The Police and Fire Retirement System of the City of Detroit

GASB Statement Nos. 67 and 68 Accounting and Financial Reporting for Pension Plans of Component II

June 30, 2017

GRS Retirement Consulting

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October 25, 2017

Board of Trustees
The Police and Fire Retirement System
of the City of Detroit

Dear Board Members:

This report provides information required for the Police and Fire Retirement System of the City of Detroit in connection with the Governmental Accounting Standards Board (GASB) Statement No. 67 "Financial Reporting for Pension Plans" and No. 68 "Employer Reporting for Pension Plans." These calculations have been made on a basis that is consistent with our understanding of these Statements. This information is subject to review of the City's and the System's Auditor. Please let us know if the City's or the System's Auditor recommends any changes. This report covers the Police and Fire Retirement System Plan known as Component II (also known as the Legacy Plan). Since Component I is a separate plan, it is detailed in a separate 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 Nos. 67 and 68 may produce significantly different results. 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.

This report is based upon information, furnished to us by System staff, concerning retirement and ancillary benefits, active members, deferred vested members, retirees and beneficiaries, and financial data. This report is based on the valuation date of June 30, 2016. The total pension liability was rolled-forward from the valuation date to the plan year ending June 30, 2017 using generally accepted actuarial principles. The asset information as of June 30, 2017 was provided by the System. This information was checked for internal consistency, but it was not audited by GRS. A description of the adjustments made to the data is included in this report (either directly or by reference). GRS is not responsible for the accuracy of the member or financial data. This report is based upon estimates of frozen accrued benefits. Final calculations were not provided by Retirement System Staff. Future measurements based on final calculation of benefit amounts will differ.

At the direction of the System and with approval of the System's Auditor, the long-term expected return on assets used to determine the discount rate is 7.17% as of June 30, 2017, up from 7.15% as of June 30, 2016. We have reviewed this assumption based on the System's asset allocation and have determined it to be reasonable for purposes of the measurement being taken.

The benefit provisions reflected in this valuation for the development of the end of year Total Pension Liability (TPL) are those in effect for Component II as of the end of the plan year on June 30, 2017. There were no changes in benefit provisions since the June 30, 2016 GASB Statement Nos. 67 and 68 valuations.

To the best of our knowledge, the information contained within this report is accurate and fairly represents the actuarial position of the System on the measurement date for purposes of GASB Statement Nos. 67 and 68 reporting. 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.

David T. Kausch and Judith A. Kermans 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,

David T. Kausch

David T. Kausch, FSA, EA, FCA, MAAA, PhD
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SECTION A

EXECUTIVE SUMMARY

Executive Summary
as of June 30, 2017

Actuarial Valuation Date	June 30, 2016
Measurement Date of the Net Pension Liability	June 30, 2017
Employer's Fiscal Year Ending Date (GASB No. 68 Reporting Date)	June 30, 2018

Membership	
Number of	
- Retirees and Beneficiaries	8,204
- DROP Members	631
- Inactive, Nonretired Members	369
- Active Members	2,205
- Total	11,409
Covered Payroll	$ 126,865,176
Net Pension Liability	
Total Pension Liability	$ 3,750,305,804
Plan Fiduciary Net Position	2,922,141,978
Net Pension Liability	$ 828,163,826
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	77.92%
Net Pension Liability as a Percentage of Covered Payroll	652.79%
Development of the Single Discount Rate	
Single Discount Rate	7.17%
Long-Term Expected Rate of Investment Return	7.17%
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	$ 47,428,047

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	$ -	$ -
Changes in assumptions	-	-
Net difference between projected and actual earnings on pension plan investments	164,711,293	133,854,643
Asset Transfer	-	-
Total	$ 164,711,293	$ 133,854,643

*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 29, 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

Changes to the Actuarial Assumptions

For purposes of determining the total pension liability as of June 30, 2017, the following actuarial assumptions were changed/modified from those used in the June 30, 2016 funding valuation:

- At the direction of the System and approval of the Systems' Auditor, the long-term expected return on assets was 7.17% as of June 30, 2017 (it was 6.75% in the June 30, 2016 funding valuation, as required by the Plan of Adjustment).
- The excess of the Annuity Reserve Fund (ARF) over the related accrued liabilities was not included as a liability in this report.

The following actuarial assumptions were changed/modified from those used in the June 30, 2016 GASB Statement Nos. 67 and 68 valuations.

- The Single Discount Rate (SDR) changed to 7.17% from 7.15%, which was used in the June 30, 2016 GASB Statement Nos. 67 and 68 valuations.
- The Average Final Compensation (AFC) load was increased from 8% to 10%. This load is applied to active member's liabilities and is based on a comparison of actual benefits (for members retiring after the valuation date) to estimated benefits based on valuation data.
- The Board adopted new option factors for the Plan. However, we have not been provided with an effective date for the new factors. For the sake of simplicity, we have assumed the new factors apply to all retirements after the actuarial valuation date.

Changes to the Benefit Provisions

There were no changes in benefit provisions.

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 Police and Fire Retirement System of the City of Detroit 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.

Discussion

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 of resources and inflows of resources related to pensions.

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

- a description of the types of benefits provided by the plan, as well as automatic or ad hoc COLAs;
- the number and classes of employees covered by the benefit terms;
- for the current year, sources of changes in the net pension liability;
- significant assumptions and methods used to calculate the total pension liability;
- inputs to the Single Discount Rate;
- certain information about mortality assumptions and the dates of experience studies;
- the date of the valuation used to determine the total pension liability;
- information about changes of assumptions or other inputs and benefit terms;
- the basis for determining contributions to the plan, including a description of the plan's funding policy, as well as member and employer contribution requirements;
- the total pension liability, 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;
- a description of the system that administers the pension plan; and
- a description of the terms of the plan's Deferred Retirement Option Program (DROP) and the total DROP balance for those members currently participating in the DROP. ***Current DROP balances for members of this plan are not available and are not included. These balances are also excluded from the reported assets.***

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;
- the pension plan's investment policies;
- the portion of present value of benefits to be provided through the pension plan to current active and inactive plan members;
- a description of how fair value is determined; and
- 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.

Discussion

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;
- comparison of the actual employer contributions to the actuarially determined contributions based on the plan's funding policy; and
- the annual money-weighted rate of return on pension plan investments for each year.

While the first two tables may be built prospectively as the information becomes available, sufficient information may currently be available for the third table from prior financial statements.

Timing of the Valuation

An actuarial valuation to determine the total pension liability is required to be performed at least every two years. For the employer's financial reporting purposes, the net pension liability and pension expense should be measured as of the employer's "measurement date" which may not be earlier than the employer's prior fiscal year-end date. 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 rolled to the plan year end of June 30, 2017.

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 (which is published by the Bond Buyer Index) 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 7.17%; the municipal bond rate is 3.56% (based on the weekly rate closest to but not later than the plan year end of the "20-Year Municipal GO AA Index" rate from the Fidelity); and the resulting Single Discount Rate is 7.17% as of June 30, 2017.

The projection of contributions used to determine this Single Discount Rate reflect that plan member contributions ceased prior to June 30, 2016 and that employer contributions will be made at rates equal to those set by the final Plan of Adjustment through June 30, 2023 and a 30-year closed level dollar amortization thereafter. 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.

Discussion

Therefore, the long-term expected rate of return on pension plan investments of 7.17% was applied to all periods of projected benefit payments to determine the total pension liability. Note projections are shown with a 7.17% investment return (the current long-term expected rate provided by the Retirement System).

Note the projections show assets continuing to grow after the satisfaction of liabilities. This is a byproduct of the way in which the Contingency Reserve (the excess of ARF over annuity liabilities) is handled in the valuation. See Contingency Reserve comment for additional details.

The 30-year period, beginning July 1, 2023, was chosen to illustrate the projection of net plan position due to its use in the City's 40-year forecasting included in the Plan of Adjustment and the State requirements under the Michigan Constitution and the Public Employees Retirement System Investment Act (PERSIA). There have been a number of changes resulting from the Bankruptcy and the Board is in the process of establishing a funding policy. The amortization method used in the projections is unchanged from the June 30, 2016 GASB Statement Nos. 67 and 68 reports.

Limitation of Assets as a Percent of Total Pension Liability Measurements

This report includes a measure of the plan fiduciary net position as a percent of total pension liability (77.92% as of June 30, 2017). Unless otherwise indicated, with regard to any such measurements presented in this report:

(1) This measurement is not intended to be a funded ratio or a measure of funded progress.
(2) This measurement is inappropriate for assessing the sufficiency of Plan assets to cover the estimated cost of settling the Plan's benefit obligations.
(3) The measurement is inappropriate for assessing the need for or amount of future employer contributions.

Limitations of Project Scope

Actuarial Standards do not require the actuary to evaluate the ability of the plan sponsor or other contributing entities to make required contributions when due. Such an evaluation was not within the scope of this project and is not within our area of expertise. Consequently, we have not made such an evaluation.

Plan

The Police and Fire Retirement System has two components. It is our understanding that Component I and Component II are separate plans and the assets from one plan cannot be used to satisfy the liabilities of the other, even though assets may be pooled for investment purposes and transfers may be required by the plan document in certain circumstances. Therefore, this report only includes the liabilities and reported assets of Component II. The liabilities and reported assets of Component I will be detailed in a separate report.

Discussion

Contingency Reserve

Historically, the Retirement Board has included a contingency reserve in the development of the accrued liabilities equal to the difference between the annuity liabilities and the Annuity Reserve Fund (when the Annuity Reserve Fund exceeds the annuity liabilities). Neither GASB Statements No. 67 nor 68 seem to address this situation directly. However, question 23 of the GASB Statement No. 67 implementation guide addresses a closely related issue. Based on that guidance, we believe the TPL should not include the Contingency Reserve and have, therefore, removed it.

The Contingency Reserve may still need to be disclosed in accordance with paragraph 30(e). If so, the amount of the reserve is $46,668,368 as of June 30, 2016. Of that amount, $20 million was transferred to Component I during the FY 2017. The projections in Section G show the Net Plan Position as of June 30, 2017 with and without the remaining contingency reserve. If the contingency reserve is removed from the liabilities and those assets are never to be paid out, they will continue to grow with interest.

SECTION B

FINANCIAL STATEMENTS

This information is subject to review by the City's and the System's Auditor. Please let us know if there are any recommended changes.

Statement of Fiduciary Net Position
as of June 30, 2017

Assets		
Cash and Cash Equivalents	$	98,873,797
Receivables	$	76,065,900
Investments		
Investments at Fair Value	$	2,824,592,231
Cash and Investments held as Collateral for Securities Lending		212,806,635
Capital Assets - Net		267,822
Total Investments	$	3,037,666,688
Total Assets	$	3,212,606,385
Liabilities		
Payables		
Accounts Payable	$	290,464,407
Total Liabilities	$	290,464,407
Net Position Restricted for Pensions	$	2,922,141,978

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

Additions		
Contributions		
Employer	$	18,300,000
Employee		14,055
Other		-
Total Contributions	$	18,314,055
Investment Income		
Net Appreciation in Fair Value of Investments	$	282,398,412
Interest and Dividends		-
Less Investment Expense		-
Net Investment Income	$	282,398,412
Other	$	1,491,589
Total Additions	$	302,204,056
Deductions		
Benefit Payments, including Refunds of Employee Contributions	$	306,098,871
Pension Plan Administrative Expense		4,433,657
Other		20,000,000
Total Deductions	$	330,532,528
Net Increase in Net Position	$	(28,328,472)
Net Position Restricted for Pensions		
Beginning of Year	$	2,950,470,450
End of Year	$	2,922,141,978

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

A. Expense

1. Service Cost	$ -
2. Interest on the Total Pension Liability	261,449,503
3. Current-Period Benefit Changes	0
4. Employee Contributions (made negative for addition here)	(14,055)
5. Projected Earnings on Plan Investments (made negative for addition here)	(199,850,151)
6. Pension Plan Administrative Expense	4,433,657
7. Other Changes in Plan Fiduciary Net Position	(1,491,589)
8. Recognition of Outflow (Inflow) of Resources due to Liabilities	(14,730,674)
9. Recognition of Outflow (Inflow) of Resources due to Assets	(2,368,644)
10. Total Pension Expense	**$ 47,428,047**

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	$	(10,648,606)
2. Assumption Changes (gains) or losses	$	(4,082,068)
3. Recognition period for Liabilities: Average of the expected remaining service lives of all employees {in years}*		1.0000
4. Outflow (Inflow) of Resources to be recognized in the current pension expense for the difference between expected and actual experience of the Total Pension Liability	$	(10,648,606)
5. Outflow (Inflow) of Resources to be recognized in the current pension expense for Assumption Changes	$	(4,082,068)
6. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Liabilities	$	(14,730,674)
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	$	-
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	$	-
B. Outflows (Inflows) of Resources due to Assets		
1. Net difference between projected and actual earnings on pension plan investments (gains) or losses	$	(82,548,261)
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	$	(16,509,652)
4. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Assets	$	(66,038,609)

* *We used a 1-year period (immediate recognition), since the Plan is closed and no benefits are accruing and, therefore, future participation service is zero.*

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	$ -	$ 14,730,674	$ (14,730,674)
2. Due to Assets	61,957,042	84,325,686	(22,368,644)
3. Due to Asset Transfer	20,000,000	-	20,000,000
4. Total	$ 81,957,042	$ 99,056,360	$ (17,099,318)

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	$ -	$ 10,648,606	$ (10,648,606)
2. Assumption Changes	-	$ 4,082,068	(4,082,068)
3. Net Difference between projected and actual earnings on pension plan investments	61,957,042	84,325,686	(22,368,644)
4. Due to Asset Transfer	20,000,000	-	20,000,000
5. Total	$ 81,957,042	$ 99,056,360	$ (17,099,318)

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	$ -	$ -	$ -
2. Assumption Changes	-	-	-
3. Net Difference between projected and actual earnings on pension plan investments	164,711,293	133,854,643	30,856,650
4. Asset transfer	-	-	-
5. Total	$ 164,711,293	$ 133,854,643	$ 30,856,650

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	$ (22,368,644)
2019	45,447,388
2020	24,287,561
2021	(16,509,655)
2022	-
Thereafter	-
Total	$ 30,856,650

SECTION C

REQUIRED SUPPLEMENTARY INFORMATION

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	$	-
2. Interest on the Total Pension Liability		261,449,503
3. Changes of benefit terms		0
4. Difference between expected and actual experience of the Total Pension Liability		(10,648,606)
5. Changes of assumptions		(4,082,068)
6. Benefit payments, including refunds of employee contributions		(306,098,871)
7. Net change in total pension liability	$	(59,380,042)
8. Total pension liability – beginning		3,809,685,846
9. Total pension liability – ending	**$**	**3,750,305,804**
B. Plan fiduciary net position		
1. Contributions – employer	$	18,300,000
2. Contributions – employee		14,055
3. Net investment income		282,398,412
4. Benefit payments, including refunds of employee contributions		(306,098,871)
5. Pension plan administrative expense		(4,433,657)
6. Other		(18,508,411)
7. Net change in plan fiduciary net position	$	(28,328,472)
8. Plan fiduciary net position – beginning		2,950,470,450
9. Plan fiduciary net position – ending	**$**	**2,922,141,978**
C. Net pension liability	**$**	**828,163,826**
D. Plan fiduciary net position as a percentage of the total pension liability		**77.92%**
E. Covered-employee payroll	**$**	**126,865,176**
F. Net pension liability as a percentage of covered-employee payroll		**652.79%**

A Special Funding Situation may occur if a non-city entity has a legal obligation to contribute directly to the Retirement System. The Net Pension Liability shown here has not been adjusted for any potential special funding situation. Our understanding is that the City makes all the employer contributions into the fund, even though the City may receive monies from other entities as a result of the POA.

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

Ultimately 10 Fiscal Years will be Displayed

Fiscal year ending June 30,	2017	2016	2015	2014
Total Pension Liability				
Service Cost	$ -	$ -	$ -	$ 34,967,708
Interest on the Total Pension Liability	261,449,503	264,233,822	306,063,331	304,737,368
Benefit Changes	-	-	(555,898,068)	(102,236,878)
Difference between Expected and Actual Experience	(10,648,606)	45,955,554	(59,621,651)	-
Assumption Changes*	(4,082,068)	114,463,362	(95,014,469)	540,356,835
Benefit Payments	(286,667,369)	(285,936,674)	(313,816,916)	(285,512,629)
Refunds	(19,431,502)	(18,530,489)	-	(38,027,844)
Net Change in Total Pension Liability	(59,380,042)	120,185,575	(718,287,774)	454,284,561
Total Pension Liability - Beginning	3,809,685,846	3,689,500,271	4,407,788,045	3,953,503,484
Total Pension Liability - Ending (a)	$ 3,750,305,804	$3,809,685,846	$3,689,500,271	$4,407,788,045
Plan Fiduciary Net Position				
Employer Contributions	$ 18,300,000	$ 37,787,744	$ 114,300,000	$ -
Employee Contributions	14,055	24,801	42,576	7,783,141
Pension Plan Net Investment Income	282,398,412	24,649,809	122,736,820	568,760,793
Benefit Payments	(286,667,369)	(285,936,673)	(313,816,916)	(285,512,629)
Refunds	(19,431,502)	(18,530,489)	-	(38,027,844)
Pension Plan Administrative Expense	(4,433,657)	(3,103,694)	(7,630,692)	(11,373,226)
Other	(18,508,411)	824,511	2,919,354	-
Net Change in Plan Fiduciary Net Position	(28,328,472)	(244,283,991)	(81,448,858)	241,630,235
Plan Fiduciary Net Position - Beginning	2,950,470,450	3,194,754,441	3,276,203,299	3,034,573,064
Plan Fiduciary Net Position - Ending (b)	$ 2,922,141,978	$2,950,470,450	$3,194,754,441	$3,276,203,299
Net Pension Liability - Ending (a) - (b)	828,163,826	859,215,396	494,745,830	1,131,584,746
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	77.92 %	77.45 %	86.59 %	74.33 %
Covered Employee Payroll (excluding DROP)	$ 126,865,176	$ 134,758,956	$ 132,566,687	$ 150,176,596
Net Pension Liability as a Percentage of Covered Employee Payroll	652.79 %	637.59 %	373.21 %	753.50 %

Notes to Schedule:

* *For the fiscal years ending 2016 and 2017, the "Assumption Change" item only includes the effect of the change in the SDR. All other changes to the actuarial assumptions and methods, as discussed on the bottom of page 2, are included in the "Difference between Expected and Actual Experience" line.*

A Special Funding Situation may occur if a non-city entity has a legal obligation to contribute directly to the Retirement System. The Net Pension Liability shown here has not been adjusted for any potential special funding situation. Our understanding is that the City makes all the employer contributions into the fund, even though the City may receive monies from other entities as a result of the POA.

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

Ultimately 10 Fiscal Years will be Displayed

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
2014	$ 4,407,788,045	$ 3,276,203,299	$ 1,131,584,746	74.33%	$ 150,176,596	753.50%
2015	3,689,500,271	3,194,754,441	494,745,830	86.59%	132,566,687	373.21%
2016	3,809,685,846	2,950,470,450	859,215,396	77.45%	134,758,956	637.59%
2017	3,750,305,804	2,922,141,978	828,163,826	77.92%	126,865,176	652.79%

* *Covered payroll shown is the reported payroll on the actuarial valuation date (census date). Actual covered payroll paid during the year was unavailable. Covered payroll for this purpose excludes DROP member payroll.*

Schedule of Contributions Multiyear

Last 10 Fiscal Years

FY Ending June 30,	Actuarially Determined Contribution#	Actual Contribution	Contribution Deficiency (Excess)	Covered Payroll		Actual Contribution as a % of Covered Payroll
2014	$ 62,954,305	$ -	$ 62,954,305	$ 186,694,166	*	0.00%
2015	N/A	114,300,000	N/A	132,566,687		86.22%
2016	N/A	37,787,744	N/A	134,758,956		28.04%
2017	N/A	18,300,000	N/A	126,865,176		14.42%

* *Includes DROP members, consistent with Plan Funding.*

\# *Beginning with FY 2015, employer contributions are set forth in the POA through 2023 and are not actuarially determined. Employer contributions will again be actuarially determined in FY 2024 and beyond.*

Notes to Schedule of Contributions

Contribution Requirement: The expected contributions for fiscal year 2015 and beyond are provided in the POA. A contribution schedule showing actual fiscal year 2017 contributions as well as the Foundations future contribution requirements is below.

Fiscal Year	Contribution Source (Millions) Foundations	Total
2017	$ 18.3	$ 18.3
2018	18.3	18.3
2019	18.3	18.3
2020	18.3	18.3
2021	18.3	18.3
2022	18.3	18.3
2023	18.3	18.3

Beginning with Fiscal Year 2024, employer contributions will be actuarially determined.

Schedule of Investment Returns

This information was not available to Gabriel, Roeder, Smith & Company for inclusion in this report.

SECTION D

NOTES TO FINANCIAL STATEMENTS

Notes to Financial Statements

Single Discount Rate

A Single Discount Rate of 7.17% was used to measure the total pension liability as of June 30, 2017. This Single Discount Rate was based on the expected rate of return on pension plan investments of 7.17% as directed by the System and the System's Auditor. The projection of cash flows used to determine this Single Discount Rate assumed that plan member contributions will cease as of June 30, 2017 and that employer contributions will be made at rates equal to those set by the final Plan of Adjustment through June 30, 2023 and the System's funding policy thereafter. 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 7.17%, 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 Assumption[#]

	1% Decrease 6.17%	Current Single Discount Rate Assumption 7.17%	1% Increase 8.17%
Total Pension Liability (TPL)	$4,140,389,552	$3,750,305,804	$3,423,085,733
Net Position Restricted for Pensions	2,922,141,978	2,922,141,978	2,922,141,978
Net Pension Liability (NPL)	$1,218,247,574	$ 828,163,826	$ 500,943,755

[#] *The inclusion of discount rates shown on this required schedule does not imply the rate is reasonable (other than the current assumption).*

Expected Real Returns by Asset Class

This information was not available to Gabriel, Roeder, Smith & Company for this report.

Notes to Financial Statements

Summary of Population Statistics

Inactive Plan Members or Beneficiaries Currently Receiving Benefits	8,204
DROP Members	631
Inactive Plan Members Entitled to But Not Yet Receiving Benefits	369
Active Plan Members	2,205
Total Plan Members	11,409

Additional information regarding the plan population may be found in the June 30, 2016 actuarial valuation of the System.

Additional Notes

Interest on the Annuity Savings Fund (ASF) is capped. If actual interest rate earned on the fund exceeds the cap, the excess (that would have been payable to the ASF if not for the cap) is transferred to Component I if needed to fund transition liabilities. We have assumed no future transfers of assets to Component I in this valuation. If future transfers to Component I are triggered, Component II liabilities and assets will be reduced in equal amounts.

Liabilities and reported assets for Component I are not included in this report and will be detailed in a separate report.

SECTION E

SUMMARY OF BENEFITS

Summary of Frozen Benefit Provisions

Component II Frozen Benefits

All Component II benefits are frozen as of June 30, 2014 based on service and average final compensation accrued as of that date and the provisions of the Detroit Police and Fire Retirement System as it existed on June 30, 2014 and all future cost-of-living adjustments ("COLA's") were reduced from 2.25% to 1.0125% per year. The benefits evaluated in this report are the frozen reduced benefits. Component II benefits are payable after separation from service, upon meeting the eligibility conditions of the plan as it existed on June 30, 2014, regardless of whether the individual is eligible to receive a Component I benefit at that time.

Our understanding of the June 30, 2014 plan provisions is provided below for completeness. The material below is a non-legal summary and is not intended to cover all potential situations that could occur. If there are discrepancies between the description below, and appropriate legal documents, the latter necessarily govern.

Age and Service Retirement

Eligibility - 25 years of service regardless of age. 20 years of service regardless of age for eligible DPOA and DFFA members. DFFA members must retire by age 60.

Annual Amount - An annuity equal to the actuarial equivalent of the member's accumulated contribution account plus a defined benefit, which, when added to the annuity will provide the following:

Pre-1969 Members - For all service earned up to April 5, 2011 for LSA and Fire equivalent members, and up to September 1, 2011 for DPOA and Fire equivalent members, 2.5% of AFC times the first 25 years of service, with a maximum allowance of 15/22 of a police officer's or firefighter's annual rate of compensation (actuarially reduced to reflect early payment).

For all service earned after April 5, 2011 for LSA and Fire equivalent members, and after September 1, 2011 for DPOA and Fire equivalent members, 2.1% of AFC times the first 25 years of service, with a maximum allowance of 15/22 of a police officer's or firefighter's annual rate of compensation.

1969 Plan Members - For all service earned up to April 5, 2011 for LSA and Fire equivalent members, and up to September 1, 2011 for DPOA and Fire equivalent members, 2.5% of AFC times the first 25 years of service plus 2.1% of AFC times each of the next 10 years of service.

For all service earned after April 5, 2011 for LSA and Fire equivalent members, and after September 1, 2011 for DPOA and Fire equivalent members, 2.1% of AFC times each year of service, up to 35 years of service.

Members may elect to receive their accumulated contribution account in a lump sum after 25 years of service (20 years of service for eligible DPOA and DFFA members). The defined benefit at retirement is then reduced by the actuarial equivalent of the amount of principal withdrawn. No reduction is made with regard to the interest portion of the withdrawal. Pre-1969 plan members may elect 1969 plan benefits at the time of retirement.

Summary of Frozen Benefit Provisions

Type of Average Final Compensation (AFC) - Average of the current compensation for the ranks held in each of last 5 years (last 3 years for DPCOA, Executive Members and their Fire equivalents). Pension benefits for non-union employees may not be diminished due to a reduction in compensation because of fiscal emergency. AFC includes prior longevity distributions during the averaging period in accordance with the following schedule: 1% of compensation after 5 years of service, 2% after 11 years, 3% after 16 years and 4% after 21 years. A member may elect that upon retirement or upon death before retirement either (i) a lump sum payment equal to 85% (100% for DPOA and DPCOA members) of the amount of his or her unused accumulated sick leave bank, or (ii) to have the 3-year average of 25% of the value of the accumulated unused sick leave bank added to his or her AFC. Any member electing the AFC adjustment option will also be paid a lump sum equal to the remaining value of the sick leave bank as provided in (i) above. Lump sum payments are not paid by the Retirement System.

Deferred Retirement (vested benefit)

Eligibility - 10 years of service for DPOA and Fire equivalents, age 40 with 8 years of service for all others.

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

Benefit Commencement - DPOA and Fire equivalent members hired after 6/30/85: Unreduced benefit begins at age 62. ***All other members***: Unreduced benefit begins at the age when the member would have first been eligible for regular retirement had the member continued in City service. **All** members may elect a reduced benefit payable immediately.

Note, for valuation purposes, the frozen accrued benefit was valued in the event of a death or disability. The following death and disability provisions are provided for historical purposes only.

Duty Disability Retirement

Eligibility - No age or service requirement.

Annual Amount – A basic benefit of 50% of final compensation and a supplemental benefit of 16-2/3% of final compensation is payable for 24 months. After 24 months, members disabled from any occupation continue to receive both benefits; otherwise, only the 50% benefit is then payable. Upon attaining 25 years of service, the disability benefit is 50% of final compensation. Members convert to regular retirement benefit at age 65. Worker's compensation payments are offset. Members who have already filed under the old duty disability plan will receive 66-2/3% of final compensation payable to eligibility date for regular retirement.

Non-Duty Disability Retirement

Eligibility - 5 years of service.

Annual Amount - Computed as a regular retirement benefit, but based on average final compensation and credited service at the time of disability. Minimum benefit is 20% of average final compensation.

Duty Death Before Retirement

Eligibility - No age or service requirement.

Summary of Frozen Benefit Provisions

Annual Amount - Surviving spouse receives 5/11 of police officer's or firefighter's compensation and each child under age 18 receives 1/10 of such compensation with a maximum total of 7/33 of such compensation. If there is no surviving spouse, each child receives 1/4 of such compensation with a maximum total of 1/2 of such compensation. If there is no surviving spouse or children, each dependent parent receives 1/6 of such compensation. Worker's compensation payments are offset.

Non-Duty Death Before Retirement

Eligibility - No age or service requirement.

Annual Amount - Same as a regular retirement benefit to a surviving spouse, but reduced in accordance with a 100% joint and survivor option election. Minimum benefit is 20% of average final compensation. Each child under 18 receives 1/7 of police officer's or firefighter's compensation with a maximum total of 2/7 of such compensation. If there is no spouse or children, each dependent parent receives 1/7 of such compensation.

Post-Retirement Cost-of-Living Adjustments

Pre-1969 Members - Allowances increase in proportion to active member compensation for the corresponding rank. These increases are not considered COLAs and are therefore not reduced under the POA.

1969 Plan Members - Police retired after July 1, 2001, certain Police classes retired after July 1, 1998 and all Fire members: For all service earned up to April 5, 2011 for LSA members (September 1, 2011 for DPOA members) pensions increase by 2.25% of the current pension amount each July 1. No cost-of-living adjustments for service earned after April 5, 2011 for LSA members (September 1, 2011 for DPOA members). COLA is reduced by 45% according to the POA.

Member Contributions

5% of covered compensation payable until first eligible for regular retirement.

DROP Plan

Members with 25 years (20 years for DPOA members) of service may elect to participate in the DROP. When a DROP election is made, the member ceases to accrue any further age and service retirement benefits. Seventy-five percent (75%) of the member's benefit (accrued to their DROP date) is contributed to a DROP account (a defined contribution account). At retirement the member is entitled to the balance in the DROP account and a monthly benefit equal to 100% of their benefit accrued to their DROP date, increased by any post-retirement increases that the member would have received, had the member been retired. Fire members must retire from the DROP plan at age 60. Participation in the DROP is limited to 10 years for LSA members electing to DROP after April 5, 2011.

SECTION F

ACTUARIAL COST METHOD AND ACTUARIAL ASSUMPTIONS

Summary of Assumptions Used for DPFRS
Actuarial Valuation
Assumptions Adopted by Board of Trustees
After Consulting with Actuary

ASSUMPTION REVIEW

All assumptions are estimates of future experience except as noted. The rationale for the assumptions is based on experience studies unless noted otherwise.

ECONOMIC ASSUMPTIONS

For the Determination of the June 30, 2017 TPL:
The investment return rate used in the valuation was 7.17% per year, compounded annually (net after investment expenses). This assumption was provided by the Retirement System. We believe it is reasonable when using a 2.25% assumed **price inflation**.

NON-ECONOMIC ASSUMPTIONS

The mortality table used to measure retired life mortality is the RP-2014 Blue Collar Annuitant Table for males and females. Tables were extended below age 50 with a cubic spline to the published Juvenile rates. Pre-retirement mortality is the RP-2014 Blue Collar Employee Tables for males and females. The tables are projected to be fully generational, based on the 2-dimensional, sex distinct mortality improvement scale MP-2014 (which was published and intended to be used with RP-2014). This table was first used as of June 30, 2014. The rationale for the mortality assumption is based on the 2008-2013 Mortality Experience Study issued February 13, 2015.

The probabilities of age/service retirement for members eligible to retire are shown on page 25. The rationale is based on the 2002-2007 Experience Study. However, probabilities were modified effective with the June 30, 2014 valuation to reflect a change in the modeling of the future DROP members, consistent with the plan closure. The revised probabilities were selected so that, when combined with the model change, the effect on the present value of benefits would be immaterial.

The probabilities of separation from service (including death-in-service) are shown for sample ages on page 26. These probabilities were first used for the June 30, 2008 valuation. The rationale is based on the 2002-2007 Experience Study.

Data adjustments: See page 22 of the June 30, 2016 actuarial valuation issued May 31, 2017.

Single Life Retirement Values Based on RP-2014 Blue Collar for Males and Females

Sample Attained Ages in 2016	Future Life Expectancy (years)	
	Men	Women
45	39.37	42.74
50	34.40	37.67
55	29.61	32.76
60	25.04	27.99
65	20.71	23.39
70	16.67	19.02
75	12.96	14.99
80	9.70	11.41

Probabilities of Service Retirement

Service	Percent of Eligible Active Members Retiring within Next Year			
	Police		Fire	
	20 & Out	25 & Out	20 & Out	25 & Out
19	40%		40%	
20	40%		40%	
21	40%		40%	
22	40%		40%	
23	40%		40%	
24	100%	40%	100%	40%
25	100%	40%	100%	40%
26	100%	40%	100%	40%
27	100%	40%	100%	40%
28	100%	40%	100%	40%
29	100%	100%	100%	100%
30	100%	100%	100%	100%
31	100%	100%	100%	100%
32	100%	100%	100%	100%
33	100%	100%	100%	100%
34	100%	100%	100%	100%
35	100%	100%	100%	100%
36	100%	100%	100%	100%
37	100%	100%	100%	100%
38	100%	100%	100%	100%
39	100%	100%	100%	100%
40	100%	100%	100%	100%

Age	Percent of Eligible Active Members Retiring within Next Year	
	Police	Fire
60	40%	100%
61	40%	100%
62	40%	100%
63	40%	100%
64	40%	100%
65	100%	100%
66	100%	100%
67	100%	100%
68	100%	100%
69	100%	100%
70	100%	100%

Members eligible for 20 & Out are assumed to be first eligible for normal retirement after 19 years of service due to their ability to purchase service. Members eligible for 25 & Out are assumed to be eligible for normal retirement after 24 years of service due to their ability to purchase service. Members are also eligible to retire at age 60 with no service requirement. The rationale is based on the 2002-2007 Experience Study.

Probabilities of Separation

Sample Ages	Years of Service	% of Active Members Withdrawing within Next Year	
		Police	Fire
ALL	0	8.50%	5.00%
	1	7.50%	4.00%
	2	6.00%	3.00%
	3	5.00%	2.00%
	4	4.50%	2.00%
25	5 & Over	4.50%	1.96%
30		3.30%	1.62%
35		2.30%	1.11%
40		1.70%	0.77%
45		1.50%	0.60%
50		1.10%	0.51%
55		0.80%	0.51%
60		0.80%	0.51%

Sample Ages	% of Active Members Becoming Disabled within Next Year			
	Police		Fire	
	Ordinary	Duty	Ordinary	Duty
25	0.06%	0.13%	0.07%	0.34%
30	0.07%	0.19%	0.08%	0.52%
35	0.08%	0.34%	0.09%	0.90%
40	0.11%	0.49%	0.12%	1.30%
45	0.16%	0.73%	0.18%	1.92%
50	0.47%	1.16%	0.53%	3.06%
55	0.73%	1.96%	0.82%	5.18%
60	0.83%	2.82%	0.94%	7.47%

The rationale is based on the 2002-2007 Experience Study.

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. This assumption accounts for potential dependent children/dependent parent death benefits. No other assumption is made for surviving children/dependent parents. Male spouses are assumed to be three years older than female spouses.
Pay Increase Timing:	N/A
Decrement Timing:	Decrements 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 of decrement.
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.
Incidence of Contributions:	Employer contributions are assumed to be received on the last day of the fiscal year. For purposes of determining the GASB single discount rate, all cash flows are assumed to occur mid-year.
Longevity in AFC:	Longevity payments were included directly in the AFC data provided by the System. No further adjustment was included.
Unused Sick Leave Payout:	Sick leave banks as of June 30, 2014 were included in data provided by the System. No further adjustment was included.
Administrative Expense:	3.0% of Component I payroll. 50% of the administrative expenses were allocated to Component II and 50% to Component I based on actual administrative expenses paid.
Post-Retirement COLA:	Active members are assumed to receive a 0.9% COLA rather than 1.0125% because the annuity portion is not subject to the COLA. Post-retirement increases for retired members were based on the plan in effect at retirement. For the pre-69 plan members, future COLA's are assumed to be the same as wage inflation for active members (not reduced in POA). For other members retiring before 2014, the COLA rate is prorated by the ratio of COLA eligible service to total service at retirement before applying the POA mandated reduction to 1.0125%. The service ratio is provided on the data file.
AFC Period:	AFC data was provided by the System for the June 30, 2014 (date of freeze) valuation.
Disability Change Age:	The duty disability benefit is assumed to change at normal retirement age.

Miscellaneous and Technical Assumptions (Concluded)

DROP Assumption:	All active members not in the DROP are assumed to have a 40% chance of retiring or entering the DROP in their first five years of retirement eligibility with a 60% chance of entering the DROP.
Workers Compensation Offset:	No Workers Compensation offsets are assumed for duty disability benefits.
DROP Account:	DROP account balances are not reported. No liability is included for DROP account balances.
Class Codes:	For valuation purposes, members are categorized as DPOA, DFFA or LSA based on class codes provided by the Retirement System and are primarily used in the valuation to determine normal retirement eligibility (20 & Out versus 25 & Out). Therefore, counts in the valuation may not represent actual membership in the respective associations.
Frozen Benefit Estimate:	Reported AFC as of June 30, 2014 was adjusted to include 25% of unused sick leave (to a maximum of 25 days per year of service) plus a load of 10% to provide consistency with a sample of actual computations.*
Form of Payment:	The actuarial equivalent basis for optional forms of payment and early retirement are based on the RP-2014 Mortality Table with Blue Collar adjustments projected 11 years, a 6.75% interest rate, 90%/10% unisex mix and a 1.0125% COLA assumption per System Policy. Annuity withdrawal factors use the same mortality and interest rate assumptions with a 0% COLA assumption. No adjustment has been made for alternate forms of payment elections. Principal balances of accumulated member contributions were converted to life annuity offsets based on plan factors for the valuation.
Retiree Pop-Up Factor:	If a retiree has a pop-up option but no pop-up factor is provided in the data, the pop-up factor is determined by using an average age at retirement of 50.2, beneficiary age of 47.2, and the optional form of payment assumptions (determined above).
Member Contributions:	Member contributions to this Component II plan are assumed to have ceased with the bankruptcy.

The rationale for the miscellaneous and technical assumptions is the 2002-2007 Experience Study, modified as necessary for changes in data or administration.

* *Load developed based on a sample of members who retired after June 30, 2014 by comparing their actual AFC (from their final benefit calculation) to their AFC reported in the June 30, 2014 active data file. This load was updated for the 2016 valuation based on a sample of members who retired after June 30, 2016.*

SECTION G

CALCULATION OF THE SINGLE DISCOUNT RATE

Calculation of the Single Discount Rate at End of Year

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 (which is published by the Bond Buyer Index) 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 7.17%; the municipal bond rate is 3.56%; and the resulting SDR is 7.17% as of June 30, 2017.

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). For purposes of determining the discount rate as of June 30, 2017, the employer contributions for the 10-year period ending June 30, 2023 were set by the 8th Amended Plan of Adjustment (POA). Subsequent employer contributions were determined by a closed 30-year level dollar amortization of any unfunded actuarial accrued liability (excluding the contingency reserve) using 7.17% interest, net of all expenses, consistent with the 100% funded target by 2053 in the POA and State Law.

Note that these projections are specifically used to determine the GASB discount rate and should not be interpreted as a funding projection or recommendation.

Rates of Return: The 7.17% rate of return was before administrative expenses. Therefore, the projections assumed that any administration expenses incurred by the plan will directly increase employer contributions beginning with FY 2024.

Contingency Reserve: The System maintains a contingency reserve equal to the excess (if any) of the Annuity Reserve Fund over the annuity liabilities. We believe GASB 67/68 requires this reserve to be removed from the NPL. Since there are no benefits in the projection directly related to the reserve, the result is that the reserve will continue to grow with interest, if experience is exactly as assumed. Please see comments on page 7 for additional details.

Calculation of the Single Discount Rate at End of Year

Administrative Expenses: For purposes of the projection using a 7.17% rate of return, administrative expenses were assumed to be related to Component I payroll. Payroll was increased by an assumed wage inflation as of June 30, 2014 of 2.00% for 5 years, 2.50% for the next 5 years and 3.00% thereafter. Since benefits are frozen, the wage inflation assumption does not affect anything other than the administrative expenses.

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. For purposes of determining the discount rate as of June 30, 2017, the benefit payments reflect the plan provisions in force as of June 30, 2017.

Unfunded Actuarial Accrued Liabilities: Actual employer contributions through June 30, 2023 are set by the POA. The amortization period and method after 2023 has not yet been established by the Board.

Single Discount Rate Development
Projection of Contributions at 7.17%
End of Year

Fiscal Year Ending June 30,	Projected Contributions from Current Employees	Projected Service Cost	Administrative Expense Contributions#	Projected UAL Contributions	Projected Total Contributions
2018	$ -	$ -	$ 2,118,203	$ 16,181,797	$ 18,300,000
2019	-	-	1,976,192	16,323,808	18,300,000
2020	-	-	1,827,872	16,472,128	18,300,000
2021	-	-	1,711,013	16,588,987	18,300,000
2022	-	-	1,607,614	16,692,386	18,300,000
2023	-	-	1,545,784	16,754,216	18,300,000
2024	-	-	1,483,967	92,812,276	94,296,243
2025	-	-	1,419,109	92,812,276	94,231,385
2026	-	-	1,357,665	92,812,276	94,169,941
2027	-	-	1,285,943	92,812,276	94,098,219
2028	-	-	1,215,485	92,812,276	94,027,761
2029	-	-	1,140,390	92,812,276	93,952,666
2030	-	-	1,073,365	92,812,276	93,885,641
2031	-	-	1,007,362	92,812,276	93,819,638
2032	-	-	941,097	92,812,276	93,753,373
2033	-	-	865,097	92,812,276	93,677,373
2034	-	-	797,813	92,812,276	93,610,089
2035	-	-	726,001	92,812,276	93,538,277
2036	-	-	667,535	92,812,276	93,479,811
2037	-	-	615,691	92,812,276	93,427,967
2038	-	-	567,690	92,812,276	93,379,966
2039	-	-	525,173	92,812,276	93,337,449
2040	-	-	471,584	92,812,276	93,283,860
2041	-	-	410,196	92,812,276	93,222,472
2042	-	-	338,694	92,812,276	93,150,970
2043	-	-	269,865	92,812,276	93,082,141
2044	-	-	212,314	92,812,276	93,024,590
2045	-	-	165,485	92,812,276	92,977,761
2046	-	-	124,504	92,812,276	92,936,780
2047	-	-	91,440	92,812,276	92,903,716
2048	-	-	65,700	92,812,276	92,877,976
2049	-	-	46,365	92,812,276	92,858,641
2050	-	-	31,461	92,812,276	92,843,737
2051	-	-	21,269	92,812,276	92,833,545
2052	-	-	14,258	92,812,276	92,826,534
2053	-	-	8,256	92,812,276	92,820,532
2054	-	-	4,968	-	4,968
2055	-	-	2,538	-	2,538
2056	-	-	1,192	-	1,192
2057	-	-	426	-	426
2058	-	-	-	-	-
2059	-	-	-	-	-
2060	-	-	-	-	-
2061	-	-	-	-	-
2062	-	-	-	-	-
2063	-	-	-	-	-
2064	-	-	-	-	-
2065	-	-	-	-	-
2066	-	-	-	-	-
2067	-	-	-	-	-

Expenses assumed to be paid by employer.

Employer contributions as shown may differ substantially from those determined by a funding valuation.

Single Discount Rate Development
Projection of Contributions at 7.17%
End of Year (Concluded)

Fiscal Year Ending June 30,	Projected Contributions from Current Employees	Projected Service Cost	Administrative Expense Contributions#	Projected UAL Contributions	Projected Total Contributions
2068	$ -	$ -	$ -	$ -	$ -
2069	-	-	-	-	-
2070	-	-	-	-	-
2071	-	-	-	-	-
2072	-	-	-	-	-
2073	-	-	-	-	-
2074	-	-	-	-	-
2075	-	-	-	-	-
2076	-	-	-	-	-
2077	-	-	-	-	-
2078	-	-	-	-	-
2079	-	-	-	-	-
2080	-	-	-	-	-
2081	-	-	-	-	-
2082	-	-	-	-	-
2083	-	-	-	-	-
2084	-	-	-	-	-
2085	-	-	-	-	-
2086	-	-	-	-	-
2087	-	-	-	-	-
2088	-	-	-	-	-
2089	-	-	-	-	-
2090	-	-	-	-	-
2091	-	-	-	-	-
2092	-	-	-	-	-
2093	-	-	-	-	-
2094	-	-	-	-	-
2095	-	-	-	-	-
2096	-	-	-	-	-
2097	-	-	-	-	-
2098	-	-	-	-	-
2099	-	-	-	-	-
2100	-	-	-	-	-
2101	-	-	-	-	-
2102	-	-	-	-	-
2103	-	-	-	-	-
2104	-	-	-	-	-
2105	-	-	-	-	-
2106	-	-	-	-	-
2107	-	-	-	-	-
2108	-	-	-	-	-
2109	-	-	-	-	-
2110	-	-	-	-	-
2111	-	-	-	-	-
2112	-	-	-	-	-
2113	-	-	-	-	-
2114	-	-	-	-	-
2115	-	-	-	-	-
2116	-	-	-	-	-
2117	-	-	-	-	-

Expenses assumed to be paid by employer.

Employer contributions as shown may differ substantially from those determined by a funding valuation.

Single Discount Rate Development
Projection of Plan Fiduciary Net Position at 7.17%
End of Year

Fiscal Year Ending June 30,	Projected Beginning Plan Net Position Without Annuity Reserve	Projected Total Contributions	Projected Benefit Payments	Annuity Reserve Refund	Projected Administrative Expenses	Projected Investment Earnings at 7.17%	Projected Ending Plan Net Position Without Annuity Reserve	Projected Ending Plan Net Position With Annuity Reserve
	(a)	(b)	(c)	(d)	(e)	(f)	(g)=(a)+(b)-(c)-(d)-(e)+(f)	(h)
2018	$ 2,922,141,978	$ 18,300,000	$ 309,360,962	$ 26,408,409	$ 2,118,203	$ 197,295,558	$ 2,799,849,962	$ 2,828,151,854
2019	2,799,849,962	18,300,000	313,682,854	-	1,976,192	190,273,449	2,692,764,364	2,723,095,502
2020	2,692,764,364	18,300,000	314,265,818	-	1,827,872	182,580,099	2,577,550,774	2,610,056,654
2021	2,577,550,774	18,300,000	313,472,305	-	1,711,013	174,351,357	2,455,018,812	2,489,855,365
2022	2,455,018,812	18,300,000	311,517,991	-	1,607,614	165,638,307	2,325,831,515	2,363,165,848
2023	2,325,831,515	18,300,000	310,457,208	-	1,545,784	156,415,127	2,188,543,649	2,228,554,854
2024	2,188,543,649	94,296,243	308,878,862	-	1,483,967	149,306,674	2,121,783,737	2,164,663,745
2025	2,121,783,737	94,231,385	306,244,815	-	1,419,109	144,612,784	2,052,963,982	2,098,918,487
2026	2,052,963,982	94,169,941	303,618,617	-	1,357,665	139,770,928	1,981,928,568	2,031,178,011
2027	1,981,928,568	94,098,219	300,668,166	-	1,285,943	134,781,631	1,908,854,309	1,961,634,937
2028	1,908,854,309	94,027,761	297,456,076	-	1,215,485	129,655,367	1,833,865,875	1,890,430,874
2029	1,833,865,875	93,952,666	293,732,845	-	1,140,390	124,409,863	1,757,355,169	1,817,975,878
2030	1,757,355,169	93,885,641	289,544,302	-	1,073,365	119,071,606	1,679,694,749	1,744,661,963
2031	1,679,694,749	93,819,638	284,892,374	-	1,007,362	113,667,239	1,601,281,889	1,670,907,253
2032	1,601,281,889	93,753,373	279,779,854	-	941,097	108,225,148	1,522,539,458	1,597,156,960
2033	1,522,539,458	93,677,373	274,257,109	-	865,097	102,773,879	1,443,868,504	1,523,836,081
2034	1,443,868,504	93,610,089	268,305,925	-	797,813	97,342,828	1,365,717,684	1,451,418,936
2035	1,365,717,684	93,538,277	261,956,442	-	726,001	91,963,103	1,288,536,621	1,380,382,652
2036	1,288,536,621	93,479,811	255,136,794	-	667,535	86,669,473	1,212,881,576	1,311,312,968
2037	1,212,881,576	93,427,967	247,875,676	-	615,691	81,500,812	1,139,318,988	1,244,807,911
2038	1,139,318,988	93,379,966	240,118,098	-	567,690	76,499,669	1,068,512,834	1,181,565,313
2039	1,068,512,834	93,337,449	232,083,961	-	525,173	71,705,906	1,000,947,056	1,122,105,397
2040	1,000,947,056	93,283,860	223,766,467	-	471,584	67,154,461	937,147,325	1,066,992,720
2041	937,147,325	93,222,472	215,154,314	-	410,196	62,883,421	877,688,708	1,016,844,017
2042	877,688,708	93,150,970	206,266,446	-	338,694	58,933,353	823,167,891	972,300,636
2043	823,167,891	93,082,141	197,153,061	-	269,865	55,345,270	774,172,376	933,997,938
2044	774,172,376	93,024,590	187,917,991	-	212,314	52,157,638	731,224,299	902,509,354
2045	731,224,299	92,977,761	178,652,675	-	165,485	49,404,673	694,788,572	878,354,767
2046	694,788,572	92,936,780	169,404,255	-	124,504	47,118,048	665,314,641	862,042,532
2047	665,314,641	92,903,716	160,268,369	-	91,440	45,326,619	643,185,168	854,018,448
2048	643,185,168	92,877,976	151,274,822	-	65,700	44,056,774	628,779,395	854,729,421
2049	628,779,395	92,858,641	142,483,688	-	46,365	43,333,586	622,441,569	864,592,212
2050	622,441,569	92,843,737	133,940,117	-	31,461	43,180,150	624,493,877	884,006,721
2051	624,493,877	92,833,545	125,667,127	-	21,269	43,618,753	635,257,778	913,377,694
2052	635,257,778	92,826,534	117,685,093	-	14,258	44,671,727	655,056,688	953,117,801
2053	655,056,688	92,820,532	110,005,215	-	8,256	46,361,867	684,225,616	1,003,657,711
2054	684,225,616	4,968	102,633,235	-	4,968	45,443,265	627,035,645	969,371,022
2055	627,035,645	2,538	95,570,364	-	2,538	41,591,565	573,056,847	939,937,669
2056	573,056,847	1,192	88,812,345	-	1,192	37,959,366	522,203,868	915,390,045
2057	522,203,868	426	82,351,392	-	426	34,540,824	474,393,299	895,770,925
2058	474,393,299	-	76,178,242	-	-	31,330,282	429,545,339	881,135,742
2059	429,545,339	-	70,283,645	-	-	28,322,347	387,584,041	871,553,476
2060	387,584,041	-	64,659,289	-	-	25,511,865	348,436,618	867,106,660
2061	348,436,618	-	59,297,973	-	-	22,893,871	312,032,516	867,891,201
2062	312,032,516	-	54,194,159	-	-	20,463,501	278,301,858	874,015,610
2063	278,301,858	-	49,344,594	-	-	18,215,861	247,173,125	885,599,554
2064	247,173,125	-	44,748,275	-	-	16,145,856	218,570,707	902,772,310
2065	218,570,707	-	40,406,253	-	-	14,248,030	192,412,484	925,671,342
2066	192,412,484	-	36,320,528	-	-	12,516,423	168,608,379	954,441,897
2067	168,608,379	-	32,492,505	-	-	10,944,528	147,060,402	989,238,183

Employer contributions as shown may differ substantially from those determined by a funding valuation.

Single Discount Rate Development
Projection of Plan Fiduciary Net Position at 7.17%
End of Year (Concluded)

Fiscal Year Ending June 30,	Projected Beginning Plan Net Position Without Annuity Reserve	Projected Total Contributions	Projected Benefit Payments	Annuity Reserve Refund	Projected Administrative Expenses	Projected Investment Earnings at 7.17%	Projected Ending Plan Net Position Without Annuity Reserve	Projected Ending Plan Net Position With Annuity Reserve
	(a)	(b)	(c)	(d)	(e)	(f)	(g)=(a)+(b)-(c)-(d)-(e)+(f)	(h)
2068	$ 147,060,402	$ -	$ 28,923,007	$ -	$ -	$ 9,525,289	$ 127,662,684	$ 1,030,224,613
2069	127,662,684	-	25,612,403	-	-	8,251,104	110,301,385	1,077,577,004
2070	110,301,385	-	22,559,949	-	-	7,113,835	94,855,270	1,131,484,551
2071	94,855,270	-	19,763,319	-	-	6,104,872	81,196,824	1,192,152,424
2072	81,196,824	-	17,217,729	-	-	5,215,241	69,194,335	1,259,805,452
2073	69,194,335	-	14,916,381	-	-	4,435,738	58,713,693	1,334,691,627
2074	58,713,693	-	12,850,782	-	-	3,757,046	49,619,956	1,417,085,508
2075	49,619,956	-	11,010,450	-	-	3,169,859	41,779,365	1,507,292,197
2076	41,779,365	-	9,383,044	-	-	2,665,021	35,061,342	1,605,651,444
2077	35,061,342	-	7,954,675	-	-	2,233,659	29,340,327	1,712,541,739
2078	29,340,327	-	6,710,244	-	-	1,867,303	24,497,387	1,828,384,340
2079	24,497,387	-	5,634,337	-	-	1,557,968	20,421,018	1,953,646,666
2080	20,421,018	-	4,711,568	-	-	1,298,201	17,007,650	2,088,845,577
2081	17,007,650	-	3,926,265	-	-	1,081,128	14,162,513	2,234,551,220
2082	14,162,513	-	3,263,070	-	-	900,496	11,799,939	2,391,390,516
2083	11,799,939	-	2,707,309	-	-	750,679	9,843,309	2,560,050,530
2084	9,843,309	-	2,245,082	-	-	626,672	8,224,899	2,741,281,978
2085	8,224,899	-	1,863,018	-	-	524,092	6,885,973	2,935,903,245
2086	6,885,973	-	1,548,808	-	-	439,161	5,776,326	3,144,804,136
2087	5,776,326	-	1,291,316	-	-	368,670	4,853,680	3,368,949,784
2088	4,853,680	-	1,080,491	-	-	309,944	4,083,133	3,609,384,928
2089	4,083,133	-	907,609	-	-	260,786	3,436,311	3,867,238,244
2090	3,436,311	-	765,215	-	-	219,425	2,890,521	4,143,727,053
2091	2,890,521	-	647,133	-	-	184,452	2,427,840	4,440,162,351
2092	2,427,840	-	548,411	-	-	154,756	2,034,186	4,757,954,261
2093	2,034,186	-	465,127	-	-	129,465	1,698,524	5,098,618,068
2094	1,698,524	-	394,262	-	-	107,895	1,412,156	5,463,780,832
2095	1,412,156	-	333,565	-	-	89,500	1,168,091	5,855,188,601
2096	1,168,091	-	281,351	-	-	73,840	960,580	6,274,714,361
2097	960,580	-	236,374	-	-	60,546	784,752	6,724,366,679
2098	784,752	-	197,637	-	-	49,304	636,419	7,206,299,170
2099	636,419	-	164,340	-	-	39,842	511,921	7,722,820,691
2100	511,921	-	135,808	-	-	31,920	408,033	8,276,406,342
2101	408,033	-	111,446	-	-	25,330	321,917	8,869,709,305
2102	321,917	-	90,724	-	-	19,885	251,078	9,505,573,541
2103	251,078	-	73,176	-	-	15,424	193,326	10,187,047,410
2104	193,326	-	58,421	-	-	11,803	146,709	10,917,398,231
2105	146,709	-	46,095	-	-	8,895	109,509	11,700,127,965
2106	109,509	-	35,865	-	-	6,588	80,232	12,538,990,011
2107	80,232	-	27,457	-	-	4,785	57,561	13,438,007,171
2108	57,561	-	20,644	-	-	3,400	40,316	14,401,490,913
2109	40,316	-	15,207	-	-	2,355	27,465	15,434,062,070
2110	27,465	-	10,933	-	-	1,584	18,116	16,540,673,002
2111	18,116	-	7,647	-	-	1,029	11,498	17,726,631,340
2112	11,498	-	5,194	-	-	641	6,946	18,997,625,430
2113	6,946	-	3,412	-	-	378	3,912	20,359,751,641
2114	3,912	-	2,160	-	-	204	1,956	21,819,543,597
2115	1,956	-	1,313	-	-	94	737	23,384,003,514
2116	737	-	763	-	-	26	-	25,060,635,777
2117	-	-	-	-	-	-	-	26,857,483,362

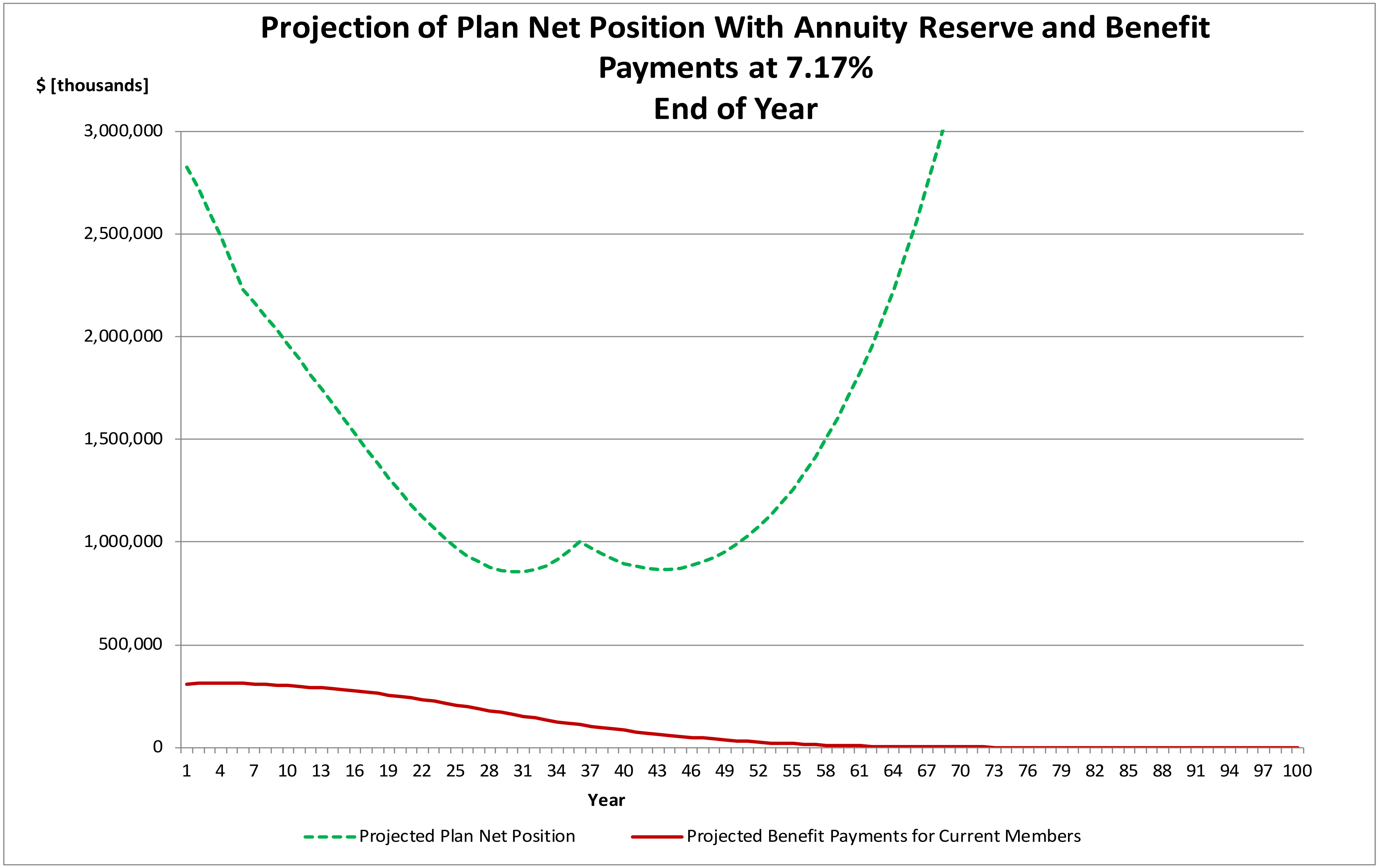
Employer contributions as shown may differ substantially from those determined by a funding valuation.

Single Discount Rate Development
Present Values of Projected Benefits at 7.17%
End of Year

Fiscal Year Ending June 30,	Projected Beginning Plan Net Position With Annuity Reserve	Projected Benefit Payments	Funded Portion of Benefit Payments	Unfunded Portion of Benefit Payments	Present Value of Funded Benefit Payments using Expected Return Rate (v)	Present Value of Unfunded Benefit Payments using Municipal Bond Rate (vf)	Present Value of Benefit Payments using Single Discount Rate (sdr)
(a)	(b)	(c)	(d)	(e)	(f)=(d)*v^((a)-.5)	(g)=(e)*vf ^((a)-.5)	(h)=((c)/(1+sdr)^(a-.5)
2018	$ 2,922,141,978	$ 309,360,962	$ 309,360,962	$ -	$ 298,833,233	$ -	$ 298,833,233
2019	2,828,151,854	313,682,854	313,682,854	-	282,735,886	-	282,735,886
2020	2,723,095,502	314,265,818	314,265,818	-	264,310,289	-	264,310,289
2021	2,610,056,654	313,472,305	313,472,305	-	246,004,397	-	246,004,397
2022	2,489,855,365	311,517,991	311,517,991	-	228,114,869	-	228,114,869
2023	2,363,165,848	310,457,208	310,457,208	-	212,128,479	-	212,128,479
2024	2,228,554,854	308,878,862	308,878,862	-	196,930,140	-	196,930,140
2025	2,164,663,745	306,244,815	306,244,815	-	182,187,893	-	182,187,893
2026	2,098,918,487	303,618,617	303,618,617	-	168,541,144	-	168,541,144
2027	2,031,178,011	300,668,166	300,668,166	-	155,736,983	-	155,736,983
2028	1,961,634,937	297,456,076	297,456,076	-	143,765,249	-	143,765,249
2029	1,890,430,874	293,732,845	293,732,845	-	132,467,811	-	132,467,811
2030	1,817,975,878	289,544,302	289,544,302	-	121,842,735	-	121,842,735
2031	1,744,661,963	284,892,374	284,892,374	-	111,864,480	-	111,864,480
2032	1,670,907,253	279,779,854	279,779,854	-	102,507,253	-	102,507,253
2033	1,597,156,960	274,257,109	274,257,109	-	93,761,127	-	93,761,127
2034	1,523,836,081	268,305,925	268,305,925	-	85,589,789	-	85,589,789
2035	1,451,418,936	261,956,442	261,956,442	-	77,973,593	-	77,973,593
2036	1,380,382,652	255,136,794	255,136,794	-	70,862,803	-	70,862,803
2037	1,311,312,968	247,875,676	247,875,676	-	64,240,056	-	64,240,056
2038	1,244,807,911	240,118,098	240,118,098	-	58,066,235	-	58,066,235
2039	1,181,565,313	232,083,961	232,083,961	-	52,368,564	-	52,368,564
2040	1,122,105,397	223,766,467	223,766,467	-	47,113,711	-	47,113,711
2041	1,066,992,720	215,154,314	215,154,314	-	42,269,697	-	42,269,697
2042	1,016,844,017	206,266,446	206,266,446	-	37,812,416	-	37,812,416
2043	972,300,636	197,153,061	197,153,061	-	33,723,772	-	33,723,772
2044	933,997,938	187,917,991	187,917,991	-	29,993,541	-	29,993,541
2045	902,509,354	178,652,675	178,652,675	-	26,606,986	-	26,606,986
2046	878,354,767	169,404,255	169,404,255	-	23,541,668	-	23,541,668
2047	862,042,532	160,268,369	160,268,369	-	20,782,008	-	20,782,008
2048	854,018,448	151,274,822	151,274,822	-	18,303,457	-	18,303,457
2049	854,729,421	142,483,688	142,483,688	-	16,086,382	-	16,086,382
2050	864,592,212	133,940,117	133,940,117	-	14,110,119	-	14,110,119
2051	884,006,721	125,667,127	125,667,127	-	12,352,887	-	12,352,887
2052	913,377,694	117,685,093	117,685,093	-	10,794,313	-	10,794,313
2053	953,117,801	110,005,215	110,005,215	-	9,414,854	-	9,414,854
2054	1,003,657,711	102,633,235	102,633,235	-	8,196,248	-	8,196,248
2055	969,371,022	95,570,364	95,570,364	-	7,121,592	-	7,121,592
2056	939,937,669	88,812,345	88,812,345	-	6,175,242	-	6,175,242
2057	915,390,045	82,351,392	82,351,392	-	5,342,916	-	5,342,916
2058	895,770,925	76,178,242	76,178,242	-	4,611,743	-	4,611,743
2059	881,135,742	70,283,645	70,283,645	-	3,970,226	-	3,970,226
2060	871,553,476	64,659,289	64,659,289	-	3,408,149	-	3,408,149
2061	867,106,660	59,297,973	59,297,973	-	2,916,448	-	2,916,448
2062	867,891,201	54,194,159	54,194,159	-	2,487,103	-	2,487,103
2063	874,015,610	49,344,594	49,344,594	-	2,113,039	-	2,113,039
2064	885,599,554	44,748,275	44,748,275	-	1,788,015	-	1,788,015
2065	902,772,310	40,406,253	40,406,253	-	1,506,503	-	1,506,503
2066	925,671,342	36,320,528	36,320,528	-	1,263,573	-	1,263,573
2067	954,441,897	32,492,505	32,492,505	-	1,054,771	-	1,054,771

Single Discount Rate Development
Present Values of Projected Benefits at 7.17%
End of Year (Concluded)

Fiscal Year Ending June 30,	Projected Beginning Plan Net Position With Annuity Reserve	Projected Benefit Payments	Funded Portion of Benefit Payments	Unfunded Portion of Benefit Payments	Present Value of Funded Benefit Payments using Expected Return Rate (v)	Present Value of Unfunded Benefit Payments using Municipal Bond Rate (vf)	Present Value of Benefit Payments using Single Discount Rate (sdr)
(a)	(b)	(c)	(d)	(e)	(f)=(d)*v^((a)-.5)	(g)=(e)*vf ^((a)-.5)	(h)=((c)/(1+sdr)^(a-.5)
2068	$ 989,238,183	$ 28,923,007	$ 28,923,007	$ -	$ 876,083	$ -	$ 876,083
2069	1,030,224,613	25,612,403	25,612,403	-	723,901	-	723,901
2070	1,077,577,004	22,559,949	22,559,949	-	594,968	-	594,968
2071	1,131,484,551	19,763,319	19,763,319	-	486,342	-	486,342
2072	1,192,152,424	17,217,729	17,217,729	-	395,353	-	395,353
2073	1,259,805,452	14,916,381	14,916,381	-	319,594	-	319,594
2074	1,334,691,627	12,850,782	12,850,782	-	256,917	-	256,917
2075	1,417,085,508	11,010,450	11,010,450	-	205,397	-	205,397
2076	1,507,292,197	9,383,044	9,383,044	-	163,328	-	163,328
2077	1,605,651,444	7,954,675	7,954,675	-	129,201	-	129,201
2078	1,712,541,739	6,710,244	6,710,244	-	101,697	-	101,697
2079	1,828,384,340	5,634,337	5,634,337	-	79,678	-	79,678
2080	1,953,646,666	4,711,568	4,711,568	-	62,171	-	62,171
2081	2,088,845,577	3,926,265	3,926,265	-	48,343	-	48,343
2082	2,234,551,220	3,263,070	3,263,070	-	37,489	-	37,489
2083	2,391,390,516	2,707,309	2,707,309	-	29,023	-	29,023
2084	2,560,050,530	2,245,082	2,245,082	-	22,458	-	22,458
2085	2,741,281,978	1,863,018	1,863,018	-	17,389	-	17,389
2086	2,935,903,245	1,548,808	1,548,808	-	13,489	-	13,489
2087	3,144,804,136	1,291,316	1,291,316	-	10,494	-	10,494
2088	3,368,949,784	1,080,491	1,080,491	-	8,193	-	8,193
2089	3,609,384,928	907,609	907,609	-	6,422	-	6,422
2090	3,867,238,244	765,215	765,215	-	5,052	-	5,052
2091	4,143,727,053	647,133	647,133	-	3,987	-	3,987
2092	4,440,162,351	548,411	548,411	-	3,152	-	3,152
2093	4,757,954,261	465,127	465,127	-	2,495	-	2,495
2094	5,098,618,068	394,262	394,262	-	1,973	-	1,973
2095	5,463,780,832	333,565	333,565	-	1,558	-	1,558
2096	5,855,188,601	281,351	281,351	-	1,226	-	1,226
2097	6,274,714,361	236,374	236,374	-	961	-	961
2098	6,724,366,679	197,637	197,637	-	750	-	750
2099	7,206,299,170	164,340	164,340	-	582	-	582
2100	7,722,820,691	135,808	135,808	-	449	-	449
2101	8,276,406,342	111,446	111,446	-	344	-	344
2102	8,869,709,305	90,724	90,724	-	261	-	261
2103	9,505,573,541	73,176	73,176	-	196	-	196
2104	10,187,047,410	58,421	58,421	-	146	-	146
2105	10,917,398,231	46,095	46,095	-	108	-	108
2106	11,700,127,965	35,865	35,865	-	78	-	78
2107	12,538,990,011	27,457	27,457	-	56	-	56
2108	13,438,007,171	20,644	20,644	-	39	-	39
2109	14,401,490,913	15,207	15,207	-	27	-	27
2110	15,434,062,070	10,933	10,933	-	18	-	18
2111	16,540,673,002	7,647	7,647	-	12	-	12
2112	17,726,631,340	5,194	5,194	-	7	-	7
2113	18,997,625,430	3,412	3,412	-	5	-	5
2114	20,359,751,641	2,160	2,160	-	3	-	3
2115	21,819,543,597	1,313	1,313	-	2	-	2
2116	23,384,003,514	763	763	-	1	-	1
2117	25,060,635,777	-	-	-	-	-	-
				Totals	$ 3,750,305,804	$ -	$ 3,750,305,804



Projection of Plan Net Position With Annuity Reserve and Benefit Payments at 7.17%
End of Year
$ [thousands]
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
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.
AFC	Average Final Compensation.

Glossary of Terms

Amortization Payment	The amortization payment is the periodic payment required to pay off an interest-discounted amount with payments of interest and principal.
Amortization Method	The method used to determine the periodic amortization payment may be a level dollar amount, or a level percent of pay amount. The period will typically be expressed in years, and the method will either be "open" (meaning, reset each year) or "closed" (the number of years remaining will decline each year).
Cost-of-Living Adjustments	Postemployment benefit changes intended to adjust benefit payments for the effects of inflation.
Cost-Sharing Multiple-Employer Defined Benefit Pension Plan (cost-sharing pension plan)	A multiple-employer defined benefit pension plan in which the pension obligations to the employees of more than one employer are pooled and pension plan assets can be used to pay the benefits of the employees of any employer that provides pensions through the pension plan.
Covered-Employee Payroll	The payroll of covered employees, which is typically only the pensionable pay and does not include pay above any pay cap.
Deferred 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 funding method for allocating the costs of the plan between the normal cost and the accrued liability. The actuarial present value of the projected benefits of each individual included in an actuarial valuation is allocated on a level basis (either level dollar or level percent of pay) over the earnings or service of the individual between entry age and assumed exit ages(s). The portion of the actuarial present value allocated to a valuation year is the normal cost. The portion of this actuarial present value not provided for at a valuation date by the actuarial present value of future normal costs is the actuarial accrued liability. The sum of the accrued liability plus the present value of all future normal costs is the present value of all benefits.
GASB	The Governmental Accounting Standards Board is an organization that exists in order to promulgate accounting standards for governmental entities.
Fiduciary Net Position	The fiduciary net position is the value of the assets of the trust.
Long-Term Expected Rate of Return	The long-term rate of return is the expected return to be earned over the entire trust portfolio based on the asset allocation of the portfolio.
Money-Weighted Rate of Return	The money-weighted rate of return is a method of calculating the returns that adjusts for the changing amounts actually invested. For purposes of GASB Statement No. 67, money-weighted rate of return is calculated as the internal rate of return on pension plan investments, net of pension plan investment expense.
Multiple-Employer Defined Benefit Pension Plan	A multiple-employer plan is a defined benefit pension plan that is used to provide pensions to the employees of more than one employer.
Municipal Bond Rate	The Municipal Bond Rate is the discount rate to be used for those benefit payments that occur after the assets of the trust have been depleted.
Net Pension Liability (NPL)	The NPL is the liability of employers and non-employer contribution entities to plan members for benefits provided through a defined benefit pension plan.
Non-Employer Contribution Entities	Non-employer contribution entities are entities that make contributions to a pension plan that is used to provide pensions to the employees of other entities. For purposes of the GASB Accounting statement plan members are not considered non-employer contribution entities.
Normal Cost	The actuarial present value of the pension trust benefits allocated to the current year by the actuarial cost method. Also known as 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.
PERSIA	Public Employees Retirement System Investment Act (Michigan PA 314).
POA	The 8th Amended Plan for the Adjustment of the Debt of the City of Detroit.
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. Also known as normal cost.
Total Pension Expense	The total pension expense is the sum of the following items that are recognized at the end of the employer's fiscal year: 1. Service Cost 2. Interest on the Total Pension Liability 3. Current-Period Benefit Changes 4. Employee Contributions (made negative for addition here) 5. Projected Earnings on Plan Investments (made negative for addition here) 6. Pension Plan Administrative Expense 7. Other Changes in Plan Fiduciary Net Position 8. Recognition of Outflow (Inflow) of Resources due to Liabilities 9. Recognition of Outflow (Inflow) of Resources due to Assets
Total Pension Liability (TPL)	The TPL is the portion of the actuarial present value of projected benefit payments that is attributed to past periods of member service.
Unfunded Actuarial Accrued Liability (UAAL)	The UAAL is the difference between actuarial accrued liability and valuation assets.
Valuation Assets	The valuation assets are the assets used in determining the unfunded liability of the plan. For purposes of the GASB Statement No. 67, the valuation asset is equal to the market value of assets.