16,000,000 in 2017 and 2018, and $6,000,000 thereafter. The State's contributions are payable by September 30 each year and end on September 15, 2031.
Allowable service	Service during which member contributions were made. Allowable Service may also include certain leaves of absence, military service and service prior to becoming a member. Allowable service also includes time on duty disability provided that the member returns to active service if the disability ceases.
Salary	All amounts of salary, wages or compensation.
Average salary	Average of the five highest calendar years of salary out of the last ten calendar years.
Retirement	
Normal retirement benefit	
Age/service requirement	Age 60 and 10 years of employment. Any age with 30 years of employment. Proportionate retirement annuity is available at age 65 and 1 year allowable service.
Amount	2.00% of average salary for the first 10 years of allowable service plus 2.50% of average salary for each subsequent year of allowable service.

Summary of Plan Provisions –
Minneapolis Employees Retirement Fund (MERF) (Continued)

Disability

Disability benefit

Age/service requirement	Total and permanent disability before age 60 with five years of allowable service, or no allowable service if a work-related disability.
Amount	2.00% of average salary for the first 10 years of disability service plus 2.50% of average salary for each subsequent year of disability service. Disability service is the greater of (a) or (b) where: (a.) equals allowable service plus service projected to age 60, subject to a maximum of 22 years, and (b.) equals allowable service. Benefit is reduced by Workers' Compensation benefits. Payments stop at age 60 or earlier if disability ceases or death occurs. Benefits may be reduced on resumption of partial employment.

Disability after separation

Age/service requirement	Total and permanent disability after electing to receive a retirement benefit but before age 60.
Amount	Actuarial equivalent of total credit to member's account.

Retirement after disability

Age/service requirement	Total and permanent disability after electing to receive a retirement benefit but before age 60. Employee is still disabled after age 60.
Amount	Benefit continues according to the option selected.

Summary of Plan Provisions –
Minneapolis Employees Retirement Fund (MERF) (Continued)

Death

<u>Pre-retirement survivor's spouse benefit</u>

Age/service requirement	Active member with 18 months of allowable service.
Amount	30% of salary averaged over the last six months to the surviving spouse plus 10% of salary averaged over the last six months to each surviving child. Maximum benefit is $900 per month.

<u>Pre-retirement survivor's spouse annuity</u>

Age/service requirement	Active member or former member who dies before retirement with 20 years of allowable service.
Amount	Actuarial equivalent of a single life annuity which would have been paid as a retirement benefit on the date of death without regard to eligibility age for retirement benefit. If there is no surviving spouse, the designated beneficiary may be a dependent child or dependent parent.

<u>Refund of accumulated city contributions</u>

Age/service requirement	Active member or former member dies after 10 years of allowable service and prior to retirement.
Amount	Present value of the City's annual installments of $60 or, in the case of a former member, the net accumulation of city deposits. This benefit is not payable if survivor's benefits are paid.

<u>Lump sum</u>

Age/service requirement	Death prior to service or disability retirement without an eligible surviving beneficiary.
Amount	$750 with less than 10 years allowable service, or $1,500 with 10 or more years of allowable service.

<u>Refund of member contributions at death</u>

Age/service requirement	Active member or former member dies before retirement.
Amount	The excess of the member's contributions (exclusive of the contributions to the survivor's account) plus interest to the date of death.

Summary of Plan Provisions –
Minneapolis Employees Retirement Fund (MERF) (Concluded)

Termination	
Deferred benefit	
Age/service requirement	Three years of allowable service.
Amount	Benefit computed under law in effect at termination and increased by the following percentage (augmentation), compounded annually: (a.) 0.00% prior to July 1, 1971, (b.) 5.00% from July 1, 1971 to January 1, 1981, and (c.) 3.00% thereafter until the annuity begins. Amount is payable at or after age 60.
Refund of member contributions upon termination	
Age/service requirement	Termination of public service.
Amount	Member's contributions with interest. A deferred annuity may be elected in lieu of a refund if vested.
Form of payment	▪ Life annuity. ▪ Life annuity with 3, 5, 10 or 15 years guaranteed. ▪ Life annuity with lump sum death benefit. ▪ Joint & Survivor (with or without bounce back feature).
Optional form conversion factors	1986 PET mortality table with a one year setback, blended 50% male and 50% female, and 5% interest.
Two dollar bill and annuity	Optional Two Dollar Bill money purchase annuity available at age 55 with 20 years of service if member had service prior to June 28, 1973. According to PERA, this option is rarely utilized. We have assumed that remaining active members will not elect this optional benefit.
Benefit increases	Benefit recipients receive future annual 1.00% benefit increases. If the accrued liability funding ratio of the General Employees Retirement Plan reaches 90% (on a market value of assets basis) for two consecutive years, the benefit increase will change to 2.50%. If, after reverting to a 2.50% benefit increase, 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%.
Changes in plan provisions	The Employer Supplemental Contribution changed from $21,000,000 to $31,000,000 in calendar years 2019 to 2031. The state's contribution changed from $16,000,000 to $6,000,000 in calendar years 2019 to 2031.

SECTION F

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

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

Actuarial Cost Method

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

(i) the annual normal cost for each individual active member, payable from the date of employment to the date of retirement, is sufficient to accumulate the value of the member's benefit at the time of retirement; and

(ii) each annual normal cost is a constant percentage of the member's year by year projected covered pay.

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

Valuation of Future Post-Retirement Benefit Increases

Benefit recipients receive a future annual 1.00% post-retirement benefit increase. If the funding ratio reaches 90% (based on a 2.50% post-retirement benefit increase assumption) for two consecutive years, the benefit increase will revert to 2.50%. If, after reverting to a 2.50% benefit increase, 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%.

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

- Future investment returns of 7.50%
- Liabilities and normal cost based on statutory funding assumptions
    - Discount rate of 8.00%
    - Statutory salary increases (rate of 11.50% at year 1 declining to 3.50% at years 26 and later)
- Open group; stable active population (new member profile based on average new members hired in recent years)
- The postretirement benefit increase rate is assumed to be 1.00% per year until the funding ratio threshold required to pay a 2.50% postretirement benefit increase is reached
- Current statutory contributions (i.e. not including potential contribution increases under the contribution stabilizer statutes) as directed by PERA

Based on these assumptions and methods, the projection indicates that this plan is expected to attain the funding ratio threshold required to pay a 2.50% postretirement benefit increase in 2044. A 1.00% postretirement benefit increase assumption through 2044 and a 2.5% postretirement benefit increase thereafter are assumed in our calculations.

Asset Valuation Method

Fair value of assets.

Summary of Actuarial Assumptions – Basic and Coordinated

The following assumptions were used in valuing the liabilities and benefits under the plan. The assumptions are based on the last experience study dated June 30, 2015, 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 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	1.00% per annum through 2044 and 2.50% per annum thereafter.
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 Mortality Table, adjusted for white collar and mortality improvements using projection scale MP-2015, from a base year of 2014. Rates are set forward one year for males and set back one year for females.
Healthy post-retirement	RP-2014 Healthy Annuitant Mortality Table, adjusted for white collar and mortality improvements using projection scale MP-2015, from a base year of 2014. Rates are set forward two years for males. Female rates are multiplied by a factor of 0.90.
Disabled retirees	RP-2014 Disabled Mortality Table, adjusted for mortality improvements using projection scale MP-2015, from a base year of 2014. Rates are set forward one year for males and set forward six years for females. 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 tables. Members who have attained the highest assumed retirement age are assumed to retire in one year.
Withdrawal	Service-related rates based on experience; see table of sample rates.
Disability	Age-related rates based on experience; see table of sample rates.

Summary of Actuarial Assumptions – Basic and Coordinated (Continued)

Allowance for combined service annuity	Liabilities for former members are increased by 15.0% for vested members and 3.0% 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 a 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 dates 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 Normal Retirement.
Percentage married	80% of male and 70% of female active members are assumed to be married. Actual marital status is used for members in payment status.
Age of spouse	Males are assumed to have a beneficiary three years younger, while females are assumed to have a beneficiary two years older. 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: 10% elect 25% Joint & Survivor option 15% elect 50% Joint & Survivor option 10% elect 75% Joint & Survivor option 35% elect 100% Joint & Survivor option Females: 10% elect 25% Joint & Survivor option 10% elect 50% Joint & Survivor option 5% elect 75% Joint & Survivor option 15% 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 – Basic and Coordinated (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: <u>Data for active members:</u> There were 3,636 members reported with a salary less than $100. We used prior year salary (2,452 members), if available; otherwise high five salary with a 10% load to account for salary increases (1,057 members). If neither prior year salary or high five salary was available, we assumed a value of $35,000. There were also 2,339 members reported without a gender and 51 members reported with an invalid date of birth. We assumed a date of birth based on an entry age of 38 and female gender. <u>Data for terminated members:</u> We calculated benefits for these members using the reported Average Salary and credited service. If Average Salary was not reported (186 members), we assumed a value of $24,000. If credited service was not reported (141 members), we assumed credited service was elapsed time from hire to termination date (92 members); otherwise nine years. If termination date was invalid or not reported (116 members), we assumed the termination date was equal to hire date plus credited service; otherwise the valuation date unless they are noted as a pre-July 1, 1989 hire, then June 30, 1989. If reported termination date occurs prior to reported hire date, the two dates were swapped. There were 44 members reported with an invalid date of birth and 272 members reported without a gender. We assumed a date of birth of July 1, 1967 and female gender. <u>Data for retired members:</u> There were 106 members reported without a gender. We assumed retirees are female and beneficiaries are male. There were 8 members reported with an invalid date of birth. We assumed a date of birth of July 1, 1945. There were 595 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.

Summary of Actuarial Assumptions – Basic and Coordinated (Continued)

Unknown data for certain members (Continued)	<u>Data for retired members (Continued):</u> Because PERA reclassifies disabled members as retirees once the member reaches Normal Retirement Age, we compare the members that PERA reports as retirees to our disabled group from the last valuation. If a member was disabled in the valuation, we reclassify that member as a disabled retiree in this year's valuation. We reclassified 2,142 retirees as disabled retirees in this valuation.
Changes in actuarial assumptions	The Combined Service Annuity (CSA) loads were 0.8% for active members (0.2% for active MERF members) and 60.0% for vested and non-vested deferred member liability (30.0% for deferred MERF members). The revised CSA loads are now 0.0% for active member liability, 15.0% for vested deferred member liability, and 3.0% for non-vested deferred member liability. The assumed post-retirement benefit increase rate was changed from 1.00% per year for all years to 1.00% per year through 2044 and 2.50% per year thereafter. For accounting purposes, this change was treated as a difference between expected and actual experience.

Summary of Actuarial Assumptions – Basic and Coordinated (Continued)

	Percentage of Members Dying Each Year*					
	Healthy Post-Retirement Mortality		Healthy Pre-Retirement Mortality		Disability Mortality	
Age in 2017	Male	Female	Male	Female	Male	Female
20	0.03%	0.01%	0.03%	0.01%	0.06%	0.10%
25	0.04	0.02	0.03	0.01	0.23	0.24
30	0.06	0.04	0.03	0.02	0.52	0.46
35	0.09	0.07	0.04	0.02	0.89	0.71
40	0.14	0.10	0.04	0.03	1.27	0.95
45	0.20	0.13	0.07	0.05	1.61	1.17
50	0.29	0.18	0.12	0.08	1.93	1.42
55	0.42	0.24	0.21	0.13	2.29	1.74
60	0.59	0.34	0.36	0.19	2.69	2.16
65	0.89	0.56	0.63	0.27	3.22	2.90
70	1.47	0.90	1.10	0.46	4.08	4.21

* *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.*

	Disability Retirement	
Age	Male	Female
20	0.01%	0.01%
25	0.01	0.01
30	0.01	0.01
35	0.03	0.02
40	0.05	0.04
45	0.08	0.05
50	0.15	0.10
55	0.34	0.16
60	0.53	0.28
65	0.00	0.00
70	0.00	0.00

Summary of Actuarial Assumptions – Basic and Coordinated (Concluded)

	Retirement		
Age	**Rule of 90 Eligible**	**Tier 1**	**Tier 2**
55	20.0%	5.0%	5.0%
56	15.0%	5.0%	5.0%
57	15.0%	5.0%	5.0%
58	15.0%	6.0%	5.0%
59	15.0%	7.0%	6.0%
60	15.0%	8.0%	7.0%
61	18.0%	10.0%	9.0%
62	35.0%	20.0%	15.0%
63	25.0%	20.0%	15.0%
64	25.0%	25.0%	15.0%
65	32.5%	32.5%	25.0%
66	25.0%	25.0%	25.0%
67	20.0%	20.0%	20.0%
68	17.5%	17.5%	17.5%
69	15.0%	15.0%	15.0%
70	17.5%	17.5%	17.5%
71+	100.0%	100.0%	100.0%

Summary of Actuarial Assumptions – Basic and Coordinated (Concluded)

Salary Scale			% Withdrawals	
Year	Increase	Year	Male	Female
1	11.25%	1	25.00%	25.00%
2	8.25%	2	20.00	20.00
3	6.75%	3	15.00	15.00
4	5.75%	4	10.00	11.00
5	5.25%	5	9.00	10.00
6	4.95%	6	7.00	9.00
7	4.65%	7	5.50	7.50
8	4.55%	8	5.00	6.50
9	4.45%	9	4.50	5.50
10	4.25%	10	4.00	5.00
11	4.00%	11	3.25	4.25
12	3.85%	12	3.00	4.00
13	3.75%	13	2.75	3.75
14	3.65%	14	2.50	3.50
15	3.65%	15	2.50	3.25
16	3.60%	16	2.25	3.00
17	3.55%	17	2.00	2.75
18	3.50%	18	1.75	2.50
19	3.50%	19	1.50	2.50
20	3.50%	20	1.50	2.25
21	3.50%	21	1.50	2.25
22	3.45%	22	1.50	2.25
23	3.35%	23	1.00	2.00
24	3.35%	24	1.00	2.00
25	3.35%	25	1.00	1.75
26+	3.25%	26	1.00	1.75
		27	1.00	1.50
		28	1.00	1.50
		29	1.00	1.50
		30	1.00	1.50

Summary of Actuarial Assumptions - MERF

The following assumptions were used in valuing the liabilities and benefits under the plan for MERF members only. Assumptions regarding investment return, mortality, benefit increases, and Combined Service Annuity (CSA) are the same as shown in the Basic and Coordinated Plan assumption summary.

Salary increases	Total reported pay for prior calendar year increased 1.73% (half year of 3.50%, compounded) to prior fiscal year and 3.50% annually for each future year.
Retirement	Active members are assumed to retire at age 61, or immediately if currently age 61 or older.
Withdrawal	Rates are shown in rate table.
Disability	Age-related rates based on experience; see table of sample rates.
Commencement of deferred benefits	Members receiving deferred annuities (including current terminated deferred members) are assumed to begin receiving benefits at age 60.
Percentage married	66.67% 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	Members are assumed to elect a life annuity.
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: There were no members with missing or invalid dates of birth. <u>Data for active members:</u> There were no active members with missing salary or service. <u>Data for terminated members:</u> Benefits were provided by PERA for five members. For the remaining members, we calculated benefits using the reported Average Salary, credited service and termination date from the 2016 valuation data file. <u>Data for Retired members:</u> There were no members reported with missing benefits. There was one member reported without a gender. We assumed male gender.

Summary of Actuarial Assumptions – MERF (Concluded)

	Withdrawal		Disability Retirement	
Age	Male	Female	Male	Female
20	21.00%	21.00%	0.21%	0.21%
25	11.00	11.00	0.21	0.21
30	5.00	5.00	0.23	0.23
35	1.50	1.50	0.30	0.30
40	1.00	1.00	0.41	0.41
45	1.00	1.00	0.61	0.61
50	1.00	1.00	0.93	0.93
55	1.00	1.00	1.60	1.60
60	1.00	1.00	0.00	0.00
65	0.00	0.00	0.00	0.00
70	0.00	0.00	0.00	0.00

SECTION G

CALCULATION OF THE SINGLE DISCOUNT RATE

Calculation of the Single Discount Rate

GASB Statement No. 67 includes a specific requirement for the discount rate that is used for the purpose of the measurement of the Total Pension Liability. This rate considers the ability of the fund to meet benefit obligations in the future. To make this determination, employer contributions, employee contributions, benefit payments, expenses and investment returns are projected into the future. The Plan Net Position (assets) in future years can then be determined and compared to its obligation to make benefit payments in those years. As long as assets are projected to be on hand in a future year, the assumed long-term 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 valuation, 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 7.50%**.

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

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

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

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

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

	Payroll			Projected Contributions				
Fiscal Year Ending	Payroll for Current Employees	Payroll for New Employees	Total Employee Payroll	Contributions from Current Employees	Employer Contributions for Current Employees	Contributions on Future Payroll toward Current UAL*	Additional State Contributions	Total Contributions
2017	$ 6,156,985	$ -	$ 6,156,985					
2018	$ 6,187,110	$ -	$ 6,187,110	$ 402,162	$ 464,033	$ -	$ 37,000	$ 903,195
2019	$ 5,836,830	$ 551,361	$ 6,388,191	$ 379,394	$ 437,762	$ 30,380	$ 37,000	$ 884,536
2020	$ 5,530,048	$ 1,065,759	$ 6,595,807	$ 359,453	$ 414,754	$ 58,723	$ 37,000	$ 869,930
2021	$ 5,271,731	$ 1,538,440	$ 6,810,171	$ 342,663	$ 395,380	$ 84,768	$ 37,000	$ 859,811
2022	$ 5,032,043	$ 1,999,458	$ 7,031,501	$ 327,083	$ 377,403	$ 110,170	$ 37,000	$ 851,656
2023	$ 4,805,140	$ 2,454,885	$ 7,260,025	$ 312,334	$ 360,386	$ 135,264	$ 37,000	$ 844,984
2024	$ 4,589,621	$ 2,906,355	$ 7,495,976	$ 298,325	$ 344,222	$ 160,140	$ 37,000	$ 839,687
2025	$ 4,386,940	$ 3,352,655	$ 7,739,595	$ 285,151	$ 329,021	$ 184,731	$ 37,000	$ 835,903
2026	$ 4,196,234	$ 3,794,898	$ 7,991,132	$ 272,755	$ 314,718	$ 209,099	$ 37,000	$ 833,572
2027	$ 4,015,093	$ 4,235,751	$ 8,250,844	$ 260,981	$ 301,132	$ 233,390	$ 37,000	$ 832,503
2028	$ 3,841,500	$ 4,677,496	$ 8,518,996	$ 249,697	$ 288,112	$ 257,730	$ 37,000	$ 832,539
2029	$ 3,674,779	$ 5,121,085	$ 8,795,864	$ 238,861	$ 275,608	$ 282,172	$ 37,000	$ 833,641
2030	$ 3,514,698	$ 5,567,031	$ 9,081,729	$ 228,455	$ 263,602	$ 306,743	$ 37,000	$ 835,800
2031	$ 3,360,039	$ 6,016,846	$ 9,376,885	$ 218,403	$ 252,003	$ 331,528	$ 37,000	$ 838,934
2032	$ 3,209,396	$ 6,472,238	$ 9,681,634	$ 208,611	$ 240,705	$ 356,620	$ -	$ 805,936
2033	$ 3,061,057	$ 6,935,230	$ 9,996,287	$ 198,969	$ 229,579	$ 382,131	$ -	$ 810,679
2034	$ 2,915,205	$ 7,405,962	$ 10,321,167	$ 189,488	$ 218,640	$ 408,069	$ -	$ 816,197
2035	$ 2,772,786	$ 7,883,818	$ 10,656,604	$ 180,231	$ 207,959	$ 434,398	$ -	$ 822,588
2036	$ 2,633,308	$ 8,369,636	$ 11,002,944	$ 171,165	$ 197,498	$ 461,167	$ -	$ 829,830
2037	$ 2,495,467	$ 8,865,073	$ 11,360,540	$ 162,205	$ 187,160	$ 488,466	$ -	$ 837,831
2038	$ 2,359,593	$ 9,370,164	$ 11,729,757	$ 153,374	$ 176,969	$ 516,296	$ -	$ 846,639
2039	$ 2,225,087	$ 9,885,887	$ 12,110,974	$ 144,631	$ 166,882	$ 544,712	$ -	$ 856,225
2040	$ 2,090,994	$ 10,413,587	$ 12,504,581	$ 135,915	$ 156,825	$ 573,789	$ -	$ 866,529
2041	$ 1,956,492	$ 10,954,488	$ 12,910,980	$ 127,172	$ 146,737	$ 603,592	$ -	$ 877,501
2042	$ 1,821,525	$ 11,509,062	$ 13,330,587	$ 118,399	$ 136,614	$ 634,149	$ -	$ 889,162
2043	$ 1,687,892	$ 12,075,939	$ 13,763,831	$ 109,713	$ 126,592	$ 665,384	$ -	$ 901,689
2044	$ 1,556,905	$ 12,654,250	$ 14,211,155	$ 101,199	$ 116,768	$ 697,249	$ -	$ 915,216
2045	$ 1,427,996	$ 13,245,022	$ 14,673,018	$ 92,820	$ 107,100	$ 729,801	$ -	$ 929,721
2046	$ 1,300,650	$ 13,849,241	$ 15,149,891	$ 84,542	$ 97,549	$ 763,093	$ -	$ 945,184
2047	$ 1,175,701	$ 14,466,562	$ 15,642,263	$ 76,421	$ 88,178	$ 797,108	$ -	$ 961,707
2048	$ 1,053,738	$ 15,096,898	$ 16,150,636	$ 68,493	$ 79,030	$ 831,839	$ -	$ 979,362
2049	$ 935,816	$ 15,739,716	$ 16,675,532	$ 60,828	$ 70,186	$ 867,258	$ -	$ 998,272
2050	$ 823,343	$ 16,394,144	$ 17,217,487	$ 53,517	$ 61,751	$ 903,317	$ -	$ 1,018,585
2051	$ 716,587	$ 17,060,468	$ 17,777,055	$ 46,578	$ 53,744	$ 940,032	$ -	$ 1,040,354
2052	$ 616,164	$ 17,738,645	$ 18,354,809	$ 40,051	$ 46,212	$ 977,399	$ -	$ 1,063,662
2053	$ 522,772	$ 18,428,568	$ 18,951,340	$ 33,980	$ 39,208	$ 1,015,414	$ -	$ 1,088,602
2054	$ 437,214	$ 19,130,045	$ 19,567,259	$ 28,419	$ 32,791	$ 1,054,065	$ -	$ 1,115,275
2055	$ 360,702	$ 19,842,493	$ 20,203,195	$ 23,446	$ 27,053	$ 1,093,321	$ -	$ 1,143,820
2056	$ 292,608	$ 20,567,191	$ 20,859,799	$ 19,019	$ 21,946	$ 1,133,252	$ -	$ 1,174,217
2057	$ 232,522	$ 21,305,220	$ 21,537,742	$ 15,114	$ 17,439	$ 1,173,918	$ -	$ 1,206,471
2058	$ 181,084	$ 22,056,635	$ 22,237,719	$ 11,770	$ 13,581	$ 1,215,321	$ -	$ 1,240,672
2059	$ 138,132	$ 22,822,313	$ 22,960,445	$ 8,979	$ 10,360	$ 1,257,509	$ -	$ 1,276,848
2060	$ 102,922	$ 23,603,737	$ 23,706,659	$ 6,690	$ 7,719	$ 1,300,566	$ -	$ 1,314,975
2061	$ 74,780	$ 24,402,346	$ 24,477,126	$ 4,861	$ 5,609	$ 1,344,569	$ -	$ 1,355,039
2062	$ 52,587	$ 25,220,045	$ 25,272,632	$ 3,418	$ 3,944	$ 1,389,625	$ -	$ 1,396,987
2063	$ 35,293	$ 26,058,700	$ 26,093,993	$ 2,294	$ 2,647	$ 1,435,834	$ -	$ 1,440,775
2064	$ 22,342	$ 26,919,705	$ 26,942,047	$ 1,452	$ 1,676	$ 1,483,276	$ -	$ 1,486,404
2065	$ 13,158	$ 27,804,506	$ 27,817,664	$ 855	$ 987	$ 1,532,028	$ -	$ 1,533,870
2066	$ 7,307	$ 28,714,431	$ 28,721,738	$ 475	$ 548	$ 1,582,165	$ -	$ 1,583,188
2067	$ 3,841	$ 29,651,354	$ 29,655,195	$ 250	$ 288	$ 1,633,790	$ -	$ 1,634,328

* *Contributions related to future employee payroll in excess of normal cost and expenses of 8.49% of pay.*

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*	Additional State Contributions	Total Contributions
2068	$ 1,761	$ 30,617,227	$ 30,618,988	$ 114	$ 132	$ 1,687,009	$ -	$ 1,687,255
2069	$ 629	$ 31,613,476	$ 31,614,105	$ 41	$ 47	$ 1,741,903	$ -	$ 1,741,991
2070	$ 188	$ 32,641,376	$ 32,641,564	$ 12	$ 14	$ 1,798,540	$ -	$ 1,798,566
2071	$ 55	$ 33,702,360	$ 33,702,415	$ 4	$ 4	$ 1,857,000	$ -	$ 1,857,008
2072	$ 11	$ 34,797,732	$ 34,797,743	$ 1	$ 1	$ 1,917,355	$ -	$ 1,917,357
2073	$ 1	$ 35,928,669	$ 35,928,670	$ -	$ -	$ 1,979,670	$ -	$ 1,979,670
2074	$ -	$ 37,096,352	$ 37,096,352	$ -	$ -	$ 2,044,009	$ -	$ 2,044,009
2075	$ -	$ 38,301,983	$ 38,301,983	$ -	$ -	$ 2,110,439	$ -	$ 2,110,439
2076	$ -	$ 39,546,797	$ 39,546,797	$ -	$ -	$ 2,179,029	$ -	$ 2,179,029
2077	$ -	$ 40,832,068	$ 40,832,068	$ -	$ -	$ 2,249,847	$ -	$ 2,249,847
2078	$ -	$ 42,159,111	$ 42,159,111	$ -	$ -	$ 2,322,967	$ -	$ 2,322,967
2079	$ -	$ 43,529,282	$ 43,529,282	$ -	$ -	$ 2,398,463	$ -	$ 2,398,463
2080	$ -	$ 44,943,983	$ 44,943,983	$ -	$ -	$ 2,476,413	$ -	$ 2,476,413
2081	$ -	$ 46,404,663	$ 46,404,663	$ -	$ -	$ 2,556,897	$ -	$ 2,556,897
2082	$ -	$ 47,912,814	$ 47,912,814	$ -	$ -	$ 2,639,996	$ -	$ 2,639,996
2083	$ -	$ 49,469,981	$ 49,469,981	$ -	$ -	$ 2,725,796	$ -	$ 2,725,796
2084	$ -	$ 51,077,755	$ 51,077,755	$ -	$ -	$ 2,814,384	$ -	$ 2,814,384
2085	$ -	$ 52,737,782	$ 52,737,782	$ -	$ -	$ 2,905,852	$ -	$ 2,905,852
2086	$ -	$ 54,451,760	$ 54,451,760	$ -	$ -	$ 3,000,292	$ -	$ 3,000,292
2087	$ -	$ 56,221,442	$ 56,221,442	$ -	$ -	$ 3,097,801	$ -	$ 3,097,801
2088	$ -	$ 58,048,639	$ 58,048,639	$ -	$ -	$ 3,198,480	$ -	$ 3,198,480
2089	$ -	$ 59,935,220	$ 59,935,220	$ -	$ -	$ 3,302,431	$ -	$ 3,302,431
2090	$ -	$ 61,883,115	$ 61,883,115	$ -	$ -	$ 3,409,760	$ -	$ 3,409,760
2091	$ -	$ 63,894,316	$ 63,894,316	$ -	$ -	$ 3,520,577	$ -	$ 3,520,577
2092	$ -	$ 65,970,881	$ 65,970,881	$ -	$ -	$ 3,634,996	$ -	$ 3,634,996
2093	$ -	$ 68,114,935	$ 68,114,935	$ -	$ -	$ 3,753,133	$ -	$ 3,753,133
2094	$ -	$ 70,328,670	$ 70,328,670	$ -	$ -	$ 3,875,110	$ -	$ 3,875,110
2095	$ -	$ 72,614,352	$ 72,614,352	$ -	$ -	$ 4,001,051	$ -	$ 4,001,051
2096	$ -	$ 74,974,318	$ 74,974,318	$ -	$ -	$ 4,131,085	$ -	$ 4,131,085
2097	$ -	$ 77,410,984	$ 77,410,984	$ -	$ -	$ 4,265,345	$ -	$ 4,265,345
2098	$ -	$ 79,926,841	$ 79,926,841	$ -	$ -	$ 4,403,969	$ -	$ 4,403,969
2099	$ -	$ 82,524,463	$ 82,524,463	$ -	$ -	$ 4,547,098	$ -	$ 4,547,098
2100	$ -	$ 85,206,508	$ 85,206,508	$ -	$ -	$ 4,694,879	$ -	$ 4,694,879
2101	$ -	$ 87,975,720	$ 87,975,720	$ -	$ -	$ 4,847,462	$ -	$ 4,847,462
2102	$ -	$ 90,834,931	$ 90,834,931	$ -	$ -	$ 5,005,005	$ -	$ 5,005,005
2103	$ -	$ 93,787,066	$ 93,787,066	$ -	$ -	$ 5,167,667	$ -	$ 5,167,667
2104	$ -	$ 96,835,145	$ 96,835,145	$ -	$ -	$ 5,335,617	$ -	$ 5,335,617
2105	$ -	$ 99,982,288	$ 99,982,288	$ -	$ -	$ 5,509,024	$ -	$ 5,509,024
2106	$ -	$ 103,231,712	$ 103,231,712	$ -	$ -	$ 5,688,067	$ -	$ 5,688,067
2107	$ -	$ 106,586,743	$ 106,586,743	$ -	$ -	$ 5,872,930	$ -	$ 5,872,930
2108	$ -	$ 110,050,812	$ 110,050,812	$ -	$ -	$ 6,063,800	$ -	$ 6,063,800
2109	$ -	$ 113,627,463	$ 113,627,463	$ -	$ -	$ 6,260,873	$ -	$ 6,260,873
2110	$ -	$ 117,320,356	$ 117,320,356	$ -	$ -	$ 6,464,352	$ -	$ 6,464,352
2111	$ -	$ 121,133,267	$ 121,133,267	$ -	$ -	$ 6,674,443	$ -	$ 6,674,443
2112	$ -	$ 125,070,098	$ 125,070,098	$ -	$ -	$ 6,891,362	$ -	$ 6,891,362
2113	$ -	$ 129,134,877	$ 129,134,877	$ -	$ -	$ 7,115,332	$ -	$ 7,115,332
2114	$ -	$ 133,331,760	$ 133,331,760	$ -	$ -	$ 7,346,580	$ -	$ 7,346,580
2115	$ -	$ 137,665,042	$ 137,665,042	$ -	$ -	$ 7,585,344	$ -	$ 7,585,344
2116	$ -	$ 142,139,156	$ 142,139,156	$ -	$ -	$ 7,831,868	$ -	$ 7,831,868
2117	$ -	$ 146,758,679	$ 146,758,679	$ -	$ -	$ 8,086,403	$ -	$ 8,086,403

* *Contributions related to future employee payroll in excess of normal cost and expenses of 8.49% 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	$ 20,100,579	$ 903,195	$ 1,527,853	$ 11,756	$ 1,484,109	$ 20,948,274
2019	$ 20,948,274	$ 884,536	$ 1,595,336	$ 11,090	$ 1,544,539	$ 21,770,923
2020	$ 21,770,923	$ 869,930	$ 1,663,215	$ 10,507	$ 1,603,222	$ 22,570,353
2021	$ 22,570,353	$ 859,810	$ 1,727,985	$ 10,016	$ 1,660,440	$ 23,352,602
2022	$ 23,352,602	$ 851,656	$ 1,796,466	$ 9,561	$ 1,716,303	$ 24,114,534
2023	$ 24,114,534	$ 844,984	$ 1,872,250	$ 9,130	$ 1,770,428	$ 24,848,566
2024	$ 24,848,566	$ 839,687	$ 1,948,808	$ 8,720	$ 1,822,482	$ 25,553,207
2025	$ 25,553,207	$ 835,903	$ 2,023,884	$ 8,335	$ 1,872,440	$ 26,229,331
2026	$ 26,229,331	$ 833,572	$ 2,094,880	$ 7,973	$ 1,920,462	$ 26,880,512
2027	$ 26,880,512	$ 832,503	$ 2,162,613	$ 7,629	$ 1,966,780	$ 27,509,553
2028	$ 27,509,553	$ 832,540	$ 2,228,224	$ 7,299	$ 2,011,556	$ 28,118,126
2029	$ 28,118,126	$ 833,641	$ 2,290,228	$ 6,982	$ 2,054,968	$ 28,709,525
2030	$ 28,709,525	$ 835,801	$ 2,348,693	$ 6,678	$ 2,097,261	$ 29,287,216
2031	$ 29,287,216	$ 838,934	$ 2,404,839	$ 6,384	$ 2,138,647	$ 29,853,574
2032	$ 29,853,574	$ 805,936	$ 2,458,415	$ 6,098	$ 2,177,946	$ 30,372,943
2033	$ 30,372,943	$ 810,679	$ 2,510,080	$ 5,816	$ 2,215,181	$ 30,882,907
2034	$ 30,882,907	$ 816,197	$ 2,559,556	$ 5,539	$ 2,251,820	$ 31,385,829
2035	$ 31,385,829	$ 822,588	$ 2,606,601	$ 5,268	$ 2,288,052	$ 31,884,600
2036	$ 31,884,600	$ 829,830	$ 2,651,781	$ 5,003	$ 2,324,073	$ 32,381,719
2037	$ 32,381,719	$ 837,831	$ 2,694,296	$ 4,741	$ 2,360,096	$ 32,880,609
2038	$ 32,880,609	$ 846,639	$ 2,732,643	$ 4,483	$ 2,396,434	$ 33,386,556
2039	$ 33,386,556	$ 856,225	$ 2,766,324	$ 4,228	$ 2,433,502	$ 33,905,731
2040	$ 33,905,731	$ 866,528	$ 2,797,101	$ 3,973	$ 2,471,696	$ 34,442,881
2041	$ 34,442,881	$ 877,501	$ 2,824,900	$ 3,717	$ 2,511,372	$ 35,003,137
2042	$ 35,003,137	$ 889,163	$ 2,850,440	$ 3,461	$ 2,552,890	$ 35,591,289
2043	$ 35,591,289	$ 901,689	$ 2,872,421	$ 3,207	$ 2,596,662	$ 36,214,012
2044	$ 36,214,012	$ 915,216	$ 2,890,666	$ 2,958	$ 2,643,202	$ 36,878,806
2045	$ 36,878,806	$ 929,720	$ 2,928,295	$ 2,713	$ 2,692,219	$ 37,569,737
2046	$ 37,569,737	$ 945,184	$ 2,982,023	$ 2,471	$ 2,742,639	$ 38,273,066
2047	$ 38,273,066	$ 961,706	$ 3,032,184	$ 2,234	$ 2,794,159	$ 38,994,513
2048	$ 38,994,513	$ 979,362	$ 3,078,438	$ 2,002	$ 2,847,223	$ 39,740,658
2049	$ 39,740,658	$ 998,273	$ 3,120,746	$ 1,778	$ 2,902,330	$ 40,518,737
2050	$ 40,518,737	$ 1,018,585	$ 3,156,647	$ 1,564	$ 2,960,120	$ 41,339,231
2051	$ 41,339,231	$ 1,040,354	$ 3,187,338	$ 1,362	$ 3,021,336	$ 42,212,221
2052	$ 42,212,221	$ 1,063,662	$ 3,212,869	$ 1,171	$ 3,086,735	$ 43,148,578
2053	$ 43,148,578	$ 1,088,602	$ 3,232,287	$ 993	$ 3,157,172	$ 44,161,072
2054	$ 44,161,072	$ 1,115,275	$ 3,244,431	$ 831	$ 3,233,650	$ 45,264,735
2055	$ 45,264,735	$ 1,143,820	$ 3,248,944	$ 685	$ 3,317,315	$ 46,476,241
2056	$ 46,476,241	$ 1,174,217	$ 3,245,847	$ 556	$ 3,409,416	$ 47,813,471
2057	$ 47,813,471	$ 1,206,471	$ 3,235,093	$ 442	$ 3,511,296	$ 49,295,703
2058	$ 49,295,703	$ 1,240,672	$ 3,215,835	$ 344	$ 3,624,436	$ 50,944,632
2059	$ 50,944,632	$ 1,276,848	$ 3,187,379	$ 262	$ 3,750,488	$ 52,784,327
2060	$ 52,784,327	$ 1,314,975	$ 3,149,600	$ 196	$ 3,891,263	$ 54,840,769
2061	$ 54,840,769	$ 1,355,038	$ 3,102,138	$ 142	$ 4,048,721	$ 57,142,248
2062	$ 57,142,248	$ 1,396,987	$ 3,046,046	$ 100	$ 4,224,944	$ 59,718,033
2063	$ 59,718,033	$ 1,440,775	$ 2,982,999	$ 67	$ 4,422,063	$ 62,597,805
2064	$ 62,597,805	$ 1,486,404	$ 2,913,721	$ 42	$ 4,642,277	$ 65,812,723
2065	$ 65,812,723	$ 1,533,870	$ 2,838,696	$ 25	$ 4,887,907	$ 69,395,779
2066	$ 69,395,779	$ 1,583,188	$ 2,758,782	$ 14	$ 5,161,396	$ 73,381,567
2067	$ 73,381,567	$ 1,634,327	$ 2,675,015	$ 7	$ 5,465,297	$ 77,806,169

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)
2068	$ 77,806,169	$ 1,687,256	$ 2,588,175	$ 3	$ 5,802,289	$ 82,707,536
2069	$ 82,707,536	$ 1,741,991	$ 2,498,609	$ 1	$ 6,175,205	$ 88,126,122
2070	$ 88,126,122	$ 1,798,566	$ 2,406,545	$ -	$ 6,587,073	$ 94,105,216
2071	$ 94,105,216	$ 1,857,008	$ 2,312,304	$ -	$ 7,041,127	$ 100,691,047
2072	$ 100,691,047	$ 1,917,357	$ 2,216,116	$ -	$ 7,540,828	$ 107,933,116
2073	$ 107,933,116	$ 1,979,670	$ 2,118,119	$ -	$ 8,089,886	$ 115,884,553
2074	$ 115,884,553	$ 2,044,009	$ 2,018,467	$ -	$ 8,692,282	$ 124,602,377
2075	$ 124,602,377	$ 2,110,439	$ 1,917,341	$ -	$ 9,352,289	$ 134,147,764
2076	$ 134,147,764	$ 2,179,029	$ 1,814,966	$ -	$ 10,074,488	$ 144,586,315
2077	$ 144,586,315	$ 2,249,847	$ 1,711,615	$ -	$ 10,863,793	$ 155,988,340
2078	$ 155,988,340	$ 2,322,967	$ 1,607,613	$ -	$ 11,725,467	$ 168,429,161
2079	$ 168,429,161	$ 2,398,463	$ 1,503,340	$ -	$ 12,665,148	$ 181,989,432
2080	$ 181,989,432	$ 2,476,413	$ 1,399,233	$ -	$ 13,688,872	$ 196,755,484
2081	$ 196,755,484	$ 2,556,897	$ 1,295,779	$ -	$ 14,803,098	$ 212,819,700
2082	$ 212,819,700	$ 2,639,996	$ 1,193,503	$ -	$ 16,014,741	$ 230,280,934
2083	$ 230,280,934	$ 2,725,796	$ 1,092,959	$ -	$ 17,331,195	$ 249,244,966
2084	$ 249,244,966	$ 2,814,384	$ 994,718	$ -	$ 18,760,376	$ 269,825,008
2085	$ 269,825,008	$ 2,905,852	$ 899,354	$ -	$ 20,310,759	$ 292,142,265
2086	$ 292,142,265	$ 3,000,292	$ 807,434	$ -	$ 21,991,416	$ 316,326,539
2087	$ 316,326,539	$ 3,097,801	$ 719,492	$ -	$ 23,812,065	$ 342,516,913
2088	$ 342,516,913	$ 3,198,480	$ 636,019	$ -	$ 25,783,124	$ 370,862,498
2089	$ 370,862,498	$ 3,302,431	$ 557,448	$ -	$ 27,915,763	$ 401,523,244
2090	$ 401,523,244	$ 3,409,760	$ 484,150	$ -	$ 30,221,970	$ 434,670,824
2091	$ 434,670,824	$ 3,520,577	$ 416,424	$ -	$ 32,714,613	$ 470,489,590
2092	$ 470,489,590	$ 3,634,996	$ 354,488	$ -	$ 35,407,514	$ 509,177,612
2093	$ 509,177,612	$ 3,753,133	$ 298,469	$ -	$ 38,315,529	$ 550,947,805
2094	$ 550,947,805	$ 3,875,110	$ 248,395	$ -	$ 41,454,629	$ 596,029,149
2095	$ 596,029,149	$ 4,001,051	$ 204,191	$ -	$ 44,841,994	$ 644,668,003
2096	$ 644,668,003	$ 4,131,085	$ 165,685	$ -	$ 48,496,115	$ 697,129,518
2097	$ 697,129,518	$ 4,265,345	$ 132,610	$ -	$ 52,436,890	$ 753,699,143
2098	$ 753,699,143	$ 4,403,969	$ 104,619	$ -	$ 56,685,747	$ 814,684,240
2099	$ 814,684,240	$ 4,547,098	$ 81,299	$ -	$ 61,265,758	$ 880,415,797
2100	$ 880,415,797	$ 4,694,879	$ 62,185	$ -	$ 66,201,770	$ 951,250,261
2101	$ 951,250,261	$ 4,847,462	$ 46,786	$ -	$ 71,520,541	$ 1,027,571,478
2102	$ 1,027,571,478	$ 5,005,005	$ 34,602	$ -	$ 77,250,881	$ 1,109,792,762
2103	$ 1,109,792,762	$ 5,167,667	$ 25,143	$ -	$ 83,423,816	$ 1,198,359,102
2104	$ 1,198,359,102	$ 5,335,617	$ 17,941	$ -	$ 90,072,741	$ 1,293,749,519
2105	$ 1,293,749,519	$ 5,509,024	$ 12,567	$ -	$ 97,233,605	$ 1,396,479,581
2106	$ 1,396,479,581	$ 5,688,067	$ 8,640	$ -	$ 104,945,097	$ 1,507,104,105
2107	$ 1,507,104,105	$ 5,872,930	$ 5,833	$ -	$ 113,248,846	$ 1,626,220,048
2108	$ 1,626,220,048	$ 6,063,800	$ 3,869	$ -	$ 122,189,643	$ 1,754,469,622
2109	$ 1,754,469,622	$ 6,260,873	$ 2,524	$ -	$ 131,815,667	$ 1,892,543,638
2110	$ 1,892,543,638	$ 6,464,352	$ 1,623	$ -	$ 142,178,744	$ 2,041,185,111
2111	$ 2,041,185,111	$ 6,674,443	$ 1,032	$ -	$ 153,334,612	$ 2,201,193,134
2112	$ 2,201,193,134	$ 6,891,362	$ 651	$ -	$ 165,343,215	$ 2,373,427,060
2113	$ 2,373,427,060	$ 7,115,332	$ 410	$ -	$ 178,269,016	$ 2,558,810,998
2114	$ 2,558,810,998	$ 7,346,580	$ 259	$ -	$ 192,181,331	$ 2,758,338,650
2115	$ 2,758,338,650	$ 7,585,344	$ 166	$ -	$ 207,154,701	$ 2,973,078,529
2116	$ 2,973,078,529	$ 7,831,868	$ 108	$ -	$ 223,269,271	$ 3,204,179,560
2117	$ 3,204,179,560	$ 8,086,403	$ 85	$ -	$ 240,611,222	$ 3,452,877,100

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 Benefit Payments (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	$ 20,100,579	$ 1,527,853	$ 1,527,853	$ -	$ 1,473,592	$ -	$ 1,473,592
2019	$ 20,948,276	$ 1,595,336	$ 1,595,336	$ -	$ 1,431,329	$ -	$ 1,431,329
2020	$ 21,770,925	$ 1,663,215	$ 1,663,215	$ -	$ 1,388,120	$ -	$ 1,388,120
2021	$ 22,570,356	$ 1,727,985	$ 1,727,985	$ -	$ 1,341,561	$ -	$ 1,341,561
2022	$ 23,352,605	$ 1,796,466	$ 1,796,466	$ -	$ 1,297,421	$ -	$ 1,297,421
2023	$ 24,114,538	$ 1,872,250	$ 1,872,250	$ -	$ 1,257,816	$ -	$ 1,257,816
2024	$ 24,848,570	$ 1,948,808	$ 1,948,808	$ -	$ 1,217,907	$ -	$ 1,217,907
2025	$ 25,553,211	$ 2,023,884	$ 2,023,884	$ -	$ 1,176,582	$ -	$ 1,176,582
2026	$ 26,229,334	$ 2,094,880	$ 2,094,880	$ -	$ 1,132,888	$ -	$ 1,132,888
2027	$ 26,880,516	$ 2,162,613	$ 2,162,613	$ -	$ 1,087,924	$ -	$ 1,087,924
2028	$ 27,509,557	$ 2,228,224	$ 2,228,224	$ -	$ 1,042,726	$ -	$ 1,042,726
2029	$ 28,118,130	$ 2,290,228	$ 2,290,228	$ -	$ 996,969	$ -	$ 996,969
2030	$ 28,709,529	$ 2,348,693	$ 2,348,693	$ -	$ 951,087	$ -	$ 951,087
2031	$ 29,287,220	$ 2,404,839	$ 2,404,839	$ -	$ 905,882	$ -	$ 905,882
2032	$ 29,853,577	$ 2,458,415	$ 2,458,415	$ -	$ 861,455	$ -	$ 861,455
2033	$ 30,372,946	$ 2,510,080	$ 2,510,080	$ -	$ 818,194	$ -	$ 818,194
2034	$ 30,882,911	$ 2,559,556	$ 2,559,556	$ -	$ 776,113	$ -	$ 776,113
2035	$ 31,385,833	$ 2,606,601	$ 2,606,601	$ -	$ 735,235	$ -	$ 735,235
2036	$ 31,884,605	$ 2,651,781	$ 2,651,781	$ -	$ 695,795	$ -	$ 695,795
2037	$ 32,381,724	$ 2,694,296	$ 2,694,296	$ -	$ 657,628	$ -	$ 657,628
2038	$ 32,880,613	$ 2,732,643	$ 2,732,643	$ -	$ 620,454	$ -	$ 620,454
2039	$ 33,386,559	$ 2,766,324	$ 2,766,324	$ -	$ 584,280	$ -	$ 584,280
2040	$ 33,905,735	$ 2,797,101	$ 2,797,101	$ -	$ 549,563	$ -	$ 549,563
2041	$ 34,442,884	$ 2,824,900	$ 2,824,900	$ -	$ 516,302	$ -	$ 516,302
2042	$ 35,003,140	$ 2,850,440	$ 2,850,440	$ -	$ 484,624	$ -	$ 484,624
2043	$ 35,591,292	$ 2,872,421	$ 2,872,421	$ -	$ 454,289	$ -	$ 454,289
2044	$ 36,214,015	$ 2,890,666	$ 2,890,666	$ -	$ 425,279	$ -	$ 425,279
2045	$ 36,878,809	$ 2,928,295	$ 2,928,295	$ -	$ 400,758	$ -	$ 400,758
2046	$ 37,569,740	$ 2,982,023	$ 2,982,023	$ -	$ 379,638	$ -	$ 379,638
2047	$ 38,273,069	$ 3,032,184	$ 3,032,184	$ -	$ 359,092	$ -	$ 359,092
2048	$ 38,994,516	$ 3,078,438	$ 3,078,438	$ -	$ 339,135	$ -	$ 339,135
2049	$ 39,740,661	$ 3,120,746	$ 3,120,746	$ -	$ 319,810	$ -	$ 319,810
2050	$ 40,518,739	$ 3,156,647	$ 3,156,647	$ -	$ 300,920	$ -	$ 300,920
2051	$ 41,339,234	$ 3,187,338	$ 3,187,338	$ -	$ 282,647	$ -	$ 282,647
2052	$ 42,212,224	$ 3,212,869	$ 3,212,869	$ -	$ 265,034	$ -	$ 265,034
2053	$ 43,148,582	$ 3,232,287	$ 3,232,287	$ -	$ 248,033	$ -	$ 248,033
2054	$ 44,161,076	$ 3,244,431	$ 3,244,431	$ -	$ 231,595	$ -	$ 231,595
2055	$ 45,264,740	$ 3,248,944	$ 3,248,944	$ -	$ 215,737	$ -	$ 215,737
2056	$ 46,476,245	$ 3,245,847	$ 3,245,847	$ -	$ 200,494	$ -	$ 200,494
2057	$ 47,813,476	$ 3,235,093	$ 3,235,093	$ -	$ 185,888	$ -	$ 185,888
2058	$ 49,295,708	$ 3,215,835	$ 3,215,835	$ -	$ 171,890	$ -	$ 171,890
2059	$ 50,944,638	$ 3,187,379	$ 3,187,379	$ -	$ 158,483	$ -	$ 158,483
2060	$ 52,784,332	$ 3,149,600	$ 3,149,600	$ -	$ 145,679	$ -	$ 145,679
2061	$ 54,840,775	$ 3,102,138	$ 3,102,138	$ -	$ 133,473	$ -	$ 133,473
2062	$ 57,142,254	$ 3,046,046	$ 3,046,046	$ -	$ 121,916	$ -	$ 121,916
2063	$ 59,718,038	$ 2,982,999	$ 2,982,999	$ -	$ 111,063	$ -	$ 111,063
2064	$ 62,597,810	$ 2,913,721	$ 2,913,721	$ -	$ 100,915	$ -	$ 100,915
2065	$ 65,812,728	$ 2,838,696	$ 2,838,696	$ -	$ 91,457	$ -	$ 91,457
2066	$ 69,395,784	$ 2,758,782	$ 2,758,782	$ -	$ 82,681	$ -	$ 82,681
2067	$ 73,381,572	$ 2,675,015	$ 2,675,015	$ -	$ 74,577	$ -	$ 74,577

Single Discount Rate Development
Present Values of Projected Benefit Payments
(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	$ 77,806,175	$ 2,588,175	$ 2,588,175	$ -	$ 67,122	$ -	$ 67,122
2069	$ 82,707,542	$ 2,498,609	$ 2,498,609	$ -	$ 60,278	$ -	$ 60,278
2070	$ 88,126,128	$ 2,406,545	$ 2,406,545	$ -	$ 54,007	$ -	$ 54,007
2071	$ 94,105,221	$ 2,312,304	$ 2,312,304	$ -	$ 48,272	$ -	$ 48,272
2072	$ 100,691,051	$ 2,216,116	$ 2,216,116	$ -	$ 43,036	$ -	$ 43,036
2073	$ 107,933,120	$ 2,118,119	$ 2,118,119	$ -	$ 38,263	$ -	$ 38,263
2074	$ 115,884,557	$ 2,018,467	$ 2,018,467	$ -	$ 33,919	$ -	$ 33,919
2075	$ 124,602,381	$ 1,917,341	$ 1,917,341	$ -	$ 29,972	$ -	$ 29,972
2076	$ 134,147,768	$ 1,814,966	$ 1,814,966	$ -	$ 26,392	$ -	$ 26,392
2077	$ 144,586,318	$ 1,711,615	$ 1,711,615	$ -	$ 23,153	$ -	$ 23,153
2078	$ 155,988,343	$ 1,607,613	$ 1,607,613	$ -	$ 20,229	$ -	$ 20,229
2079	$ 168,429,163	$ 1,503,340	$ 1,503,340	$ -	$ 17,597	$ -	$ 17,597
2080	$ 181,989,434	$ 1,399,233	$ 1,399,233	$ -	$ 15,236	$ -	$ 15,236
2081	$ 196,755,486	$ 1,295,779	$ 1,295,779	$ -	$ 13,125	$ -	$ 13,125
2082	$ 212,819,702	$ 1,193,503	$ 1,193,503	$ -	$ 11,245	$ -	$ 11,245
2083	$ 230,280,935	$ 1,092,959	$ 1,092,959	$ -	$ 9,580	$ -	$ 9,580
2084	$ 249,244,967	$ 994,718	$ 994,718	$ -	$ 8,110	$ -	$ 8,110
2085	$ 269,825,010	$ 899,354	$ 899,354	$ -	$ 6,821	$ -	$ 6,821
2086	$ 292,142,267	$ 807,434	$ 807,434	$ -	$ 5,697	$ -	$ 5,697
2087	$ 316,326,541	$ 719,492	$ 719,492	$ -	$ 4,722	$ -	$ 4,722
2088	$ 342,516,915	$ 636,019	$ 636,019	$ -	$ 3,883	$ -	$ 3,883
2089	$ 370,862,499	$ 557,448	$ 557,448	$ -	$ 3,166	$ -	$ 3,166
2090	$ 401,523,245	$ 484,150	$ 484,150	$ -	$ 2,558	$ -	$ 2,558
2091	$ 434,670,825	$ 416,424	$ 416,424	$ -	$ 2,047	$ -	$ 2,047
2092	$ 470,489,592	$ 354,488	$ 354,488	$ -	$ 1,621	$ -	$ 1,621
2093	$ 509,177,613	$ 298,469	$ 298,469	$ -	$ 1,269	$ -	$ 1,269
2094	$ 550,947,806	$ 248,395	$ 248,395	$ -	$ 983	$ -	$ 983
2095	$ 596,029,150	$ 204,191	$ 204,191	$ -	$ 751	$ -	$ 751
2096	$ 644,668,004	$ 165,685	$ 165,685	$ -	$ 567	$ -	$ 567
2097	$ 697,129,519	$ 132,610	$ 132,610	$ -	$ 422	$ -	$ 422
2098	$ 753,699,144	$ 104,619	$ 104,619	$ -	$ 310	$ -	$ 310
2099	$ 814,684,241	$ 81,299	$ 81,299	$ -	$ 224	$ -	$ 224
2100	$ 880,415,798	$ 62,185	$ 62,185	$ -	$ 159	$ -	$ 159
2101	$ 951,250,262	$ 46,786	$ 46,786	$ -	$ 112	$ -	$ 112
2102	$ 1,027,571,479	$ 34,602	$ 34,602	$ -	$ 77	$ -	$ 77
2103	$ 1,109,792,763	$ 25,143	$ 25,143	$ -	$ 52	$ -	$ 52
2104	$ 1,198,359,103	$ 17,941	$ 17,941	$ -	$ 34	$ -	$ 34
2105	$ 1,293,749,519	$ 12,567	$ 12,567	$ -	$ 22	$ -	$ 22
2106	$ 1,396,479,581	$ 8,640	$ 8,640	$ -	$ 14	$ -	$ 14
2107	$ 1,507,104,104	$ 5,833	$ 5,833	$ -	$ 9	$ -	$ 9
2108	$ 1,626,220,048	$ 3,869	$ 3,869	$ -	$ 6	$ -	$ 6
2109	$ 1,754,469,622	$ 2,524	$ 2,524	$ -	$ 3	$ -	$ 3
2110	$ 1,892,543,638	$ 1,623	$ 1,623	$ -	$ 2	$ -	$ 2
2111	$ 2,041,185,110	$ 1,032	$ 1,032	$ -	$ 1	$ -	$ 1
2112	$ 2,201,193,133	$ 651	$ 651	$ -	$ 1	$ -	$ 1
2113	$ 2,373,427,059	$ 410	$ 410	$ -	$ -	$ -	$ -
2114	$ 2,558,810,996	$ 259	$ 259	$ -	$ -	$ -	$ -
2115	$ 2,758,338,649	$ 166	$ 166	$ -	$ -	$ -	$ -
2116	$ 2,973,078,527	$ 108	$ 108	$ -	$ -	$ -	$ -
2117	$ 3,204,179,557	$ 85	$ 85	$ -	$ -	$ -	$ -
				Totals	$ 30,356,999	$ -	$ 30,356,999

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 payments at predetermined rates of interest and 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.
Actuarial Valuation Date	The date as of which an actuarial valuation is performed.
Actuarially Determined Contribution (ADC) or Annual Required Contribution (ARC)	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 and does not include pay above any pay cap.
Deferred Inflows and Outflows	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	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.

Glossary of Terms

Entry Age Actuarial Cost Method (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 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.
GASB	The Governmental Accounting Standards Board is an organization that exists in order to promulgate accounting standards for 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 Statement 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.

Glossary of Terms

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 post-employment 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.
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 Benefit Changes 4. Employee Contributions (made negative for addition here) 5. Projected Earnings on Plan Investments (made negative for addition here) 6. Pension Plan Administrative Expense 7. Other Changes in Plan Fiduciary Net Position 8. Recognition of Outflow (Inflow) of Resources due to Liabilities 9. Recognition of Outflow (Inflow) of Resources due to Assets
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 assets used in determining the unfunded liability of the plan. For purposes of the GASB Statement No. 67, the valuation asset is equal to the market value of assets.