City of St. Clair Shores
Employees Retirement System

GASB Statement Nos. 67 and 68 Accounting and Financial Reporting for Pensions

June 30, 2017

GRS Retirement Consulting

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September 8, 2017

Board of Trustees
City of St. Clair Shores Employees Retirement System

Dear Board Members:

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 St. Clair Shores Employees 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 Board and is intended for use by the Retirement System and those designated or approved by the Board. This report may be provided to parties other than the System only in its entirety and only with the permission of the Board. 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 satisfying 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 report was based upon information furnished by the City, 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.

This report complements the actuarial valuation report that was provided to the City and should be considered in conjunction with that report. Please see the actuarial valuation report as of June 30, 2016 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 with this report is accurate and fairly represents the actuarial position of the City of St. Clair Shores Employees 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.

Mark Buis and Rebecca L. Stouffer 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.

The signing actuaries are independent of the plan sponsor.

Respectfully submitted,

Mark Buis, FSA, EA, FCA, MAAA

Rebecca L. Stouffer, ASA, MAAA

MB/RLS:ah

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SECTION A

EXECUTIVE SUMMARY

Executive Summary
as of June 30, 2017

		2017
Actuarial Valuation Date		June 30, 2016
Measurement Date of the Net Pension Liability		June 30, 2017
Employer's Fiscal Year Ending Date (Reporting Date)		June 30, 2017
Membership		
Number of[#]		
- Retirees and Beneficiaries		212
- Inactive, Nonretired Members		20
- Active Members		66
- Total		298
Covered Payroll	$	4,228,625
Net Pension Liability		
Total Pension Liability	$	65,928,071
Plan Fiduciary Net Position		39,096,042
Net Pension Liability	$	26,832,029
Plan Fiduciary Net Position as a Percentage		
of Total Pension Liability		59.30 %
Net Pension Liability as a Percentage		
of Covered Payroll		634.53 %
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	$	5,835,862

Deferred Outflows and Deferred Inflows of Resources by Source to be Recognized in Future Pension Expenses

	Deferred Outflows of Resources	Deferred Inflows of Resources
Difference between expected and actual experience	$ -	$ 110,316
Changes in assumptions	-	-
Net difference between projected and actual earnings on pension plan investments	3,262,829	1,652,649
Total	$ 3,262,829	$ 1,762,965

[#] *As of the Actuarial Valuation Date.*

**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" 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.

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 City 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.

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, 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 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-employee 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 7.50% on the actuarial value of assets), then the following outcomes are expected:

1. Employer normal cost dollar amounts will eventually decrease as active payroll declines due to the closed nature of the Plan.
2. Amortization payment dollar amounts will remain level over the next 24 years, as of the fiscal year beginning July 1, 2018.
3. The funded status of the plan is expected to reach a 100% funded ratio in approximately 24 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 2117. 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 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, 2016 and a measurement date of June 30, 2017. Update procedures were used to roll forward the total pension liability to the measurement date.

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 daily 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%.

SECTION B

FINANCIAL STATEMENTS

Auditor's Note – This information is intended to assist in preparation of the financial statements of the City of St. Clair Shores Employees Retirement System. Financial statements are the responsibility of management, subject to the auditor's review. Please let us know if the auditor recommends any changes.

Pension Expense Under GASB Statement No. 68
Fiscal Year Ended June 30, 2017

A. Expense

1. Service Cost	$	538,145
2. Interest on the Total Pension Liability		4,768,890
3. Current-Period Benefit Changes		0
4. Employee Contributions (made negative for addition here)		(36,262)
5. Projected Earnings on Plan Investments (made negative for addition here)		(2,661,604)
6. Pension Plan Administrative Expense		32,639
7. Other Changes in Plan Fiduciary Net Position		(6,072)
8. Recognition of Outflow (Inflow) of Resources due to Liabilities		2,326,740
9. Recognition of Outflow (Inflow) of Resources due to Assets		873,386
10. Total Pension Expense	**$**	**5,835,862**

Statement of Outflows and Inflows Arising from Current Reporting Period Fiscal Year Ended June 30, 2017

A. Outflows (Inflows) of Resources due to Liabilities		
1. Difference between expected and actual experience of the Total Pension Liability (gains) or losses	$	(293,718)
2. Assumption Changes (gains) or losses	$	-
3. Recognition period for Liabilities: Average of the expected remaining service lives of all employees {in years}		1.6015
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	$	(183,402)
5. Outflow (Inflow) of Resources to be recognized in the current pension expense for assumption changes	$	-
6. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Liabilities	$	(183,402)
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	$	(110,316)
8. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses for assumption changes	$	-
9. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Liabilities	$	(110,316)
B. Outflows (Inflows) of Resources due to Assets		
1. Net difference between projected and actual earnings on pension plan investments (gains) or losses	$	(2,065,811)
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	$	(413,162)
4. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Assets	$	(1,652,649)

Statement of Outflows and Inflows Arising from Current and Prior Reporting Periods Fiscal Year Ended June 30, 2017

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	$ 2,510,142	$ 183,402	$ 2,326,740
2. Due to Assets	1,286,548	413,162	873,386
3. Total	$ 3,796,690	$ 596,564	$ 3,200,126

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	$ 249,348	$ 183,402	$ 65,946
2. Assumption Changes	2,260,794	-	2,260,794
3. Net Difference between projected and actual earnings on pension plan investments	1,286,548	413,162	873,386
4. Total	$ 3,796,690	$ 596,564	$ 3,200,126

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	$ -	$ 110,316	$ (110,316)
2. Assumption Changes	-	-	0
3. Net Difference between projected and actual earnings on pension plan investments	3,262,829	1,652,649	1,610,180
4. Total	$ 3,262,829	$ 1,762,965	$ 1,499,864

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	$ 763,070
2019	873,384
2020	276,573
2021	(413,163)
2022	-
Thereafter	0
Total	$ 1,499,864

Statement of Fiduciary Net Position
as of June 30, 2017

		2017
Assets		
Cash and Deposits	$	1,689,262
Receivables		
Accounts Receivable - Sale of Investments	$	42,576
Accrued Interest and Other Dividends		57,263
Contributions		-
Accounts Receivable - Other		572
Total Receivables	$	100,411
Investments		
Fixed Income	$	7,609,366
Domestic Equities		23,584,210
International Equities		5,353,695
Real Estate		580,621
Other		1,659,216
Total Investments	$	38,787,108
Total Assets	$	40,576,781
Liabilities		
Payables		
Accounts Payable - Purchase of Investments	$	-
Accrued Expenses		63,644
Accounts Payable - Other		1,417,095
Total Liabilities	$	1,480,739
Net Position Restricted for Pensions	$	39,096,042

Statement of Changes in Fiduciary Net Position for Year Ended June 30, 2017

		2017
Additions		
Contributions		
Employer	$	2,554,204
Employee		36,262
Other		288,254
Total Contributions	$	2,878,720
Investment Income		
Net Appreciation in Fair Value of Investments	$	4,132,869
Interest and Dividends		830,956
Less Investment Expense		(236,410)
Net Investment Income	$	4,727,415
Other	$	6,072
Total Additions	$	7,612,207
Deductions		
Benefit Payments, including Refunds of Employee Contributions	$	4,802,739
Pension Plan Administrative Expense		32,639
Other		288,254
Total Deductions	$	5,123,632
Net Increase in Net Position	$	2,488,575
Net Position Restricted for Pensions		
Beginning of Year	$	36,607,467
End of Year	$	39,096,042

SECTION C

REQUIRED SUPPLEMENTARY INFORMATION

Auditor's Note – This information is intended to assist in preparation of the financial statements of the City of St. Clair Shores Employees Retirement System. Financial statements are the responsibility of management, subject to the auditor's review. Please let us know if the auditor recommends any changes.

Schedule of Changes in Net Pension Liability and Related Ratios Current Period Fiscal Year Ended June 30, 2017

A. Total Pension Liability		
1. Service Cost	$	538,145
2. Interest on the Total Pension Liability		4,768,890
3. Changes of benefit terms		0
4. Difference between expected and actual experience of the Total Pension Liability		(293,718)
5. Changes of assumptions		0
6. Benefit payments, including refunds of employee contributions		(4,802,739)
7. Net change in Total Pension Liability	$	210,578
8. Total Pension Liability – Beginning		65,717,493
9. Total Pension Liability – Ending	**$**	**65,928,071**
B. Plan Fiduciary Net Position		
1. Contributions – Employer	$	2,554,204
2. Contributions – Employee		36,262
3. Net investment income		4,727,415
4. Benefit payments, including refunds of employee contributions		(4,802,739)
5. Pension Plan Administrative Expense		(32,639)
6. Other		6,072
7. Net change in Plan Fiduciary Net Position	$	2,488,575
8. Plan Fiduciary Net Position – Beginning		36,607,467
9. Plan Fiduciary Net Position – Ending	**$**	**39,096,042**
C. Net Pension Liability	**$**	**26,832,029**
D. Plan Fiduciary Net Position as a percentage of the Total Pension Liability		**59.30%**
E. Covered-Employee payroll	**$**	**4,228,625**
F. Net Pension Liability as a percentage of Covered-Employee payroll		**634.53%**

Schedules of Required Supplementary Information
Schedule of Changes in Net Pension Liability and Related Ratios Multiyear

Last 10 Fiscal Years (which may be built prospectively starting from 2014)

Fiscal year ending June 30,	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008
Total Pension Liability										
Service Cost	$ 538,145	$ 500,404	$ 542,686	$ 549,023						
Interest on the Total Pension Liability	4,768,890	4,585,406	4,509,141	4,437,488						
Benefit Changes	-	-	-							
Difference between Expected and Actual Experience	(293,718)	590,221	652,195							
Assumption Changes	-	5,351,422	-							
Benefit Payments	(4,802,739)	(4,754,671)	(4,704,465)	(4,909,010)						
Refunds	-	-	-							
Net Change in Total Pension Liability	$ 210,578	6,272,782	999,557	77,501						
Total Pension Liability - Beginning	65,717,493	59,444,711	58,445,154	57,648,592						
Total Pension Liability - Ending (a)	$ 65,928,071	$ 65,717,493	$ 59,444,711	$ 57,726,093						
Plan Fiduciary Net Position										
Employer Contributions	$ 2,554,204	$ 2,462,821	$ 2,512,506	$ 2,561,038						
Employee Contributions	36,262	97,276	38,285	41,177						
Pension Plan Net Investment Income	4,727,415	(399,194)	223,297	6,003,181						
Benefit Payments	(4,802,739)	(4,754,671)	(4,704,465)	(4,909,010)						
Refunds	-	-	-							
Pension Plan Administrative Expense	(32,639)	(32,000)	(19,945)	(28,731)						
Other	6,072	2,776	4,080	314,970						
Net Change in Plan Fiduciary Net Position	$ 2,488,575	(2,622,992)	(1,946,242)	3,982,625						
Plan Fiduciary Net Position - Beginning	36,607,467	39,230,459	41,176,701	36,475,015						
Plan Fiduciary Net Position - Ending (b)	$ 39,096,042	$ 36,607,467	$ 39,230,459	$ 40,457,640						
Net Pension Liability - Ending (a) - (b)	26,832,029	29,110,026	20,214,252	17,268,453						
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	59.30 %	55.70 %	65.99 %	70.09 %						
Covered-Employee Payroll	$ 4,228,625	$ 4,277,968	$ 4,418,095	$ 4,664,037						
Net Pension Liability as a Percentage of Covered-Employee Payroll	634.53 %	680.46 %	457.53 %	370.25 %						

Notes to Schedule:

2015 Beginning Total Pension Liability and Plan Fiduciary Net Position were adjusted to reflect the Excess Earnings Reserve.

Schedules of Required Supplementary Information
Schedule of the Net Pension Liability Multiyear

Last 10 Fiscal Years (which may be built prospectively starting from 2014)

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	$ 57,726,093	$ 40,457,640	$ 17,268,453	70.09 %	$ 4,664,037	370.25 %
2015	59,444,711	39,230,459	20,214,252	65.99 %	4,418,095	457.53 %
2016	65,717,493	36,607,467	29,110,026	55.70 %	4,277,968	680.46 %
2017	65,928,071	39,096,042	26,832,029	59.30 %	4,228,625	634.53 %

Schedule of Contributions Multiyear

Last 10 Fiscal Years (Which May Be Built Prospectively Starting from 2014)

FY Ending June 30,	Actuarially Determined Contribution	Actual Contribution	Contribution Deficiency (Excess)	Covered Payroll	Actual Contribution as a % of Covered Payroll
2008					
2009					
2010					
2011					
2012					
2013					
2014	$ 2,561,038	$ 2,561,038	$ -	$ 4,664,037	54.91 %
2015	2,512,506	2,512,506	-	4,418,095	56.87 %
2016	2,462,821	2,462,821	-	4,277,968	57.57 %
2017	2,554,204	2,554,204	-	4,228,625	60.40 %

Notes to Schedule of Contributions

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

Actuarial Cost Method	Entry-Age Normal
Amortization Method	Level Dollar, Closed
Remaining Amortization Period	18 years
Asset Valuation Method	4-Year smoothed market
Wage Inflation	4.0%
Salary Increases	4.0% to 7.7% including inflation.
Investment Rate of Return	8.0% net of investment and administrative expenses
Retirement Age	Experience-based table of rates that are specific to the type of eligibility condition. Last updated for the 2008 valuation pursuant to an experience study of the period 2002 - 2007.
Mortality	RP-2000 table projected to 2008. This table provides no margin for future mortality improvement.

Other Information:

Notes	An experience review has been completed. Scheduled updates to the mortality assumption, investment return, and other key assumptions were effective for the June 30, 2016 funding and GASB valuations.

** Based on valuation assumptions used in the June 30, 2015 actuarial valuation.*

Schedule of Investment Returns Multiyear

Last 10 Fiscal Years (Which May Be Built Prospectively Starting from 2014)

FY Ending June 30,	Annual Return[1]
2008	
2009	
2010	
2011	
2012	
2013	
2014	17.50 %
2015	(0.02)%
2016	0.38 %
2017	14.55 %

[1] *Annual money-weighted rate of return, net of investment expenses.*

SECTION D

NOTES TO FINANCIAL STATEMENTS

Auditor's Note – This information is intended to assist in preparation of the financial statements of the City of St. Clair Shores Employees Retirement System. Financial statements are the responsibility of management, subject to the auditor's review. Please let us know if the auditor recommends any changes.

Long-Term Expected Return on Plan Assets

The assumed rate of investment return was adopted by the plan's trustees after considering input from the plan's investment consultant(s) and actuary(s).

The long-term expected rate of return on pension plan investments was determined using a building-block method in which expected future real rates of return (expected returns, net of pension plan investment expense and inflation) are developed for each major asset class. These real rates of return 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. Best estimates of arithmetic real rates of return were provided by the Retirement System's investment manager, Morgan Stanley, for each major asset class included in the Plan's portfolio as of June 30, 2017. The best estimates and the Plan's target asset allocation are summarized in the following table:

Asset Allocation

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return*
Domestic Equity	40.00%	7.10%
International Equity	15.00%	6.90%
Domestic Fixed Income	30.00%	2.80%
Hedge Funds	6.00%	3.50%
Real Estate	2.00%	4.50%
Private Equity	2.00%	9.60%
Real Assets	4.00%	4.40%
Cash	1.00%	1.40%
Total	100.00 %	

**The rates of return shown above were provided by the Retirement System's investment manager, are based upon the investment manager's inflation assumption of 2.0% (1.8% for International Equity), and are gross of investment and administrative expenses.*

Gabriel, Roeder, Smith & Company does not provide investment advice.

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 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 7.50%, 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 Net Pension Liability to the Single Discount Rate (SDR) Assumption

	1% Decrease 6.50%	Current Single Discount Rate Assumption 7.50%	1% Increase 8.50%
Total Pension Liability	$ 72,439,751	$ 65,928,071	$ 60,379,173
Plan Fiduciary Net Position	39,096,042	39,096,042	39,096,042
Net Pension Liability/(Asset)	$ 33,343,709	$ 26,832,029	$ 21,283,131

Summary of Population Statistics#

Inactive Plan Members or Beneficiaries Currently Receiving Benefits	212
Inactive Plan Members Entitled to But Not Yet Receiving Benefits	20
Active Plan Members	66
Total Plan Members	298

As of the Actuarial Valuation Date.

SECTION E

SUMMARY OF BENEFITS

Summary of Benefits

Regular Retirement (No reduction factor for age)

Eligibility - Age 50 with 25 years of service, or age 60 with 10 or more years of service.

***Annual Amount* – AFSCME, Court Non-Union, Court Clerical, and PEA:** Total service multiplied by 2.5% of average final compensation with a maximum of 80% of average final compensation.

Dispatchers: Total service multiplied by 2.5% of average final compensation with a maximum of 75% of average final compensation.

AR4: Total service multiplied by 2.5% of average final compensation with a maximum of 62.5% of average final compensation. Maximum benefit for AR4 members cannot exceed base pay as of termination date.

Type of Average Final Compensation - Highest 5 non-consecutive years out of last 10. Court Clerical and Dispatchers – Highest 5 consecutive years out of last 10.

Deferred Retirement (Vested Benefit)

Eligibility - 10 years of service, benefit begins at age 60.

Annual Amount - Computed as regular retirement but based on average final compensation and service at time of termination.

Duty Disability Retirement

Eligibility - No age or service requirement.

Annual Amount - Computed as regular retirement with a minimum benefit of 20% of average final compensation. Upon termination of worker's compensation or age 60, whichever occurs first, benefit is recomputed to include additional service credit for the period worker's compensation was paid.

Non-Duty Disability Retirement

Eligibility - 10 or more years of service.

Annual Amount - Computed as regular retirement.

Death-in-Service Survivor Pension

Eligibility - 10 years of service.

Annual Amount - Computed as regular retirement but actuarially reduced in accordance with a 100% joint and survivor election.

Summary of Benefits
(Concluded)

Post-Retirement Cost-of-Living Adjustments

Retirees effective 7/1/93 (Court Clerical effective 1/1/03): 5% cost-of-living increase at age 60 or five years after retirement, whichever is later, with a second increase of 5% five years after the first increase.

Member Contributions

AR4 and Court Non-Union:	None
AFSCME, Court Clerical, Dispatchers, and PEA:	1.0% of pay

City's Contributions

Actuarially determined amounts which are sufficient to at least cover the requirements of the funding objective stated on page A-1 of the actuarial valuation report dated November 1, 2016.

New Hires

The Plan is closed. No new hires will participate in this Retirement System.

SECTION F

ACTUARIAL COST METHOD AND ACTUARIAL ASSUMPTIONS

Actuarial Cost Method

The actuarial cost method is the procedure for allocating the actuarial present value of benefits and expenses to time periods. The method used for your valuation is known as the ***individual entry-age actuarial cost method,*** and has the following characteristics:

- The annual normal costs for each individual active member is sufficient to accumulate the value of the member's pension at the time of retirement.
- Each annual normal cost is a constant percentage of the member's year-by-year projected pensionable compensation.

The unfunded actuarial accrued liability was financed as a level dollar over a closed period of years (24 years for the fiscal year beginning July 1, 2018).

The valuation assets used for funding purposes is derived as follows: prior year valuation assets are increased by contribution and expected investment income (net of expenses) and reduced by refunds and benefit payments. To this amount is added 25% of the difference between expected and actual investment income for each of the previous four years.

The market value of assets was used for GASB Statement Nos. 67 and 68 reporting and in the projection of the Plan Fiduciary Net Position shown in section G of this report.

The total pension liability shown in this report is based on an actuarial valuation performed as of June 30, 2016 rolled forward to the measurement date of June 30, 2017. The roll forward procedure increases the June 30, 2016 actuarial accrued liability with normal cost and interest and decreases it with actual benefit payments paid.

Excess Earnings Reserve. An amount equal to the market value of the Excess Earnings Reserve is added to the liability to assure proper allocation of assets to liability.

Actuarial Assumptions Used for the Valuation

The contribution requirements and benefit values of the System are calculated by applying actuarial assumptions to the benefit provisions and demographic information furnished by the plan sponsor, using the actuarial cost method described on the previous page.

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

* long-term rates of investment return to be generated by the assets of the System
* patterns of pay increases to members
* rates of mortality among members, retirants and beneficiaries
* rates of withdrawal of active members (without entitlement to a retirement benefit)
* rates of disability among members
* the age patterns of actual retirements

The monetary effect of each assumption is calculated 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. 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.

Actuarial Assumptions Used for the Valuation (Continued)

The rate of investment is compounded annually net of expenses.

Investment Return	7.50%
Wage Inflation	3.50%
Price Inflation	2.75%
Spread Between Investment Return and Wage Inflation	4.00%
Spread Between Investment Return and Price Inflation	4.75%

These assumptions are used to equate the value of payments due at different points in time.

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. Base wage growth was set to 2.5% for 2012-2019.

Sample Salary Adjustment Factors Used to Project Salaries in Years 2020 and Beyond

Sample	Percent Increase in Salary During Next Year	
Ages	**Base**	**Promotion & Seniority**
20	3.5 %	3.7 %
25	3.5	3.2
30	3.5	2.7
35	3.5	2.2
40	3.5	1.4
45	3.5	0.7
50	3.5	0.2
55	3.5	0.0

Actuarial Assumptions Used for the Valuation (Continued)

Mortality Table. The mortality assumption is used to measure the probabilities of members dying before retirement and the probabilities of each benefit payment being made after retirement. Descriptions of the mortality tables used in the valuation are below.

- **Healthy Pre-Retirement:** The RP-2014 Employee Generational Mortality Tables, with blue-collar adjustments and extended via cubic spline. This table is adjusted backwards to 2006 with the MP-2014 scale. A base year of 2006 with future mortality improvements assumed each year using scale MP-2015.

- **Healthy Post-Retirement:** The RP-2014 Healthy Annuitant Generational Mortality Tables, with blue-collar adjustments and extended via cubic spline. This table is adjusted backwards to 2006 with the MP-2014 scale. A base year of 2006 with future mortality improvements assumed each year using scale MP-2015.

- **Disability Retirement:** The RP-2014 Disabled Mortality Table, extended via cubic spline. This table is adjusted backwards to 2006 with the MP-2014 scale. A base year of 2006 with future mortality improvements assumed each year using scale MP-2015.

These rates were first used for the June 30, 2016 valuation.

The rates of retirement used to measure the probability of eligible members retiring during the next year were as follows:

Retirement Ages	Percent of Active Members Retiring within Next Year
50	20 %
51	20
52	20
53	20
54	20
55	25
56	25
57	25
58	25
59	25
60	30
61	30
62	30
63	30
64	30
65	100

These rates were first used for the June 30, 2008 valuation.

Actuarial Assumptions Used for the Valuation (Concluded)

Rates of separation from active membership are represented by the following table: (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.

Sample Ages	Years of Service	% of Active Members Separating within Next Year
ALL	0	15.00 %
	1	12.00
	2	10.00
	3	8.00
	4	6.00
25	5 & Over	5.00
30		5.00
35		4.50
40		3.00
45		2.60
50		1.50
55		1.50
60		1.50

The rates were first used for the June 30, 2008 valuation.

Vested members who terminate with a benefit worth less than 100% of their own accumulated contributions were assumed to forfeit their vested benefit.

Rates of disability are represented by the following table:

Sample Ages	Percent Becoming Disabled within Next Year
20	0.03%
25	0.05%
30	0.07%
35	0.13%
40	0.19%
45	0.28%
50	0.45%
55	0.76%
60	1.10%

These rates were first used for the June 30, 1986 valuation. For purposes of the valuation we assume that all disabilities are ordinary, as opposed to non-duty disabilities.

Miscellaneous and Technical Assumptions

Marriage Assumption:	100% of males and 100% of females are assumed to be married for purposes of death-in-service benefits. Male spouses are assumed to be three years older than female spouses.
Pay Increase Timing:	Beginning of the valuation year.
Decrement Timing:	Decrements of all types are assumed to occur mid-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.
Decrement Operation:	All decrements the first 5 years of service. Only mortality operates during retirement eligibility.
Service Credit Accruals:	It is assumed that members accrue one year of service credit per year.
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.
Normal Form of Benefit:	Straight life benefit terminating at death of retiree.
Benefit Service:	Exact fractional service is used to determine the amount of benefit payable.
Payroll Adjustment:	Members who did not work the entire plan year had pays adjusted to reasonably reflect a full year's pay.
Assumption Rationale:	Certain actuarial assumptions were based upon the results of an assumption study for the City of St. Clair Shores Employees Retirement System. A report dated August 11, 2016 presented the results of this study. Other assumptions were based upon an experience study dated, September 23, 2008. We believe these assumptions continue to be suitable for purposes of this study.

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 7.50%; 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 SDR.

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.

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 plan.

Single Discount Rate Development
Projection of Contributions

Year	Projected Payroll for Current Employees	Projected Contributions from Current Employees	Projected Service Cost and Expense Contributions	Projected UAL Contributions	Projected Total Contributions
1	3,720,063	$ 31,902	$ 455,706	$ 2,188,608	$ 2,676,216
2	3,411,173	29,028	411,735	2,226,291	2,667,054
3	3,131,506	26,338	375,548	2,345,222	2,747,108
4	2,901,561	24,106	346,196	2,394,123	2,764,425
5	2,694,157	22,262	320,127	2,338,685	2,681,074
6	2,470,018	20,472	292,181	2,338,685	2,651,338
7	2,255,159	18,872	266,053	2,338,685	2,623,610
8	2,026,441	17,134	238,507	2,338,685	2,594,327
9	1,788,935	15,227	210,194	2,338,685	2,564,106
10	1,576,213	13,507	184,805	2,338,685	2,536,997
11	1,389,426	12,012	162,618	2,338,685	2,513,315
12	1,216,377	10,636	141,923	2,338,685	2,491,244
13	1,062,917	9,405	123,636	2,338,685	2,471,727
14	907,012	8,101	105,102	2,338,685	2,451,888
15	742,755	6,646	85,601	2,338,685	2,430,932
16	599,977	5,369	68,702	2,338,685	2,412,757
17	487,020	4,366	55,352	2,338,685	2,398,403
18	390,692	3,516	44,135	2,338,685	2,386,336
19	302,101	2,725	34,017	2,338,685	2,375,427
20	228,743	2,063	25,564	2,338,685	2,366,312
21	170,212	1,532	18,903	2,338,685	2,359,120
22	126,210	1,146	13,950	2,338,685	2,353,781
23	92,088	848	10,118	2,338,685	2,349,651
24	65,272	600	7,119	2,338,684	2,346,403
25	46,682	429	5,031	2,338,683	2,344,143
26	32,569	298	3,479	-	3,777
27	22,512	205	2,368	-	2,573
28	14,379	135	1,470	-	1,606
29	8,102	81	794	-	875
30	4,885	49	472	-	521
31	2,500	25	230	-	255
32	1,795	18	161	-	179
33	772	8	71	-	79
34	-	-	-	-	-
35	-	-	-	-	-
36	-	-	-	-	-
37	-	-	-	-	-
38	-	-	-	-	-
39	-	-	-	-	-
40	-	-	-	-	-
41	-	-	-	-	-
42	-	-	-	-	-
43	-	-	-	-	-
44	-	-	-	-	-
45	-	-	-	-	-
46	-	-	-	-	-
47	-	-	-	-	-
48	-	-	-	-	-
49	-	-	-	-	-
50	-	-	-	-	-

Single Discount Rate Development
Projection of Contributions
(Concluded)

Year	Projected Payroll for Current Employees	Projected Contributions from Current Employees	Projected Service Cost and Expense Contributions	Projected UAL Contributions	Projected Total Contributions
51	$ -	$ -	$ -	$ -	$ -
52	-	-	-	-	-
53	-	-	-	-	-
54	-	-	-	-	-
55	-	-	-	-	-
56	-	-	-	-	-
57	-	-	-	-	-
58	-	-	-	-	-
59	-	-	-	-	-
60	-	-	-	-	-
61	-	-	-	-	-
62	-	-	-	-	-
63	-	-	-	-	-
64	-	-	-	-	-
65	-	-	-	-	-
66	-	-	-	-	-
67	-	-	-	-	-
68	-	-	-	-	-
69	-	-	-	-	-
70	-	-	-	-	-
71	-	-	-	-	-
72	-	-	-	-	-
73	-	-	-	-	-
74	-	-	-	-	-
75	-	-	-	-	-
76	-	-	-	-	-
77	-	-	-	-	-
78	-	-	-	-	-
79	-	-	-	-	-
80	-	-	-	-	-
81	-	-	-	-	-
82	-	-	-	-	-
83	-	-	-	-	-
84	-	-	-	-	-
85	-	-	-	-	-
86	-	-	-	-	-
87	-	-	-	-	-
88	-	-	-	-	-
89	-	-	-	-	-
90	-	-	-	-	-
91	-	-	-	-	-
92	-	-	-	-	-
93	-	-	-	-	-
94	-	-	-	-	-
95	-	-	-	-	-
96	-	-	-	-	-
97	-	-	-	-	-
98	-	-	-	-	-
99	-	-	-	-	-
100	-	-	-	-	-

Single Discount Rate Development
Projection of Plan Fiduciary Net Position

Year	Projected Beginning Plan Net Position	Projected Total Contributions	Projected Benefit Payments	Projected Administrative Expenses	Projected Investment Earnings at 7.500%	Projected Ending Plan Net Position
	(a)	(b)	(c)	(d)	(e)	(f)=(a)+(b)-(c)-(d)+(e)
1	$ 39,096,042	$ 2,676,216	$ 4,992,201	$ -	$ 2,846,924	$ 39,626,981
2	39,626,981	2,667,054	5,130,024	-	2,881,332	40,045,343
3	40,045,343	2,747,108	5,235,608	-	2,911,769	40,468,613
4	40,468,613	2,764,425	5,302,670	-	2,941,683	40,872,050
5	40,872,050	2,681,074	5,375,503	-	2,966,189	41,143,810
6	41,143,810	2,651,338	5,442,279	-	2,983,018	41,335,886
7	41,335,886	2,623,610	5,535,039	-	2,992,987	41,417,444
8	41,417,444	2,594,327	5,604,853	-	2,995,454	41,402,372
9	41,402,372	2,564,106	5,708,549	-	2,989,393	41,247,322
10	41,247,322	2,536,997	5,765,820	-	2,974,657	40,993,156
11	40,993,156	2,513,315	5,803,791	-	2,953,325	40,656,004
12	40,656,004	2,491,244	5,818,503	-	2,926,684	40,255,429
13	40,255,429	2,471,727	5,843,058	-	2,895,018	39,779,115
14	39,779,115	2,451,888	5,874,027	-	2,857,423	39,214,400
15	39,214,400	2,430,932	5,859,261	-	2,814,842	38,600,914
16	38,600,914	2,412,757	5,824,423	-	2,769,444	37,958,692
17	37,958,692	2,398,403	5,768,438	-	2,722,810	37,311,468
18	37,311,468	2,386,336	5,698,957	-	2,676,383	36,675,230
19	36,675,230	2,375,427	5,614,057	-	2,631,389	36,067,988
20	36,067,988	2,366,312	5,500,931	-	2,589,676	35,523,045
21	35,523,045	2,359,120	5,368,527	-	2,553,416	35,067,054
22	35,067,054	2,353,781	5,216,043	-	2,524,635	34,729,426
23	34,729,426	2,349,651	5,064,976	-	2,504,723	34,518,825
24	34,518,825	2,346,403	4,902,225	-	2,494,801	34,457,804
25	34,457,804	2,344,143	4,717,598	-	2,496,940	34,581,288
26	34,581,288	3,777	4,526,173	-	2,427,073	32,485,965
27	32,485,965	2,573	4,316,846	-	2,277,587	30,449,279
28	30,449,279	1,606	4,116,257	-	2,132,186	28,466,814
29	28,466,814	875	3,914,685	-	1,990,896	26,543,901
30	26,543,901	521	3,701,914	-	1,854,500	24,697,007
31	24,697,007	255	3,491,329	-	1,723,727	22,929,660
32	22,929,660	179	3,281,927	-	1,598,884	21,246,796
33	21,246,796	79	3,078,956	-	1,480,139	19,648,058
34	19,648,058	-	2,881,950	-	1,367,485	18,133,593
35	18,133,593	-	2,690,200	-	1,260,961	16,704,354
36	16,704,354	-	2,506,177	-	1,160,544	15,358,720
37	15,358,720	-	2,330,308	-	1,066,097	14,094,509
38	14,094,509	-	2,163,022	-	977,441	12,908,928
39	12,908,928	-	2,004,462	-	894,361	11,798,827
40	11,798,827	-	1,854,570	-	816,623	10,760,880
41	10,760,880	-	1,713,339	-	743,977	9,791,518
42	9,791,518	-	1,580,586	-	676,163	8,887,095
43	8,887,095	-	1,456,071	-	612,917	8,043,941
44	8,043,941	-	1,339,326	-	553,979	7,258,594
45	7,258,594	-	1,229,833	-	499,110	6,527,871
46	6,527,871	-	1,127,081	-	448,089	5,848,879
47	5,848,879	-	1,030,558	-	400,719	5,219,040
48	5,219,040	-	939,833	-	356,821	4,636,029
49	4,636,029	-	854,545	-	316,236	4,097,720
50	4,097,720	-	774,342	-	278,816	3,602,194

Single Discount Rate Development
Projection of Plan Fiduciary Net Position
(Concluded)

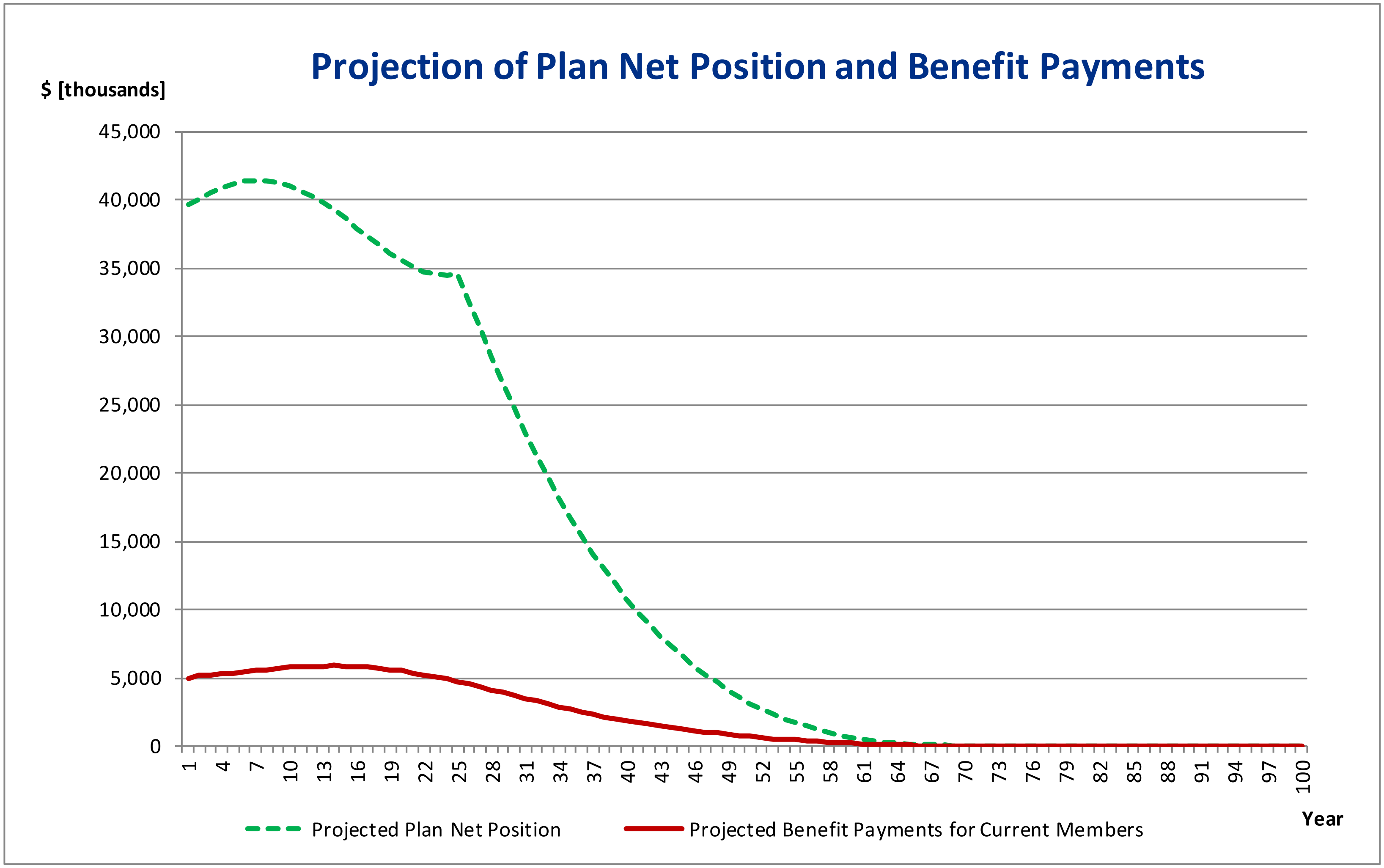
Year	Projected Beginning Plan Net Position	Projected Total Contributions	Projected Benefit Payments	Projected Administrative Expenses	Projected Investment Earnings at 7.500%	Projected Ending Plan Net Position
	(a)	(b)	(c)	(d)	(e)	(f)=(a)+(b)-(c)-(d)+(e)
51	$ 3,602,194	$ -	$ 698,911	$ -	$ 244,429	$ 3,147,712
52	3,147,712	-	628,012	-	212,954	2,732,654
53	2,732,654	-	561,445	-	184,276	2,355,485
54	2,355,485	-	499,039	-	158,286	2,014,732
55	2,014,732	-	440,662	-	134,879	1,708,948
56	1,708,948	-	386,259	-	113,948	1,436,638
57	1,436,638	-	335,844	-	95,381	1,196,176
58	1,196,176	-	289,467	-	79,054	985,763
59	985,763	-	247,141	-	64,832	803,454
60	803,454	-	208,817	-	52,570	647,207
61	647,207	-	174,453	-	42,117	514,871
62	514,871	-	143,988	-	33,313	404,196
63	404,196	-	117,329	-	25,994	312,862
64	312,862	-	94,307	-	19,992	238,547
65	238,547	-	74,685	-	15,141	179,003
66	179,003	-	58,209	-	11,282	132,076
67	132,076	-	44,606	-	8,263	95,733
68	95,733	-	33,577	-	5,944	68,100
69	68,100	-	24,804	-	4,194	47,490
70	47,490	-	17,958	-	2,901	32,432
71	32,432	-	12,725	-	1,964	21,671
72	21,671	-	8,817	-	1,301	14,155
73	14,155	-	5,966	-	842	9,030
74	9,030	-	3,938	-	532	5,624
75	5,624	-	2,533	-	329	3,420
76	3,420	-	1,588	-	198	2,030
77	2,030	-	970	-	117	1,176
78	1,176	-	577	-	67	666
79	666	-	334	-	38	370
80	370	-	189	-	21	202
81	202	-	105	-	11	108
82	108	-	58	-	6	56
83	56	-	31	-	3	28
84	28	-	16	-	1	13
85	13	-	8	-	1	6
86	6	-	4	-	0	2
87	2	-	2	-	0	1
88	1	-	1	-	0	0
89	0	-	0	-	0	0
90	0	-	0	-	0	0
91	0	-	0	-	0	0
92	0	-	-	-	0	0
93	0	-	-	-	0	0
94	0	-	-	-	0	0
95	0	-	-	-	0	0
96	0	-	-	-	0	0
97	0	-	-	-	0	0
98	0	-	-	-	0	0
99	0	-	-	-	0	0
100	0	-	-	-	0	0

Single Discount Rate Development
Present Values of Projected Benefits

Year	Projected Beginning Plan Net Position	Projected Benefit Payments	Funded Portion of Projected Benefit Payments	Unfunded Portion of Projected 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 All 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)
1	$ 39,096,042	$ 4,992,201	$ 4,992,201	$ -	$ 4,814,906	$ -	$ 4,814,906
2	39,626,981	5,130,024	5,130,024	-	4,602,636	-	4,602,636
3	40,045,343	5,235,608	5,235,608	-	4,369,643	-	4,369,643
4	40,468,613	5,302,670	5,302,670	-	4,116,850	-	4,116,850
5	40,872,050	5,375,503	5,375,503	-	3,882,228	-	3,882,228
6	41,143,810	5,442,279	5,442,279	-	3,656,237	-	3,656,237
7	41,335,886	5,535,039	5,535,039	-	3,459,120	-	3,459,120
8	41,417,444	5,604,853	5,604,853	-	3,258,373	-	3,258,373
9	41,402,372	5,708,549	5,708,549	-	3,087,122	-	3,087,122
10	41,247,322	5,765,820	5,765,820	-	2,900,552	-	2,900,552
11	40,993,156	5,803,791	5,803,791	-	2,715,957	-	2,715,957
12	40,656,004	5,818,503	5,818,503	-	2,532,876	-	2,532,876
13	40,255,429	5,843,058	5,843,058	-	2,366,107	-	2,366,107
14	39,779,115	5,874,027	5,874,027	-	2,212,696	-	2,212,696
15	39,214,400	5,859,261	5,859,261	-	2,053,147	-	2,053,147
16	38,600,914	5,824,423	5,824,423	-	1,898,548	-	1,898,548
17	37,958,692	5,768,438	5,768,438	-	1,749,116	-	1,749,116
18	37,311,468	5,698,957	5,698,957	-	1,607,486	-	1,607,486
19	36,675,230	5,614,057	5,614,057	-	1,473,059	-	1,473,059
20	36,067,988	5,500,931	5,500,931	-	1,342,676	-	1,342,676
21	35,523,045	5,368,527	5,368,527	-	1,218,938	-	1,218,938
22	35,067,054	5,216,043	5,216,043	-	1,101,689	-	1,101,689
23	34,729,426	5,064,976	5,064,976	-	995,146	-	995,146
24	34,518,825	4,902,225	4,902,225	-	895,972	-	895,972
25	34,457,804	4,717,598	4,717,598	-	802,072	-	802,072
26	34,581,288	4,526,173	4,526,173	-	715,839	-	715,839
27	32,485,965	4,316,846	4,316,846	-	635,100	-	635,100
28	30,449,279	4,116,257	4,116,257	-	563,339	-	563,339
29	28,466,814	3,914,685	3,914,685	-	498,374	-	498,374
30	26,543,901	3,701,914	3,701,914	-	438,406	-	438,406
31	24,697,007	3,491,329	3,491,329	-	384,621	-	384,621
32	22,929,660	3,281,927	3,281,927	-	336,327	-	336,327
33	21,246,796	3,078,956	3,078,956	-	293,514	-	293,514
34	19,648,058	2,881,950	2,881,950	-	255,566	-	255,566
35	18,133,593	2,690,200	2,690,200	-	221,918	-	221,918
36	16,704,354	2,506,177	2,506,177	-	192,314	-	192,314
37	15,358,720	2,330,308	2,330,308	-	166,343	-	166,343
38	14,094,509	2,163,022	2,163,022	-	143,629	-	143,629
39	12,908,928	2,004,462	2,004,462	-	123,815	-	123,815
40	11,798,827	1,854,570	1,854,570	-	106,564	-	106,564
41	10,760,880	1,713,339	1,713,339	-	91,580	-	91,580
42	9,791,518	1,580,586	1,580,586	-	78,590	-	78,590
43	8,887,095	1,456,071	1,456,071	-	67,348	-	67,348
44	8,043,941	1,339,326	1,339,326	-	57,626	-	57,626
45	7,258,594	1,229,833	1,229,833	-	49,223	-	49,223
46	6,527,871	1,127,081	1,127,081	-	41,963	-	41,963
47	5,848,879	1,030,558	1,030,558	-	35,693	-	35,693
48	5,219,040	939,833	939,833	-	30,279	-	30,279
49	4,636,029	854,545	854,545	-	25,611	-	25,611
50	4,097,720	774,342	774,342	-	21,588	-	21,588

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

Year	Projected Beginning Plan Net Position	Projected Benefit Payments	Funded Portion of Projected Benefit Payments	Unfunded Portion of Projected 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 All 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	$ 3,602,194	$ 698,911	$ 698,911	$ -	$ 18,126	$ -	$ 18,126
52	3,147,712	628,012	628,012	-	15,151	-	15,151
53	2,732,654	561,445	561,445	-	12,600	-	12,600
54	2,355,485	499,039	499,039	-	10,418	-	10,418
55	2,014,732	440,662	440,662	-	8,557	-	8,557
56	1,708,948	386,259	386,259	-	6,978	-	6,978
57	1,436,638	335,844	335,844	-	5,644	-	5,644
58	1,196,176	289,467	289,467	-	4,525	-	4,525
59	985,763	247,141	247,141	-	3,594	-	3,594
60	803,454	208,817	208,817	-	2,825	-	2,825
61	647,207	174,453	174,453	-	2,195	-	2,195
62	514,871	143,988	143,988	-	1,685	-	1,685
63	404,196	117,329	117,329	-	1,278	-	1,278
64	312,862	94,307	94,307	-	955	-	955
65	238,547	74,685	74,685	-	704	-	704
66	179,003	58,209	58,209	-	510	-	510
67	132,076	44,606	44,606	-	364	-	364
68	95,733	33,577	33,577	-	255	-	255
69	68,100	24,804	24,804	-	175	-	175
70	47,490	17,958	17,958	-	118	-	118
71	32,432	12,725	12,725	-	78	-	78
72	21,671	8,817	8,817	-	50	-	50
73	14,155	5,966	5,966	-	32	-	32
74	9,030	3,938	3,938	-	19	-	19
75	5,624	2,533	2,533	-	12	-	12
76	3,420	1,588	1,588	-	7	-	7
77	2,030	970	970	-	4	-	4
78	1,176	577	577	-	2	-	2
79	666	334	334	-	1	-	1
80	370	189	189	-	1	-	1
81	202	105	105	-	0	-	0
82	108	58	58	-	0	-	0
83	56	31	31	-	0	-	0
84	28	16	16	-	0	-	0
85	13	8	8	-	0	-	0
86	6	4	4	-	0	-	0
87	2	2	2	-	0	-	0
88	1	1	1	-	0	-	0
89	0	0	0	-	0	-	0
90	0	0	0	-	0	-	0
91	0	0	0	-	0	-	0
92	0	-	-	-	-	-	-
93	0	-	-	-	-	-	-
94	0	-	-	-	-	-	-
95	0	-	-	-	-	-	-
96	0	-	-	-	-	-	-
97	0	-	-	-	-	-	-
98	0	-	-	-	-	-	-
99	0	-	-	-	-	-	-
100	0	-	0	(0)	0	(0)	-
				Totals	$ 68,785,183	$ -	$ 68,785,183



Projection of Plan Net Position and Benefit Payments
$ [thousands]
45,000
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
1
4
7
10
13
16
19
22
25
28
31
34
37
40
43
46
49
52
55
58
61
64
67
70
73
76
79
82
85
88
91
94
97
100
Year
Projected Plan Net Position
Projected Benefit Payments for Current Members

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 employees that are provided with pensions through the pension plan.
Deferred Retirement Option Program (DROP)	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.
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 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.
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 market value of the assets of the trust dedicated to the defined benefit provisions.
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.