The Police and Fire Retirement System of the City of Detroit

GASB Statement No. 67 Plan Reporting and Accounting Schedules of Component I

June 30, 2017

GRS Retirement Consulting
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November 10, 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." 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 I (also known as the Hybrid Plan). Since Component II 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. In particular, this report is not a funding report and nothing in this report should be construed as a funding recommendation. 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 the 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. GRS is not responsible for the accuracy of any information provided by the Retirement System or the plan sponsor.

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% net of investment expenses as of June 30, 2017, up from 7.15% net of investment expenses 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.

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The benefit provisions reflected in this valuation for the development of the end of year TPL are those in effect for Component I as of the end of the plan year on June 30, 2017. There were no changes in benefit provisions from the June 30, 2016 GASB Statement No. 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,

David T. Kausch

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

Judith A. Kermans

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Table of Contents

SECTION A

EXECUTIVE SUMMARY

Executive Summary
as of June 30, 2017

Actuarial Valuation Date		June 30, 2016
Pension Plan's Fiscal Year Ending Date (Measurement Date & Reporting Date)		June 30, 2017
Membership		
Number of		
- Retirees and Beneficiaries		44
- DROP Members		54
- Inactive, Nonretired Members		293
- Active Members		2,483
- Total		2,874
Covered Payroll (excluding DROP)	$	128,837,649
Net Pension Liability (Asset)		
Total Pension Liability	$	68,577,964
Plan Fiduciary Net Position		93,356,020
Net Pension Liability (Asset)	$	(24,778,056)
Plan Fiduciary Net Position as a Percentage of Total Pension Liability		136.13%
Net Pension Liability (Asset) as a Percentage of Covered Payroll		(19.23)%
Development of the Single Discount Rate as of June 30, 2017		
Single Discount Rate		7.17%
Long-Term Expected Rate of 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

**Source: Fixed-income municipal bonds with 20 years to maturity that include only federally tax-exempt municipal bonds as reported in Fidelity Index's "20-Year Municipal GO AA Index" as of June 30, 2017. In describing this index, Fidelity notes that the municipal curves are constructed using option-adjusted analytics of a diverse population of over 10,000 tax-exempt securities.*

Discussion

Implementation of GASB Statement No. 67

The System first implemented GASB Statement No. 67 for the plan year ending June 30, 2015.

Changes to the Actuarial Assumptions

The Single Discount Rate (SDR) changed to 7.17% at the end of the year from 7.15% at the beginning of the year.

Other economic and demographic assumptions are the same as those used in the June 30, 2016 GASB Statement No. 67 valuation as approved by the Boards.

There was an administrative change involving the allocation of administrative expenses between Component I and Component II. Administrative expenses are now shared 60% with Component II and 40% with Component I. This change was reflected in our modeling, where appropriate.

Changes to the Plan Provisions

There were no changes in benefit provisions during the year affecting the Total Pension Liability.

Funding

Employee contributions are initially set to 6.0% of pay for members hired before June 30, 2014 and 8.0% of pay for members hired after June 30, 2014, but can be increased if necessary to maintain funding levels at 100%. Employer contributions are initially set at 12.25% of payroll. Employer contributions are actuarially determined beginning in fiscal year 2024 to be the amount necessary to fund the plan on an actuarial basis.

Post Retirement COLA

This plan has a post retirement COLA feature known as the Variable Pension Improvement Factor or VPIF of a 1% compound COLA. It can be granted beginning July 1, 2015 only if the five-year projection shows the plan funded status above 90% based upon 6.75% future investment return. It is reasonable to assume that there will be years in which a 1% compound COLA will be granted, however, it is unlikely to be granted every year. For purposes of the TPL, we have therefore assumed a 0.50% compound COLA beginning July 1, 2017 to model the potential average COLA over time. In the notes section we indicate the TPL based on a 0% VPIF and a 1% compound VPIF beginning July 1, 2017.

At the Board's direction, there was a $20 million transfer from the Component II plan to the Component I plan in the year ending June 30, 2017. As a result of this transfer, the probability of the payment of future VPIFs may have increased. We did not perform an assessment of the change in likelihood of paying a VPIF. We understand that the Board's policy is to review the actuarial assumptions including the VPIF assumption in the next experience study. In the interim, we will continue to monitor this assumption.

Discussion

DROP Plan

We understand that the System is working on bringing the management of all DROP plan balances in-house, but that all balances are currently (as of the measurement date) still managed by an outside vendor and the amount of the balances is currently unavailable. The balances were not included in the reported assets and, therefore, not included in the computed liabilities.

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).

Discussion

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 (Asset) (NPL(A));
- 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 were not provided and are not included. These balances were also not included in the reported assets.***

Required Supplementary Information

GASB Statement No. 67 requires a 10-year fiscal history of:

- sources of changes in the NPL(A);
- information about the components of the NPL(A) and related ratios, including the pension plan's fiduciary net position as a percentage of the total pension liability, and the NPL(A) 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.

Discussion

Measurement of the Net Pension Liability (Asset)

The Net Pension Liability (Asset) 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 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 (SDR) that reflects (1) a long-term expected rate of return on pension plan investments (to the extent that the plan's fiduciary net position is projected to be sufficient to pay benefits) and (2) tax-exempt municipal bond rate based on an index of 20-year general obligation bonds with an average AA credit rating as of the measurement date (to the extent that the contributions for use with the long-term expected rate of return are not met).

For the purpose of this valuation, the expected rate of return on pension plan investments is 7.17%; the municipal bond rate is 3.56% (based on the "20-Year Municipal GO AA Index" from the Fidelity Index); and the resulting Single Discount Rate is 7.17% as of June 30, 2017.

For purposes of calculating the SDR, the following simplifications were made to the projections:

1) Voluntary employee contributions were excluded.
2) The VPIF was assumed to be 0.50% compound each year beginning in Fiscal Year 2016.
3) Mandatory employee contributions were assumed to be fixed at the current rate of 6% for members hired before June 30, 2014 and 8% for members hired after June 30, 2014.
4) The VPIF reduction under Section 9.5 of the plan was assumed not to occur.
5) Employer contributions were determined in a manner to fully fund the plan beginning in 2024, in accordance with the plan.

Discussion

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 (136.13% as of June 30, 2017). 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.

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 I. The liabilities and reported assets of Component II will be detailed in a separate report.

Changes from the Prior GASB Statement No. 67 Report

Currently the GASB Statement No. 67 report and the GASB Statement No. 68 report (as of the same measurement date) are prepared at different times. The most recent report published was the June 30, 2016 GASB Statement No. 68 report issued on August 31, 2017. That report included a change in the reported assets that was made after the production of the June 30, 2016 GASB Statement No. 67 report published earlier. As a result, the historical schedules in this report have been updated to match the June 30, 2016 GASB Statement No. 68 report published in August and differ from the June 30, 2016 GASB Statement No. 67 report. Please see the June 30, 2016 GASB Statement No. 68 report for more details.

Comparisons to Funding Valuation

Because of a difference in the actuarial funding method used in the GASB valuations vs. funding valuation as well as differences in the investment return assumption, it is likely that the June 30, 2017 funding valuation will show a lower funded status than this report and possibly will be less than 100%.

Discussion

Development of TPL, Service Cost and PE

The TPL is the entry age accrued liability of the Defined Benefit plan plus the current Voluntary Member Contribution Reserve Fund (VMCRF). The service cost is the normal cost for the defined benefit portion plus voluntary member contributions made during the year. The Pension Expense (PE) is the service cost plus interest on the TPL plus adjustments for deferred inflows and outflows and “other” changes in Plan Fiduciary Net Position, less expected income on the Plan Fiduciary Net Position less member contributions. In this way, contributions to the VMCRF should not have an effect on the PE.

During the year, the VMCRF was increased by approximately $12,000 resulting from internal reserve fund transfers. This amount appears to be attributable to transfers from the mandatory member contribution reserve fund, presumably for prior period member contributions. This means that in a prior period the PE was offset by these contributions, but the service cost was not increased during that year for these same contributions.

SECTION B

FINANCIAL STATEMENTS

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, 2017

Assets	
Cash and Cash Equivalents	$ 5,628,513
Receivables	$ 6,140,664
Investments	
Investments at Fair Value	$ 84,227,771
Cash and Investments held as Collateral for Securities Lending	6,340,975
Total Investments	$ 90,568,746
Total Assets	$ 102,337,923
Liabilities	
Payables	
Accounts Payable	$ 8,981,903
Total Liabilities	$ 8,981,903
Total Fund Balances	$ 93,356,020

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

Additions		
Contributions		
Employer	$	16,448,246
Mandatory Member Pension Fund Contributions		8,554,893
Transfer from Component II		20,000,000
Voluntary Member Contributions		34,134
Total Contributions	$	45,037,273
Investment Income		
Net Appreciation in Fair Value of Investments	$	8,897,790
Investment Income		-
Less Investment Expense		-
Net Investment Income	$	8,897,790
Other	$	9,060
Total Additions	$	53,944,123
Deductions		
Benefit Payments, including Refunds of Employee Contributions	$	223,826
Pension Plan Administrative Expense		2,648,040
Other		-
Total Deductions	$	2,871,866
Net Increase in Net Position	$	51,072,257
Total Fund Balances Beginning of Year	$	42,283,763
Total Fund Balances End of Year	$	93,356,020

SECTION C

REQUIRED SUPPLEMENTARY INFORMATION

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 (Asset) and Related Ratios Multiyear

Ultimately 10 Fiscal Years will be Displayed

Fiscal year ending June 30,	2017	2016	2015
Total Pension Liability			
Service Cost#	$ 25,448,316	$ 24,084,267	$ 24,850,184
Interest on the Total Pension Liability (and Service Cost)	4,474,574	2,743,066	894,089
Benefit Changes	-	-	-
Difference between Expected and Actual Experience	(10,708,737)	(4,077,124)	-
Assumption Changes	(221,533)	2,424,058	(1,008,119)
Benefit Payments	(137,325)	(63,883)	-
Refunds	(86,501)	(37,368)	-
Net Change in Total Pension Liability	18,768,794	25,073,016	24,736,154
Total Pension Liability - Beginning	49,809,170	24,736,154	-
Total Pension Liability - Ending (a)	$ 68,577,964	$ 49,809,170	$ 24,736,154
Plan Fiduciary Net Position			
Employer Contributions	$ 16,448,246	$ 15,955,915	$ 14,606,971
Employee Contributions	8,554,893	7,834,119	7,390,335
Voluntary Employee Contributions #	34,134	15,459	14,370
Pension Plan Net Investment Income	8,897,790	252,125	21,019
Benefit Payments	(137,325)	(63,883)	(19,554)
Refunds	(86,501)	(37,368)	-
Pension Plan Administrative Expense	(2,648,040)	(3,000,369)	(685,677)
Other	20,009,060	301	-
Net Change in Plan Fiduciary Net Position	51,072,257	20,956,299	21,327,464
Plan Fiduciary Net Position - Beginning	42,283,763	21,327,464	-
Plan Fiduciary Net Position - Ending (b)	$ 93,356,020	$ 42,283,763	$ 21,327,464
Net Pension Liability (Asset) - Ending (a) - (b)	(24,778,056)	7,525,407	3,408,690
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	136.13 %	84.89 %	86.22 %
Covered-Employee Payroll (excluding DROP)	$ 128,837,649	$ 131,695,469	$ 132,566,687
Net Pension Liability (Asset) as a Percentage of Covered-Employee Payroll	(19.23)%	5.71 %	2.57 %

Notes to Schedule:

N/A

Voluntary employee contributions made during the year are added to the service cost and included in the employee contribution total.

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 (Asset) shown here has not been adjusted for any potential special funding situation.

Schedules of Required Supplementary Information
Schedule of the Net Pension Liability (Asset) Multiyear

Ultimately 10 Fiscal Years will be Displayed

FY Ending June 30,	Total Pension Liability	Plan Net Position	Net Pension Liability (Asset)	Plan Net Position as a % of Total Pension Liability	Covered Payroll*	Net Pension Liability (Asset) as a % of Covered Payroll
2015	$ 24,736,154	$ 21,327,464	$ 3,408,690	86.22%	$ 132,566,687	2.57%
2016	$ 49,809,170	$ 42,283,763	$ 7,525,407	84.89%	$ 131,695,469	5.71%
2017	$ 68,577,964	$ 93,356,020	$ (24,778,056)	136.13%	$ 128,837,649	(19.23)%

* *Covered payroll shown is the reported payroll from the actuarial valuation date (census date). For 2015, covered payroll was based on payroll reported for Component II. Beginning in 2016, covered payroll was based on payroll reported for Component I.*

Schedule of Contributions Multiyear

FY Ending June 30,	Actuarially Determined Contribution#	Actual Contribution	Contribution Deficiency (Excess)	Covered Payroll*	Actual Contribution as a % of Covered Payroll
2015	N/A	$ 14,606,971	N/A	$ 132,566,687	11.02%
2016	N/A	$ 15,831,763	N/A	$ 131,695,469	12.02%
2017	N/A	$ 16,448,246	N/A	$ 128,837,649	12.77%

* *Covered payroll shown is the reported payroll from the actuarial valuation date (census date). For 2015, covered payroll was based on payroll reported for Component II. Beginning in 2016, covered payroll was based on payroll reported for Component I.*

\# *Employer contribution amounts are set in the plan until Fiscal Year 2024.*

Notes to Schedule of Contributions

Employer Contribution: 12.25% until FY 2024. Actuarially determined beginning in FY 2024.

Schedule of Investment Returns

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

Contribution Stabilization Reserve (CSR)

The CSR is currently $0.

SECTION D

NOTES TO FINANCIAL STATEMENTS

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 7.17% 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 be made at 6% of compensation for members hired before June 30, 2014 and 8% for members hired after June 30, 2014 and that employer contributions will be made at 12.25% of compensation through June 30, 2023. Beyond 2023, the employer contributions will be actuarially determined, however, the Board does not have a funding policy at this time. For purposes of the GASB projections only, the employer contribution shown in this report is the rate which, when applied to the closed group payroll, is sufficient to fund the benefits. The rate as determined is 7.84% of the closed group payroll. The actual contributions to this plan will be on open group payroll under different assumptions and methods and are expected to be at a lower rate. The contributions that result from applying the current funding approach to the methods required under GASB Statement Nos. 67 and 68 should not be interpreted as a funding recommendation or requirement. Different contributions will result when applying the same funding approach to the methods and assumptions used in the funding valuation. 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 (Asset) (NPL(A)) to changes in the Single Discount Rate, the following presents the plan's NPL(A), calculated using a Single Discount Rate of 7.17%, as well as what the plan's NPL(A) 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 (Asset) to the Single Discount Rate Assumption

	1% Decrease 6.17%	Current Single Discount Rate Assumption 7.17%	1% Increase 8.17%
Total Pension Liability	$81,124,959	$68,577,964	$58,601,640
Net Position Restricted for Pensions	93,356,020	93,356,020	93,356,020
Net Pension Liability (Asset)	$(12,231,061)	$(24,778,056)	$(34,754,380)

Expected Real Returns by Asset Class

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

Summary of Population Statistics

Inactive Plan Members or Beneficiaries Currently Receiving Benefits	44
DROP Members	54
Inactive Plan Members Entitled to But Not Yet Receiving Benefits	293
Active Plan Members	2,483
Total Plan Members	2,874

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

Additional Note

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

The Total Pension Liability is sensitive to the assumption regarding the VPIF. The sensitivity may increase as the plan matures. To illustrate the sensitivity, we are showing the Total Pension Liability below based on two alternate VPIF assumptions: 0% and 1% beginning July 1, 2017 (the maximum amount payable). All scenarios are based on a 7.17% discount rate.

VPIF Assumption

	Minimum 0%	Current Assumption 0.5%	Maximum 1%
Total Pension Liability	$65,167,755	$68,577,964	$72,339,268
Net Position Restricted for Pensions	93,356,020	93,356,020	93,356,020
Net Pension Liability (Asset)	$(28,188,265)	$(24,778,056)	$(21,016,752)

At the Board's direction, there was a $20 million transfer from the Component II plan to the Component I plan in the year ending June 30, 2017. As a result of this transfer, the probability of the payment of future VPIFs may have increased. We did not perform an assessment of the change in likelihood of paying a VPIF. We understand that the Board's policy is to review the actuarial assumptions including the VPIF assumption in the next experience study. In the interim we will continue to monitor this assumption.

If the assumption were increased, the results would be somewhere in between the current assumption and maximum 1%, shown above.

SECTION E

SUMMARY OF BENEFITS

Summary of Benefit Provisions
(July 1, 2016)

Plan Year

The Plan Year is the 12-month period commencing on July 1, and ending on June 30. The first plan year starts July 1, 2014.

Plan Membership

Employee means an employee of the City's Police Department who has taken an oath of office or a Firefighter providing services to the City, excluding individuals who are compensated on a contractual or fee basis, any person who is classified as a non-common law employee or an independent contractor for federal income tax and withholding, and also excluding the Medical Director of the Retirement System.

The membership of the Retirement System shall consist of all employees of the Fire Department of the City of Detroit and of the Police Department of the City of Detroit who are employed as Firefighters or Police Officers according to the rules and regulations of the respective departments.

Appointed Officials of the Police Department or the Fire Department who are appointed from the membership are permitted to remain members. A Police Officer or Firefighter who is **killed or totally disabled prior to being confirmed**, shall be deemed to have been a member as of the date of his or her death. Any Member who is **transferred to a civilian position** in his or her department shall continue as a member.

Service Credit

Credited Service: A member is credited with one month of Credited Service for each calendar month in which the individual performs 140 hours or more of service for the employer as a member. Credited Service is recorded from the later of July 1, 2014, or the date of employment with the City as a Police Officer or Firefighter. A member also receives 1 month of Credited Service for each month the member is eligible to receive duty disability benefits, until such time as the member has 25 years of credited service.

Prior Service: refers to service credit awarded to a member prior to July 1, 2014 under the terms of the Retirement System in effect on June 30, 2014.

Vesting Service: A member is credited with a year of vesting service for each Plan Year commencing on or after July 1, 2014 during which the member performs 1,000 or more hours of work for the employer. Prior Service, as defined above, is also Vesting Service.

Military Service: A member who enters the military while employed by the City and returns to employment with the City following military service receives service credit in the Retirement System for the military service time as though there had been no interruption of employment. In order to receive such service credit, the individual must pay contributions to the Retirement System for the military service time upon return to employment.

Summary of Benefit Provisions
(Continued)

Average Final Compensation

Compensation: Compensation is base salary, excluding bonuses, overtime, sick leave, longevity pay, unused vacation time, etc. Compensation includes deferred compensation and "picked up" employee contributions to the Retirement System. Compensation is limited by IRC Section 401(a)(17).

Average Final Compensation: The average of the compensation received during the 5 consecutive years of Credited Service (including Prior Service) immediately preceding the date of the member's last termination of City employment as a Police Officer or Firefighter. If the member has less than 5 years of Credited Service (including Prior Service), the Average Final Compensation is the average of the compensation received during all years of Credited Service.

Final Compensation means the annual compensation of a member at the time of last termination of employment.

Normal Retirement

Normal Retirement Age: The Normal Retirement Age is 50 with 25 or more years of Credited Service (including prior service), with the following transition period.

Fiscal Year	Age and Elgibility Service
2015	43 and 20
2016	43 and 20
2017	44 and 21
2018	45 and 22
2019	46 and 23
2020	47 and 24
2021 and later	50 and 25

Normal Retirement Amount: The retirement allowance payable to a member who retires on or after the normal retirement age is 2.0% times average final compensation times Credited Service (after June 30, 2014) measured to the nearest month.

Deferred Retirement (Vested Benefit)

Eligibility: 10 years of Vesting Service.

Benefit Commencement: Age 55.

Annual Amount: Same as Normal Retirement but based on Average Final Compensation and Credited Service at the time of termination. An actuarial reduction from age 62 is applicable if benefits are taken prior to age 62 (*waived for DPLSA and DPCOA members*).

Summary of Benefit Provisions
(Continued)

Duty Disability Retirement

Eligibility: The individual must be totally disabled for duty by reason of illness, injury, or disease resulting from performance of duty.

Amount: For the first 24 months, the member shall receive a basic benefit equal to 50% of his or her final compensation plus a supplemental benefit equal to 16-2/3 % of final compensation. After 24 months, if the Board finds that the member is disabled from any occupation, the member shall continue to receive both the 50% and the 16-2/3% benefit until the member would have achieved 25 years of service. The 16-2/3% benefit ceases at the time the member would have had 25 years of service, or if the member is found not to be disabled from any occupation after the 24 month review. Duty disability benefits continue to be paid until age 65, unless the member is found not to be disabled prior to that date. Upon termination of disability, or the attainment of age 65, the member's benefit is reduced to the 50% basic benefit. Earned Income in any year acts to reduce the disability benefit in the following year, to the extent that earned income combined with the disability benefit exceeds the compensation at the time of disability (after adjustment for the Variable Improvement factor). Amounts payable from Worker's Comp or similar programs are offset against the amount otherwise payable.

Non-Duty Disability Retirement

Eligibility: Total and permanent disability that is not duty related but that occurred while in the employ of the City.

Amount: If the member has less than 5 years of Credited service, accumulated contributions are refunded or, at the members option, may be payable in the form of a cash refund annuity. No other benefits are payable. Members with 5 or more years of credited service at the time of disability may receive a benefit computed as a Normal Retirement benefit, but not less than 20% of Average Final Compensation. Earned Income in any year acts to reduce the disability benefit in the following year, to the extent that earned income combined with the disability benefit (after adjustment for the Variable Improvement factor) exceeds the compensation at the time of disability. Amounts payable from Worker's Comp or similar programs are offset against the amount otherwise payable.

Summary of Benefit Provisions
(Continued)

Accidental (Line of Duty) Death Before Retirement

Eligibility: Death resulting directly from performance of Duty in the service of the employer or as a result of illness contracted or injuries received while in the service of the employer.

Amount: Accumulated Mandatory Employee Contributions are refunded. If there is a surviving spouse, the surviving spouse receives a lifetime pension of 5/11ths of the member's final compensation. Each surviving child under age 18 receives a pension of 1/10th of final compensation payable until age 18. If there are more than two surviving children, each receives an equal share of 7/33rds of final compensation, payable to age 18 and redistributed to the remaining children upon attainment of age 18. The sum of all benefits payable shall not exceed 2/3rds of the member's Final Compensation. If there is no surviving spouse, each surviving child under age 18 receives a pension of 1/4th of the member's final compensation, subject to a maximum total of ½ of final compensation. If there is neither surviving spouse nor surviving children under the age of 18, each dependent parent, if any, shall receive a pension of 1/6th of the member's Final Compensation.

Ordinary (Other than Line of Duty) Death Before Retirement

Eligibility: 10 or more years of Vesting Service. The individual must be employed by the employer at time of death.

Amount: The Surviving Spouse shall receive a retirement allowance computed as though the member had retired the day before death, notwithstanding that the death was prior to the Normal Retirement Date, elected the Joint and 100% Option in favor of the spouse, and then died.

Refund of Mandatory Contributions

A member who ceases to be an employee for reasons other than retirement, death, or disability, may elect to receive a refund of mandatory Accumulated Contributions (without interest) in lieu of any other Component I benefit payable. In the case of a member who dies while employed by the City, or following termination of employment with the City, if no Surviving Spouse benefit is payable, the accumulated mandatory Employee Contributions (without interest) are paid to the member's estate.

Variable Pension Improvement Factor (VPIF Escalator)

Eligibility: In receipt of a retirement allowance for at least 12 months as of the first day of the plan year.

Amount: Beginning July 1, 2015 and effective the first date of each Plan year thereafter, the Board may determine that the Component I Retirement Allowance shall be increased by 1% of the then current (i.e., compounded to include prior VPIF's) retirement allowance. The VPIF Escalator may not be awarded in the event that the funding level of Component I of the Retirement System projected over a 5-year period falls below 90%.

Summary of Benefit Provisions
(Continued)

Deferred Retirement Option Program "DROP"

Eligibility: Eligible for immediate retirement under Component I and either a non-union executive or covered by a collective bargaining agreement permitting participation in the DROP.

Amount: Upon entry into the DROP, the member ceases to accrue additional retirement benefits and must elect the optional form under which the retirement allowance will ultimately be paid. 75% of that amount, including VPIF, is paid into the DROP account.

Investment: ING is currently responsible for the administration and investment of the DROP accounts. As soon as possible after July 1, 2014, the Board shall determine whether or not it is feasible for the Board to administer and invest the DROP accounts, in which case DROP assets would be commingled with Retirement System assets for investment purposes.

Earnings Credits: If the Board administers and invests the accounts, earnings credits shall be 75% of actual net Retirement System earnings rates, but neither less than 0% nor more than 7.75%.

Fees: Fees associated with maintenance of the DROP accounts outside the Retirement System shall be charged directly to DROP participants by means of deductions from their accounts.

Distribution: Upon termination of employment for any reason (including disability), the member's DROP account may be distributed in the form of a lump sum or an annuity. Any such annuity shall be subject to market rates of interest and other market related assumptions. At the same time, the member's monthly retirement allowance shall commence in the amount that would have been paid at the time the member entered the DROP, together with any applicable VPIF increases.

Death While in DROP: In the case of a member who dies during DROP participation, the DROP account balance is paid either to the named beneficiary or to the estate. Further, the DROP election is then rescinded and 100% of the retirement allowance that would have been paid but for participation in the DROP is restored. Survivor benefits are then payable in accordance with the payment option elected by the deceased member at the time the member elected to participate in the DROP.

Termination of DROP: The DROP can be terminated if it is determined that it is not cost neutral and cannot be amended to make it so.

Contributions

Members: Members who were active as of June 30, 2014 contribute 6% of Compensation. Members who are hired or rehired after that date contribute 8% of compensation. DROP participants do not make employee contributions. Member contributions are "picked up" in accordance with IRC 414(h).

Employers: 11.2% of compensation for members of the DPOA until October 3, 2014; 11.2% of Compensation of active employees who are members of the DFFA until November 6, 2014; 12.25% of Compensation of Active employees who are members of the DPCOA, DPLSA, and DPOA from and after October 3, 2014 until June 30, 2023; 12.25% of Compensation of DFFA members from and after November 6, 2014 until June 30, 2023, to be split between the Pension Accumulation Fund and the Rate Stabilization reserve. For Plan years 2024 and later, contributions shall be determined by an Actuary using reasonable and appropriate assumptions approved by the Board and the Investment Committee.

Summary of Benefit Provisions
(Continued)

Voluntary Employee Contributions

Eligibility: Coverage by a collective bargaining agreement that permits the Member to make Voluntary Employee Contributions to Component I cannot be a current participant in the DROP.

Amount: Not less than 1% of Compensation nor more than 10% of Compensation. DPOA members can elect to have a whole % of the amount the City pays him or her for accumulated sick leave in excess of 400 hours paid to the voluntary employee account. All voluntary employee contributions are made on an after tax basis.

Earnings Crediting: Each Plan year, accounts are credited with earnings at a rate equal to the net investment rate of return on Retirement System Assets for the second fiscal year immediately preceding the fiscal year in which earnings are to be credited. The earnings rate may not be less than 0% and may not exceed 5.25%.

Distribution: Upon termination of employment, accounts may be distributed in a lump sum, in equal monthly installments for a period not exceeding three years, or, at the option of the member, in the form of an actuarially equivalent life annuity payable in the same form as and added to the member's Retirement Allowance. The determination of actuarial equivalent for this purpose is based upon market rates of investment return and other market related assumptions. In case of a member who dies before receiving a distribution of his or her voluntary account, the value of the account is payable to the nominated beneficiary, or to the estate.

Forms of Payment

Normal Form of Payment: The normal form of payment is a straight life allowance with no death benefit, and, in particular, no residual refund of mandatory employee contributions. Until the date the first Retirement Allowance payment check is issued, any Member may elect to receive payment in either the Normal Form or in the Actuarial Equivalent of the Normal Form computed as of the effective date of retirement and payable in one of the forms described below.

Option One. Modified Cash Refund Annuity: If a Retiree who elected a Modified Cash Refund Annuity dies before payment has been received in an aggregate amount equal to, but not exceeding the Retiree's Accumulated Mandatory Employee Contributions at the time of retirement, the difference between said Accumulated Mandatory Employee Contributions and the aggregate amount of annuity payments already received, shall be paid in a single lump sum to a Beneficiary nominated by written designation duly executed by the Member and filed with the Board. If there are no such designated Beneficiaries surviving said Retiree, any such difference shall be paid to the Retiree's estate.

Option Two. Joint and One Hundred Percent Survivor Allowance: Upon the death of a Retiree who elected a Joint and One Hundred Percent Survivor Allowance, one hundred percent of the reduced Retirement Allowance shall be paid to and continued throughout the life of the Beneficiary nominated by written designation duly executed and filed with the Board prior to the date the first payment of the Retirement Allowance becomes due.

Summary of Benefit Provisions
(Continued)

Option "A". Joint and Seventy-Five Percent Survivor Allowance: Upon the death of a Retiree who elected a Joint and Seventy-Five Percent Survivor Allowance, seventy-five percent of the reduced Retirement Allowance shall be continued throughout the life of and paid to the Beneficiary nominated by written designation duly executed by the Member and filed with the Board prior to the date the first payment of the Retirement Allowance becomes due.

Option Three. Joint and Fifty Percent Survivor Allowance: Upon the death of a Retiree who elected a Joint and Fifty Percent Survivor Allowance, fifty percent of the reduced Retirement Allowance shall be continued throughout the life of and paid to the Beneficiary nominated by written designation duly executed by the Member and filed with the Board prior to the date the first payment of the Retirement Allowance becomes due.

Option "B". Joint and Twenty-Five Percent Survivor Allowance: Upon the death of a Retiree who elected a Joint and Twenty-Five Percent Survivor Allowance, twenty-five percent of the reduced Retirement Allowance shall be paid throughout the life of the Beneficiary nominated by written designation duly executed and filed with the Board prior to the date the first payment of the Retirement Allowance becomes due.

Joint and Survivor Optional Forms of Payment: The Joint and Survivor Optional Forms of Payment provided under the Retirement System shall be made available in either the standard form or the pop-up form, as follows:

> ***Standard Form:*** Under the Standard Form, the reduced Retirement Allowance shall be paid throughout the lifetime of the Retiree.
>
> ***Pop-up Form:*** Under the Pop-up Form, the reduced Retirement Allowance shall be paid throughout the lifetime of the Retiree and the designated Beneficiary. In the event of the death of the designated Beneficiary during the lifetime of the Retiree, the amount of the Retirement Allowance shall be changed to the amount that would have been payable had the Retiree elected the Straight Life Retirement Allowance Form of Payment.

Disposition of Residue: If under a Joint and One Hundred Percent Survivor allowance, a Joint and Seventy-Five Percent Survivor allowance, a Joint and Fifty Percent Survivor allowance, or a Joint and Twenty-Five Percent Survivor allowance as provided above, both the Retiree and the Beneficiary die before they have received, in Retirement Allowance payments, an aggregate amount equal to the Retiree's Accumulated Mandatory Employee Contributions at the time of retirement, the difference between the said Accumulated Mandatory Employee Contributions and the aggregate amount of Retirement Allowances paid to the Retiree and Beneficiary, shall be paid in a single lump sum to such person or persons nominated by written designation of the Retiree duly executed and filed with the Board. If there are no such person or persons surviving the Retiree and the Beneficiary, any such difference shall be paid to the estate of the second to die of the Retiree or Beneficiary.

Summary of Benefit Provisions
(Concluded)

Rehire Before or After Retirement

A former member who is vested and is not a DROP participant and who later becomes a Police Officer or Firefighter (but not a Police Assistant) shall have his or her benefit pertaining to total Credited Service earned on and after July 1, 2014 calculated in accordance with the terms of Component I of the Retirement System in effect at the time of the last separation from service. If the former member has previously withdrawn mandatory accumulated contributions, and such withdrawn contributions are not repaid within two years of the rehire date, only the Credited Service earned on and after the rehire date shall be taken into consideration in determining the retirement allowance.

Retirement benefits for a Retiree who returns to active full time employment other than as a Police Assistant shall be subject to the following provisions:

- A Retiree who returns to work will have the Retirement Allowance suspended upon re-employment. The variable pension improvement factor (escalator) shall not be added to the amount of the original Retirement Allowance during the Retiree's re-employment period.
- A Retiree who returns to work will be entitled to receive a second Retirement Allowance in accordance with the provisions of the Retirement System in effect during the re-employment period.
- A Retiree's Average Final Compensation for purposes of determining the second Retirement Allowance will be based upon the Compensation earned by the Retiree after the return to work.
- An individual who retires for a second time will not be allowed to change the payment option selected with respect to the original Retirement Allowance. However, the individual may select a separate payment option with respect to the second Retirement Allowance.

SECTION F

ACTUARIAL COST METHOD AND ACTUARIAL ASSUMPTIONS

Summary of Assumptions and Methods Used for GASB Valuation

All demographic assumptions are estimates of future experience except as noted. The rationale for the assumptions is based on the 2002-2007 experience study of the Component II plan 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 expenses). This is a prescribed assumption set by the Retirement System. We believe it is reasonable when using a 2.25% assumed **price inflation**.

Pay increase assumptions for individual active members are shown on page 28. Part of the assumption for each age is for a merit and/or seniority increase, and the other recognizes wage inflation (as of June 30, 2014 assumed to be 2.00% for five years, 2.50% for the next five years after that and 3.00% thereafter). The rationale for this assumption is that it is consistent with expectations by the employer used during the plan design.

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). 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 pages 29 and 30. The rationale is based on the 2002-2007 Experience Study modified as necessary to account for the difference in eligibility of the Component I plan.

The probabilities of separation from service are shown for sample ages on page 31.

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:	Beginning of (Fiscal) year. This is equivalent to assuming that reported pays represent amounts paid to members during the year ending on the valuation date.
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 Operation:	Disability and mortality decrements do not operate during the first 5 years of service. Disability and withdrawal do not operate during retirement eligibility.
Longevity in AFC:	None
Unused Sick Leave Payout:	None
Administrative Expense:	3.0% of payroll. 40% of administrative expenses were allocated to Component I and 60% to Component II based on actual administrative expenses paid.
Post-Retirement COLA:	A 0.5% COLA was used to determine the SDR and TPL.
Disability Change Age:	The duty disability benefit is assumed to change at the earlier of age 65 or the time the member would have had 25 years of credited service (including prior service). The benefit at change age was assumed to be 2.0% times final compensation times projected benefit service.
DROP Assumption:	Members are assumed to retire or DROP based on assumed rates. 60% of members leaving active service in accordance with the Ret/DROP rates are assumed to DROP/40% and are assumed to retire. Members entering the DROP are assumed to retire 5 years after entering the DROP. Employer contributions are assumed not to be made on DROP payroll. DROP account balances are assumed to grow at 6.75% per year.
Service Credit Accruals:	Service accruals for calculating benefits begin as of June 30, 2014 for Component I liabilities. However, service prior to June 30, 2014 is used to satisfy benefit eligibility requirements.

Miscellaneous and Technical Assumptions (Concluded)

Workers Compensation Offset:	No Workers compensation offsets are assumed for duty disability benefits.
DROP Account:	Members in the Component II DROP as of June 30, 2014 were excluded from this valuation.
Class Codes/Bargaining Unit:	For valuation purposes, members are categorized as DPOA, DFFA or LSA based on class codes and bargaining units provided by the Retirement System and are primarily used in the valuation to determine deferred retirement commencement.
Form of Payment:	No adjustment has been made for alternate forms of payment elections.
Disability Load:	Duty Disability benefits were increased by 2.0% to account for the Death While Disabled provision based on an analysis of the estimated impact for a sample set of individuals.
IRC Section 415 Limit:	We assumed that no benefits will be limited by IRC Section 415. The limit is assumed to grow with wage inflation.
IRC Section 401(a)(17) Limit:	All of the member salary provided falls below the current 401(a)(17) limit. The limit is assumed to grow with wage inflation.
IRC Section 401(h) Limit:	We did not test for the 401(h) limit on employer contributions for medical benefits. No employer contributions are anticipated in this valuation.
Data adjustments:	Benefits for newly identified DROP, retired, and deferred members were estimated based on previously reported active member data.
COLA (VPIF):	Unless stated otherwise, liabilities in this report are based on an assumed average 0.5% future VPIF.
New Entrant Assumption:	None.

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

Funding Methods

The entry age actuarial cost method was used in determining liabilities and normal cost as prescribed by GASB Statement Nos. 67 and 68. Under this method, each individual's service cost is determined as a level percent of pay from plan inception to DROP or termination of active service. This method is used in this report to comply with the GASB Standards and differs from the method used for funding the plan.

Projection of Employer Contributions. Actual employer contributions through June 30, 2023 are set at 12.25% of pay. The amortization period and method after 2023 has not yet been established by the Board. Additional funding for Transition Costs may occur as a result of Component II ASF transfers. For the purposes of the GASB projections only, the employer contribution shown in this report is the rate which, when applied to the closed group projected payroll, is sufficient to fund the benefits.

Present assets are set equal to the Market Value.

The data about persons now covered and about present assets was furnished by the System's administrative staff. Although examined for general reasonableness, the data was not audited by the actuary. Please see the June 30, 2016 actuarial valuation report dated July 3, 2017 (section E) for a description of any data adjustments that were made by the actuary.

Sample Salary Adjustment Rates

	Salary Increase Assumptions for an Individual Member		
Service	Merit & Seniority	Base (Economic)*	Increase Next Year
5	5.20%	3.00%	8.20%
10	1.70%	3.00%	4.70%
15	1.00%	3.00%	4.00%
20	1.00%	3.00%	4.00%
25	1.00%	3.00%	4.00%
30	1.00%	3.00%	4.00%
35	1.00%	3.00%	4.00%

** Ultimate rate shown. Base (Economic) salary increase rates as of June 30, 2014 are assumed to be 2.00% for five years, 2.50% for the next five years after that and 3.00% thereafter.*

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 for Members Older Than Age 43 or with 17 or More Years of Credited Service (Including Prior Service)

	Percent of Eligible Active Members Retiring or Entering DROP Within Next Year			
	Police		Fire	
Service	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%

The rationale for the retirement probabilities is the 2002-2007 Experience Study modified to account for the different eligibility in Component I and split to estimate which eligibility (Component I or Component II) would influence members based on the relative service under each component.

	Percent of Eligible Active Members Retiring or Entering DROP Within Next Year	
Age	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.

Probabilities of Service Retirement for Members Age 43 or Younger and with Less Than 17 Years of Service on June 30, 2014

	Percent of Eligible Active Members Retiring or Entering DROP Within Next Year	
Age	**Police**	**Fire**
50	30%	20%
51	30%	20%
52	30%	20%
53	30%	20%
54	30%	20%
55	30%	20%
56	30%	20%
57	30%	20%
58	30%	20%
59	30%	20%
60	100%	100%

The rationale for the retirement probabilities is the 2002-2007 Experience Study modified to account for the different eligibility in Component I and split to estimate which eligibility (Component I or Component II) would influence members based on the relative service under each component.

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%

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 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 7.17%; the municipal bond rate is 3.56%; and the resulting Single Discount Rate is 7.17% as of June 30, 2017.

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

The **Projection of Contributions** table shows the development of expected contributions in future years. Normal Cost contributions for future hires are not included (nor are their benefits). For purposes of determining the discount rate as of June 30, 2017, the employer contributions for the 10-year period ending June 30, 2023 are set at 12.25% of payroll. Subsequent employer contributions were set at 7.84% of the closed group payroll including contributions for expenses. The actual employer rate will be determined by future funding valuations and is expected to be different when based on open group payroll. The estimated employer contribution rate of 7.84% is less than the estimated rate from the 2016 GASB report. The primary factors decreasing this estimate were the liability gains as of June 30, 2016, gains on the market value of assets as of June 30, 2017, and reflection of the $20 million transfer from Component II to fund transition costs. Member contributions were set at 6% for members hired before June 30, 2014 and at 8% for members hired after June 30, 2014. The voluntary member contributions were excluded for the projections (and assets). The VPIF was assumed to be 0.50% compound each year beginning in fiscal year 2016. The VPIF reduction under Section 9.5 of the plan was assumed not to occur.

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

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

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

Single Discount Rate Development
Projection of Contributions
End of Year

Fiscal Year Ending June 30,	Payroll for Current Employees	Projected Contributions from Current Employees	Projected Employer Service Cost Contribution	Employer Administrative Expense Contributions #	Projected Employer UAL Contributions	Projected Total Contributions
2018	$ 116,127,138	$ 7,176,929	$ 14,385,844	$ 1,393,526	$ (1,553,796)	$ 21,402,503
2019	107,858,179	6,686,146	13,456,078	1,294,298	(1,537,749)	19,898,773
2020	100,539,501	6,253,929	12,582,777	1,206,474	(1,473,162)	18,570,018
2021	94,234,000	5,882,401	11,844,882	1,130,808	(1,432,025)	17,426,066
2022	89,455,823	5,602,206	11,221,399	1,073,470	(1,336,531)	16,560,545
2023	85,894,967	5,394,339	10,668,307	1,030,740	(1,176,914)	15,916,473
2024	82,249,034	5,180,168	10,088,727	986,988	(4,628,110)	11,627,773
2025	78,813,940	4,978,513	9,544,886	945,767	(4,312,330)	11,156,837
2026	75,018,987	4,754,296	8,952,592	900,228	(3,971,988)	10,635,129
2027	70,972,049	4,514,523	8,321,553	851,665	(3,609,630)	10,078,111
2028	66,851,515	4,270,461	7,690,789	802,218	(3,252,433)	9,511,035
2029	62,814,925	4,031,519	7,090,860	753,779	(2,920,498)	8,955,660
2030	59,043,440	3,808,361	6,547,791	708,521	(2,627,822)	8,436,850
2031	55,294,863	3,586,139	6,017,479	663,538	(2,346,383)	7,920,772
2032	51,272,845	3,347,104	5,443,203	615,274	(2,039,134)	7,366,447
2033	47,202,572	3,105,423	4,865,992	566,431	(1,732,154)	6,805,692
2034	43,264,924	2,871,190	4,331,959	519,179	(1,459,546)	6,262,782
2035	39,558,441	2,649,919	3,843,263	474,701	(1,216,928)	5,750,955
2036	36,424,979	2,463,204	3,440,864	437,100	(1,022,564)	5,318,604
2037	33,591,028	2,294,375	3,088,117	403,092	(857,966)	4,927,618
2038	31,019,712	2,139,857	2,778,415	372,237	(718,978)	4,571,532
2039	28,307,397	1,975,713	2,466,677	339,689	(587,314)	4,194,766
2040	25,056,787	1,772,892	2,112,482	300,681	(448,929)	3,737,125
2041	21,300,903	1,521,630	1,736,974	255,611	(322,780)	3,191,434
2042	17,320,694	1,244,374	1,367,630	207,848	(217,687)	2,602,165
2043	13,726,864	990,043	1,054,949	164,722	(143,605)	2,066,109
2044	10,757,144	776,989	814,375	129,086	(100,195)	1,620,255
2045	8,262,203	598,519	614,172	99,146	(65,633)	1,246,203
2046	6,155,243	447,306	447,053	73,863	(38,399)	929,823
2047	4,480,866	325,812	320,710	53,770	(23,219)	677,072
2048	3,196,570	232,502	226,161	38,359	(13,937)	483,085
2049	2,221,471	161,487	153,966	26,658	(6,480)	335,631
2050	1,505,221	109,406	101,738	18,063	(1,805)	227,402
2051	1,014,315	73,764	67,424	12,172	(83)	153,277
2052	644,429	46,746	41,760	7,733	1,025	97,264
2053	378,252	27,408	23,659	4,539	1,454	57,059
2054	215,284	15,650	13,114	2,583	1,179	32,527
2055	107,131	7,968	5,995	1,286	1,117	16,366
2056	46,668	3,602	2,384	560	715	7,261
2057	12,527	1,002	619	150	213	1,984
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 Plan Fiduciary Net Position
End of Year
(Net of Voluntary Employee Contribution)

Fiscal Year Ending June 30,	Projected Beginning Plan Net Position	Projected Total Contributions	Projected Benefit Payments	Projected Administrative Expenses	Projected Investment Earnings at 7.17%	Projected Ending Plan Net Position
	(a)	(b)	(c)	(d)	(e)	(f)=(a)+(b)-(c)-(d)+(e)
2018	$ 93,276,665	$ 21,402,503	$ 1,556,128	$ 1,393,526	$ 7,338,020	$ 119,067,534
2019	119,067,534	19,898,773	2,404,641	1,294,298	9,107,853	144,375,221
2020	144,375,221	18,570,018	3,216,355	1,206,474	10,850,101	169,372,511
2021	169,372,511	17,426,066	3,946,744	1,130,808	12,579,040	194,300,065
2022	194,300,065	16,560,545	4,673,331	1,073,470	14,312,277	219,426,086
2023	219,426,086	15,916,473	5,490,530	1,030,740	16,063,838	244,885,127
2024	244,885,127	11,627,773	6,286,304	986,988	17,711,670	266,951,278
2025	266,951,278	11,156,837	7,115,696	945,767	19,249,455	289,296,107
2026	289,296,107	10,635,129	8,019,549	900,228	20,802,962	311,814,420
2027	311,814,420	10,078,111	9,267,257	851,665	22,355,656	334,129,266
2028	334,129,266	9,511,035	10,742,127	802,218	23,885,436	355,981,391
2029	355,981,391	8,955,660	12,402,654	753,779	25,375,875	377,156,493
2030	377,156,493	8,436,850	14,182,295	708,521	26,814,751	397,517,278
2031	397,517,278	7,920,772	16,063,058	663,538	28,191,765	416,903,219
2032	416,903,219	7,366,447	18,179,670	615,274	29,489,341	434,964,063
2033	434,964,063	6,805,692	20,431,542	566,431	30,686,937	451,458,719
2034	451,458,719	6,262,782	22,506,243	519,179	31,779,052	466,475,131
2035	466,475,131	5,750,955	24,392,752	474,701	32,772,803	480,131,436
2036	480,131,436	5,318,604	26,175,210	437,100	33,675,259	492,512,989
2037	492,512,989	4,927,618	27,873,398	403,092	34,490,614	503,654,730
2038	503,654,730	4,571,532	29,502,347	372,237	35,220,632	513,572,309
2039	513,572,309	4,194,766	31,117,459	339,689	35,862,696	522,172,623
2040	522,172,623	3,737,125	32,742,064	300,681	36,407,356	529,274,360
2041	529,274,360	3,191,434	34,539,942	255,611	36,835,576	534,505,818
2042	534,505,818	2,602,165	36,529,684	207,848	37,121,497	537,491,948
2043	537,491,948	2,066,109	38,383,280	164,722	37,252,936	538,262,991
2044	538,262,991	1,620,255	39,970,306	129,086	37,237,858	537,021,711
2045	537,021,711	1,246,203	41,379,258	99,146	37,087,099	533,876,610
2046	533,876,610	929,823	42,622,629	73,863	36,807,536	528,917,477
2047	528,917,477	677,072	43,659,290	53,770	36,407,249	522,288,739
2048	522,288,739	483,085	44,438,692	38,359	35,898,220	514,192,992
2049	514,192,992	335,631	44,984,642	26,658	35,293,739	504,811,061
2050	504,811,061	227,402	45,319,162	18,063	34,605,759	494,306,997
2051	494,306,997	153,277	45,447,631	12,172	33,845,688	482,846,159
2052	482,846,159	97,264	45,473,673	7,733	33,021,212	470,483,229
2053	470,483,229	57,059	45,369,912	4,539	32,137,141	457,302,978
2054	457,302,978	32,527	45,122,233	2,583	31,200,047	443,410,736
2055	443,410,736	16,366	44,773,337	1,286	30,215,741	428,868,221
2056	428,868,221	7,261	44,277,209	560	29,190,226	413,787,939
2057	413,787,939	1,984	43,640,849	150	28,131,217	398,280,141
2058	398,280,141	-	42,905,251	-	27,045,158	382,420,047
2059	382,420,047	-	42,083,944	-	25,936,924	366,273,027
2060	366,273,027	-	41,161,411	-	24,811,682	349,923,299
2061	349,923,299	-	40,153,794	-	23,674,905	333,444,409
2062	333,444,409	-	39,084,224	-	22,531,049	316,891,234
2063	316,891,234	-	37,953,568	-	21,384,018	300,321,685
2064	300,321,685	-	36,764,866	-	20,237,859	283,794,678
2065	283,794,678	-	35,521,912	-	19,096,661	267,369,427
2066	267,369,427	-	34,228,504	-	17,964,537	251,105,459
2067	251,105,459	-	32,889,133	-	16,845,596	235,061,922

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

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

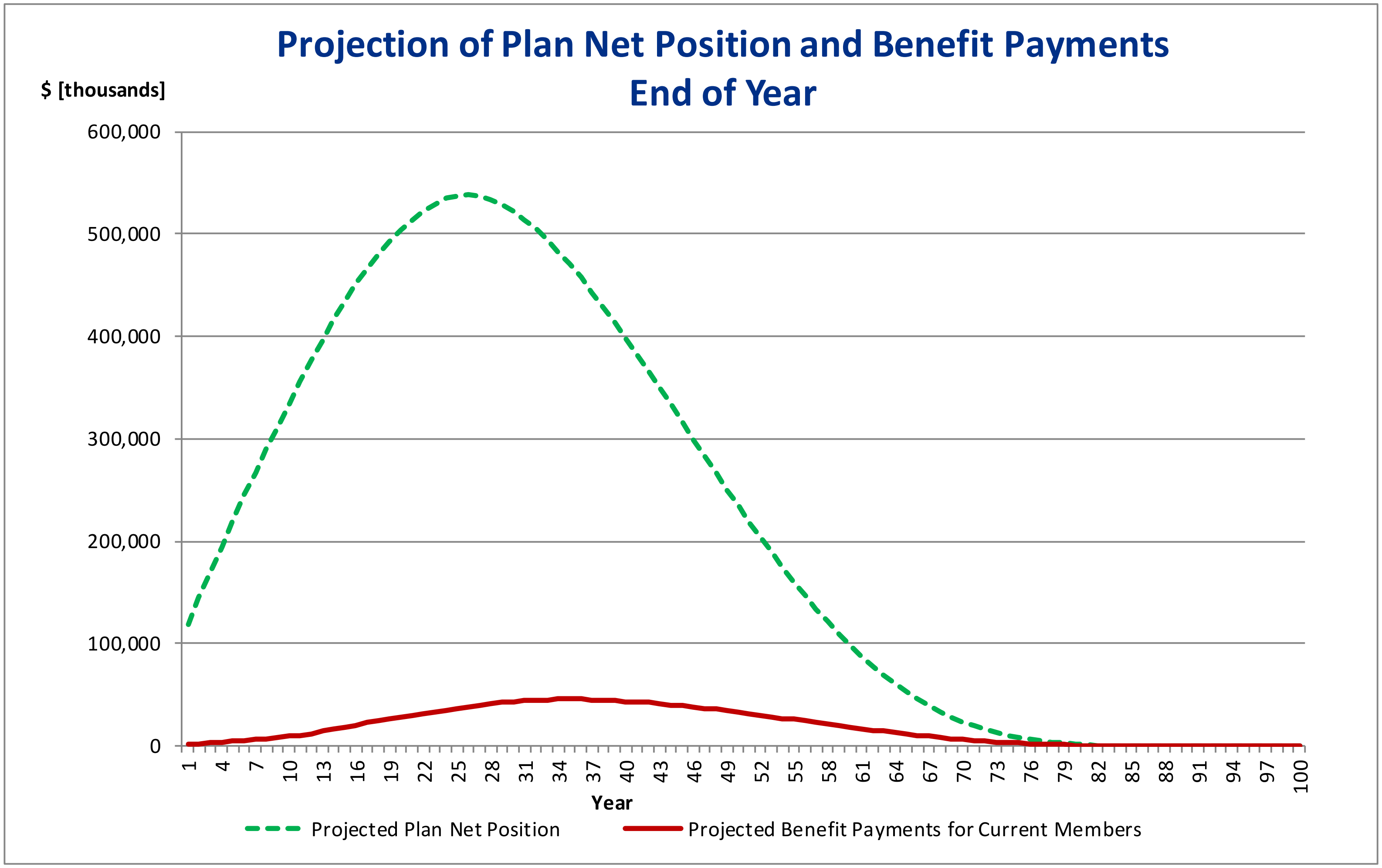
Fiscal Year Ending June 30,	Projected Beginning Plan Net Position	Projected Total Contributions	Projected Benefit Payments	Projected Administrative Expenses	Projected Investment Earnings at 7.17%	Projected Ending Plan Net Position
	(a)	(b)	(c)	(d)	(e)	(f)=(a)+(b)-(c)-(d)+(e)
2068	$ 235,061,922	$ -	$ 31,508,820	$ -	$ 15,743,902	$ 219,297,004
2069	219,297,004	-	30,093,153	-	14,663,430	203,867,282
2070	203,867,282	-	28,648,468	-	13,608,015	188,826,828
2071	188,826,828	-	27,181,797	-	12,581,284	174,226,315
2072	174,226,315	-	25,700,589	-	11,586,609	160,112,336
2073	160,112,336	-	24,212,507	-	10,627,061	146,526,890
2074	146,526,890	-	22,725,242	-	9,705,380	133,507,028
2075	133,507,028	-	21,246,334	-	8,823,957	121,084,652
2076	121,084,652	-	19,783,051	-	7,984,824	109,286,425
2077	109,286,425	-	18,342,202	-	7,189,651	98,133,875
2078	98,133,875	-	16,930,058	-	6,439,762	87,643,578
2079	87,643,578	-	15,552,510	-	5,736,138	77,827,206
2080	77,827,206	-	14,215,260	-	5,079,415	68,691,361
2081	68,691,361	-	12,923,688	-	4,469,876	60,237,550
2082	60,237,550	-	11,682,800	-	3,907,454	52,462,204
2083	52,462,204	-	10,497,219	-	3,391,729	45,356,713
2084	45,356,713	-	9,371,103	-	2,921,938	38,907,548
2085	38,907,548	-	8,308,201	-	2,496,978	33,096,325
2086	33,096,325	-	7,311,554	-	2,115,425	27,900,196
2087	27,900,196	-	6,383,311	-	1,775,564	23,292,448
2088	23,292,448	-	5,524,859	-	1,475,431	19,243,019
2089	19,243,019	-	4,736,930	-	1,212,845	15,718,934
2090	15,718,934	-	4,019,694	-	985,436	12,684,676
2091	12,684,676	-	3,372,770	-	790,670	10,102,576
2092	10,102,576	-	2,795,249	-	625,880	7,933,207
2093	7,933,207	-	2,285,615	-	488,290	6,135,882
2094	6,135,882	-	1,841,659	-	375,062	4,669,286
2095	4,669,286	-	1,460,471	-	283,336	3,492,151
2096	3,492,151	-	1,138,444	-	210,280	2,563,988
2097	2,563,988	-	871,228	-	153,145	1,845,905
2098	1,845,905	-	653,712	-	109,321	1,301,514
2099	1,301,514	-	480,241	-	76,400	897,673
2100	897,673	-	344,943	-	52,211	604,941
2101	604,941	-	241,937	-	34,851	397,855
2102	397,855	-	165,490	-	22,696	255,061
2103	255,061	-	110,241	-	14,404	159,225
2104	159,225	-	71,424	-	8,900	96,701
2105	96,701	-	44,959	-	5,350	57,091
2106	57,091	-	27,472	-	3,126	32,745
2107	32,745	-	16,281	-	1,774	18,239
2108	18,239	-	9,354	-	978	9,863
2109	9,863	-	5,216	-	523	5,171
2110	5,171	-	2,824	-	271	2,618
2111	2,618	-	1,482	-	136	1,272
2112	1,272	-	749	-	65	588
2113	588	-	361	-	29	257
2114	257	-	165	-	13	104
2115	104	-	72	-	5	37
2116	37	-	38	-	1	0
2117	0	-	-	-	0	0

Single Discount Rate Development
Present Values of Projected Benefits
End of Year

Fiscal Year Ending June 30,	Projected Beginning Plan Net Position	Projected Benefit Payments	Funded Portion of Benefit Payments	Unfunded Portion of Benefit Payments	Present Value of Funded Benefit Payments using Expected Return Rate (v)	Present Value of Unfunded Benefit Payments using Municipal Bond Rate (v_f)	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	$ 93,276,665	$ 1,556,128	$ 1,556,128	$ -	$ 1,503,172	$ -	$ 1,503,172
2019	119,067,534	2,404,641	2,404,641	-	2,167,407	-	2,167,407
2020	144,375,221	3,216,355	3,216,355	-	2,705,085	-	2,705,085
2021	169,372,511	3,946,744	3,946,744	-	3,097,296	-	3,097,296
2022	194,300,065	4,673,331	4,673,331	-	3,422,134	-	3,422,134
2023	219,426,086	5,490,530	5,490,530	-	3,751,556	-	3,751,556
2024	244,885,127	6,286,304	6,286,304	-	4,007,923	-	4,007,923
2025	266,951,278	7,115,696	7,115,696	-	4,233,194	-	4,233,194
2026	289,296,107	8,019,549	8,019,549	-	4,451,716	-	4,451,716
2027	311,814,420	9,267,257	9,267,257	-	4,800,158	-	4,800,158
2028	334,129,266	10,742,127	10,742,127	-	5,191,841	-	5,191,841
2029	355,981,391	12,402,654	12,402,654	-	5,593,356	-	5,593,356
2030	377,156,493	14,182,295	14,182,295	-	5,968,032	-	5,968,032
2031	397,517,278	16,063,058	16,063,058	-	6,307,244	-	6,307,244
2032	416,903,219	18,179,670	18,179,670	-	6,660,766	-	6,660,766
2033	434,964,063	20,431,542	20,431,542	-	6,984,995	-	6,984,995
2034	451,458,719	22,506,243	22,506,243	-	7,179,508	-	7,179,508
2035	466,475,131	24,392,752	24,392,752	-	7,260,713	-	7,260,713
2036	480,131,436	26,175,210	26,175,210	-	7,270,017	-	7,270,017
2037	492,512,989	27,873,398	27,873,398	-	7,223,737	-	7,223,737
2038	503,654,730	29,502,347	29,502,347	-	7,134,365	-	7,134,365
2039	513,572,309	31,117,459	31,117,459	-	7,021,496	-	7,021,496
2040	522,172,623	32,742,064	32,742,064	-	6,893,795	-	6,893,795
2041	529,274,360	34,539,942	34,539,942	-	6,785,794	-	6,785,794
2042	534,505,818	36,529,684	36,529,684	-	6,696,560	-	6,696,560
2043	537,491,948	38,383,280	38,383,280	-	6,565,604	-	6,565,604
2044	538,262,991	39,970,306	39,970,306	-	6,379,650	-	6,379,650
2045	537,021,711	41,379,258	41,379,258	-	6,162,669	-	6,162,669
2046	533,876,610	42,622,629	42,622,629	-	5,923,156	-	5,923,156
2047	528,917,477	43,659,290	43,659,290	-	5,661,303	-	5,661,303
2048	522,288,739	44,438,692	44,438,692	-	5,376,848	-	5,376,848
2049	514,192,992	44,984,642	44,984,642	-	5,078,758	-	5,078,758
2050	504,811,061	45,319,162	45,319,162	-	4,774,214	-	4,774,214
2051	494,306,997	45,447,631	45,447,631	-	4,467,433	-	4,467,433
2052	482,846,159	45,473,673	45,473,673	-	4,170,936	-	4,170,936
2053	470,483,229	45,369,912	45,369,912	-	3,883,008	-	3,883,008
2054	457,302,978	45,122,233	45,122,233	-	3,603,443	-	3,603,443
2055	443,410,736	44,773,337	44,773,337	-	3,336,363	-	3,336,363
2056	428,868,221	44,277,209	44,277,209	-	3,078,654	-	3,078,654
2057	413,787,939	43,640,849	43,640,849	-	2,831,396	-	2,831,396
2058	398,280,141	42,905,251	42,905,251	-	2,597,435	-	2,597,435
2059	382,420,047	42,083,944	42,083,944	-	2,377,264	-	2,377,264
2060	366,273,027	41,161,411	41,161,411	-	2,169,591	-	2,169,591
2061	349,923,299	40,153,794	40,153,794	-	1,974,882	-	1,974,882
2062	333,444,409	39,084,224	39,084,224	-	1,793,671	-	1,793,671
2063	316,891,234	37,953,568	37,953,568	-	1,625,252	-	1,625,252
2064	300,321,685	36,764,866	36,764,866	-	1,469,020	-	1,469,020
2065	283,794,678	35,521,912	35,521,912	-	1,324,396	-	1,324,396
2066	267,369,427	34,228,504	34,228,504	-	1,190,793	-	1,190,793
2067	251,105,459	32,889,133	32,889,133	-	1,067,647	-	1,067,647

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

Fiscal Year Ending June 30,	Projected Beginning Plan Net Position	Projected Benefit Payments	Funded Portion of Benefit Payments	Unfunded Portion of Benefit Payments	Present Value of Funded Benefit Payments using Expected Return Rate (v)	Present Value of Unfunded Benefit Payments using Municipal Bond Rate (vf)	Present Value of Benefit Payments using Single Discount Rate (sdr)
(a)	(b)	(c)	(d)	(e)	(f)=(d)*v^((a)-.5)	(g)=(e)*vf ^((a)-.5)	(h)=((c)/(1+sdr)^(a-.5)
2068	$ 235,061,922	$ 31,508,820	$ 31,508,820	$ -	$ 954,408	$ -	$ 954,408
2069	219,297,004	30,093,153	30,093,153	-	850,543	-	850,543
2070	203,867,282	28,648,468	28,648,468	-	755,539	-	755,539
2071	188,826,828	27,181,797	27,181,797	-	668,899	-	668,899
2072	174,226,315	25,700,589	25,700,589	-	590,136	-	590,136
2073	160,112,336	24,212,507	24,212,507	-	518,771	-	518,771
2074	146,526,890	22,725,242	22,725,242	-	454,330	-	454,330
2075	133,507,028	21,246,334	21,246,334	-	396,345	-	396,345
2076	121,084,652	19,783,051	19,783,051	-	344,357	-	344,357
2077	109,286,425	18,342,202	18,342,202	-	297,916	-	297,916
2078	98,133,875	16,930,058	16,930,058	-	256,583	-	256,583
2079	87,643,578	15,552,510	15,552,510	-	219,936	-	219,936
2080	77,827,206	14,215,260	14,215,260	-	187,576	-	187,576
2081	68,691,361	12,923,688	12,923,688	-	159,124	-	159,124
2082	60,237,550	11,682,800	11,682,800	-	134,222	-	134,222
2083	52,462,204	10,497,219	10,497,219	-	112,532	-	112,532
2084	45,356,713	9,371,103	9,371,103	-	93,739	-	93,739
2085	38,907,548	8,308,201	8,308,201	-	77,547	-	77,547
2086	33,096,325	7,311,554	7,311,554	-	63,679	-	63,679
2087	27,900,196	6,383,311	6,383,311	-	51,875	-	51,875
2088	23,292,448	5,524,859	5,524,859	-	41,895	-	41,895
2089	19,243,019	4,736,930	4,736,930	-	33,517	-	33,517
2090	15,718,934	4,019,694	4,019,694	-	26,539	-	26,539
2091	12,684,676	3,372,770	3,372,770	-	20,778	-	20,778
2092	10,102,576	2,795,249	2,795,249	-	16,068	-	16,068
2093	7,933,207	2,285,615	2,285,615	-	12,260	-	12,260
2094	6,135,882	1,841,659	1,841,659	-	9,217	-	9,217
2095	4,669,286	1,460,471	1,460,471	-	6,821	-	6,821
2096	3,492,151	1,138,444	1,138,444	-	4,961	-	4,961
2097	2,563,988	871,228	871,228	-	3,543	-	3,543
2098	1,845,905	653,712	653,712	-	2,480	-	2,480
2099	1,301,514	480,241	480,241	-	1,700	-	1,700
2100	897,673	344,943	344,943	-	1,139	-	1,139
2101	604,941	241,937	241,937	-	746	-	746
2102	397,855	165,490	165,490	-	476	-	476
2103	255,061	110,241	110,241	-	296	-	296
2104	159,225	71,424	71,424	-	179	-	179
2105	96,701	44,959	44,959	-	105	-	105
2106	57,091	27,472	27,472	-	60	-	60
2107	32,745	16,281	16,281	-	33	-	33
2108	18,239	9,354	9,354	-	18	-	18
2109	9,863	5,216	5,216	-	9	-	9
2110	5,171	2,824	2,824	-	5	-	5
2111	2,618	1,482	1,482	-	2	-	2
2112	1,272	749	749	-	1	-	1
2113	588	361	361	-	0	-	0
2114	257	165	165	-	0	-	0
2115	104	72	72	-	0	-	0
2116	37	38	38	-	0	-	0
2117	0	-	-	-	-	-	-
				Totals	$ 230,566,145	$ -	$ 230,566,145



Projection of Plan Net Position and Benefit Payments
End of Year
$ [thousands]
600,000
500,000
400,000
300,000
200,000
100,000
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)	A calculated contribution into a defined benefit pension plan for the reporting period, most often determined based on the funding policy of the plan. Typically the Actuarially Determined Contribution has a normal cost payment and an amortization payment.

Glossary of Terms

Amortization Payment	The amortization payment is the periodic payment required to pay off an interest-discounted amount with payments of interest and principal.
Amortization Method	The method used to determine the periodic amortization payment may be a level dollar amount, or a level percent of pay amount. The period will typically be expressed in years, and the method will either be “open” (meaning, reset each year) or “closed” (the number of years remaining will decline each year).
Cost-of-Living Adjustments (COLA)	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 (Asset) (NPL(A))	The NPL(A) 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.
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.
Single Discount Rate (SDR)	The discount rate used in determining the Total Pension Liability.
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.
Variable Pension Improvement Factor (VPIF)	An increase on the Component I Retirement Allowance of 1% compound subject to plan restrictions.

GRS Retirement Consulting

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November 10, 2017

Mr. David Cetlinski
Assistant Executive Director
The Police and Fire Retirement System of the
City of Detroit
One Detroit Center
500 Woodward Avenue, Suite 3000
Detroit, MI 48226-3534

Dear Dave:

Please find enclosed 20 copies of the GASB Statement No. 67 Plan Reporting Accounting Schedules report of the Police and Fire Retirement System of the City of Detroit.

Sincerely,

Kenneth G. Alberts

KGA:bd
Enclosure

cc: Cynthia Thomas, City of Detroit Retirement Systems
David T. Kausch, GRS
Judith A. Kermans, GRS
Brian B. Murphy, GRS