

**THE POLICE AND FIRE RETIREMENT SYSTEM OF THE  
CITY OF DETROIT**  
GASB STATEMENT NO. 67 PLAN REPORTING AND  
ACCOUNTING SCHEDULES OF COMPONENT II  
JUNE 30, 2016

November 7, 2016

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.” These calculations have been made on a basis that is consistent with our understanding of this Statement. This information is subject to the System’s Auditor’s review. Please let us know if 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 (as defined by GASB Statement No. 67), 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 No. 67. 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. 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, 2015. The total pension liability was rolled-forward from the valuation date to the plan year ending June 30, 2016 using generally accepted actuarial principles. The asset information as of June 30, 2016 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. 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 of frozen accrued benefits for active members are not available. Future measurements based on final calculation of benefit amounts may 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 7.15% as of June 30, 2016, down from 7.47% as of June 30, 2015. We have reviewed this assumption based on the System’s asset allocation and have determined it to be reasonable for purposes of this measurement.

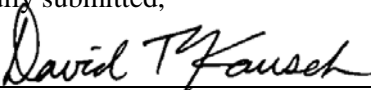
The benefit provisions reflected in this valuation for the development of the end of year Total Pension Liability (TPL) are those in effect for Component II as of the end of the plan year on June 30, 2016. There were no changes in benefit provisions since the June 30, 2015 GASB 67 valuation.

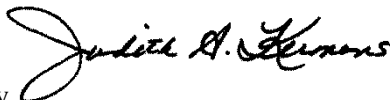
To the best of our knowledge, the information contained within this report is accurate and fairly represents the actuarial position of the System on the measurement date for purposes of GASB Statement No. 67 reporting. All calculations have been made in conformity with generally accepted actuarial principles and practices as well as with the Actuarial Standards of Practice issued by the Actuarial Standards Board.

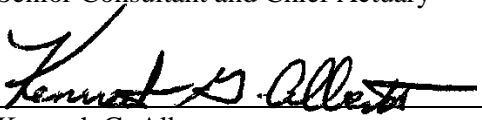
The signing individuals are independent of the plan sponsor.

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,

By   
David T. Kausch, FSA, EA, FCA, MAAA  
Senior Consultant and Chief Actuary

By   
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By   
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**SECTION A**  
EXECUTIVE SUMMARY

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## EXECUTIVE SUMMARY

### AS OF JUNE 30, 2016

Actuarial Valuation Date	June 30, 2015
Pension Plan's Fiscal Year Ending Date (Measurement Date & Reporting Date)	June 30, 2016

#### Membership

Number of	
- Retirees and Beneficiaries	8,279
- DROP Members	631
- Inactive, Nonretired Members	325
- Active Members	2,386
- Total	11,621
Covered Payroll (excluding DROP)	\$ 134,758,956

#### Net Pension Liability

Total Pension Liability	\$ 3,809,685,846
Plan Fiduciary Net Position	2,950,470,450
Net Pension Liability	\$ 859,215,396
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	77.45%
Net Pension Liability as a Percentage of Covered Payroll	637.59%

#### Development of the Single Discount Rate as of June 30, 2016

Single Discount Rate	7.15%
Long-Term Expected Rate of Return	7.15%
Long-Term Municipal Bond Rate *	2.85%
Last Year Ending June 30 in the 2017 to 2116 Projection Period for which Projected Benefit Payments are Fully Funded	2116

*\*Source: "State & local bonds" rate from Federal Reserve statistical release (H.15) as of June 30, 2016. The statistical release describes this rate as "Bond Buyer Index, general obligation, 20 years to maturity, mixed quality." In describing this index, the Bond Buyer notes that the bonds' average credit quality is roughly equivalent to Moody's Investors Service's Aa2 rating and Standard & Poor's Corp.'s AA.*

## DISCUSSION

### Implementation of GASB Statement No. 67

The System first implemented GASB Statement No. 67 for the plan year ending June 30, 2014.

### Changes to the Actuarial Assumptions

For purposes of determining the total pension liability as of June 30, 2016, the following actuarial assumptions were changed/modified from those used in the June 30, 2015 funding valuation:

- At the direction of the System and approval of the Systems' Auditor, the long-term expected return on assets was 7.15% as of June 30, 2016 (it was 6.75% in the June 30, 2015 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, 2015 GASB 67 valuation.

- The Single Discount Rate (SDR) changed to 7.15% from 7.47%, which was used in the June 30, 2015 GASB 67 valuation.
- The excess of the Annuity Reserve Fund (ARF) over the related accrued liabilities was not included as a liability.
- The AFC load was increased from 6% to 8%. 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.
- Retired Pre-1969 members receive post-retirement increases in proportion to active member compensation for the corresponding rank. In the June 30, 2015 GASB 67 report, we understood that Pre-1969 member's increases would be subject to the same 45% reduction in the COLA (under the POA) that affected all members. Based on recent discussion with System staff and counsel, we now understand that the 45% reductions will not be applied to Pre-1969 members.

### Changes to the Benefit Provisions

There were no changes in benefit provisions.

## Accounting Standard

For pension plans that are administered through trusts or equivalent arrangements, Governmental Accounting Standards Board (GASB) Statement No. 67, “Financial Reporting for Pension Plans,” establishes standards of financial reporting for separately issued financial reports and specifies the required approach for measuring the pension liability of employers and non-employer contributing entities for benefits provided through the pension plan.

The following discussion provides a summary of the information that is required to be disclosed under this new accounting standard. 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 your internal staff will be responsible for preparing that information to comply with this accounting standard.

## Financial Statements

GASB Statement No. 67 requires defined benefit pension plans to present two financial statements – a statement of fiduciary net position and a statement of changes in fiduciary net position.

The *statement of fiduciary net position* presents the following items as of the end of the pension plan’s reporting period, such as:

- assets;
- deferred inflows and outflows of resources;
- liabilities; and
- fiduciary net position (assets, plus deferred outflows, minus liabilities, minus deferred inflows).

The *statement of changes in fiduciary net position* presents the following for the plan’s reporting period:

- additions, such as contributions and investment income;
- deductions, such as benefit payments and expenses; and
- net increase or decrease in the fiduciary net position (the difference between additions and deductions).



## Notes to Financial Statements

GASB Statement No. 67 also requires the notes of the plan's financial statements to include additional disclosure information. This disclosure information 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;
- the composition of the pension plan's Board and the authority under which benefit terms may be amended;
- a description of the plan's funding policy, which includes member and employer contribution requirements;
- the pension plan's investment policies;
- a description of how fair value is determined;
- concentrations of investments greater than or equal to 5%;
- annual money-weighted rate of return on pension plan investments;
- the portion of the present value of benefits to be provided through the pension plan to current active and inactive plan members;
- the pension plan's fiduciary net position;
- the net pension liability;
- the pension plan's fiduciary net position as a percentage of the total pension liability;
- significant assumptions and methods used to calculate the total pension liability;
- inputs to the discount rates;
- certain information about mortality assumptions and the dates of experience studies; 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.***

## 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 and fourth tables from prior financial statements.

## Measurement of the Net Pension Liability

The net pension liability is to be measured as the total pension liability, less the amount of the pension plan's fiduciary net position. In actuarial terms, this will be the accrued liability less the market value of assets (not the smoothed actuarial value of assets that is often encountered in actuarial valuations performed to determine the employer's contribution requirement).

## Timing of the Valuation

An actuarial valuation to determine the total pension liability is required to be performed at least every two years. If the actuarial valuation is not calculated as of the plan's fiscal year end, the total pension liability is required to be rolled-forward from the actuarial valuation date to the pension plan's fiscal year end.

The total pension liability shown in this report is based on an actuarial valuation performed as of June 30, 2015 rolled forward to the plan year end of June 30, 2016.

## 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 Federal Reserve) as of the measurement date (to the extent that the contributions for use with the long-term expected rate of return are not met).

For the purpose of this valuation, the expected rate of return on pension plan investments is 7.15%; the municipal bond rate is 2.85% (based on the weekly rate closest to but not later than the plan year end of the "state & local bonds" rate from Federal Reserve statistical release (H.15)); and the resulting Single Discount Rate is 7.15% as of June 30, 2016.

The projection of contributions used to determine this Single Discount Rate reflect that plan member contributions ceased prior to June 30, 2015 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. Therefore, the long-term expected rate of return on pension plan investments of 7.15% was applied to all periods of projected benefit payments to determine the total pension liability. Note projections are shown on two investment return rates: 6.75% (the rate mandated in the POA) and 7.15% (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 (a change in the method from the 2015 GASB 67 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 has not yet determined if changes to the funding policy are warranted and what those changes might be. The amortization method used in the projections is unchanged from the June 30, 2015 GASB Statement No. 67 report. In the June 30, 2015 actuarial valuation of Component II, we recommended that the Board explore alternate funding policies.

### **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 (77.45% as of June 30, 2016). Unless otherwise indicated, with regard to any such measurements 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 contribution.

### **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 that the assets from one plan cannot be used to satisfy the liabilities of the other, even though assets may be pooled for investment purposes. 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.

### **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 Nos. 67 nor 68 seem to address this situation directly. However, question 23 of the GASB Statement 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 \$46,800,981 as of June 30, 2015 (the most recent data available and based on the valuation assumed rate of return of 6.75%). The projections in the back show the Net Plan Position with and without the contingency reserve. If the contingency reserve is removed for the liabilities and those assets are never to be paid out, they will continue to grow with interest.

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## **SECTION B**

### FINANCIAL STATEMENTS

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This information is subject to the System's Auditor's review. Please let us know if the System's Auditor recommends any changes.

**STATEMENT OF FIDUCIARY NET POSITION\***  
**AS OF JUNE 30, 2016**

**Assets**

Cash and Deposits	N/A
Receivables	
Accounts Receivable - Sale of Investments	N/A
Accrued Interest and Other Dividends	N/A
Contributions	N/A
Accounts Receivable - Other	N/A
Total Receivables	<u>N/A</u>
Investments	
Fixed Income	N/A
Domestic Equities	N/A
International Equities	N/A
Real Estate	N/A
Other	N/A
Total Investments	<u>N/A</u>
<b>Total Assets</b>	<u>N/A</u>

**Liabilities**

Payables	
Accounts Payable - Purchase of Investments	N/A
Accrued Expenses	N/A
Accounts Payable - Other	N/A
<b>Total Liabilities</b>	<u>N/A</u>

**Net Position Restricted for Pensions** \$ 2,950,470,450

\* Details not provided by Retirement System.

**STATEMENT OF CHANGES IN FIDUCIARY NET POSITION  
FOR YEAR ENDED JUNE 30, 2016**

**Additions**

Contributions		
Employer		\$ 37,787,744
Employee		24,801
Other		-
	Total Contributions	<u>\$ 37,812,545</u>
Investment Income		
Net Appreciation in Fair Value of Investments		\$ 37,815,468
Interest and Dividends		-
Less Investment Expense		<u>(13,165,659)</u>
	Net Investment Income	<u>\$ 24,649,809</u>
Other		<u>\$ 824,511</u>
	<b>Total Additions</b>	<u>\$ 63,286,865</u>

**Deductions**

Benefit Payments, including Refunds of Employee Contributions		\$ 304,467,162
Pension Plan Administrative Expense		3,103,694
Other		-
	<b>Total Deductions</b>	<u>\$ 307,570,856</u>
	<b>Net Increase in Net Position</b>	\$ (244,283,991)

**Net Position Restricted for Pensions**

Beginning of Year		\$ 3,194,754,441
End of Year		<u>\$ 2,950,470,450</u>

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## **SECTION C**

### **REQUIRED SUPPLEMENTARY INFORMATION**

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This information is subject to the System's Auditor's review. Please let us know if the System's Auditor recommends any changes.

**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,	2016	2015	2014
<b>Total Pension Liability</b>			
Service Cost	\$ -	\$ -	\$ 34,967,708
Interest on the Total Pension Liability	264,233,822	306,063,331	304,737,368
Benefit Changes	-	(555,898,068)	(102,236,878)
Difference between Expected and Actual Experience	45,955,553	(59,621,651)	-
Assumption Changes*	114,463,362	(95,014,469)	540,356,835
Benefit Payments	(285,936,673)	(313,816,916)	(285,512,629)
Refunds	(18,530,489)	-	(38,027,844)
<b>Net Change in Total Pension Liability</b>	<b>120,185,575</b>	<b>(718,287,774)</b>	<b>454,284,561</b>
<b>Total Pension Liability - Beginning</b>	<b>3,689,500,271</b>	<b>4,407,788,045</b>	<b>3,953,503,484</b>
<b>Total Pension Liability - Ending (a)</b>	<b>\$ 3,809,685,846</b>	<b>\$ 3,689,500,271</b>	<b>\$ 4,407,788,045</b>
<b>Plan Fiduciary Net Position</b>			
Employer Contributions	\$ 37,787,744	\$ 114,300,000	\$ -
Employee Contributions	24,801	42,576	7,783,141
Pension Plan Net Investment Income	24,649,809	122,736,820	568,760,793
Benefit Payments	(285,936,673)	(313,816,916)	(285,512,629)
Refunds	(18,530,489)	-	(38,027,844)
Pension Plan Administrative Expense	(3,103,694)	(7,630,692)	(11,373,226)
Other	824,511	2,919,354	-
<b>Net Change in Plan Fiduciary Net Position</b>	<b>(244,283,991)</b>	<b>(81,448,858)</b>	<b>241,630,235</b>
<b>Plan Fiduciary Net Position - Beginning</b>	<b>3,194,754,441</b>	<b>3,276,203,299</b>	<b>3,034,573,064</b>
<b>Plan Fiduciary Net Position - Ending (b)</b>	<b>\$ 2,950,470,450</b>	<b>\$ 3,194,754,441</b>	<b>\$ 3,276,203,299</b>
<b>Net Pension Liability - Ending (a) - (b)</b>	<b>859,215,396</b>	<b>494,745,830</b>	<b>1,131,584,746</b>
<b>Plan Fiduciary Net Position as a Percentage</b>			
<b>of Total Pension Liability</b>	77.45 %	86.59 %	74.33 %
<b>Covered-Employee Payroll (excluding DROP)</b>	\$ 134,758,956	\$ 132,566,687	\$ 150,176,596
<b>Net Pension Liability as a Percentage</b>			
<b>of Covered-Employee Payroll</b>	637.59 %	373.21 %	753.50 %

**Notes to Schedule:**

N/A

\* For the June 30, 2016 GASB 67 report, the "Assumption Change" item only includes the effect of the change in the SDR from 7.47% to 7.15%. 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**

<b>FY Ending June 30,</b>	<b>Total Pension Liability</b>	<b>Plan Net Position</b>	<b>Net Pension Liability</b>	<b>Plan Net Position as a % of Total Pension Liability</b>	<b>Covered Payroll*</b>	<b>Net Pension Liability as a % of Covered Payroll</b>
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%

\* 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

<b>FY Ending June 30,</b>	<b>Actuarially Determined Contribution#</b>	<b>Actual Contribution</b>	<b>Contribution Deficiency (Excess)</b>	<b>Covered Payroll</b>	<b>Actual Contribution as a % of Covered Payroll</b>
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%

\* 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. The DIA has entered into an agreement to pay part of its contribution requirement in a single lump sum payment. A contribution schedule showing actual fiscal year 2016 contributions as well as the Foundations future contribution requirements is below.

Fiscal Year	Contribution Source (Millions)			Total
	State	DIA	Foundations	
2016	-	\$ 19.5	\$ 18.3	\$ 37.8
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 contribution will be actuarially determined.

## SCHEDULE OF INVESTMENT RETURNS

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

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## **SECTION D**

### **NOTES TO FINANCIAL STATEMENTS**

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This information is subject to the System's Auditor's review. Please let us know if the System's Auditor recommends any changes.

## Single Discount Rate

A Single Discount Rate of 7.15% was used to measure the total pension liability as of June 30, 2016. This Single Discount Rate was based on the expected rate of return on pension plan investments of 7.15% 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, 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 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 7.15%, as well as what the plan's net pension liability would be if it were calculated using a Single Discount Rate that is one percent lower or one percent higher.

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

	Current Single Discount		
	1% Decrease 6.15%	Rate Assumption 7.15%	1% Increase 8.15%
Total Pension Liability (TPL)	\$4,213,128,634	\$3,809,685,846	\$3,472,030,996
Net Position Restricted for Pensions	2,950,470,450	2,950,470,450	2,950,470,450
Net Pension Liability (NPL)	\$1,262,658,184	\$ 859,215,396	\$ 521,560,546

### Expected Real Returns by Asset Class

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

## Summary of Population Statistics

Inactive Plan Members or Beneficiaries Currently Receiving Benefits	8,279
DROP Members	631
Inactive Plan Members Entitled to But Not Yet Receiving Benefits	325
Active Plan Members	2,386
Total Plan Members	11,621

Additional information regarding the plan population may be found in the June 30, 2015 actuarial valuation of the System.

## Additional Note

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.

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## **SECTION E**

### SUMMARY OF BENEFITS

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## SUMMARY OF BENEFIT PROVISIONS (JULY 1, 2015)

### *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%. 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 does not have legal standing 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 BENEFIT PROVISIONS (CONTINUED)

***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 BENEFIT PROVISIONS (CONCLUDED)

**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.

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## **SECTION F**

### **ACTUARIAL COST METHOD AND ACTUARIAL ASSUMPTIONS**

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**SUMMARY OF ASSUMPTIONS USED FOR DPFRS ACTUARIAL  
VALUATION  
ASSUMPTIONS ADOPTED BY BOARD OF TRUSTEES**

**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, 2016 TPL:***

*The investment return rate* used in the valuation was 7.15% 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 22. 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 23. These probabilities were first used for the June 30, 2008 valuation. The rationale (excluding death-in-service probabilities) is based on the 2002-2007 Experience Study. The rationale for the death-in-service probabilities is based on the 2008-2013 Mortality Experience Study.

## MISCELLANEOUS AND TECHNICAL ASSUMPTIONS

<b>Marriage Assumption:</b>	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.
<b>Pay Increase Timing:</b>	N/A
<b>Decrement Timing:</b>	Decrements are assumed to occur mid-year.
<b>Eligibility Testing:</b>	Eligibility for benefits is determined based upon the age nearest birthday and service nearest whole year on the date of decrement.
<b>Decrement Relativity:</b>	Decrement rates are used directly from the experience study, without adjustment for multiple decrement table effects.
<b>Decrement Operation:</b>	Disability and mortality decrements do not operate during the first 5 years of service. Disability and withdrawal do not operate during retirement eligibility.
<b>Incidence of Contributions:</b>	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.
<b>Longevity in AFC:</b>	Longevity payments were included directly in the AFC data provided by the System. No further adjustment was included.
<b>Unused Sick Leave Payout:</b>	Sick leave banks as of June 30, 2014 were included in data provided by the System. No further adjustment was included.
<b>Administrative Expense:</b>	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.
<b>Post-Retirement COLA:</b>	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.
<b>AFC Period:</b>	AFC data was provided by the System.
<b>Disability Change Age:</b>	The duty disability benefit is assumed to change at normal retirement age.

## MISCELLANEOUS AND TECHNICAL ASSUMPTIONS (CONCLUDED)

<b>DROP Assumption:</b>	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.
<b>Workers Compensation Offset:</b>	No Workers Compensation offsets are assumed for duty disability benefits.
<b>DROP Account:</b>	DROP account balances are not reported. No liability is included for DROP account balances.
<b>Class Codes:</b>	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.
<b>Frozen Benefit Estimate:</b>	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 8% to provide consistency with a sample of actual computations.*
<b>Form of Payment:</b>	The actuarial equivalent basis for optional forms of payment and early retirement are based on the 1971 Group Annuity Mortality table projected to 1984, a 7.8% interest rate and a 0% COLA assumption. Annuity withdrawal factors use the same mortality and COLA assumptions with a 5% interest rate. No adjustment has been made for alternate forms of payment elections. Principle balances of accumulated member contributions were converted to life annuity offsets based on plan factors for the valuation.
<b>Retiree Pop-Up Factor:</b>	In the case that a retiree has a pop-up option but no pop-up factor is provided in the data, the pop-up factor was 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).
<b>Member Contributions:</b>	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 2015 valuation based on a sample of members who retired after June 30, 2015.

**SINGLE LIFE RETIREMENT VALUES  
BASED ON RP-2014 BLUE COLLAR  
FOR MALES AND FEMALES**

Sample Attained Ages in 2015	Future Life Expectancy (years)	
	Males	Females
45	39.26	42.64
50	34.29	37.57
55	29.50	32.66
60	24.95	27.90
65	20.62	23.29
70	16.58	18.93
75	12.88	14.91
80	9.62	11.33

## 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%
Ref	922	922	922	922

Age	Percent of Eligible Active Members Retiring Within Next Year	
	Police	Fire
	60	40%
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%
Ref	922	1

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%
Ref		566 207	230 113 x .85

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%
Ref	105 x 0.75	90 x 0.85	105 x 0.85	90 x 2.25

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

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## **SECTION G**

### **CALCULATION OF THE SINGLE DISCOUNT RATE**

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## 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 Federal Reserve) as of the measurement date (to the extent that the contributions for use with the long-term expected rate of return are not met).

For the purpose of this valuation, the expected rate of return on pension plan investments is 7.15%; the municipal bond rate is 2.85%; and the resulting SDR is 7.15% as of June 30, 2016.

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, 2016, the employer contributions for the 10-year period ending June 30, 2023 were set by the 8<sup>th</sup> Amended Plan of Adjustment (POA). Subsequent employer contributions were determined by a closed 30-year level dollar amortization of any unfunded actuarial accrued liability using 7.15% interest, net of investment 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 6.75% rate of return mandated by the POA is net after administrative expenses. We therefore do not show the administrative expenses in that projection. The 7.15% 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. Both rates are net of investment expenses.

**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. The treatment of the Contingency Reserve is different from the 2015 GASB 67 report. Please see comments on pages 5-6 for additional details.

**Administrative Expenses:** For purposes of the projection using a 7.15% 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, 2016, the benefit payments reflect the plan provisions in force as of June 30, 2016.

**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 7.15%  
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
2017	\$ -	\$ -	\$ 1,812,317	\$ 16,487,683	\$ 18,300,000
2018	-	-	1,706,445	16,593,555	18,300,000
2019	-	-	1,605,173	16,694,827	18,300,000
2020	-	-	1,491,843	16,808,157	18,300,000
2021	-	-	1,389,976	16,910,024	18,300,000
2022	-	-	1,297,666	17,002,334	18,300,000
2023	-	-	1,231,981	17,068,019	18,300,000
2024	-	-	1,167,258	104,147,871	105,315,129
2025	-	-	1,101,885	104,147,871	105,249,756
2026	-	-	1,039,570	104,147,871	105,187,441
2027	-	-	971,270	104,147,871	105,119,141
2028	-	-	907,790	104,147,871	105,055,661
2029	-	-	840,452	104,147,871	104,988,323
2030	-	-	779,889	104,147,871	104,927,760
2031	-	-	721,200	104,147,871	104,869,071
2032	-	-	662,949	104,147,871	104,810,820
2033	-	-	601,459	104,147,871	104,749,330
2034	-	-	545,040	104,147,871	104,692,911
2035	-	-	478,330	104,147,871	104,626,201
2036	-	-	426,532	104,147,871	104,574,403
2037	-	-	380,905	104,147,871	104,528,776
2038	-	-	338,989	104,147,871	104,486,860
2039	-	-	302,774	104,147,871	104,450,645
2040	-	-	254,513	104,147,871	104,402,384
2041	-	-	200,946	104,147,871	104,348,817
2042	-	-	159,064	104,147,871	104,306,935
2043	-	-	121,430	104,147,871	104,269,301
2044	-	-	95,405	104,147,871	104,243,276
2045	-	-	73,679	104,147,871	104,221,550
2046	-	-	53,965	104,147,871	104,201,836
2047	-	-	39,253	104,147,871	104,187,124
2048	-	-	28,034	104,147,871	104,175,905
2049	-	-	19,502	104,147,871	104,167,373
2050	-	-	13,002	104,147,871	104,160,873
2051	-	-	8,687	104,147,871	104,156,558
2052	-	-	5,797	104,147,871	104,153,668
2053	-	-	3,195	104,147,871	104,151,066
2054	-	-	2,084	-	2,084
2055	-	-	945	-	945
2056	-	-	336	-	336
2057	-	-	130	-	130
2058	-	-	-	-	-
2059	-	-	-	-	-
2060	-	-	-	-	-
2061	-	-	-	-	-
2062	-	-	-	-	-
2063	-	-	-	-	-
2064	-	-	-	-	-
2065	-	-	-	-	-
2066	-	-	-	-	-

# 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 7.15%  
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
2067	\$ -	\$ -	\$ -	\$ -	\$ -
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	-	-	-	-	-

# 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 7.15% 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 7.15%	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)	
2017	\$ 2,950,470,450	\$ 18,300,000	\$ 306,551,308	\$ 46,530,081	\$ 1,812,317	\$ 197,440,977	\$ 2,811,317,721	\$ 2,861,174,702
2018	2,811,317,721	18,300,000	309,785,417	-	1,706,445	190,708,554	2,708,834,412	2,762,256,168
2019	2,708,834,412	18,300,000	314,233,370	-	1,605,173	183,228,286	2,594,524,155	2,651,765,567
2020	2,594,524,155	18,300,000	315,436,562	-	1,491,843	175,016,813	2,470,912,563	2,532,246,735
2021	2,470,912,563	18,300,000	314,279,129	-	1,389,976	166,222,827	2,339,766,285	2,405,485,850
2022	2,339,766,285	18,300,000	312,942,297	-	1,297,666	156,896,077	2,200,722,399	2,271,140,913
2023	2,200,722,399	18,300,000	311,499,285	-	1,231,981	147,007,444	2,053,298,577	2,128,752,016
2024	2,053,298,577	105,315,129	309,850,071	-	1,167,258	139,583,945	1,987,180,323	2,068,028,682
2025	1,987,180,323	105,249,756	307,197,230	-	1,101,885	134,949,692	1,919,080,655	2,005,709,672
2026	1,919,080,655	105,187,441	304,453,174	-	1,039,570	130,176,972	1,848,952,325	1,941,775,317
2027	1,848,952,325	105,119,141	301,482,273	-	971,270	125,267,173	1,776,885,095	1,876,344,931
2028	1,776,885,095	105,055,661	298,197,715	-	907,790	120,229,762	1,703,065,012	1,809,636,226
2029	1,703,065,012	104,988,323	294,453,012	-	840,452	115,083,188	1,627,843,059	1,742,034,114
2030	1,627,843,059	104,927,760	290,201,637	-	779,889	109,854,181	1,551,643,473	1,673,999,189
2031	1,551,643,473	104,869,071	285,502,672	-	721,200	104,570,999	1,474,859,670	1,605,963,820
2032	1,474,859,670	104,810,820	280,338,466	-	662,949	99,262,390	1,397,931,464	1,538,409,561
2033	1,397,931,464	104,749,330	274,774,557	-	601,459	93,957,499	1,321,262,277	1,471,784,558
2034	1,321,262,277	104,692,911	268,739,356	-	545,040	88,687,686	1,245,358,477	1,406,643,101
2035	1,245,358,477	104,626,201	262,285,777	-	478,330	83,487,297	1,170,707,868	1,343,524,342
2036	1,170,707,868	104,574,403	255,406,872	-	426,532	78,391,454	1,097,840,321	1,283,013,173
2037	1,097,840,321	104,528,776	248,048,345	-	380,905	73,439,950	1,027,379,797	1,225,792,508
2038	1,027,379,797	104,486,860	240,234,760	-	338,989	68,676,536	959,969,444	1,172,568,664
2039	959,969,444	104,450,645	232,110,836	-	302,774	64,142,113	896,148,592	1,123,948,656
2040	896,148,592	104,402,384	223,726,976	-	254,513	59,873,471	836,442,956	1,080,530,725
2041	836,442,956	104,348,817	215,083,360	-	200,946	55,908,192	781,415,659	1,042,955,703
2042	781,415,659	104,306,935	206,140,994	-	159,064	52,287,911	731,710,446	1,011,950,604
2043	731,710,446	104,269,301	196,972,183	-	121,430	49,056,115	687,942,249	988,219,578
2044	687,942,249	104,243,276	187,679,390	-	95,405	46,253,171	650,663,901	972,411,059
2045	650,663,901	104,221,550	178,358,201	-	73,679	43,915,249	620,368,820	965,120,899
2046	620,368,820	104,201,836	169,074,757	-	53,965	42,075,305	597,517,238	966,919,091
2047	597,517,238	104,187,124	159,895,295	-	39,253	40,763,917	582,533,730	978,347,816
2048	582,533,730	104,175,905	150,870,030	-	28,034	40,009,680	575,821,251	999,936,044
2049	575,821,251	104,167,373	142,049,505	-	19,502	39,839,627	577,759,244	1,032,198,245
2050	577,759,244	104,160,873	133,480,223	-	13,002	40,279,257	588,706,149	1,075,637,538
2051	588,706,149	104,156,558	125,184,457	-	8,687	41,353,415	609,022,978	1,130,769,961
2052	609,022,978	104,153,668	117,182,305	-	5,797	43,087,206	639,075,750	1,198,127,642
2053	639,075,750	104,151,066	109,485,484	-	3,195	45,506,391	679,244,527	1,278,268,630
2054	679,244,527	2,084	102,099,995	-	2,084	44,978,921	622,123,452	1,263,977,779
2055	622,123,452	945	95,027,048	-	945	41,143,257	568,239,661	1,255,986,571
2056	568,239,661	336	88,262,136	-	336	37,528,236	517,505,761	1,254,426,576
2057	517,505,761	130	81,797,925	-	130	34,127,868	469,835,704	1,259,446,357
2058	469,835,704	-	75,625,115	-	-	30,936,328	425,146,916	1,271,214,731
2059	425,146,916	-	69,734,480	-	-	27,948,034	383,360,471	1,289,922,134
2060	383,360,471	-	64,117,720	-	-	25,157,636	344,400,387	1,315,781,209
2061	344,400,387	-	58,767,536	-	-	22,559,957	308,192,808	1,349,027,359
2062	308,192,808	-	53,678,250	-	-	20,149,916	274,664,475	1,389,918,696
2063	274,664,475	-	48,846,378	-	-	17,922,398	243,740,495	1,438,735,393
2064	243,740,495	-	44,270,606	-	-	15,872,093	215,341,983	1,495,779,016
2065	215,341,983	-	39,951,526	-	-	13,993,341	189,383,798	1,561,372,079
2066	189,383,798	-	35,890,640	-	-	12,280,001	165,773,159	1,635,858,603

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 7.15% 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 7.15%	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)	
2067	\$ 165,773,159	\$ -	\$ 32,088,764	\$ -	\$ -	\$ 10,725,411	\$ 144,409,807	\$ 1,719,606,360
2068	144,409,807	-	28,546,116	-	-	9,322,395	125,186,086	1,813,009,192
2069	125,186,086	-	25,262,426	-	-	8,063,264	107,986,924	1,916,489,383
2070	107,986,924	-	22,236,373	-	-	6,939,838	92,690,389	2,030,500,773
2071	92,690,389	-	19,465,063	-	-	5,943,500	79,168,826	2,155,532,653
2072	79,168,826	-	16,943,059	-	-	5,065,313	67,291,080	2,292,114,920
2073	67,291,080	-	14,663,285	-	-	4,296,149	56,923,945	2,440,822,690
2074	56,923,945	-	12,617,125	-	-	3,626,787	47,933,606	2,602,281,111
2075	47,933,606	-	10,794,003	-	-	3,048,029	40,187,632	2,777,170,984
2076	40,187,632	-	9,181,516	-	-	2,550,843	33,556,959	2,966,234,621
2077	33,556,959	-	7,766,035	-	-	2,126,480	27,917,403	3,170,281,518
2078	27,917,403	-	6,532,724	-	-	1,766,581	23,151,261	3,390,194,409
2079	23,151,261	-	5,466,288	-	-	1,463,269	19,148,242	3,626,934,975
2080	19,148,242	-	4,551,702	-	-	1,209,185	15,805,725	3,881,549,210
2081	15,805,725	-	3,773,547	-	-	997,534	13,029,712	4,155,173,856
2082	13,029,712	-	3,116,637	-	-	822,128	10,735,203	4,449,042,653
2083	10,735,203	-	2,566,571	-	-	677,396	8,846,028	4,764,492,461
2084	8,846,028	-	2,109,722	-	-	558,370	7,294,676	5,102,969,830
2085	7,294,676	-	1,732,931	-	-	460,687	6,022,432	5,466,038,359
2086	6,022,432	-	1,424,069	-	-	380,572	4,978,935	5,855,386,000
2087	4,978,935	-	1,172,109	-	-	314,814	4,121,640	6,272,832,810
2088	4,121,640	-	967,052	-	-	260,722	3,415,309	6,720,339,329
2089	3,415,309	-	800,201	-	-	216,081	2,831,189	7,200,015,276
2090	2,831,189	-	664,109	-	-	179,098	2,346,178	7,714,128,927
2091	2,346,178	-	552,579	-	-	148,338	1,941,937	8,265,117,153
2092	1,941,937	-	460,604	-	-	122,666	1,604,000	8,855,596,243
2093	1,604,000	-	384,193	-	-	101,188	1,320,995	9,488,373,683
2094	1,320,995	-	320,233	-	-	83,200	1,083,962	10,166,460,917
2095	1,083,962	-	266,384	-	-	68,144	885,722	10,893,087,130
2096	885,722	-	220,914	-	-	55,568	720,376	11,671,714,185
2097	720,376	-	182,523	-	-	45,094	582,948	12,506,052,814
2098	582,948	-	150,176	-	-	36,405	469,176	13,400,080,138
2099	469,176	-	123,029	-	-	29,224	375,371	14,358,058,517
2100	375,371	-	100,340	-	-	23,314	298,345	15,384,555,836
2101	298,345	-	81,456	-	-	18,470	235,359	16,484,467,260
2102	235,359	-	65,798	-	-	14,517	184,078	17,663,038,560
2103	184,078	-	52,849	-	-	11,305	142,534	18,925,891,111
2104	142,534	-	42,186	-	-	8,709	109,058	20,279,048,658
2105	109,058	-	33,422	-	-	6,623	82,259	21,728,966,041
2106	82,259	-	26,221	-	-	4,960	60,998	23,282,559,971
2107	60,998	-	20,317	-	-	3,648	44,329	24,947,241,978
2108	44,329	-	15,513	-	-	2,625	31,441	26,730,953,722
2109	31,441	-	11,635	-	-	1,839	21,645	28,642,204,869
2110	21,645	-	8,533	-	-	1,248	14,359	30,690,113,684
2111	14,359	-	6,096	-	-	813	9,076	32,884,450,502
2112	9,076	-	4,230	-	-	500	5,347	35,235,684,335
2113	5,347	-	2,838	-	-	283	2,791	37,755,032,827
2114	2,791	-	1,832	-	-	135	1,094	40,454,515,777
2115	1,094	-	1,132	-	-	38	0	43,347,012,483
2116	0	-	-	-	-	0	0	46,446,323,876

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

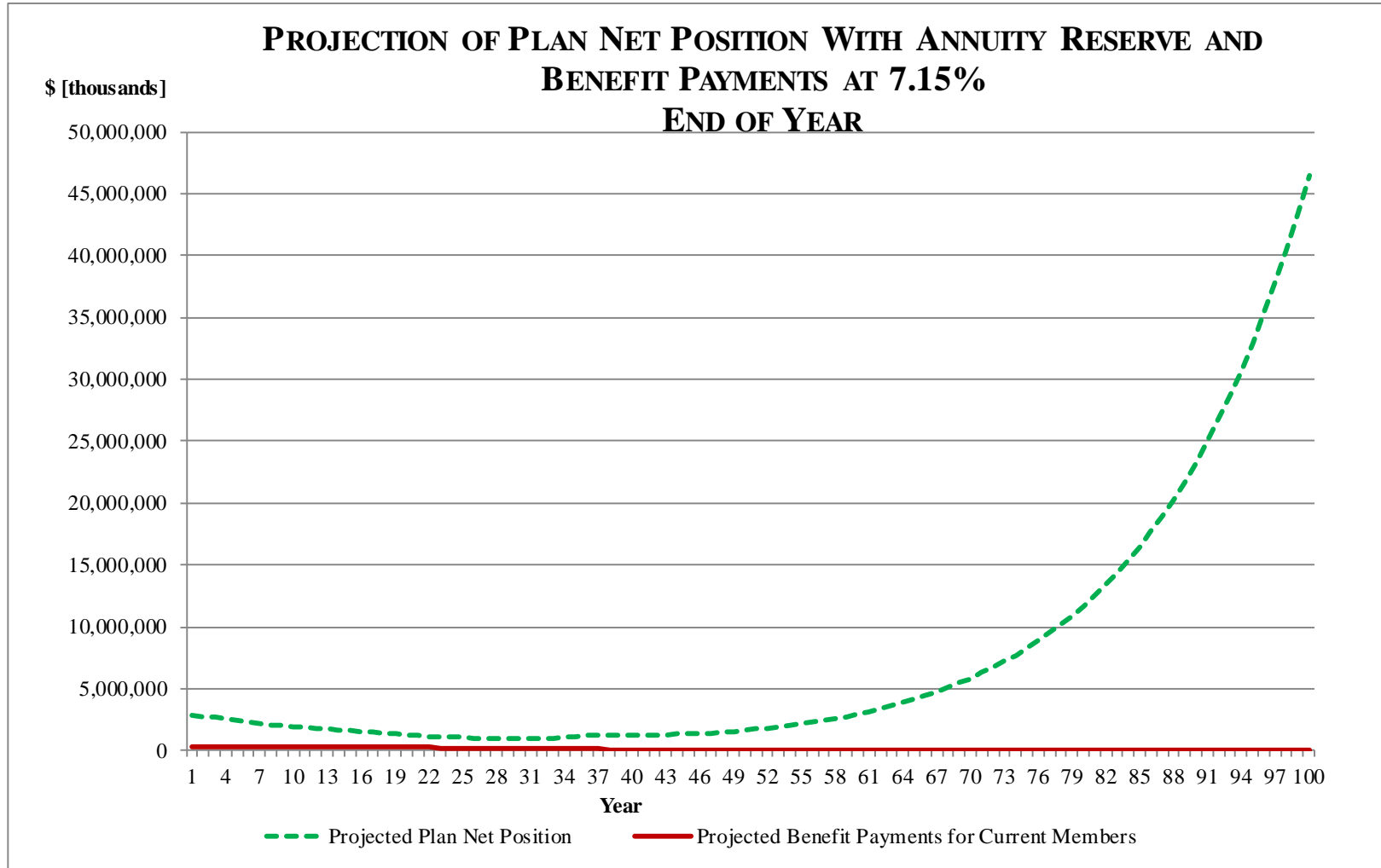


## SINGLE DISCOUNT RATE DEVELOPMENT PRESENT VALUES OF PROJECTED BENEFITS AT 7.15% END OF YEAR

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)=((1+sdr)^(a)-.5)
2017	\$ 2,950,470,450	\$ 306,551,308	\$ 306,551,308	\$ -	\$ 296,146,829	\$ -	\$ 296,146,829
2018	2,861,174,702	309,785,417	309,785,417	-	279,301,139	-	279,301,139
2019	2,762,256,168	314,233,370	314,233,370	-	264,406,340	-	264,406,340
2020	2,651,765,567	315,436,562	315,436,562	-	247,707,649	-	247,707,649
2021	2,532,246,735	314,279,129	314,279,129	-	230,330,129	-	230,330,129
2022	2,405,485,850	312,942,297	312,942,297	-	214,046,092	-	214,046,092
2023	2,271,140,913	311,499,285	311,499,285	-	198,841,904	-	198,841,904
2024	2,128,752,016	309,850,071	309,850,071	-	184,590,899	-	184,590,899
2025	2,068,028,682	307,197,230	307,197,230	-	170,798,403	-	170,798,403
2026	2,005,709,672	304,453,174	304,453,174	-	157,977,355	-	157,977,355
2027	1,941,775,317	301,482,273	301,482,273	-	145,997,003	-	145,997,003
2028	1,876,344,931	298,197,715	298,197,715	-	134,770,331	-	134,770,331
2029	1,809,636,226	294,453,012	294,453,012	-	124,197,773	-	124,197,773
2030	1,742,034,114	290,201,637	290,201,637	-	114,236,658	-	114,236,658
2031	1,673,999,189	285,502,672	285,502,672	-	104,887,476	-	104,887,476
2032	1,605,963,820	280,338,466	280,338,466	-	96,117,834	-	96,117,834
2033	1,538,409,561	274,774,557	274,774,557	-	87,923,633	-	87,923,633
2034	1,471,784,558	268,739,356	268,739,356	-	80,254,280	-	80,254,280
2035	1,406,643,101	262,285,777	262,285,777	-	73,100,357	-	73,100,357
2036	1,343,524,342	255,406,872	255,406,872	-	66,433,198	-	66,433,198
2037	1,283,013,173	248,048,345	248,048,345	-	60,213,897	-	60,213,897
2038	1,225,792,508	240,234,760	240,234,760	-	54,425,706	-	54,425,706
2039	1,172,568,664	232,110,836	232,110,836	-	49,076,261	-	49,076,261
2040	1,123,948,656	223,726,976	223,726,976	-	44,147,105	-	44,147,105
2041	1,080,530,725	215,083,360	215,083,360	-	39,609,423	-	39,609,423
2042	1,042,955,703	206,140,994	206,140,994	-	35,429,408	-	35,429,408
2043	1,011,950,604	196,972,183	196,972,183	-	31,594,556	-	31,594,556
2044	988,219,578	187,679,390	187,679,390	-	28,095,176	-	28,095,176
2045	972,411,059	178,358,201	178,358,201	-	24,918,167	-	24,918,167
2046	965,120,899	169,074,757	169,074,757	-	22,044,974	-	22,044,974
2047	966,919,091	159,895,295	159,895,295	-	19,456,931	-	19,456,931
2048	978,347,816	150,870,030	150,870,030	-	17,133,633	-	17,133,633
2049	999,936,044	142,049,505	142,049,505	-	15,055,460	-	15,055,460
2050	1,032,198,245	133,480,223	133,480,223	-	13,203,195	-	13,203,195
2051	1,075,637,538	125,184,457	125,184,457	-	11,556,341	-	11,556,341
2052	1,130,769,961	117,182,305	117,182,305	-	10,095,778	-	10,095,778
2053	1,198,127,642	109,485,484	109,485,484	-	8,803,232	-	8,803,232
2054	1,278,268,630	102,099,995	102,099,995	-	7,661,594	-	7,661,594
2055	1,263,977,779	95,027,048	95,027,048	-	6,655,007	-	6,655,007
2056	1,255,986,571	88,262,136	88,262,136	-	5,768,774	-	5,768,774
2057	1,254,426,576	81,797,925	81,797,925	-	4,989,525	-	4,989,525
2058	1,259,446,357	75,625,115	75,625,115	-	4,305,175	-	4,305,175
2059	1,271,214,731	69,734,480	69,734,480	-	3,704,931	-	3,704,931
2060	1,289,922,134	64,117,720	64,117,720	-	3,179,204	-	3,179,204
2061	1,315,781,209	58,767,536	58,767,536	-	2,719,479	-	2,719,479
2062	1,349,027,359	53,678,250	53,678,250	-	2,318,219	-	2,318,219
2063	1,389,918,696	48,846,378	48,846,378	-	1,968,776	-	1,968,776
2064	1,438,735,393	44,270,606	44,270,606	-	1,665,279	-	1,665,279
2065	1,495,779,016	39,951,526	39,951,526	-	1,402,532	-	1,402,532
2066	1,561,372,079	35,890,640	35,890,640	-	1,175,895	-	1,175,895

## SINGLE DISCOUNT RATE DEVELOPMENT PRESENT VALUES OF PROJECTED BENEFITS AT 7.15% 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 <sup>a</sup> ((a)-.5)	(g)=(e)*vf <sup>a</sup> ((a)-.5)	(h)=((c)/(1+sdr) <sup>a</sup> ((a)-.5)
2067	\$ 1,635,858,603	\$ 32,088,764	\$ 32,088,764	\$ -	\$ 981,179	\$ -	\$ 981,179
2068	1,719,606,360	28,546,116	28,546,116	-	814,610	-	814,610
2069	1,813,009,192	25,262,426	25,262,426	-	672,800	-	672,800
2070	1,916,489,383	22,236,373	22,236,373	-	552,691	-	552,691
2071	2,030,500,773	19,465,063	19,465,063	-	451,525	-	451,525
2072	2,155,532,653	16,943,059	16,943,059	-	366,797	-	366,797
2073	2,292,114,920	14,663,285	14,663,285	-	296,260	-	296,260
2074	2,440,822,690	12,617,125	12,617,125	-	237,909	-	237,909
2075	2,602,281,111	10,794,003	10,794,003	-	189,950	-	189,950
2076	2,777,170,984	9,181,516	9,181,516	-	150,793	-	150,793
2077	2,966,234,621	7,766,035	7,766,035	-	119,034	-	119,034
2078	3,170,281,518	6,532,724	6,532,724	-	93,449	-	93,449
2079	3,390,194,409	5,466,288	5,466,288	-	72,976	-	72,976
2080	3,626,934,975	4,551,702	4,551,702	-	56,711	-	56,711
2081	3,881,549,210	3,773,547	3,773,547	-	43,879	-	43,879
2082	4,155,173,856	3,116,637	3,116,637	-	33,822	-	33,822
2083	4,449,042,653	2,566,571	2,566,571	-	25,994	-	25,994
2084	4,764,492,461	2,109,722	2,109,722	-	19,941	-	19,941
2085	5,102,969,830	1,732,931	1,732,931	-	15,287	-	15,287
2086	5,466,038,359	1,424,069	1,424,069	-	11,724	-	11,724
2087	5,855,386,000	1,172,109	1,172,109	-	9,006	-	9,006
2088	6,272,832,810	967,052	967,052	-	6,934	-	6,934
2089	6,720,339,329	800,201	800,201	-	5,355	-	5,355
2090	7,200,015,276	664,109	664,109	-	4,148	-	4,148
2091	7,714,128,927	552,579	552,579	-	3,221	-	3,221
2092	8,265,117,153	460,604	460,604	-	2,506	-	2,506
2093	8,855,596,243	384,193	384,193	-	1,951	-	1,951
2094	9,488,373,683	320,233	320,233	-	1,517	-	1,517
2095	10,166,460,917	266,384	266,384	-	1,178	-	1,178
2096	10,893,087,130	220,914	220,914	-	912	-	912
2097	11,671,714,185	182,523	182,523	-	703	-	703
2098	12,506,052,814	150,176	150,176	-	540	-	540
2099	13,400,080,138	123,029	123,029	-	413	-	413
2100	14,358,058,517	100,340	100,340	-	314	-	314
2101	15,384,555,836	81,456	81,456	-	238	-	238
2102	16,484,467,260	65,798	65,798	-	179	-	179
2103	17,663,038,560	52,849	52,849	-	134	-	134
2104	18,925,891,111	42,186	42,186	-	100	-	100
2105	20,279,048,658	33,422	33,422	-	74	-	74
2106	21,728,966,041	26,221	26,221	-	54	-	54
2107	23,282,559,971	20,317	20,317	-	39	-	39
2108	24,947,241,978	15,513	15,513	-	28	-	28
2109	26,730,953,722	11,635	11,635	-	20	-	20
2110	28,642,204,869	8,533	8,533	-	13	-	13
2111	30,690,113,684	6,096	6,096	-	9	-	9
2112	32,884,450,502	4,230	4,230	-	6	-	6
2113	35,235,684,335	2,838	2,838	-	4	-	4
2114	37,755,032,827	1,832	1,832	-	2	-	2
2115	40,454,515,777	1,132	1,132	-	1	-	1
2116	43,347,012,483	-	-	-	-	-	-
<b>Totals</b>					\$ 3,809,685,846	\$ -	\$ 3,809,685,846



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**SECTION H**  
GLOSSARY OF TERMS

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## GLOSSARY OF TERMS

<b><i>Actuarial Accrued Liability (AAL)</i></b>	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."
<b><i>Actuarial Assumptions</i></b>	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.
<b><i>Accrued Service</i></b>	Service credited under the system which was rendered before the date of the actuarial valuation.
<b><i>Actuarial Equivalent</i></b>	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.
<b><i>Actuarial Cost Method</i></b>	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.
<b><i>Actuarial Gain (Loss)</i></b>	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.
<b><i>Actuarial Present Value (APV)</i></b>	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.
<b><i>Actuarial Valuation</i></b>	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.
<b><i>Actuarial Valuation Date</i></b>	The date as of which an actuarial valuation is performed.
<b><i>Actuarially Determined Contribution (ADC) or Annual Required Contribution (ARC)</i></b>	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

<b><i>Amortization Payment</i></b>	The amortization payment is the periodic payment required to pay off an interest-discounted amount with payments of interest and principal.
<b><i>Amortization Method</i></b>	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).
<b><i>Annuity Savings Fund (ASF)</i></b>	Annuity Savings Fund of the Component II (Legacy) Plan.
<b><i>Cost-of-Living Adjustments (COLA)</i></b>	Postemployment benefit changes intended to adjust benefit payments for the effects of inflation.
<b><i>Cost-Sharing Multiple-Employer Defined Benefit Pension Plan (cost-sharing pension plan)</i></b>	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.
<b><i>Covered-Employee Payroll</i></b>	The payroll of covered employees, which is typically only the pensionable pay and does not include pay above any pay cap.
<b><i>Deferred Retirement Option Program (DROP)</i></b>	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.
<b><i>Deferred Inflows and Outflows</i></b>	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.
<b><i>Discount Rate</i></b>	For GASB purposes, the discount rate is the single rate of return that results in the present value of all projected benefit payments to be equal to the sum of the funded and unfunded projected benefit payments, specifically: <ol style="list-style-type: none"> <li>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</li> <li>2. The present value of the benefit payments not in (1) above, discounted using the municipal bond rate.</li> </ol>

## GLOSSARY OF TERMS

<b><i>Entry Age Actuarial Cost Method (EAN)</i></b>	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.
<b><i>GASB</i></b>	The Governmental Accounting Standards Board (GASB) is an organization that exists in order to promulgate accounting standards for governmental entities.
<b><i>Fiduciary Net Position</i></b>	The fiduciary net position is the value of the assets of the trust.
<b><i>Long-Term Expected Rate of Return</i></b>	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.
<b><i>Money-Weighted Rate of Return</i></b>	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.
<b><i>Multiple-Employer Defined Benefit Pension Plan</i></b>	A multiple-employer plan is a defined benefit pension plan that is used to provide pensions to the employees of more than one employer.
<b><i>Municipal Bond Rate</i></b>	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.
<b><i>Net Pension Liability (NPL)</i></b>	The NPL is the liability of employers and non-employer contribution entities to plan members for benefits provided through a defined benefit pension plan.
<b><i>Non-Employer Contribution Entities</i></b>	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.
<b><i>Normal Cost</i></b>	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

<b><i>Other Postemployment Benefits (OPEB)</i></b>	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.
<b><i>PERSIA</i></b>	Public Employees Retirement System Investment Act (Michigan PA 314).
<b><i>POA</i></b>	The 8th Amended Plan for the Adjustment of the Debt of the City of Detroit.
<b><i>Real Rate of Return</i></b>	The real rate of return is the rate of return on an investment after adjustment to eliminate inflation.
<b><i>Service Cost</i></b>	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.
<b><i>Total Pension Expense</i></b>	The total pension expense is the sum of the following items that are recognized at the end of the employer's fiscal year: <ol style="list-style-type: none"> <li>1. Service Cost</li> <li>2. Interest on the Total Pension Liability</li> <li>3. Current-Period Benefit Changes</li> <li>4. Employee Contributions (made negative for addition here)</li> <li>5. Projected Earnings on Plan Investments (made negative for addition here)</li> <li>6. Pension Plan Administrative Expense</li> <li>7. Other Changes in Plan Fiduciary Net Position</li> <li>8. Recognition of Outflow (Inflow) of Resources due to Liabilities</li> <li>9. Recognition of Outflow (Inflow) of Resources due to Assets</li> </ol>
<b><i>Total Pension Liability (TPL)</i></b>	The TPL is the portion of the actuarial present value of projected benefit payments that is attributed to past periods of member service.
<b><i>Unfunded Actuarial Accrued Liability (UAAL)</i></b>	The UAAL is the difference between actuarial accrued liability and valuation assets.
<b><i>Valuation Assets</i></b>	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.