

City of Grand Rapids General Retirement System

GASB Statement Nos. 67 and 68 Accounting and
Financial Reporting for Pensions
June 30, 2018



October 16, 2018

Mr. Jeff Dood, Chief Financial Officer
Board of Trustees
City of Grand Rapids General
Retirement System
Grand Rapids, Michigan

Dear Mr. Dood:

This report provides accounting and financial reporting information that is intended to comply with the Governmental Accounting Standards Board (GASB) Statement Nos. 67 and 68 for the City of Grand Rapids General Retirement System. These calculations have been made on a basis that is consistent with our understanding of these Statements.

GASB Statement No. 67 is the accounting standard that applies to the stand-alone 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.

This report was prepared at the request of the City and is intended for use by the Retirement System and those designated or approved by the City. This report may be provided to parties other than the System only in its entirety and only with the permission of the City. GRS is not responsible for unauthorized use of this report.

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 Statement Nos. 67 and 68. The calculation of the plan's liability for this report is not applicable for funding purposes of the plan. A calculation of the plan's liability for purposes other than satisfying the requirements of GASB Statement No. 67 may produce significantly different results.

The valuation was based upon information furnished by the City and Plan Administrator, concerning Retirement System benefits, financial transactions, plan provisions, and active members, terminated members, retirees and beneficiaries. We checked for internal reasonability and year-to-year consistency, but did not audit the data. We are not responsible for the accuracy or completeness of the information provided by the City.

Mr. Jeff Dood
City of Grand Rapids General
Retirement System
October 16, 2018
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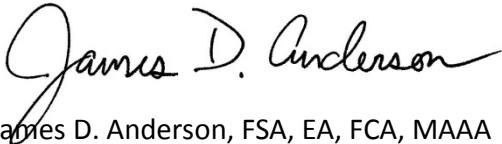
This report complements the actuarial valuation report that was provided to the Board and should be considered in conjunction with that report. Please see the actuarial valuation report as of June 30, 2018 for additional discussion of the nature of actuarial calculations and more information related 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 City of Grand Rapids General Retirement System. 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.

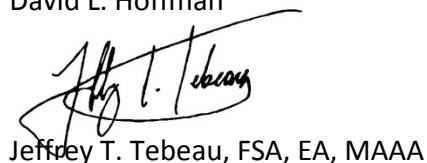
The signing individuals are independent of the plan sponsor.

James D. Anderson and Jeffrey T. Tebeau 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,


James D. Anderson, FSA, EA, FCA, MAAA


David L. Hoffman


Jeffrey T. Tebeau, FSA, EA, MAAA

JDA/DLH/JTT:dj

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SECTION A

EXECUTIVE SUMMARY

Executive Summary

Actuarial Valuation Date	June 30, 2018
Measurement Date of the Net Pension Liability	June 30, 2018
Employer's Fiscal Year Ending Date (Reporting Date)	June 30, 2019

Membership

Number of	
- Retirees and Beneficiaries	1,189
- Inactive, Nonretired Members	108
- Active Members	479
- Total	1,776
Covered Payroll ⁽¹⁾	\$ 30,949,968

Net Pension Liability

Total Pension Liability	\$ 526,954,073
Plan Fiduciary Net Position	416,899,911
Net Pension Liability	\$ 110,054,162
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	79.12%
Net Pension Liability as a Percentage of Covered Payroll	355.59%

Development of the Single Discount Rate

Single Discount Rate	7.15%
Long-Term Expected Rate of Investment Return	7.15%
Long-Term Municipal Bond Rate ⁽²⁾	3.62%
Year when the Plan Fiduciary Net Position is projected to no longer be sufficient to make Projected Benefit Payments	N/A

Total Pension Expense	\$ 20,154,669
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Deferred Outflows of Resources and Deferred Inflows of Resources

	Deferred Outflows of Resources	Deferred Inflows of Resources
Difference between expected and actual experience	\$ 205,224	\$ 1,679,215
Changes in assumptions	3,128,174	427,195
Net difference between projected and actual earnings on pension plan investments	15,494,743	6,656,559
Total	\$ 18,828,141	\$ 8,762,969

⁽¹⁾ The amount provided represents the annual pays for members active on the valuation date and does not necessarily represent Covered Payroll as defined in GASB Statements No. 67 and 68.

⁽²⁾ 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, 2018. 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.

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 the System subsequent to the measurement date of June 30, 2018.

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.

GASB Statement Nos. 67 and 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 and the net 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 GASB Statement No. 67. This information includes:

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

Required Supplementary Information

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 payroll; and
- a comparison of the actual employer contributions to the actuarially determined contributions based on the plan's funding policy.

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 7.15% on the actuarial value of assets), then the following outcomes are expected:

1. The employer normal cost as a percentage of pay is expected to remain level as a percentage of payroll.
2. The unfunded liability is expected to be paid off in 30 years, which is the number of years remaining in the closed amortization schedule of the unfunded liability.
3. The funded status of the plan is expected to reach a 100% funded ratio in 30 years, which is the number of years remaining in the closed amortization schedule of the unfunded liability.

This funding policy results in the expectation that the plan's assets will be able to fully pay for promised benefits through at least 2118. 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.

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, 2018 and a measurement date of June 30, 2018.

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 7.15%; the municipal bond rate is 3.62% (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 7.15%.

SECTION B

FINANCIAL STATEMENTS

Statement of Pension Expense Under GASB Statement No. 68

Measurement Date – June 30, 2018

Reporting Date – June 30, 2019

A. Expense

1. Service Cost	\$ 5,016,826
2. Interest on the Total Pension Liability	36,420,065
3. Current Period Benefit Changes	0
4. Employee Contributions (made negative for addition here)	(2,832,479)
5. Projected Earnings on Plan Investments (made negative for addition here)	(28,887,313)
6. Pension Plan Administrative Expense	556,142
7. Other Changes in Plan Fiduciary Net Position	-
8. Recognition of Outflow (Inflow) of Resources due to Liabilities	9,855,234
9. Recognition of Outflow (Inflow) of Resources due to Assets	26,194
10. Total Pension Expense	\$ 20,154,669

Statement of Outflows and Inflows Arising from the Current Reporting Period

Measurement Date – June 30, 2018

Reporting Date – June 30, 2019

A. Outflows (Inflows) of Resources due to Liabilities

1. Difference between expected and actual experience of the Total Pension Liability (gains) or losses	\$ (2,335,969)
2. Assumption Changes (gains) or losses	\$ 5,213,623
3. Recognition period for Liabilities: Average of the expected remaining service lives of all employees {in years}	2.5
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	\$ (934,388)
5. Outflow (Inflow) of Resources to be recognized in the current pension expense for Assumption Changes	\$ 2,085,449
6. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Liabilities	<u>\$ 1,151,062</u>
7. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses for the difference between expected and actual experience of the Total Pension Liability	\$ (1,401,581)
8. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses for Assumption Changes	\$ 3,128,174
9. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Liabilities	<u>\$ 1,726,593</u>

B. Outflows (Inflows) of Resources due to Assets

1. Net difference between projected and actual earnings on pension plan investments (gains) or losses	\$ (289,998)
2. Recognition period for Assets {in years}	5.0
3. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Assets	\$ (58,000)
4. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Assets	\$ (231,998)

Statement of Outflows and Inflows Arising from the Current and Prior Reporting Periods Measurement Date – June 30, 2018 Reporting Date – June 30, 2019

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	\$ 11,670,658	\$ 1,815,424	\$ 9,855,234
2. Due to Assets	9,719,468	9,693,274	26,194
3. Total	\$ 21,390,126	\$ 11,508,698	\$ 9,881,428

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	\$ 3,959,953	\$ 1,281,430	\$ 2,678,523
2. Assumption Changes	7,710,705	533,994	7,176,711
3. Net Difference between projected and actual earnings on pension plan investments	9,719,468	9,693,274	26,194
4. Total	\$ 21,390,126	\$ 11,508,698	\$ 9,881,428

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	\$ 205,224	\$ 1,679,215	\$ (1,473,991)
2. Assumption Changes	3,128,174	427,195	2,700,979
3. Net Difference between projected and actual earnings on pension plan investments	15,494,743	6,656,559	8,838,184
4. Total	\$ 18,828,141	\$ 8,762,969	\$ 10,065,172

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

Year Ending June 30	Net Deferred Outflows of Resources
2020	\$ 8,171,406
2021	4,151,285
2022	(2,199,521)
2023	(57,998)
2024	-
Thereafter	-
Total	\$ 10,065,172

Recognition of Deferred Outflows and Inflows of Resources

Measurement Date – June 30, 2018

Reporting Date – June 30, 2019

Year Established	Initial Amount	Initial Recognition Period	Current Year Recognition	Remaining Recognition	Remaining Recognition Period
Deferred Outflow (Inflow) due to Differences Between Expected and Actual Experience on Liabilities					
2015	\$10,083,648	3.7	\$1,907,718	\$ 0	0.0
2016	6,361,929	3.1	2,052,235	205,224	0.1
2017	(971,718)	2.8	(347,042)	(277,634)	0.8
2018	(2,335,969)	2.5	(934,388)	(1,401,581)	1.5
Total			\$2,678,523	\$(1,473,991)	
Deferred Outflow (Inflow) due to Assumption Changes					
2015	\$29,733,502	3.7	\$5,625,256	\$ 0	0.0
2016	0	3.1	0	0	0.1
2017	(1,495,183)	2.8	(533,994)	(427,195)	0.8
2018	5,213,623	2.5	2,085,449	3,128,174	1.5
Total			\$7,176,711	2,700,979	
Deferred Outflow (Inflow) due to Differences Between Projected and Actual Earnings on Plan Investments					
2014	\$(37,468,762)	5.0	\$(7,493,754)	\$ 0	0.0
2015	19,720,977	5.0	3,944,195	3,944,197	1.0
2016	28,876,365	5.0	5,775,273	11,550,546	2.0
2017	(10,707,601)	5.0	(2,141,520)	(6,424,561)	3.0
2018	(289,998)	5.0	(58,000)	(231,998)	4.0
Total			\$ 26,194	\$ 8,838,184	

According to Paragraph 33 of GASB Statement No. 68, *differences between expected and actual experience* and *changes in assumptions* are recognized in pension expense using a systematic and rational method over a closed period equal to the average of the expected remaining service lives of all employees that are provided with pensions through the pension plan (active employees and inactive employees) determined as of the beginning of the measurement period.

At the beginning of the measurement period, the expected remaining service lives of all contributing members was 4,565 years. Additionally, the combined plan membership (active employees and inactive employees) was 1,816. As a result, the average of the expected remaining service lives for purposes of recognizing the applicable deferred outflows and inflows of resources established in the measurement period is 2.5 years.

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

Statement of Fiduciary Net Position as of June 30, 2018

Assets

Cash and Deposits	\$ 3,031,862
Receivables	
Accounts Receivable - Sale of Investments	\$ 2,220,316
Accrued Interest and Other Dividends	486,249
Contributions	989,043
Accounts Receivable - Other	-
Total Receivables	<u>\$ 3,695,608</u>
Investments	
Fixed Income	\$ 102,022,591
Domestic Equities	253,245,258
Real Estate	20,226,797
Other - Private Equity and Commodities	35,646,707
Total Investments	<u>\$ 411,141,353</u>
Total Assets	<u><u>\$ 417,868,823</u></u>

Liabilities

Payables	
Accounts Payable - Purchase of Investments	\$ 627,686
Accrued Expenses	77,962
Accounts Payable - Other	263,264
Total Liabilities	<u>\$ 968,912</u>

Net Position Restricted for Pensions	<u><u>\$ 416,899,911</u></u>
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Statement of Changes in Fiduciary Net Position for Year Ended June 30, 2018

Additions

Contributions	
Employer	\$ 10,673,034
Member	2,832,479
Other	<u>-</u>
Total Contributions	<u>\$ 13,505,513</u>
Investment Income	
Net Appreciation in Fair Value of Investments	\$ 23,732,615
Interest and Dividends	6,490,503
Less Investment Expense	<u>(1,045,807)</u>
Net Investment Income	<u>\$ 29,177,311</u>
Other	<u>\$ -</u>
Total Additions	<u>\$ 42,682,824</u>

Deductions

Benefit Payments and Refunds	\$ 34,395,575
Pension Plan Administrative Expense	556,142
Other	<u>-</u>
Total Deductions	<u>\$ 34,951,717</u>
 Net Increase in Net Position	 \$ 7,731,107

Net Position Restricted for Pensions

Beginning of Year	<u>\$ 409,168,804</u>
End of Year	<u><u>\$ 416,899,911</u></u>

SECTION C

REQUIRED SUPPLEMENTARY INFORMATION

Schedule of Changes in the Net Pension Liability and Related Ratios

Measurement Date – June 30, 2018

A. Total Pension Liability

1. Service Cost	\$ 5,016,826
2. Interest on the Total Pension Liability	36,420,065
3. Changes of benefit terms	0
4. Differences between expected and actual experience of the Total Pension Liability	(2,335,969)
5. Changes of assumptions	5,213,623
6. Benefit payments, including refunds of employee contributions	(34,395,575)
7. Net change in Total Pension Liability	\$ 9,918,970
8. Total Pension Liability – Beginning	517,035,103
9. Total Pension Liability – Ending	<u><u>\$ 526,954,073</u></u>

B. Plan Fiduciary Net Position

1. Contributions – employer	\$ 10,673,034
2. Contributions – employee	2,832,479
3. Net investment income	29,177,311
4. Benefit payments, including refunds of employee contributions	(34,395,575)
5. Pension Plan Administrative Expense	(556,142)
6. Other	-
7. Net change in Plan Fiduciary Net Position	\$ 7,731,107
8. Plan Fiduciary Net Position – Beginning	409,168,804
9. Plan Fiduciary Net Position – Ending	<u><u>\$ 416,899,911</u></u>

C. Net Pension Liability

\$ 110,054,162

D. Plan Fiduciary Net Position as a percentage of the Total Pension Liability

79.12%

E. Covered-employee payroll*

\$ 30,949,968

F. Net Pension Liability as a percentage of covered employee payroll

355.59%

* The amount provided represents the annual pays for members active on the valuation date and does not necessarily represent Covered Payroll as defined in GASB Statements No. 67 and 68.

Schedules of Required Supplementary Information

Schedule of Changes in the Employers' Net Pension Liability and Related Ratios

Measurement Date - June 30,

	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
Total Pension Liability										
Service Cost	\$ 5,016,826	\$ 5,161,510	\$ 5,546,388	\$ 6,348,067	\$ 6,904,650	\$ 7,294,537				
Interest on the Total Pension Liability	36,420,065	36,025,286	35,127,721	33,287,484	33,394,709	32,920,147				
Benefit Changes	-	-	-	20,882	-	-				
Difference between Expected and Actual Experience of the Total Pension Liability	(2,335,969)	(971,718)	6,361,929	10,083,648	(7,420,169)	(6,012,166)				
Assumption Changes	5,213,623	(1,495,183)	-	29,733,502	-	-				
Benefit Payments	(34,286,124)	(31,894,361)	(36,708,883)	(39,570,343)	(28,055,439)	(27,037,516)				
Refunds	(109,451)	(114,697)	(208,843)	(283,087)	(152,273)	(114,916)				
Net Change in Total Pension Liability	9,918,970	6,710,837	10,118,312	39,620,153	4,671,478	7,050,086				
Total Pension Liability - Beginning	\$ 517,035,103	510,324,266	500,205,954	460,585,801	455,914,323	448,864,237				
Total Pension Liability - Ending (a)	\$ 526,954,073	\$ 517,035,103	\$ 510,324,266	\$ 500,205,954	\$ 460,585,801	\$ 455,914,323				
Plan Fiduciary Net Position										
Contributions - Employer	\$ 10,673,034	\$ 10,237,538	\$ 9,295,104	\$ 11,327,704	\$ 8,771,032	\$ 8,135,843				
Contributions - Member	2,832,479	3,012,472	3,428,169	3,473,382	3,737,014	3,933,341				
Pension Plan Net Investment Income	29,177,311	38,296,115	289,104	11,478,680	65,337,996	44,058,818				
Benefit Payments	(34,286,124)	(31,894,361)	(36,708,883)	(39,570,343)	(28,055,439)	(27,037,516)				
Refunds	(109,451)	(114,697)	(208,843)	(283,087)	(152,273)	(114,916)				
Pension Plan Administrative Expense	(556,142)	(558,024)	(568,895)	(567,869)	(523,086)	(476,059)				
Other	-	-	-	-	(21,741)	(15,873)				
Net Change in Plan Fiduciary Net Position	7,731,107	18,979,043	(24,474,244)	(14,141,533)	49,093,503	28,483,638				
Plan Fiduciary Net Position - Beginning	409,168,804	390,189,761	414,664,005	428,805,538	379,712,035	351,228,397				
Plan Fiduciary Net Position - Ending (b)	\$ 416,899,911	\$ 409,168,804	\$ 390,189,761	\$ 414,664,005	\$ 428,805,538	\$ 379,712,035				
Net Pension Liability - Ending (a) - (b)	\$ 110,054,162	\$ 107,866,299	\$ 120,134,505	\$ 85,541,949	\$ 31,780,263	76,202,288				
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	79.12 %	79.14 %	76.46 %	82.90 %	93.10 %	83.29 %				
Covered Payroll #	\$ 30,949,968	\$ 33,647,390	\$ 35,760,078	\$ 38,492,586	\$ 40,510,955	\$ 43,783,450				
Net Pension Liability as a Percentage of Covered-Employee Payroll	355.59 %	320.58 %	335.95 %	222.23 %	78.45 %	174.04 %				

Notes to Schedule:

N/A

The amount provided represents the annual pays for members active on the valuation date and does not necessarily represent Covered Payroll as defined in GASB Statements No. 67 and 68.

Schedules of Required Supplementary Information

Schedule of the Employers' Net Pension Liability

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
2013	\$ 455,914,323	\$ 379,712,035	\$ 76,202,288	83.29%	\$ 43,783,450	174.04%
2014	460,585,801	428,805,538	31,780,263	93.10%	40,510,955	78.45%
2015	500,205,954	414,664,005	85,541,949	82.90%	38,492,586	222.23%
2016	510,324,266	390,189,761	120,134,505	76.46%	35,760,078	335.95%
2017	517,035,103	409,168,804	107,866,299	79.14%	33,647,390	320.58%
2018	526,954,073	416,899,911	110,054,162	79.12%	30,949,968	355.59%

[#] The amount provided represents the annual pays for members active on the valuation date and does not necessarily represent Covered Payroll as defined in GASB Statements No. 67 and 68.

Schedule of Contributions

FY Ending June 30,	Actuarially Determined Contribution	Actual Contribution*	Contribution Deficiency (Excess)	Covered Payroll[#]	Actual Contribution as a % of Covered Payroll
2013	\$ 8,135,843	\$ 8,135,843	\$ -	\$ 43,783,450	18.58%
2014	8,771,032	8,771,032	-	40,510,955	21.65%
2015	11,327,704	11,327,704	-	38,492,586	29.43%
2016	9,295,104	9,295,104	-	35,760,078	25.99%
2017	10,237,538	10,237,538	-	33,647,390	30.43%
2018	10,673,034	10,673,034	-	30,949,968	34.48%

^{*} Actual contributions are based on Covered Payroll at the time of the contribution. Since it was reported to the actuary that the City's practice is to contribute the percent-of-payroll employer contribution rate shown in the actuarial valuation report, the annual required contributions shown in the Schedule of Employer Contributions are the actual contributions made by the City in the fiscal year.

[#] The amount provided represents the annual pays for members active on the valuation date and does not necessarily represent Covered Payroll as defined in GASB Statements No. 67 and 68.

Notes to Schedule of Contributions

Valuation Date: June 30, 2018

Notes Actuarially determined contribution rates are calculated as of June 30, which is 1 year prior to the beginning of the fiscal year in which contributions are reported.

Methods and Assumptions used to Determine Contribution Rates for the Fiscal Year Beginning July 1, 2017:

Actuarial Cost Method	Individual Entry Age Normal
Amortization Method	Level Dollar, Closed
Remaining Amortization Period	29 - 30 years
Asset Valuation Method	5-Year Smoothed Market
Inflation	2.50% -- approximate; No explicit price inflation assumption is used in this valuation.
Salary Increases	3.50% to 7.70% including inflation
Investment Rate of Return	7.25%
Retirement Age	Experience-based table of rates that are specific to the type of eligibility condition. Last updated for the 2015 valuation pursuant to an experience study of the period 2010 - 2014.
Mortality	RP-2014 Healthy Annuitant Mortality Table projected to 2019 using MP-2014 mortality improvement scale.

Other Information:

Notes The Total Pension Liability as of June 30, 2018 was calculated using a wage inflation assumption of 3.25%.

SECTION D

NOTES TO FINANCIAL STATEMENTS

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 in which best-estimate ranges of expected future real rates of return (expected returns, net of pension plan investment expense and inflation) are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation.

Based on information provided by the System's Investment Advisor, we used capital market expectations for each major asset class that is included in the plan's current asset allocation as of June 30, 2015; the best estimates for the long-term expected return are summarized in the following table:

Asset Allocation

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return
U.S. Equity	22.50%	6.10%
Non-U.S. Equity	22.50%	6.60%
Core Fixed Income	25.00%	1.90%
U.S. TIPS	10.00%	1.20%
Real Estate	5.00%	5.00%
Private Equity	5.00%	11.30%
Commodities	5.00%	2.70%
MLP	5.00%	8.50%
Cash	0.00%	0.00%
Total	100.00%	
Total Real Rate of Return		4.84%
Plus: Price Inflation - Actuary's Assumption		2.50%
Less: Investment Expenses (Passive)		0.10%
Net Expected Return		7.24%

The arithmetic rates of return were provided by the System's investment consultant along with a 2.5% per year price inflation assumption.

The table above includes expected rates of return on Retirement System assets for a 10-15 year time horizon. The nature of Retirement System obligations is long term and a long term forecast of System investment returns is needed to establish the expected rate of return on System assets. A review of investment return expectations (for a portfolio comparable to the System's) from 8 national investment consulting firms produced forward-looking arithmetic returns varying from 6.46% to 7.63% (with an average return of 7.05%) based on varying time horizons (5-30 years). Forward looking return expectations for longer time periods were not available from all of the 8 consulting firms. Return expectations for longer time periods would likely produce higher average return expectations.

Single Discount Rate

A Single Discount Rate of 7.15% 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 7.15%. The projection of cash flows used to determine this Single Discount Rate assumed that plan member contributions will be made at the current contribution rate and that employer contributions will be made at rates equal to the difference between actuarially determined contribution rates and the member rate. 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 7.15%, as well as what the plan's net pension liability would be if it were calculated using a Single Discount Rate that is one percent lower or one percent higher:

Sensitivity of the Net Pension Liability to the Single Discount Rate Assumption

	1% Decrease 6.15%	Current Single Discount Rate Assumption 7.15%	1% Increase 8.15%
Total Pension Liability	\$ 584,234,459	\$ 526,954,073	\$ 478,473,102
Plan Net Position	416,899,911	416,899,911	416,899,911
Net Pension Liability	\$ 167,334,548	\$ 110,054,162	\$ 61,573,191

Summary of Population Statistics

Inactive Plan Members or Beneficiaries Currently Receiving Benefits	1,189
Inactive Plan Members Entitled to But Not Yet Receiving Benefits	108
Active Plan Members	<u>479</u>
Total Plan Members	1,776

SECTION E

SUMMARY OF BENEFITS

Summary of Benefit Provisions Evaluated (June 30, 2018)

Voluntary Retirement. A member may retire after 30 years of service regardless of age, or after attaining age 62 and completing 8 years of service. Effective January 1, 2001, members covered by the Emergency Communications Operators Bargaining Unit, may retire after attaining age 55 and completing 8 years of service.

Final Average Salary (FAS). The average of member's highest annual salary rates, all before completion of the calendar year in which the member attains 40 years of service or reaches the benefit cap, during the three calendar years of credited service when such salary rates were the highest.

Members of the Crime Scene Technicians group have an additional sum added to their FAS, effective July 1, 2000. The sum is calculated based on an average of the group's additional compensation items during the previous three calendar years and the average of the group's valuation payroll as of June 30 for the five-year period immediately preceding the valuation.

Emergency Communication Operators I, II, and III also have an additional sum added to their FAS, effective July 1, 2005. The sum is calculated based on an average of the group's additional compensation items during the previous five calendar years and the average of the group's valuation payroll as of June 30 for the five-year period immediately preceding the valuation.

Members who retire with 10 or more years of continuous service may use up to two thousand eighty (2,080) hours (1,265 for Crime Scene Technician members) of accumulated sick leave to purchase up to one (1) year of additional credited service, on a pro rata basis.

Full Age and Service Allowance. The members' benefit multipliers, used to compute full age and service allowance, are shown in the tables on the following page.

In lieu of this single life-level amount form of payment, a retiring member may elect from several optional forms of payment, each of which is the actuarial equivalent of this single life-level payment form.

Summary of Benefit Provisions Evaluated (June 30, 2018) (Continued)

Covered Employee Group	Date of Termination	Benefit Multiplier	Allowance Cap [apply as indicated and remain in effect for subsequent termination dates unless otherwise amended]
ECO's I, II and III	January 1, 2002 – March 31, 2012	2.7%	100% applicable to ECO's I, II and III hired on or before May 6, 2002 90% applicable to ECO's I, II, and III hired from May 7, 2002 – January 23, 2012
ECO's I, II and III	April 1, 2012	2.7%, 2.5%, 2.2%, 2.0% or 1.8% for future service from and after April 1, 2012 depending on the individual election made by the employee as provided in Section 1.229(10) Bargaining unit members hired on or after January 24, 2012 do not participate in the Retirement System	
GRPOA-Crime Scene Tech/Latent Print Examiners	July 1, 2002 – July 7, 2012	2.7%	100% applicable to CST's hired prior to January 1, 2002 90% applicable to CST's hired from January 1, 2002 – November 14, 2011
GRPOA-Crime Scene Tech/Latent Print Examiners	July 8, 2012	2.7% or 2.5% or 2.2% or 2.0% or 1.8% for future service from and after July 8, 2012, depending on the individual election made by the employee as provided in Section 1.229(9) Bargaining unit members hired on or after November 15, 2011 do not participate in the Retirement System	100% applicable to CST's hired prior to January 1, 2002 90% applicable to CST's hired from January 1, 2002 – November 14, 2011
APAGR	January 1, 2003 – December 31, 2004	2.6%	97.5% for employees hired prior to January 1, 2005
APAGR	January 1, 2005 – June 11, 2011	2.7%	97.5% for employees hired prior to January 1, 2005 94.5% for employees hired from January 1, 2005 – June 30, 2014
APAGR	June 12, 2011	2.7% or 2.5% or 2.2% for future service from and after June 12, 2011, depending on the individual election made by the employee as provided in Section 1.229(3) 2.0% for members hired or re-entering service on or after June 12, 2011	

Summary of Benefit Provisions Evaluated (June 30, 2018) (Continued)

Covered Employee Group	Date of Termination	Benefit Multiplier	Allowance Cap [apply as indicated and remain in effect for subsequent termination dates unless otherwise amended]
APAGR 61st Dist. Court	January 1, 2003 – December 31, 2004	2.6%	97.5% for employees hired prior to January 1, 2005
APAGR 61st Dist. Court	January 1, 2005 – July 7, 2012	2.7%	97.5% for employees hired prior to January 1, 2005 94.5% for employees hired on or after January 1, 2005 – September 12, 2011
APAGR 61st Dist. Court	July 8, 2012	2.7%, or 2.5%, or 2.2%, or 2.0% or 1.8% for future service from and after July 8, 2012, depending on the individual election made by the employee as provided in Section 1.229(8) Bargaining unit members hired on or after September 13, 2011 do not participate in the Retirement System	
Non-Represented Members as defined in Section 1.192(18.1)	January 1, 2005 – September 4, 2010	2.7%	97.5% for employees hired prior to January 1, 2005 94.5% for employees hired on or after January 1, 2005
Non-Represented Members as defined in Section 1.192(18.1)	September 5, 2010	2.7% or 2.5% or 2.2% for future service from and after September 5, 2010, depending on the individual election made by the employee as provided in Section 1.229(1) 2.0% for non-represented members hired or re-entering service from September 5, 2010 through June 30, 2011 Bargaining unit members hired on or after July 1, 2011 do not participate in the Retirement System	97.5% for employees hired prior to January 1, 2005 94.5% for employees hired from January 1, 2005 – June 30, 2011
61 st District Court Judges	January 1, 2005 – January 8, 2011	2.7%	97.5%

Summary of Benefit Provisions Evaluated (June 30, 2018) (Continued)

Covered Employee Group	Date of Termination	Benefit Multiplier	Allowance Cap [apply as indicated and remain in effect for subsequent termination dates unless otherwise amended]
61 st District Court Judges	January 9, 2011	2.7% or 2.5% or 2.2% for future service from and after January 9, 2011, depending on the individual election made by the employee as provided in Section 1.229(2)	97.5%
Museum Full-Time Supervisory and Administrative Staff and Museum Non-Supervisory Staff	January 1, 2005 – June 30, 2006	2.7%	97.5% for employees hired prior to January 1, 2005 94.5% for employees hired on or after January 1, 2005
Library Management and Confidential Employees	January 1, 2005 – September 4, 2010	2.7%	
EC Supervisors	January 1, 2006 – January 7, 2012	2.7%	90% applicable for all employees entering this unit after July 1, 2004
EC Supervisors	January 8, 2012	2.7%, 2.5%, 2.2%, 2.0% or 1.8% for future service from and after January 8, 2012, depending on the individual election made by the employee as provided in Section 1.229(5) Bargaining unit members hired on or after September 13, 2011 do not participate in the Retirement System	
GREIU	January 1, 2005 – July 7, 2012	2.7%	97.5% for employees hired prior to January 1, 2005 94.5% for employees hired from January 1, 2005 – May 24, 2011
GREIU	July 8, 2012	2.7%, 2.5%, 2.2%, 2.0% or 1.8% for future service from and after July 8, 2012, depending on the individual election made by the employee as provided in Section 1.229(4) Bargaining unit members hired on or after May 25, 2011 do not participate in the Retirement System	

Summary of Benefit Provisions Evaluated (June 30, 2018) (Continued)

Covered Employee Group	Date of Termination	Benefit Multiplier	Allowance Cap [apply as indicated and remain in effect for subsequent termination dates unless otherwise amended]
GREIU - Public Library Rank & File and Supervisory Bargaining Units	January 1, 2006 – July 7, 2012	2.7%	97.5% for employees hired prior to January 1, 2005 94.5% for employees hired from January 1, 2005 – September 1, 2011
GREIU - Public Library Rank & File and Supervisory Bargaining Units	July 8, 2012	2.7%, 2.5%, 2.2%, 2.0% or 1.8% for future service from and after July 8, 2012, depending on the individual election made by the employee as provided in Section 1.229(6) Bargaining unit members hired on or after September 2, 2011 do not participate in the Retirement System	
GREIU - 61st District Court	January 1, 2005 – July 7, 2012	2.7%	97.5% for employees hired prior to January 1, 2005 94.5% for employees hired from January 1, 2005 – September 12, 2011
GREIU - 61st District Court	July 8, 2012	2.7%, 2.5%, 2.2%, 2.0% or 1.8% for future service from and after July 8, 2012, depending on the individual election made by the employee as provided in Section 1.229(7) Bargaining unit members hired on or after September 13, 2011 do not participate in the Retirement System	

Summary of Benefit Provisions Evaluated (June 30, 2018) (Continued)

Early Allowance. If a member leaves covered employment after either (i) completing 20 years of credited service, or (ii) both attaining age 55 and completing 10 years or more of credited service, he can receive an immediate early allowance, computed in the same manner as an age and service allowance based upon salary and service to time of termination but actuarially reduced to reflect the fact that the age when payments begin is younger than age 62.

Deferred Retirement. A member with 8 or more years of credited service who terminates employment before voluntary retirement age and does not withdraw accumulated contributions will be eligible for a deferred allowance beginning at age 62, based upon service and final average salary at time of termination.

Death Benefit. If the member's termination of employment is because of death, a benefit equal to the termination benefit is payable to a beneficiary or estate, as follows:

A refund of accumulated contributions. In addition, a "termination bonus" equivalent to a certain percent of member contributions without interest may be payable. Such percent is 25%, plus 7.5% for each whole year of credited service in excess of 10 years, to a maximum of 100% for 20 or more years of service, times an age-based Termination Bonus Percent.

If the member was eligible for normal or early retirement at the time of death, in lieu of the lump sum death benefit an eligible beneficiary will begin receiving a B-100 joint and survivor pension computed in the same manner as a service retirement pension as if the member had retired the last day of his life.

Or, if the member was not represented by any collective bargaining unit or was represented by the Association of Public Administrators, the Grand Rapids Employees Independent Union or the 61st District Court Employee's Association, and the primary beneficiary was the surviving spouse, the benefit will be computed in the manner described in the preceding paragraph, except that the member will have been assumed to have reached the age for minimum service retirement at the date of his death.

The total amount of death benefit payable cannot exceed 90% of the member's annual rate of compensation at the time of death reduced by any worker's compensation or social security payments.

Summary of Benefit Provisions Evaluated (June 30, 2018) (Continued)

Disability Benefit. If a member has 10 or more years of credited service before attaining the minimum service retirement age and becomes totally and permanently disabled, a benefit computed in the same manner as a full age and service benefit is payable. If disablement is a result of performance of duty, the 10-year minimum credited service requirement is waived and the benefit is computed as above with a minimum benefit of 50% (62% for those represented by police bargaining units) of final average salary.

The total amount of benefit payable due to disablement cannot exceed 90% of the member's annual rate of compensation at the time of disablement reduced by any worker's compensation payments, Social Security benefits, (disability benefits), and remuneration from any gainful employment.

Member Contributions. The contribution rates used are defined in the following table:

Member Classification	Period	Contribution Rate
Non-Represented Members, as defined in Section 1.192(18.1), excluding secretarial or clerical members designated as management non-union for payroll purposes, and excluding the Executive Administrative Assistant at the Grand Rapids Public Library	On or before July 1, 1977	3%
	July 2, 1977 to December 31, 1994	4%
	January 1, 1995 to December 31, 1996	3%
	January 1, 1997 to December 31, 2004	3.28%
	January 1, 2005 to September 4, 2010	4.93%
	On or after September 5, 2010	10.20%, or 8.95% or 7.28%, depending on the individual election made by the member as provided in Section 1.229(1) 6.15% for those non-represented members hired or re-entering service from September 5, 2010 through June 30, 2011

Summary of Benefit Provisions Evaluated (June 30, 2018) (Continued)

Member Classification	Period	Contribution Rate
Non-Represented Members, as defined in Section 1.192(18.1), including only secretarial or clerical members designated as management non-union for payroll purposes, and including the Executive Administrative Assistant at the Grand Rapids Public Library	On or before July 1, 1977	3%
	July 2, 1977 to December 31, 1994	4%
	January 1, 1995 to December 31, 1996	3%
	January 1, 1997 to December 31, 2004	3.28%
	January 1, 2005 to September 4, 2010	4.93%
	September 5, 2010 to July 23, 2011	10.20%, or 8.95% or 7.28%, depending on the individual election made by the member as provided in Section 1.229(1)
	On or after July 24, 2011	6.15% for those non-represented members hired or re-entering service from September 5, 2010 through June 30, 2011 8.10% for members who elected a 2.7% multiplier under Section 1.229(1); 6.85% for members who elected a 2.5% multiplier under Section 1.229(1); 5.18% for members who elected a 2.2% multiplier under Section 1.229(1); 4.05% for members with a 2.0% multiplier who were hired or re-entered service from September 5, 2010 through June 30, 2011
Emergency Communications Operators I, II and III represented by GRPOLC	On or before July 1, 1977	3%
	July 2, 1977 to January 1, 1990	4%
	January 2, 1990 to January 1, 1991	3%
	January 2, 1991 to December 31, 1996	2%
	January 1, 1997 to June 30, 2005	2.28%
	July 1, 2005 to March 31, 2012	5.36%
	On or after April 1, 2012	10.63%, or 9.38%, or 7.71%, or 6.58%, or 5.36%, depending on the individual election made by the member as provided in Section 1.229(10)

Summary of Benefit Provisions Evaluated (June 30, 2018) (Continued)

Member Classification	Period	Contribution Rate
Emergency Communication Supervisors	On or before December 31, 2005	3.28%
	January 1, 2006 to January 7, 2012	6.27%
	On or after January 8, 2012	11.54%, or 10.29%, or 8.62%, or 7.49%, or 6.27%, depending on the individual election made by the member as provided in Section 1.229(5)
Crime Scene Techs/Latent Print Examiners represented by the GRPOA	On or before July 1, 1977	3%
	July 2, 1977 to July 1, 1989	4%
	July 2, 1989 to July 1, 1990	3%
	July 2, 1990 to July 7, 2012	2%
	July 8, 2012 – June 30, 2014	7.27%, or 6.02%, or 4.35%, or 3.22%, or 2.00%, depending on the individual election made by the member as provided in Section 1.229(9)
	On or after July 1, 2014	8.27%, or 7.02%, or 5.35%, or 4.22%, or 3.00%, depending on the individual election made by the member as provided in Section 1.229(9)
GREIU	On or before July 1, 1977	3%
	July 2, 1977 to January 1, 1990	4%
	January 2, 1990 to December 31, 1996	3%
	January 1, 1997 to December 31, 2004	3.28%
	January 1, 2005 to July 7, 2012	3.89%
	On or after July 8, 2012	9.16%, or 7.91%, or 6.24%, or 5.11%, or 3.89%, depending on the individual election made by the member as provided in Section 1.229(4)
GREIU - 61st District Court	Prior to January 1, 1990	4%
	January 1, 1990 to December 31, 1996	3%
	January 1, 1997 to May 31, 2005	3.28%
	June 1, 2005 to July 7, 2012	4%
	On or after July 8, 2012	9.16%, or 7.91%, or 6.24%, or 5.11%, or 3.89%, depending on the individual election made by the member as provided in Section 1.229(7)

Summary of Benefit Provisions Evaluated (June 30, 2018) (Continued)

Member Classification	Period	Contribution Rate
GREIU – Public Library Rank & File and Supervisory Bargaining Units	On or before July 1, 1977	3%
	July 2, 1977 to January 1, 1988	4%
	January 2, 1988 to May 13, 1990	4.91%
	May 14, 1990 to December 31, 1996	4%
	January 1, 1997 to December 31, 2005	3.28%
	January 1, 2006 to July 7, 2012	3.63%
	On or after July 8, 2012	8.90%, or 7.65%, or 5.98%, or 4.85%, or 3.63%, depending on the individual election made by the member as provided in Section 1.229(6)
Library Management and Confidential Employees	On or before July 1, 1977	3%
	July 2, 1977 to January 1, 1988	4%
	January 2, 1988 to May 13, 1990	4.91%
	May 14, 1990 to December 31, 1996	4%
	January 1, 1997 to December 31, 2004	3.28%
	January 1, 2005 to September 4, 2010	4.93%
APAGR 61st District Court	Prior to January 1, 1990	4%
	January 1, 1990 to December 31, 1996	3%
	January 1, 1997 to December 31, 2004	3.28%
	January 1, 2005 to July 7, 2012	4%
	On or after July 8, 2012	9.27%, or 8.02%, or 6.35%, or 5.22%, or 4.00%, depending on the individual election made by the member as provided in Section 1.229(8)

Summary of Benefit Provisions Evaluated (June 30, 2018) (Continued)

Member Classification	Period	Contribution Rate
Non-Represented Members of the 61 st District Court	January 1, 2005 to September 4, 2010	4%
61 st District Court Judges	January 1, 2005 to January 8, 2011	4%
61 st District Court Judges	On or after January 9, 2011	10.20%, or 8.95% or 7.28%, depending on the individual election made by the member as provided in Section 1.229(2)
Association of Public Administrators of GR (APAGR)*	Prior to December 31, 1994	4%
	January 1, 1995 to December 31, 1996	3%
	January 1, 1997 to December 31, 2004	3.28%
	January 1, 2005 to June 11, 2011	3.99%
	On or after June 12, 2011	9.26%, or 8.01% or 6.34%, depending on the individual election made by the member as provided in Section 1.229(3) 6.15% for those APAGR members hired or re-entering service on or after June 12, 2011

**[No contribution after completing 39 years of service.]*

Summary of Benefit Provisions Evaluated (June 30, 2018) (Concluded)

If a member terminates employment before any allowance is payable, accumulated contributions (contributions plus regular interest) are refunded.

Employer Contributions. The City contributes the remainder amounts necessary to maintain the Retirement System in sound financial condition in accordance with its funding objectives.

Compensation. Compensation recognized for retirement system purposes includes base pay and longevity pay.

Post Retirement Increases. Post retirement benefit increases are 0% unless otherwise stated:

Member Classification	Termination Date	Escalator
GREIU and GREIU-61 st District Court	On or after March 24, 2009	1.0%, 4-year delay
GREIU Public Library Rank and File & Supervisory Bargaining Units	On or after July 9, 2009	1.0%, 4-year delay
Crime Scene Techs/Latent Print Examiners represented by the GRPOA	On or after May 12, 2009	1.0%, 6-year delay
Association of Public Administrators and APA 61 st District Court	On or after October 21, 2008	1.0%, 4-year delay
EC Supervisors	On or after September 13, 2011	1.0%, 6-year delay
Non-Represented Members	On or after July 1, 2014	1.0%, 7-year delay

13th Check. One-half of net investment income over 8% which is attributable to retired life assets is distributed annually (in January) to retired members and beneficiaries who have been on the retirement rolls for 5 years in the form of a 13th check. Net investment income is based on a market value rate of return averaged over the preceding 5 plan years. The distribution is in proportion to points. An individual's points are determined by multiplying (i) the number of full years of retirement, to a maximum of 15, by (ii) the number of years, and fractions thereof, of service at retirement. Only member classification groups not covered by the post-retirement increase participate in the 13th check program.

SECTION F

ACTUARIAL COST METHOD AND ACTUARIAL ASSUMPTIONS

Valuation Methods

Age and Service Benefits and Casualty Benefits. Normal cost and the allocation of benefit values between service rendered before and after the valuation date was determined using an individual entry-age actuarial cost method having the following characteristics:

- (i) The annual normal costs for each individual active member, payable from the date of employment to the date of retirement, are 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 Assumptions Used for the Valuation Adopted by the Board of Trustees

The actuary calculates the contribution requirements and benefit values of the System by applying financial assumptions to the benefit provisions and people information furnished, using the valuation methods described on the previous page.

The principal areas of financial risk which require assumptions about future experiences are:

- (i) Long-term rates of investment return to be generated by the assets of the System;
- (ii) patterns of pay increases to members;
- (iii) rates of mortality among members, retirants and beneficiaries;
- (iv) rates of withdrawal of active members (without entitlement to a retirement benefit);
- (v) rates of disability among members; and
- (vi) the age patterns of actual retirement.

In a valuation, the actuary calculates the monetary effect of each assumption for as long as a present covered person survives - - - a period of time which can be as long as a century.

Actual experience of the System will not coincide exactly with assumed experience, regardless of the wisdom of the assumptions, or the skill of the actuary and the precision of the many calculations made. Each valuation provides a complete recalculation of assumed future experience and takes into account all past differences between assumed and actual experience. The result is a continual series of adjustments (usually small) to the computed contribution rate.

From time-to-time it becomes appropriate to modify one or more of the assumptions, to reflect experience trends (but not random year-to-year fluctuations).

The rationale for the assumptions used in this valuation is included in the 5-year experience study ending June 30, 2014, approved by the Board in November 2015. Note that the investment return assumption was updated for the June 30, 2018 valuation. All assumptions are expectations of future experience, not market measures.

The rates of salary increase used for individual members are in accordance with the following table. This assumption is used to project a member's current salary to the salaries upon which benefit amounts will be based.

Salary Increase Assumptions for an Individual Member			
Sample Ages	Merit & Seniority	Base (Economic)	Increase Next Year
20	4.16%	3.25%	7.41%
25	2.88	3.25	6.13
30	1.98	3.25	5.23
35	1.52	3.25	4.77
40	1.10	3.25	4.35
45	0.66	3.25	3.91
50	0.32	3.25	3.57
55	0.14	3.25	3.39
60	0.00	3.25	3.25
65	--	3.25	3.25

Service at Beginning of Year	Additional Service Based Merit/Seniority Portion of Annual Increases
	Present
1	4.00%
2	3.00%
3	1.75%
4	1.75%
5	1.75%

If the number of active members remains constant, then the total active member payroll will increase 3.25% annually, the base portion of the individual salary increase assumptions. The 3.25% assumption was first used for the June 30, 2017 valuation.

The rate of investment return was 7.15% a year compounded yearly and was first used for the June 30, 2018 valuation.

The mortality tables were the RP-2014 Healthy Annuitant Mortality Table projected to 2019 using the MP-2014 mortality improvement scale. (These tables were first used for the June 30, 2015 valuation and benefit computations starting July 1, 2016.) The RP-2014 Disabled Retirees Table projected to 2019 using the MP-2014 mortality improvement scale were used for disabled members.

Sample Ages	Value at Retirement of \$1 Monthly for Life		Future Life Expectancy (Years)	
	Men	Women	Men	Women
50	\$148.41	\$152.79	33.25	35.95
55	141.60	146.69	28.92	31.44
60	133.30	138.87	24.73	27.02
65	123.05	129.07	20.70	22.74
70	110.64	117.14	16.85	18.67
75	96.10	103.11	13.26	14.86
80	79.84	87.27	10.01	11.41

This assumption is used to measure the probabilities of each benefit payment being made after retirement. For purposes of the pre-retirement death benefit, the RP-2014 Mortality Tables for Employees projected to 2019 using the MP-2014 mortality improvement scale was used and it was assumed that 100% of members were married at the time of death.

The rates of retirement used to measure the probability of eligible members retiring during the next year were as follows. These rates were first used for the June 30, 2015 valuation.

A member is eligible for retirement after completing 30 or more years of service or after both attaining age 62 and completing 8 or more years of service. Prior to the above eligibility, members who are eligible for early reduced retirement are assumed to elect this option at a 3% rate per year until eligible for Normal Retirement.

Normal Unreduced Retirement

Retirement Ages	Percent Retiring	Retirement Ages	Percent Retiring
50	40%	60	40%
51	40	61	40
52	40	62	40
53	40	63	40
54	40	64	40
55	40	65	50
56	40	66	60
57	40	67	70
58	40	68	80
59	40	69	90
		70-79	100
		80	100

Rates of separation from active membership were as follows:

(Rates do not apply to members eligible to retire and do not include separation on account of death or disability.) This assumption measures the probabilities of members remaining in employment. These rates were first used for the June 30, 2015 valuation.

Sample Ages	Years of Service	% of Active Members Separating within Next Year	
		Men	Women
ALL	0	15.00%	15.00%
	1	8.00	8.00
	2	7.00	7.00
	3	6.00	6.00
	4	5.00	5.00
20	5 & Over	3.53	7.94
25		3.44	7.72
30		3.29	7.22
35		3.05	6.28
40		2.72	5.15
45		2.30	3.98
50		1.61	2.56
55		0.61	0.94
60		0.06	0.09

The rates of disability were as follows:

Sample Ages		% of Active Members Becoming Disabled within Next Year	
20		0.01%	
25		0.01	
30		0.01	
35		0.04	
40		0.07	
45		0.16	
50		0.31	
55		0.47	
60		0.61	
		Duty Related	Non-Duty Related
Cause of Disability:	Men	30%	70%
	Women	30%	70%

Miscellaneous and Technical Assumptions

June 30, 2018

Marriage Assumption:	100% of males and females are assumed to be married for purposes of death-in-service benefits.
Pay Increase Timing:	Beginning of (Fiscal) year. This is equivalent to assuming that reported pays represent amounts paid to members during the year ended on the valuation date.
Decrement Timing:	Decrements of all types are assumed to occur in the middle of the year.
Eligibility Testing:	Eligibility for benefits is determined based upon the age nearest birthday and service nearest whole year on the date the decrement is assumed to occur.
Benefit Service:	Exact fractional service is used to determine the amount of benefit payable.
Decrement Relativity:	Decrement rates are used directly from the experience study, without adjustment for multiple decrement table effects.
Decrement Operation:	Disability and mortality decrements do not operate during the first 5 years of service. Disability and withdrawal do not operate during retirement eligibility.
Normal Form of Benefit:	The assumed normal form of benefit is the straight life form.
Other Adjustments:	Actuarial accrued liabilities were adjusted as a provision for subsidized service purchases, pending refunds, and other contingent events. Retirement present values were also adjusted for Crime Scene Technicians and ECO to reflect the "gross up factor."
Incidence of Contributions:	Contributions are assumed to be received continuously throughout the year based upon the computed percent of payroll shown in this report, and the actual payroll payable at the time contributions are made. New entrant normal cost contributions are applied to the funding of new entrant benefits.
Multiplier Election:	Most active members have the option to make higher member contributions and receive a higher benefit multiplier. Individual elections are reported and reflected in the valuation results.
13th Check Payments:	Future liabilities of members in the 13 th Check program were increased by 5% to account for future payments.
Service Purchases:	Liabilities were increased by \$5 million to load for service purchases made to date.

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

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

For the purpose of this valuation, the expected rate of return on pension plan investments is 7.15%; the municipal bond rate is 3.62%; and the resulting Single Discount Rate is 7.15%.

The tables in this section provide background for the development of the Single Discount Rate.

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. For purposes of this projection, the Plan Fiduciary Net Position was amortized over a closed period of 27 years.

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 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 Beginning July 1, 2018

Year	Payroll for Current Employees	Contributions from Current Employees	Service Cost and Expense Contributions	UAL Contributions	Total Contributions
1	\$ 30,949,968	\$ 2,474,390	\$ 2,181,969	\$ 8,995,755	\$ 13,652,114
2	29,666,048	2,369,869	2,053,654	8,995,755	13,419,279
3	28,511,535	2,259,389	1,928,028	8,995,755	13,183,173
4	27,092,037	2,129,587	1,795,891	8,995,755	12,921,234
5	25,476,536	1,997,127	1,667,752	8,995,755	12,660,634
6	23,939,033	1,862,983	1,539,872	8,995,755	12,398,610
7	22,289,236	1,723,369	1,407,161	8,995,755	12,126,285
8	20,615,882	1,585,553	1,277,132	8,995,755	11,858,440
9	18,983,477	1,451,563	1,155,104	8,995,755	11,602,422
10	17,450,592	1,315,984	1,035,748	8,995,755	11,347,487
11	15,785,031	1,174,646	915,282	8,995,755	11,085,684
12	14,092,244	1,026,817	795,856	8,995,755	10,818,429
13	12,263,483	884,504	686,344	8,995,755	10,566,603
14	10,731,839	768,350	597,326	8,995,755	10,361,432
15	9,455,497	672,315	522,427	8,995,755	10,190,498
16	8,314,544	577,754	448,557	8,995,755	10,022,066
17	7,078,601	493,627	383,151	8,995,755	9,872,533
18	6,229,094	430,351	333,291	8,995,755	9,759,397
19	5,465,039	368,210	283,402	8,995,755	9,647,367
20	4,541,391	301,925	230,166	8,995,755	9,527,846
21	3,637,262	240,495	182,160	8,995,755	9,418,410
22	2,889,047	188,878	141,804	8,995,755	9,326,437
23	2,255,525	137,709	102,806	8,995,755	9,236,270
24	1,517,159	91,589	68,646	8,995,755	9,155,990
25	1,028,653	60,878	45,923	8,995,755	9,102,556
26	686,645	38,548	29,141	8,995,755	9,063,444
27	405,566	22,613	17,055	8,995,755	9,035,423
28	234,752	12,996	9,761	-	22,757
29	132,744	7,336	5,480	-	12,815
30	74,438	4,053	3,047	-	7,099
31	39,954	2,145	1,611	-	3,756
32	20,581	1,090	824	-	1,914
33	10,057	538	384	-	922
34	4,855	267	201	-	468
35	2,404	134	96	-	230
36	1,184	65	48	-	113
37	577	31	20	-	51
38	286	14	9	-	23
39	127	6	3	-	9
40	48	2	1	-	3
41	14	1	1	-	1
42	3	0	(0)	-	-
43	0	0	(0)	-	-
44	-	-	-	-	-
45	-	-	-	-	-
46	-	-	-	-	-
47	-	-	-	-	-
48	-	-	-	-	-
49	-	-	-	-	-
50	-	-	-	-	-

Single Discount Rate Development

Projection of Plan Fiduciary Net Position Beginning July 1, 2018

Year	Projected Beginning Plan Net Position	Projected Total Contributions	Projected Benefit Payments	Projected Administrative Expenses	Projected Investment Earnings at 7.15%	Projected Ending Plan Net Position
	(a)	(b)	(c)	(d)	(e)	(f)=(a)+(b)-(c)-(d)+(e)
1	\$ 416,899,911	\$ 13,652,114	\$ 35,207,530	\$ 583,660	\$ 29,634,700	\$ 424,395,535
2	424,395,535	13,419,279	35,947,315	594,154	30,146,961	431,420,306
3	431,420,306	13,183,173	36,791,743	603,988	30,621,104	437,828,852
4	437,828,852	12,921,234	37,931,244	612,960	31,039,051	443,244,932
5	443,244,932	12,660,634	39,175,452	620,543	31,381,015	447,490,586
6	447,490,586	12,398,610	40,317,118	626,487	31,641,207	450,586,798
7	450,586,798	12,126,285	41,436,690	630,822	31,818,020	452,463,591
8	452,463,591	11,858,440	42,591,829	633,449	31,904,845	453,001,598
9	453,001,598	11,602,422	43,475,462	634,202	31,904,026	452,398,382
10	452,398,382	11,347,487	44,437,851	633,358	31,817,283	450,491,943
11	450,491,943	11,085,684	45,387,239	630,689	31,635,752	447,195,451
12	447,195,451	10,818,429	46,323,516	626,074	31,353,154	442,417,445
13	442,417,445	10,566,603	47,123,920	619,384	30,967,869	436,208,612
14	436,208,612	10,361,432	47,618,678	610,692	30,490,655	428,831,329
15	428,831,329	10,190,498	47,932,132	600,364	29,935,833	420,425,164
16	420,425,164	10,022,066	48,090,258	588,595	29,311,551	411,079,927
17	411,079,927	9,872,533	48,132,838	575,512	28,623,533	400,867,644
18	400,867,644	9,759,397	47,795,223	561,215	27,886,945	390,157,548
19	390,157,548	9,647,367	47,392,869	546,221	27,116,378	378,982,203
20	378,982,203	9,527,846	46,952,716	530,575	26,312,961	367,339,720
21	367,339,720	9,418,410	46,342,582	514,276	25,481,814	355,383,087
22	355,383,087	9,326,437	45,573,968	497,536	24,633,948	343,271,969
23	343,271,969	9,236,270	44,697,400	480,581	23,778,676	331,108,935
24	331,108,935	9,155,990	43,679,360	463,553	22,924,937	319,046,949
25	319,046,949	9,102,556	42,432,177	446,666	22,087,558	307,358,220
26	307,358,220	9,063,444	41,032,449	430,302	21,283,252	296,242,165
27	296,242,165	9,035,423	39,542,943	414,739	20,524,238	285,844,144
28	285,844,144	22,757	37,900,047	400,182	19,507,301	267,073,974
29	267,073,974	12,815	36,150,607	373,904	18,200,069	248,762,348
30	248,762,348	7,099	34,340,465	348,267	16,928,546	231,009,261
31	231,009,261	3,756	32,506,436	323,413	15,698,664	213,881,832
32	213,881,832	1,914	30,672,494	299,435	14,514,441	197,426,259
33	197,426,259	922	28,837,414	276,397	13,379,266	181,692,636
34	181,692,636	468	27,013,458	254,370	12,296,350	166,721,627
35	166,721,627	230	25,228,371	233,410	11,267,670	152,527,746
36	152,527,746	113	23,490,622	213,539	10,293,984	139,117,682
37	139,117,682	51	21,806,424	194,765	9,375,559	126,492,103
38	126,492,103	23	20,184,706	177,089	8,512,129	114,642,461
39	114,642,461	9	18,630,285	160,499	7,702,901	103,554,585
40	103,554,585	3	17,146,259	144,976	6,946,733	93,210,086
41	93,210,086	1	15,734,252	130,494	6,242,226	83,587,568
42	83,587,568	-	14,394,740	117,023	5,587,806	74,663,610
43	74,663,610	-	13,127,280	104,529	4,981,779	66,413,580
44	66,413,580	-	11,930,759	92,979	4,422,388	58,812,230
45	58,812,230	-	10,803,673	82,337	3,907,848	51,834,068
46	51,834,068	-	9,744,378	72,568	3,436,356	45,453,478
47	45,453,478	-	8,751,260	63,635	3,006,102	39,644,684
48	39,644,684	-	7,822,800	55,503	2,615,260	34,381,642
49	34,381,642	-	6,957,574	48,134	2,261,982	29,637,917
50	29,637,917	-	6,154,221	41,493	1,944,389	25,386,591

Single Discount Rate Development

Present Values of Projected Benefit Payments

Beginning July 1, 2018

Year	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 ((a)-.5)	(g)=(e)*vf ^a ((a)-.5)	(h)=(c)/(1+sdr) ^a (a-.5)
1	\$ 416,899,911	\$ 35,207,530	\$ 35,207,530	\$ -	\$ 34,012,572	\$ -	\$ 34,012,572
2	424,395,535	35,947,315	35,947,315	-	32,409,938	-	32,409,938
3	431,420,306	36,791,743	36,791,743	-	30,957,788	-	30,957,788
4	437,828,852	37,931,244	37,931,244	-	29,786,842	-	29,786,842
5	443,244,932	39,175,452	39,175,452	-	28,711,060	-	28,711,060
6	447,490,586	40,317,118	40,317,118	-	27,576,079	-	27,576,079
7	450,586,798	41,436,690	41,436,690	-	26,450,623	-	26,450,623
8	452,463,591	42,591,829	42,591,829	-	25,373,769	-	25,373,769
9	453,001,598	43,475,462	43,475,462	-	24,171,896	-	24,171,896
10	452,398,382	44,437,851	44,437,851	-	23,058,305	-	23,058,305
11	450,491,943	45,387,239	45,387,239	-	21,979,404	-	21,979,404
12	447,195,451	46,323,516	46,323,516	-	20,935,893	-	20,935,893
13	442,417,445	47,123,920	47,123,920	-	19,876,468	-	19,876,468
14	436,208,612	47,618,678	47,618,678	-	18,744,893	-	18,744,893
15	428,831,329	47,932,132	47,932,132	-	17,609,223	-	17,609,223
16	420,425,164	48,090,258	48,090,258	-	16,488,395	-	16,488,395
17	411,079,927	48,132,838	48,132,838	-	15,401,768	-	15,401,768
18	400,867,644	47,795,223	47,795,223	-	14,273,202	-	14,273,202
19	390,157,548	47,392,869	47,392,869	-	13,208,630	-	13,208,630
20	378,982,203	46,952,716	46,952,716	-	12,212,745	-	12,212,745
21	367,339,720	46,342,582	46,342,582	-	11,249,692	-	11,249,692
22	355,383,087	45,573,968	45,573,968	-	10,324,881	-	10,324,881
23	343,271,969	44,697,400	44,697,400	-	9,450,577	-	9,450,577
24	331,108,935	43,679,360	43,679,360	-	8,619,065	-	8,619,065
25	319,046,949	42,432,177	42,432,177	-	7,814,245	-	7,814,245
26	307,358,220	41,032,449	41,032,449	-	7,052,238	-	7,052,238
27	296,242,165	39,542,943	39,542,943	-	6,342,732	-	6,342,732
28	285,844,144	37,900,047	37,900,047	-	5,673,550	-	5,673,550
29	267,073,974	36,150,607	36,150,607	-	5,050,549	-	5,050,549
30	248,762,348	34,340,465	34,340,465	-	4,477,514	-	4,477,514
31	231,009,261	32,506,436	32,506,436	-	3,955,560	-	3,955,560
32	213,881,832	30,672,494	30,672,494	-	3,483,338	-	3,483,338
33	197,426,259	28,837,414	28,837,414	-	3,056,403	-	3,056,403
34	181,692,636	27,013,458	27,013,458	-	2,672,036	-	2,672,036
35	166,721,627	25,228,371	25,228,371	-	2,328,945	-	2,328,945
36	152,527,746	23,490,622	23,490,622	-	2,023,822	-	2,023,822
37	139,117,682	21,806,424	21,806,424	-	1,753,356	-	1,753,356
38	126,492,103	20,184,706	20,184,706	-	1,514,662	-	1,514,662
39	114,642,461	18,630,285	18,630,285	-	1,304,730	-	1,304,730
40	103,554,585	17,146,259	17,146,259	-	1,120,672	-	1,120,672
41	93,210,086	15,734,252	15,734,252	-	959,761	-	959,761
42	83,587,568	14,394,740	14,394,740	-	819,461	-	819,461
43	74,663,610	13,127,280	13,127,280	-	697,441	-	697,441
44	66,413,580	11,930,759	11,930,759	-	591,573	-	591,573
45	58,812,230	10,803,673	10,803,673	-	499,942	-	499,942
46	51,834,068	9,744,378	9,744,378	-	420,833	-	420,833
47	45,453,478	8,751,260	8,751,260	-	352,724	-	352,724
48	39,644,684	7,822,800	7,822,800	-	294,262	-	294,262
49	34,381,642	6,957,574	6,957,574	-	244,252	-	244,252
50	29,637,917	6,154,221	6,154,221	-	201,632	-	201,632

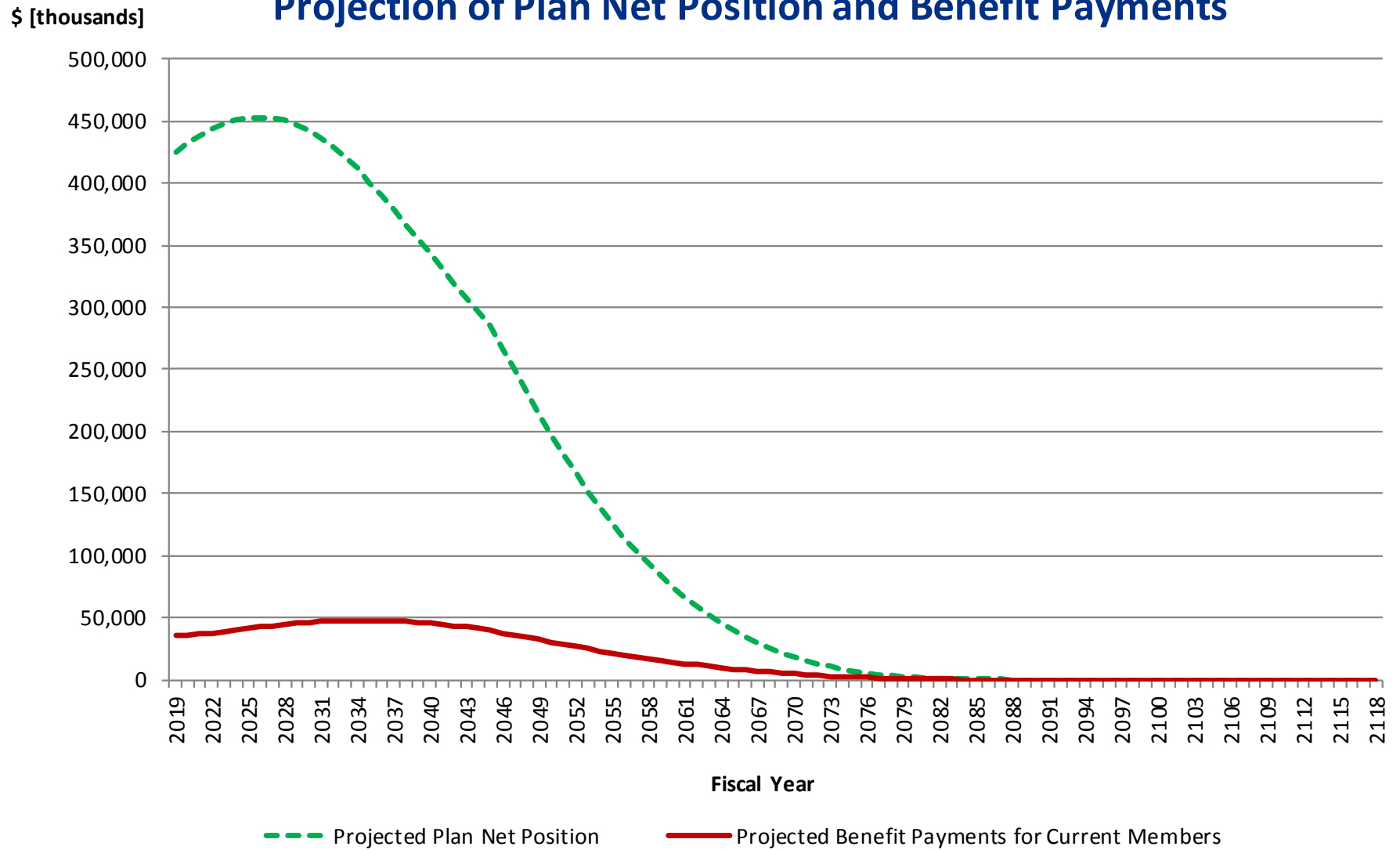
Single Discount Rate Development

Present Values of Projected Benefit Payments

Beginning July 1, 2018 (Concluded)

Year	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)
51	\$ 25,386,591	\$ 5,411,435	\$ 5,411,435	\$ -	\$ 165,466	\$ -	\$ 165,466
52	21,600,178	4,727,985	4,727,985	-	134,921	-	134,921
53	18,250,499	4,102,650	4,102,650	-	109,264	-	109,264
54	15,308,622	3,534,128	3,534,128	-	87,842	-	87,842
55	12,744,896	3,020,954	3,020,954	-	70,076	-	70,076
56	10,529,068	2,561,401	2,561,401	-	55,451	-	55,451
57	8,630,506	2,153,414	2,153,414	-	43,508	-	43,508
58	7,018,517	1,794,557	1,794,557	-	33,838	-	33,838
59	5,662,736	1,481,991	1,481,991	-	26,080	-	26,080
60	4,533,564	1,212,518	1,212,518	-	19,914	-	19,914
61	3,602,597	982,672	982,672	-	15,062	-	15,062
62	2,842,987	788,832	788,832	-	11,284	-	11,284
63	2,229,714	627,314	627,314	-	8,375	-	8,375
64	1,739,785	494,414	494,414	-	6,160	-	6,160
65	1,352,396	386,482	386,482	-	4,494	-	4,494
66	1,049,031	299,991	299,991	-	3,256	-	3,256
67	813,506	231,605	231,605	-	2,346	-	2,346
68	631,930	178,240	178,240	-	1,685	-	1,685
69	492,611	137,105	137,105	-	1,209	-	1,209
70	385,911	105,734	105,734	-	870	-	870
71	304,056	82,003	82,003	-	630	-	630
72	240,912	64,127	64,127	-	460	-	460
73	191,758	50,646	50,646	-	339	-	339
74	153,043	40,405	40,405	-	252	-	252
75	122,161	32,517	32,517	-	190	-	190
76	97,236	26,327	26,327	-	143	-	143
77	76,937	21,363	21,363	-	108	-	108
78	60,325	17,300	17,300	-	82	-	82
79	46,730	13,919	13,919	-	62	-	62
80	35,663	11,076	11,076	-	46	-	46
81	26,748	8,684	8,684	-	33	-	33
82	19,671	6,686	6,686	-	24	-	24
83	14,157	5,040	5,040	-	17	-	17
84	9,953	3,710	3,710	-	12	-	12
85	6,824	2,661	2,661	-	8	-	8
86	4,558	1,857	1,857	-	5	-	5
87	2,962	1,258	1,258	-	3	-	3
88	1,871	828	828	-	2	-	2
89	1,148	528	528	-	1	-	1
90	684	326	326	-	1	-	1
91	395	195	195	-	-	-	-
92	222	113	113	-	-	-	-
93	121	63	63	-	-	-	-
94	64	34	34	-	-	-	-
95	33	18	18	-	-	-	-
96	17	9	9	-	-	-	-
97	8	5	5	-	-	-	-
98	4	2	2	-	-	-	-
99	2	1	1	-	-	-	-
100	1	1	1	-	-	-	-
Totals	\$ 558,393,460	\$ -	\$ 558,393,460				

Projection of Plan Net Position and Benefit Payments



SECTION H

GLOSSARY OF TERMS

Glossary of Terms

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

Glossary of Terms

<i>Amortization Method</i>	The method used to determine the periodic amortization payment may be a level dollar amount, or a level percent of pay amount. The period will typically be expressed in years, and the method will either be “open” (meaning, reset each year) or “closed” (the number of years remaining will decline each year).
<i>Amortization Payment</i>	The amortization payment is the periodic payment required to pay off an interest-discounted amount with payments of interest and principal.
<i>Cost-of-Living Adjustments</i>	Postemployment benefit changes intended to adjust benefit payments for the effects of inflation.
<i>Cost-Sharing Multiple-Employer Defined Benefit Pension Plan (cost-sharing pension plan)</i>	A multiple-employer defined benefit pension plan in which the pension obligations to the employees of more than one employer are pooled and pension plan assets can be used to pay the benefits of the employees of any employer that provides pensions through the pension plan.
<i>Covered Payroll</i>	The payroll of employees that are provided with pensions through the pension plan.
<i>Deferred Inflows and Outflows</i>	The deferred inflows and outflows of pension resources are amounts used under GASB Statement No. 68 in developing the annual pension expense. Deferred inflows and outflows arise with differences between expected and actual experiences; changes of assumptions. The portion of these amounts not included in pension expense should be included in the deferred inflows or outflows of resources.
<i>Deferred Retirement Option Program (DROP)</i>	A program that permits a plan member to elect a calculation of benefit payments based on service credits and salary, as applicable, as of the DROP entry date. The plan member continues to provide service to the employer and is paid for the service by the employer after the DROP entry date; however, the pensions that would have been paid to the plan member are credited to an individual member account within the defined benefit pension plan until the end of the DROP period. Other variations for DROP exist and will be more fully detailed in the plan provision section of the valuation report.
<i>Discount Rate</i>	<p>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:</p> <ol style="list-style-type: none">1. The benefit payments to be made while the pension plans’ fiduciary net position is projected to be greater than the benefit payments that are projected to be made in the period; and2. The present value of the benefit payments not in (1) above, discounted using the municipal bond rate.

Glossary of Terms

Entry Age Actuarial Cost Method (EAN)

The EAN is a cost 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.

Fiduciary Net Position

The fiduciary net position is the market value of the assets of the trust dedicated to the defined benefit provisions.

GASB

The Governmental Accounting Standards Board is an organization that exists in order to promulgate accounting standards for governmental entities.

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 contributing entities to plan members for benefits provided through a defined benefit pension plan.

Non-Employer Contributing Entities

Non-employer contributing entities are entities that make contributions to a pension plan that is used to provide pensions to the employees of other entities. For purposes of the GASB accounting statements, plan members are not considered non-employer contributing entities.

Normal Cost

The portion of the actuarial present value allocated to a valuation year is called the normal cost. For purposes of application to the requirements of this Statement, the term normal cost is the equivalent of service cost.

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 GASB Statement Nos. 67 and 68, the valuation assets are equal to the market value of assets.