Gabriel Roeder Smith & Company
Consultants & Actuaries

THE POLICE AND FIRE RETIREMENT SYSTEM OF THE CITY OF DETROIT

ANNUAL ACTUARIAL VALUATION OF COMPONENT I

JUNE 30, 2015

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January 24, 2017

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

Re: The Police and Fire Retirement System of the City of Detroit Actuarial Valuation of Component I as of June 30, 2015

Dear Board Members:

The results of the June 30, 2015 Annual Actuarial Valuation of **Component I** of the Police and Fire Retirement System of the City of Detroit (PFRS) are presented in this report. Component II benefits are the subject of a separate report.

The required contribution rate shown on page 1 is in compliance with the Plan and the City's Plan of Adjustment (POA) as approved by the Bankruptcy Court and should not be considered a recommendation by the Actuary. While a recommended level of contributions is outside the scope of this engagement, it is likely that the Actuary would have recommended higher contributions in the absence of the POA and Plan requirements. Users of this report should be aware that contributions made at the POA and Plan required rate do not guarantee benefit security. Given the importance of benefit security to any retirement system, we suggest that contributions to the System in excess of those presented in this report be considered.

The funding level and estimated costs of the Plan shown in this report are based on the actuarial assumptions disclosed in Section F. This report includes some risk metrics but does not include a more robust assessment of the risks of future experience not meeting the actuarial assumptions. Additional assessment of risks was outside the scope of this assignment. We encourage a review and assessment of investment and other significant risks that may have a material effect on the plan's financial condition.

This report was prepared at the request of the Board and is intended for use by the Retirement System and those designated or approved by the Board. This report may be provided to parties other than the Retirement System only in its entirety and only with the permission of the Board. Authorized or unauthorized use of this report by parties other than the Board does not create a liability between Gabriel, Roeder, Smith & Company and the user of this report.

The purpose of the valuation is to measure the System's funding progress and to provide a five-year funding projection. The five-year projection is to assist the Board with its duties related to Section 9.5 of the plan. This report should not be relied on for any purpose other than the purposes described herein. Determinations of financial results, associated with the benefits described in this report, for purposes other than those identified above may be significantly different.

The findings in this report are based on data and other information through June 30, 2015. Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period, or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law. The scope of an actuarial valuation does not include an analysis of the potential range of such future measurements.

This valuation assumed the continuing ability of the plan sponsor to make the contributions necessary to fund this plan. A determination regarding whether or not the plan sponsor is actually able to do so is outside our area of expertise, beyond the scope of the assignment and was not performed.

The valuation was based upon information furnished by the Retirement System staff, concerning Retirement System benefits, financial transactions, plan provisions and active members, terminated members, retirees and beneficiaries. We checked for internal reasonability and year-to-year consistency, but did not audit the data. We are not responsible for the accuracy or completeness of the information provided by the Retirement System staff. Data supplied by Retirement System staff was supplied separately for Component I and Component II (and from different sources of information). We reconciled the Component I and Component II data with each other and the data supplied for the 2014 Component II valuation with the help of System staff. However, a number of manual changes were required to be made by Gabriel, Roeder, Smith & Company in order to create data files that could be used for valuation purposes. The changes are discussed in this report.

This report was prepared using certain assumptions as described in Section F of this report entitled Methods and Assumptions. The actuarial cost method is the Entry Age Actuarial Cost Method as prescribed by Section 9.3(1) of the Combined PFRS Plan. The assumed rate of return is 6.75% for valuations through June 30, 2023 as prescribed by Section 1.18(3) of the Combined PFRS Plan. Except for the assumed rate of investment return, the actuarial assumptions used for the valuation are set by the Board based upon advice of the actuary and other parties. The actuarial cost method and assumed rate of investment return of 6.75% are prescribed methods and/or assumptions set by another party as discussed in Actuarial Standard of Practice No. 4. In our judgment, all of the actuarial assumptions used for the valuation are reasonable for purposes of the measurement contained herein.

This report has been prepared by individuals who have substantial experience valuing public employee retirement systems. To the best of our knowledge the information contained in this report is accurate and fairly presents the actuarial position of Component I of the Police and Fire Retirement System of the City of Detroit as of the valuation date. All calculations have been made in conformity with generally accepted actuarial principles and practices and with the Actuarial Standards of Practice issued by the Actuarial Standards Board.

David T. Kausch and Judith A. Kermans are Members of the American Academy of Actuaries. These actuaries meet the Academy's Qualification Standards to render the actuarial opinions contained herein.

The signing individuals are independent of the plan sponsor. Gabriel, Roeder, Smith & Company will be pleased to review this valuation report with the Board of Trustees and to answer any questions pertaining to the valuation.

Respectfully submitted,

GABRIEL, ROEDER, SMITH & COMPANY

David T Kausch

David T. Kausch, FSA, EA, FCA, MAAA

Kenneth G. Alberts

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Judith A. Kermans

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TABLE OF CONTENTS

SECTION A

INTRODUCTION

EXECUTIVE SUMMARY
($ IN MILLIONS)

Valuation Date:	June 30, 2015	June 30, 2014
Fiscal Year Ending:	June 30, 2017	June 30, 2015
Employer Contributions:		
• Mandated Percentage of Covered Payroll	12.25 %	12.25 %
• Estimated Annual Amount	$ 16.5	$ 16.6
Membership		
• Number of:		
• Active Members (Excluding DROP)	2,484	2,608
• DROP Members	118	0
• Retirees and Beneficiaries	67	0
• Inactive, Nonretired Members	63	0
• Total	2,732	2,608
• Valuation Payroll*	$ 131.7	$ 132.6
Assets		
• Market Value	$ 21.3	$ 0
• Return on Market Value	(6.04)%	N/A
Actuarial Information		
• Total Normal Cost % (1% VPIF)	17.67 %	17.66 %
• Member Contribution Rate	6.65 %	6.20 %
• Employer Normal Cost %	11.02 %	11.46 %
• Actuarial Accrued Liability (AAL - 1/2% VPIF)	$ 57.6	$ 31.9
• Unfunded Actuarial Accrued Liability (UAAL - 1/2% VPIF)	36.3	31.9
• Funded Ratio	37.00 %	0.00 %
Risk Metrics		
• AAL/Payroll (1/2%VPIF)	43.76 %	24.09 %
• MVA/Payroll	16.19 %	0.00 %
• Equivalent Single Amortization Period (1/2% VPIF - Mandated ER Rate)	17	14
• ER Rate at 15-Year Amortization to fund 1/2% VPIF	12.47%	12.02%
• Equivalent Single Amortization Period (1% VPIF - Mandated ER Rate)	33	24
• ER Rate at 15-Year Amortization to fund 1% VPIF	13.79%	13.18%

Highlights/Changes

Fiscal Year 2015 was the first year of existence for the Component I Plan. Reported payroll changed from a base pay rate to base pay paid during past 12 months.

** Payroll shown is for non-DROP members.*

Note: AVA (Actuarial Value of Assets) is equal to MVA (Market Value of Assets)

Please see pages 5-8 of the report for important comments regarding valuation results.

An estimate of the probability of future contributions being made was outside the scope of this project, not required by Actuarial Standards, and, therefore, was not made.

NORMAL COST RATES

Valuation Date June 30	2015	2014
Normal Cost for 0.5% VPIF (COLA)		
Age & service allowances	10.78 %	10.87 %
Disability allowances	5.00 %	4.92 %
Death-in-service allowances	0.48 %	0.48 %
Administrative Expenses	0.00 %	0.00 %
Total	16.26 %	16.27 %
Additional Normal Cost for Full 1.0% VPIF (COLA)#	0.95 %	0.94 %
Members current contributions@	6.65 %	6.20 %
(Future refunds)	(0.46)%	(0.45)%
Available for monthly benefits	6.19 %	5.75 %
Employer Normal Cost (1% VPIF)	**11.02 %**	**11.46 %**

@ *Member contributions expected to be paid are a weighted average of 6% for those hired before July 1, 2014 and 8% hired after June 30, 2014.*

\# *Normal Cost Rates shown are based on benefits which includes a discretionary 1% compound Cost-of-Living Adjustment (COLA) beginning in the July 1, 2015 plan year. Plan provisions provide criteria for when a COLA can be paid. The current assumption is that on average over a members retirement years, they will receive the equivalent of a 0.5% COLA (or VPIF).*

DEVELOPMENT OF LIABILITIES AS OF JUNE 30, 2015
RETIREMENT SYSTEM TOTALS

Valuation Assumptions (1/2% VPIF)		
Present Value of Future Benefits	$	219,882,773
Present Value of Future Normal Costs		162,253,915
Actuarial Accrued Liability		57,628,858
Accrued Assets		21,327,464
Unfunded Actuarial Accrued Liability (UAAL)	$	36,301,394
Additional Amount for Full COLA		3,111,081
UAAL with Full COLA	$	39,412,475

The COLA or VPIF provided in the Plan is a discretionary 1.0% compound post retirement increase at the beginning of each plan year starting one year after retirement. However, Section 9.5 of the Plan imposes several limitations on when the COLA can be paid (or clawed back). Based on this section of the Plan, it is reasonable to assume that the average COLA a retired member will receive over their lifetime will be less than 1%. For purposes of this valuation we have assumed that the average COLA is equivalent to 0.5%. Future Plan experience, Board policy, and Plan interpretation regarding the administration of Section 9.5 may result in changes to this assumption. If the full 1% VPIF were assumed, the present value of benefits would be $232.1 million and the actuarial accrued liability would be $60.7 million.

The Transition Cost is defined in (Section G-2(f)) the Combined Plan as the accrued liability at plan inception due to vesting and eligibility service earned prior to the Component I effective date (July 1, 2014). Based on current Board policy, the Transition Cost is based on a 0.5% VPIF assumption. While the current valuation results are independent of the Transition Cost, the Transition Cost affects the projection required to be performed pursuant to Section 9.5 of the Plan. See Comments for a discussion of Transition Cost.

The Transition Cost is defined in Section G-2 of the Combined Plan as the accrued liability at plan inception due to vesting and eligibility service earned prior to the Component I effective date (7/1/2014). The Board has adopted a VPIF of ½% for the Transition Cost. The Transition Cost is not currently directly used in the valuation. The Plan provides for a separate funding source for Transition Costs until FY 2024. Because of this separate funding source, it is reasonable to account for the Transition Cost in the projections called for in Section 9.5 of the Plan (the Fiscal Responsibility). As of June 30, 2015, the plan has a remaining Transition Cost of $29.2 million. Since the plan has an unfunded actuarial accrued liability of $36.3 million, based on the ½% VPIF, the difference of $7.1 million is the current measure of the UAAL expected to be directly funded by employer and member contributions in excess of normal cost. This is further discussed in Section C of this report.

CONTRIBUTIONS COMPARATIVE SCHEDULE

		Employer Contributions for						
Valuation Date June 30	Employee Contribtutions@	Normal Cost for 0.5% VPIF (COLA)	Additional Normal Cost for Full 1.0% VPIF (COLA)	Employer Contribution in Excess of Normal Cost	Amount for UAAL	Amount for Rate Stabilization*	Contributions Effective Plan Year	Employer Contribution Type#
2014	6.20%	10.52%	0.94%	0.79%	0.79%	0.00%	2014/15	Mandated
2014	6.36%	10.36%	0.94%	0.95%	0.95%	0.00%	2015/16	Mandated
2015	6.65%	10.07%	0.95%	1.23%	TBD	TBD	2016/17	Mandated

“Mandated” (Section 9.3(2)) if specified by Plan document and POA; “Actuarially Determined” if determined by a valuation based on the Board’s funding policy.

* *Rate Stabilization Contributions are determined by the City through 2024.*

@ *Members hired before June 30, 2014 contribute 6%, members hired after June 30, 2014 contribute 8%. Therefore, as new hires enter the Plan, the employer normal cost will decrease.*

COMMENTS

COMMENT 1

Actuarial Assumption

The assumed rate of return prescribed by the POA is 6.75%, net of investment and administrative expenses. We have reviewed the reasonableness of this assumption based on the plan's investment policy and the capital market assumptions of eight nationally recognized investment consulting firms using GRS' Capital Market Assumption Modeler. The analysis depends on the underlying price inflation and the rate of administrative expenses. Based on our analysis, the prescribed 6.75% rate of return is reasonable for the purpose of the measurement. If the Board would like, we can prepare a separate report of our analysis.

COMMENT 2

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 at 90% or greater at the end of the projection period based upon 6.75% future investment return. Since there are conditions under which the VPIF cannot be paid (and even reduced) we have assumed that on average a VPIF of ½% will be paid in the development of the accrued liabilities and normal cost.

COMMENT 3

Since members hired after June 30, 2014 will have a higher member contribution rate the employer normal cost is expected to decrease as new members enter the Plan. This decrease was modeled for purposes of Comment 5.

COMMENT 4

Transition Cost

The Transition Cost is defined in Section G-2 of the Combined Plan as the accrued liability at plan inception due to vesting and eligibility service earned prior to the Component I effective date (7/1/2014). The Board has adopted a VPIF of ½% for the Transition Cost. The Transition Cost is not currently directly used in the valuation. The Plan provides for a separate funding source for Transition Costs until FY 2024. Because of this separate funding source, it is reasonable to account for the Transition Cost in the projections called for in Section 9.5 of the Plan (the Fiscal Responsibility). As of June 30, 2015, the plan has a remaining Transition Cost of $29.2 million. Since the plan has an unfunded actuarial accrued liability of $36.3 million, based on the ½% VPIF, the difference of $7.1 million is the current measure of the UAAL expected to be directly funded by employer and member contributions in excess of normal cost. Transition Cost is further discussed in Section C of this report.

COMMENT 5

Funding and Transfers of Assets from Component II

Mandatory employee contributions are initially set to 6.0% (8.0% if hired after June 30, 2014) of compensation but can be increased, if necessary, to maintain funding levels at 90% or above. Employer contributions are set at 12.25% of payroll through June 30, 2023. Employer contributions are actuarially determined beginning in 2024 to be the amount necessary to fund the plan on an actuarial basis. The 12.25% of payroll employer contribution rate exceeds the employer normal cost rate of 11.02% by 1.23% of payroll (when the normal cost rate is based on the full 1% VPIF). If employer contributions in excess of the normal cost are used for the amortization of the UAAL, the effective amortization period would be 17 years (based on a ½% VPIF).

The City has the authority to credit employer contributions to the Rate Stabilization Fund. The Board may request that some of the employer contributions be used to pay down the Transition Cost rather than being credited to the Rate Stabilization Fund. If the employer contributions in excess of the normal cost were used as the only source to fund the existing $39 million UAAL (assuming 1% VPIF), it would take 33 years to pay it off if all actuarial assumptions were met.

However, the Plan anticipates another funding source for the Transition Cost. In the event that the rate of interest credited to the Annuity Savings Fund (ASF) of the Component II (Legacy) Plan is less than the rate earned by the Component II trust, a transfer of the difference in rates (applied to the Component II ASF balance) to the Component I trust may occur to fund the Transition Cost. Transfers cease after June 30, 2023. As of June 30, 2016, no such transfers have been made. For purposes of this valuation, future transfers were not anticipated (assumed not to occur).

A simple estimate of the future ASF transfers follows. As of June 30, 2015, the ASF balance totaled $115 million. A deterministic approach would be to assume that future excess transfers of 1.50% (6.75% rate of return minus 5.25% maximum interest crediting) of ASF balances are made each year. (We understand that the System has determined that no excess ASF interest was to be transferred in the year ending June 30, 2016, so we assume the first transfer occurs the next year.) We also assume that Component II plan members will draw down their ASF balances over the next ten years so future transfers will decline as the ASF balance does. **Based on these assumptions, the expected present value of transfers from the ASF totals $6.3 million, well short of the remaining $29.2 million Transition Cost. See Comment 4 for more details on Transition Cost.**

In combination, the expected ASF transfers and employer contributions in excess of the normal cost would be expected to fully fund the Transition Cost in 15 years, but only if all assumptions are exactly met (assuming the 1/2% VPIF). We recommend that the Board set up an alternate plan for funding the Transition Cost in case future transfers do not fund the Plan.

COMMENT 6

It is our understanding of the Plan that the amount of employer contributions credited to the Rate Stabilization Reserve (RSF) is at the discretion of the Employer. We have been informed that the Employer has directed that none of the Employer contributions for FY 2015 and FY 2016 be credited to the RSF.

COMMENT 7

The determination of the Normal Cost is dependent on the ultimate normal cost Entry Age Normal Cost Method. Our understanding of the Plan's and City's objectives is to have a level total normal cost and a separately funded transition cost consistent with this method. The ultimate normal cost method is currently under review by the Actuarial Standards Board and alternate calculations may be required in the future.

COMMENT 8

401(h) Account

Section 16 of the PFRS Combined Plan includes provision for medical benefits to be funded through an Internal Revenue Code (IRC) Section 401(h) subaccount. Employer contributions to an IRC 401(h) subaccount are limited by Internal Revenue Code regulations. Our understanding is that the City has no intent to fund medical benefits through the Plan's 401(h) account at this time. If the City intends to make such contributions, additional testing will be required.

COMMENT 9

Section 3.2(1) of the Combined PFRS Plan states that a member who elects to participate in the DROP program under Component I, Component II, or both shall not accrue a benefit under the Retirement System or make mandatory or voluntary member contributions. Therefore, we have excluded all members reported as in the Component II DROP as of June 30, 2014 from this valuation.

COMMENT 10

Section 12.7(1) states that the DROP shall be effective only for as long as it is cost neutral to the City. Cost neutrality for this purpose is not defined. An assessment of the cost neutrality of the DROP was outside the scope of this valuation. We suggest the Board (or other appropriate party) define "cost neutral" for this purpose and establish a schedule for periodic review of the DROP plan meeting cost neutrality. We would be happy to work with the Board (or other appropriate party) to assist in this task.

COMMENT 11

Due to changes in the way payroll was reported, we changed the timing of future pay increases from end of year to beginning of year.

COMMENT 12

Data Adjustments

Census data as of June 30, 2015 was received from two separate sources. The only Component I specific data received contained members that were active during the year. After reconciling both the Component I and Component II data, it was discovered that there were several members that had a DROP, retired, or deferred Component I benefit. In order to value these members the following actions were taken:

- All members were assumed to have one year of Component I benefit service.
- For retired and deferred members, June 30, 2014 active data was used to determine salary and vesting service.
- For DROP members, June 30, 2015 active data was used to determine vesting service and the greater of June 30, 2015 salary and June 30, 2014 salary was used for the salary.
- Benefits were then calculated assuming immediate termination, using one year of benefit service, and determining the AFC using the salary.
- Eligibility for deferred versus immediate benefits was determined based on vesting service.

Furthermore, it was discovered that the Component I active data provided did not contain annualized salaries. In particular, we understand that the salaries reported contained at most 10.5 months of salary information. In order to value the active members, Gabriel, Roeder, Smith & Company annualized the provided salaries.

If readers of this report have information to indicate that the data adjustments described above are not reasonable, they should immediately inform the authors and should not rely on results of the report.

SECTION B

FUNDING RESULTS

ACTUARIAL LIABILITIES AS OF JUNE 30, 2015

Actuarial Present Value of	**Total Present Value**	**Portion Covered by Future Normal Cost Contributions**	**Actuarial Accrued Liabilities (1) – (2)**
Age and service allowances based on total service likely to be rendered by present active members	$ 155,621,708	$ 98,747,432	$ 56,874,276
Disability benefits likely to be paid to present active members	50,135,924	47,160,938	2,974,986
Death-in-service benefits likely to be paid on behalf of present active members	5,979,285	4,326,400	1,652,885
Separation benefits (refunds of contributions and deferred allowances) likely to be paid to present active members	5,782,212	12,019,145	(6,236,933)
Benefits attributed to voluntary member contributions	14,370	0	14,370
Benefits likely to be paid to vested inactive members	282,605	0	282,605
Benefits to be paid to members in the DROP, current retirees, beneficiaries, and future beneficiaries of current retirees.	2,066,669	0	2,066,669
Total	$ 219,882,773	$ 162,253,915	$ 57,628,858
Actuarial Value of Assets	$ 21,327,464	$ 0	$ 21,327,464
Liabilities to be covered by Future Contributions	$ 198,555,309	$ 162,253,915	$ 36,301,394
Additional Amount for Full COLA	12,273,045	9,161,964	3,111,081
Total with Full COLA	$ 210,828,354	$ 171,415,879	$ 39,412,475

ACTUARIAL BALANCE SHEET

Assets and Present Value of Expected Future Contributons (1/2% VPIF)

Valuation Date June 30:		**2015**
A. Present Actuarial Value of Assets		
1. Net assets from System financial statements	$	21,327,464
2. Adjustment for Valuation Assets		0
3. Actuarial Value of Assets		21,327,464
B. Actuarial Present Value of Expected Future Employer Contributions		
1. For Normal Costs		102,989,019
2. For Unfunded Actuarial Accrued Liability		36,301,394
3. Total		139,290,413
C. Actuarial Present Value of Expected Future Member Contributions		59,264,896
D. Total Present and Expected Future Resources	$	219,882,773

Present Value of Expected Future Benefit Payments

A. To DROP Members, Retirees and Beneficiaries		
1. Annual Pensions	$	2,066,669
2. Total		2,066,669
B. To Vested Terminated Members		282,605
C. To Present Active Members		
1. Allocated to service rendered prior to valuation date – Actuarial Accrued Liability		55,265,214
2. Allocated to service likely to be rendered after valuation date		162,253,915
3. Total		217,519,129
D. Voluntary Member Contributions		14,370
E. Total Actuarial Present Value of Expected Future Benefit Payments	$	219,882,773

The Actuarial Balance Sheet does not reflect Transition Cost (see Comment 4 on page 5).

DEVELOPMENT OF ACTUARIAL GAIN OR LOSS (1/2% VPIF)

	Actuarial Accrued Liability (AAL) (A)	Actuarial Value of Assets (B)	Unfunded Actuarial Accrued Liability (C) = (A) - (B)
(1) Beginning of Year (BOY)	$ 31,931,597	$ -	$ 31,931,597
(2) Total Normal Cost	22,033,852	N/A	22,033,852
(3) Total Contributions	N/A	22,011,676	(22,011,676)
(4) Benefit Payments and Refunds	(19,554)	(19,554)	-
(5) Interest 6.75% x (1) + 6.75% x [(2) + (3) + (4)] / 2	2,898,365	742,234	2,156,131
(6) Expected End of Year (1)+(2)+(3)+(4)+(5)	$ 56,844,261	$ 22,734,356	$ 34,109,905
(7) Actual End of Year	57,628,858	21,327,464	36,301,394
(8) Gain or Loss (6)-(7)	$ (784,597) Loss	$ 1,406,892 Loss	$ (2,191,489) Loss
(9) Percent of BOY AAL (8)/(1A)	(2.46%)	4.41%	(6.86%)

The liability loss is mostly related to changes in data and a conservative method of estimating benefits for the 248 members who are in DROP, retired or deferred. See page 8 for a description of the data adjustments for details on the estimation of benefits for these members. Other liability experience was mostly offsetting.

SECTION C

FIVE-YEAR FUNDED STATUS PROJECTION

Section 9.5, Fiscal Responsibility, of the Combined PFRS Plan contains several provisions for adjusting contributions and/or benefits to be determined based on a 5-year projection of the funded status of the plan. This section calls for two different funded status projection tests:

- Section 9.5(1) test for the funded status falling below 90%
- Section 9.5(2) test for the funded status falling below 90% and remaining below 100%

Section 9.5(3) specifies the interest rate to be used in the projections. Other methods and assumptions used in the projections are to be adopted by the Board based on the recommendation of the Investment Committee.

Projection Method:

We have been directed to use the following methods and assumptions:

- Projections based on valuation assumptions (other than VPIF).
- VPIF assumption is ½%. This assumption will be reviewed and adjusted as experience emerges.
- Transition Cost is netted out of the Actuarial Accrued Liability.
- The Transition Cost is based on a 9-year level dollar amortization of the initial Transition Cost amount which is calculated using a ½% VPIF.
- Projected assets exclude the projected value of the Rate Stabilization Fund.
- All future Employer contributions go to the Pension Accumulation Fund (PAF).
- The June 30, 2015 valuation generates the first test.
- There is a 2-year delay between the valuation date and the VPIF determination date.
- The market value is projected using a 6.75% rate of return.
- Potential future arbitrage on the voluntary contribution reserve fund was not modeled. This assumption will be revisited if the voluntary contribution reserve fund becomes material.
- Each item in Section 9.5(2) will be added in the order listed until a threshold is reached.
- Projected contributions include an expected asset transfer from the Component II Annuity Savings Fund (ASF), equal to 1.50% of the projected ASF balances. This represents the difference between the assumed rate of return of 6.75% and the maximum interest rate that can be credited to the ASF accounts of 5.25%.
- 6% of payroll member contributions for members hired as of June 30, 2014. 8% for members hired after June 30, 2014.
- 12.25% of payroll employer contributions.
- Component II ASF balances were assumed to be withdrawn as a level dollar amount over the next 10 years.
- Voluntary contributions and interest are not reflected.

Transition Cost

Under the current actuarial cost methods, members with past vesting service generate an initial liability as of June 30, 2014. This is the "Transition Cost" described in Section G-2(f) of the Combined PFRS Plan. A separate funding source was established for the Transition Cost through 2023. The projections on page 14 net the Transition Cost from the Actuarial Accrued Liability to determine projected funded status. Projected Transition Cost is based on the 9-year level dollar amortization of the initial Transition Cost amount. The initial Transition Cost amount is based on a ½% VPIF. An amortization schedule of the Transition Cost follows. Note, under this method any future gains or losses related to the Transition Cost are accounted for in the Actuarial Accrued Liability net of Transition Cost as they occur.

Transition Cost Amortization Schedule
For Projections on Page 14

Financing Transition Cost
Calculated Using A Level Dollar Amortization (mid-year payments)
and an Investment Return Assumption of 6.75% Compounded Annually
9-Year Closed Amortization

Valuation Date June 30	Fiscal Year June 30	Transition Cost at Beginning of Year	Annual Contributions During Fiscal Year Dollars	Transition Cost at End of Year
2014	2015	$ 31,931,597	$ 4,693,263	$ 29,237,905
2015	**2016**	**29,237,905**	**4,693,263**	**26,362,389**
2016	2017	26,362,389	4,693,263	23,292,776
2017	2018	23,292,776	4,693,263	20,015,963
2018	2019	20,015,963	4,693,263	16,517,966
2019	2020	16,517,966	4,693,263	12,783,854
2020	2021	12,783,854	4,693,263	8,797,689
2021	2022	8,797,689	4,693,263	4,542,459
2022	2023	4,542,459	4,693,263	0

To the extent that actual funding of the Transition Cost differs from this schedule, gains and losses will accumulate in the Plan's unfunded actuarial accrued liability.

Projected Funded Status

		5-Year Projection Assuming 6.75% Investment Return in all Future Years				
		A	B	C = (A - B)	D	E = (D/C)
Valuation Date June 30	Fiscal Year June 30	Total AAL	Transition Cost	Net AAL	Assets	Net Funded Ratio
2015	2016	$ 57,628,858	$ 29,237,905	$ 28,390,953	$ 21,313,094	75%
2016	2017	84,060,028	26,362,389	57,697,639	50,058,813	87%
2017	2018	111,822,656	23,292,776	88,529,880	80,293,214	91%
2018	2019	141,035,883	20,015,963	121,019,920	112,248,583	93%
2019	2020	171,782,570	16,517,966	155,264,604	146,073,439	94%
2020	2021	204,324,087	12,783,854	191,540,233	182,022,067	**95%**

Comment 1: Based on this projection, the Funded Status is above 90% by the end of the 5-year projection.

Comment 2: The projected funded status of 95% in 2020 assumes future ASF transfers occur each year to fund the transition cost. As of the publication of this report, the plan assets as of June 30, 2016 are available and show that no ASF transfer was made in the year ending June 30, 2016. The projection could be modified to reflect this fact. The resulting funded ratios would be lower than those shown. Without the first year ASF transfers, and using the reported assets as of June 30, 2016 (net of voluntary contributions), the projected funded status would be as follows:

		5-Year Projection Assuming 0.80% Investment Return in 2016 and 6.75% Thereafter				
		A	B	C = (A - B)	D	E = (D/C)
Valuation Date June 30	Fiscal Year June 30	Total AAL	Transition Cost	Net AAL	Assets	Net Funded Ratio
2015	2016	$ 57,628,858	$ 29,237,905	$ 28,390,953	$ 21,313,094	75%
2015	2016	84,060,028	26,362,389	57,697,639	42,262,700	73%
2016	2017	111,822,656	23,292,776	88,529,880	71,970,863	81%
2017	2018	141,035,883	20,015,963	121,019,920	103,364,473	85%
2018	2019	171,782,570	16,517,966	155,264,604	136,589,653	88%
2019	2020	204,324,087	12,783,854	191,540,233	171,898,125	**90%**

This alternate projection shows that the funded status will drop when the funding source for the transitions costs (ASF Transfers) do not occur, in the absence of an experience gain.

Section 9.5 in its entirety is shown below:

Sec 9.5. Fiscal Responsibility: Benefit Reductions and Increased Funding Obligations

(1) To safeguard the long-term actuarial and financial integrity of the Retirement System, in the event the funding level of Component I of the Retirement System projected over a five-year period falls below ninety percent (90%), the Trustee may not award the variable Pension Improvement Factor (Escalator) described in Section 6.2 to any individual beginning with the Plan Year following the Plan Year in which such determination is made and continuing until the funding level is restored to not less than ninety percent (90%).

(2) In the event the funding level of the Retirement System projected over a five-year period falls below ninety percent (90%), the following remedial action shall be required in the order set forth below, beginning with the Plan Year following the Plan Year in which such determination is made and continuing until the funding level is projected to be one hundred percent (100%) on a market value basis within the next five years:

(a) The remedial action required in Section 9.5(1) shall be implemented or continued;
(b) all amounts credited to the Rate Stabilization Fund shall be transferred to the Pension Accumulation Fund for the purposes of funding benefits payable under the Retirement System;
(c) Mandatory Employee Contributions for active and new employees shall be increased by one percent (1%) for up to the next following five Plan Years;
(d) Mandatory Employee Contributions for active and new employees shall be increased by an additional one percent (1%) per year;
(e) Mandatory Employee Contributions for active and new employees shall be increased by an additional one percent (1%) per year;
(f) The Retirement Allowance payable to a Retiree shall not include the variable Pension Improvement Factor (Escalator) that was most recently paid to the Retiree on the date the funding level is projected to fall below ninety percent (90%);
(g) The Retirement Allowance payable to a Retiree shall not include the variable Pension Improvement Factor (Escalator) that was most recently added to the Member's Retirement Allowance for the Plan Year preceding the Plan Year referenced in paragraph (f) above;
(h) Mandatory Employee Contributions for active and new employees shall be increased by an additional one percent (1%) per year; and
(i) Contributions made to the Retirement System by the City shall be increased, consistent with applicable actuarial principles and the *Public Employee Retirement System Investment Act, as amended, MCL 38.1132 et seq.*

(3) For purposes of this Section 9.5, the "funding level" shall mean the ratio of the market value of the assets of Component I of the Retirement System to the actuarial accrued liability of Component I of the Retirement System. The actuarial accrued liability shall be calculated by the Plan's Actuary utilizing an interest rate assumption of six and three-quarters percent (6.75%) and other reasonable assumptions as directed by the Board upon the recommendation of the Investment Committee. The market value of assets shall be determined on the basis of a three-year look back period of smoothed investment returns.

SECTION D

FUND ASSETS

STATEMENT OF PLAN ASSETS
(ASSETS AT MARKET OR FAIR VALUE)

Item	June 30, 2015	June 30, 2014
A. Cash and Cash Equivalents (Operating Cash)	$ 22,037,558	N/A
B. Receivables		
1. Contributions	N/A	N/A
2. Investment Income and Other Receivables	N/A	N/A
3. Total Receivables	N/A	N/A
C. Investments		
1. Short-Term Investments	N/A	N/A
2. Domestic Equities	N/A	N/A
3. International Equities	N/A	N/A
4. Domestic Fixed Income	N/A	N/A
5. International Fixed Income	N/A	N/A
6. Real Estate	N/A	N/A
7. Private Equity	N/A	N/A
8. Total Investments	N/A	N/A
D. Liabilities		
1. Benefits Payable	N/A	N/A
2. Accrued Expenses and Other Payables	710,094	N/A
3. Total Liabilities	$ 710,094	N/A
E. Total Market Value of Assets Available for Benefits	$ 21,327,464	N/A
F. Reserves		
1. State Contribution Reserve	N/A	N/A
2. Voluntary Member Contributions	14,370	N/A
3. Total Reserves	$ 14,370	N/A
G. Market Value Net of Reserves	$ 21,313,094	N/A
H. Allocation of Investments		
1. Short-Term Investments	N/A	N/A
2. Domestic Equities	N/A	N/A
3. International Equities	N/A	N/A
4. Domestic Fixed Income	N/A	N/A
5. International Fixed Income	N/A	N/A
6. Real Estate	N/A	N/A
7. Private Equity	N/A	N/A
8. Total Investments	N/A	N/A

RECONCILIATION OF PLAN ASSETS

Item	June 30, 2015	June 30, 2014
A. Market Value of Assets at Beginning of Year	$ 0	$ 0
B. Revenues and Expenditures		
1 Contributions		
a. Member Contributions	$ 7,404,705	$ 0
b. Employer Contributions	14,606,971	0
c. State Contributions	0	0
d. Purchased Service Credit	0	0
e. Total	$ 22,011,676	$ 0
2 Investment Income		
a. Interest, Dividends, and Other Income	$ 21,019	$ 0
b. Net Realized and Unrealized Gains/(Losses)	0	0
c. Investment Expenses	0	0
d. Net Investment Income	$ 21,019	$ 0
3 Benefits and Refunds		
a. Refunds	$ 19,554	$ 0
b. Regular Monthly Benefits	0	0
c. Partial Lump-Sum Benefits Paid	0	0
d. Other	0	0
e. Total	$ 19,554	$ 0
4 Administrative and Miscellaneous Expenses	$ 685,677	$ 0
5 Transfers	$ 0	$ 0
C. Market Value of Assets at End of Year	$ 21,327,464	$ 0

SECTION E

PARTICIPANT DATA

ACTIVE MEMBERS JUNE 30, 2015
BY ATTAINED AGE AND YEARS OF ELIGIBILITY SERVICE

Police Members

Attained Age	Years of Service to Valuation Date 0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	Totals No.	Totals Valuation Payroll *
Under 20									$ 0
20-24	50							50	1,609,295
25-29	85	37						122	4,996,492
30-34	36	79	47	6				168	8,263,647
35-39	15	53	103	177	3			351	18,812,580
40-44	9	23	63	384	42			521	29,397,618
45-49	4	16	40	224	86	7		377	21,983,326
50-54	3	5	16	88	33	7	2	154	8,853,719
55-59		1	9	30	9	1	1	51	2,890,239
60				2		3	2	7	466,548
61				1		2		3	175,291
62							1	1	75,988
63									0
64							1	1	69,147
65									0
66				1				1	53,751
67					1			1	55,103
71									0
72									0
Totals	**202**	**214**	**278**	**913**	**174**	**20**	**7**	**1,808**	**$97,702,744**

Fire Members

Attained Age	Years of Service to Valuation Date 0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	Totals No.	Totals Valuation Payroll *
Under 20	2							2	$ 62,443
20-24	25	1						26	803,790
25-29	54		3					57	1,797,344
30-34	41	11	9	4				65	2,384,330
35-39	15	15	38	49				117	5,778,319
40-44	4	5	51	81	18	1		160	8,626,891
45-49	1	6	18	59	45	14		143	8,138,320
50-54			9	20	32	17	6	84	5,013,942
55-59			3	6	7	4	1	21	1,288,075
60									0
61						1		1	99,271
Totals	**142**	**38**	**131**	**219**	**102**	**37**	**7**	**676**	**$33,992,725**

* *Excluding DROP members.*

TOTAL ACTIVE MEMBERS JUNE 30, 2015
BY ATTAINED AGE AND YEARS OF ELIGIBILITY SERVICE

	Years of Service to Valuation Date							Totals	
Attained Age	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation Payroll *
Under 20	2							2	$ 62,443
20-24	75	1						76	2,413,085
25-29	139	37	3					179	6,793,836
30-34	77	90	56	10				233	10,647,977
35-39	30	68	141	226	3			468	24,590,899
40-44	13	28	114	465	60	1		681	38,024,509
45-49	5	22	58	283	131	21		520	30,121,646
50-54	3	5	25	108	65	24	8	238	13,867,661
55-59		1	12	36	16	5	2	72	4,178,314
60				2		3	2	7	466,548
61				1		3		4	274,562
62							1	1	75,988
63									
64							1	1	69,147
65									
66				1				1	53,751
67					1			1	55,103
68									
69									
70									
71									
72									
73									
74									
75									
Totals	**344**	**252**	**409**	**1,132**	**276**	**57**	**14**	**2,484**	**$131,695,469**

Group Averages

	Police	Fire	Total
Age:	41.0 years	40.9 years	41.0 years
Benefit Service:	1.0 years	0.9 years	1.0 years
Eligibility Service:	14.3 years	13.8 years	14.2 years
Annual Pay:	$54,039	$50,285	$53,017

* *Excluding DROP members.*

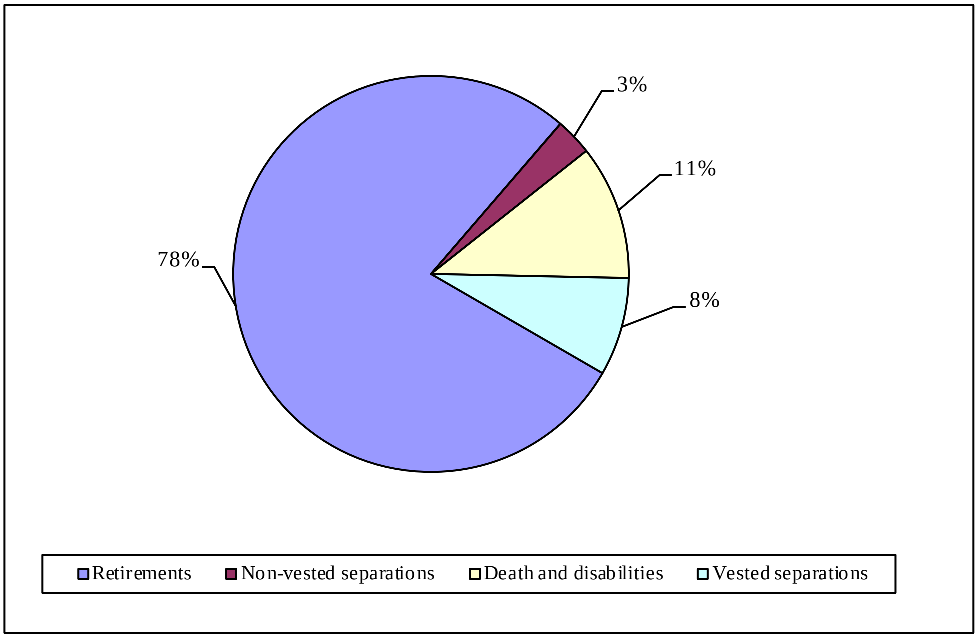
HISTORICAL SUMMARY OF ACTIVE MEMBER DATA

Valuation	Active Members		Covered Payroll		Average Salary		Average	
Date	No.	% Increase	$ Amount	% Increase	$ Amount	% Increase	Age	Service
2014	2,608	N/A	$ 132,566,687	N/A	$ 50,831	N/A	41.0	14.2
2015	2,484	(4.8)%	131,695,469	(0.7)%	53,017	4.3%	41.0	14.2

SUMMARY OF MEMBERSHIP DATA BY CATEGORY

	June 30, 2015	June 30, 2014
Active Members (Excluding DROP)		
Number	2,484	2,608
Average age (years)	41.0	41.0
Average service (years)	14.2	14.2
Average salary	$53,017	$50,831
Total payroll supplied, annualized	$131,695,469	$132,566,687
Members in DROP		
Number	118	0
Average age (years)	49.9	N/A
Total annual benefits	N/A	$0
Average annual benefit	N/A	N/A
Vested Inactive Members		
Number	63	0
Average age (years)	42.5	N/A
Total annual deferred benefits	N/A	$0
Average annual deferred benefit	N/A	N/A
Service Retirees		
Number	67	0
Average age (years)	47.9	N/A
Total annual benefits	N/A	$0
Average annual benefit	N/A	N/A
Disability Retirees		
Number	0	0
Average age (years)	N/A	N/A
Total annual benefits	$0	$0
Average annual benefit	N/A	N/A

EXPECTED TERMINATIONS FROM ACTIVE EMPLOYMENT FOR CURRENT ACTIVE MEMBERS



The chart above shows the expected future development of the present population in simplified terms. The Retirement System presently covers 2,484 active members. Eventually, 86 members are expected to terminate covered employment prior to retirement and forfeit eligibility for an employer provided benefit. 2,123 members are expected to receive monthly retirement benefits either by retiring directly from active service (including DROP), or by retiring from vested deferred status. 275 members are expected to become eligible for death-in-service or disability benefits.

SECTION F

METHODS AND ASSUMPTIONS

FUNDING METHODS

The entry age actuarial cost method was used in determining liabilities and normal cost as prescribed by Section 9.3(1) of the Combined PFRS Plan. Under this method, each individual's normal cost is determined as a level percent of pay based on a replacement life or "ultimate" normal cost. This method is based on the objective of the Plan to separately fund Transition Cost and future accruals. The application of this method differs for funding and accounting.

Unfunded Actuarial Accrued Liabilities - Actual employer contributions through June 30, 2023 are set at 12.25% of pay. Additional funding for Transition Costs may occur as a result of Component II ASF transfers. The amortization period and method after 2023 has not yet been established by the Board.

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.

Summary of Assumptions Used for DPFRS Actuarial 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

The investment return rate used in the valuation was 6.75% per year, compounded annually (net after investment and administrative expenses). This assumption is prescribed by the Eighth Amended Plan for the Adjustment of Debts of the City of Detroit (POA).

Actuarial Assumptions

The assumptions and methods are those adopted by the Board with the exception of the discount rate. For purposes of plan funding, the discount rate is 6.75% as prescribed by Section 1.18(3) of the Combined PFRS Plan. This assumption is net of all expenses.

Pay increase assumptions for individual active members are shown on page 25. 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.

Price inflation is not directly used in the valuation. For purposes of assessing the reasonableness of the assumed rate of return we assumed price inflation of 2.50% per year.

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 26 through 28. 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 29.

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%
Ref			306 + 3.00%

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

PROBABILITIES OF SERVICE RETIREMENT FOR MEMBERS OLDER THAN AGE 43 OR WITH 17 OR MORE YEARS OF CREDITED SERVICE (INCLUDING PRIOR SERVICE) AS OF JUNE 30, 2014

	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%
Ref	922	922	922	922

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%
Ref	922	1

Members eligible for 20 & Out are assumed to be first eligible for normal retirement after 19 years of service due to their ability to purchase service. Members eligible for 25 & Out are assumed to be eligible for normal retirement after 24 years of service due to their ability to purchase service. Members are also eligible to retire at age 60 with no service requirement.

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	% of Active Members Withdrawing within Next Year: Fire
ALL	0	8.50%	5.00%
	1	7.50%	4.00%
	2	6.00%	3.00%
	3	5.00%	2.00%
	4	4.50%	2.00%
25	5 & Over	4.50%	1.96%
30		3.30%	1.62%
35		2.30%	1.11%
40		1.70%	0.77%
45		1.50%	0.60%
50		1.10%	0.51%
55		0.80%	0.51%
60		0.80%	0.51%
Ref		566	230
		207	113 x .85

Sample Ages	% of Active Members Becoming Disabled Within Next Year: Police Ordinary	Police Duty	Fire Ordinary	Fire Duty
25	0.06%	0.13%	0.07%	0.34%
30	0.07%	0.19%	0.08%	0.52%
35	0.08%	0.34%	0.09%	0.90%
40	0.11%	0.49%	0.12%	1.30%
45	0.16%	0.73%	0.18%	1.92%
50	0.47%	1.16%	0.53%	3.06%
55	0.73%	1.96%	0.82%	5.18%
60	0.83%	2.82%	0.94%	7.47%
Ref	105 x 0.75	90 x 0.85	105 x 0.85	90 x 2.25

MISCELLANEOUS AND TECHNICAL ASSUMPTIONS
JUNE 30, 2015

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 the day of 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
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% 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.

MISCELLANEOUS AND TECHNICAL ASSUMPTIONS
JUNE 30, 2015
(CONTINUED)

Service Credit Accruals:	Service accruals for calculating benefits begin as of June 30, 2014 for Component I liabilities. However, service in Component II may be used to satisfy benefit eligibility requirements in Component I.
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:	For valuation purposes, members are categorized as DPOA, DFFA or LSA based on class codes provided by the Retirement System and are primarily used in the valuation to determine 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.
COLA (VPIF):	Unless stated otherwise, liabilities in this report are based on an assumed average 0.5% future VPIF.
New Entrant Assumption:	New entrants are assumed to replace the current workforce as members separate from service under current valuation assumptions. Total payroll is expected to grow with wage inflation.
Data Adjustments:	Vested Deferred and Retired members were not reported, but several were confirmed by staff after receiving our reconciliation and data questions. See page 8 for a description of how these members were handled in the valuation.

SECTION G

PLAN PROVISION SUMMARY

(as approved by staff)

SUMMARY OF BENEFIT PROVISIONS (JULY 1, 2015)

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 members 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.

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.

SUMMARY OF BENEFIT PROVISIONS (CONTINUED)

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 H
GLOSSARY

GLOSSARY

Accrued Service	The service credited under the plan which was rendered before the date of the actuarial valuation.
Actuarial Accrued Liability (AAL)	The difference between the Actuarial Present Value of Future Benefits, and the Actuarial Present Value of Future Normal Costs.
Actuarial Assumptions	Assumptions about future plan experience that affect costs or liabilities, such as: mortality, withdrawal, disablement, and retirement; future increases in salary; future rates of investment earnings; future investment and administrative expenses; characteristics of members not specified in the data, such as marital status; characteristics of future members; future elections made by members; and other items.
Actuarial Cost Method	A procedure for allocating the Actuarial Present Value of Future Benefits between the Actuarial Present Value of future Normal Costs and the Actuarial Accrued Liability.
Actuarially Determined Employer Contribution	The employer's periodic required contributions, expressed as a dollar amount or a percentage of covered plan compensation, determined under the Plan's actuarial funding policy.
Actuarial Equivalent	Of equal Actuarial Present Value, determined as of a given date and based on a given set of Actuarial Assumptions.
Actuarial Present Value (APV)	The amount of funds required to provide a payment or series of payments in the future. It is determined by discounting the future payments with an assumed interest rate and with the assumed probability each payment will be made.
Actuarial Present Value of Future Benefits (APVFB)	The Actuarial Present Value of amounts which are expected to be paid at various future times to active members, retired members, beneficiaries receiving benefits, and inactive, nonretired members entitled to either a refund or a future retirement benefit. Expressed another way, it is the value that would have to be invested on the valuation date so that the amount invested plus investment earnings would provide sufficient assets to pay all projected benefits and expenses when due.
Actuarial Valuation	The determination, as of a valuation date, of the Normal Cost, Actuarial Accrued Liability, Actuarial Value of Assets, and related Actuarial Present Values for a plan. An Actuarial Valuation for a governmental retirement system typically also includes calculations of items needed for compliance with GASB No. 25, such as the Funded Ratio and the Annual Required Contribution (ARC).
Actuarial Value of Assets	The value of the assets as of a given date, used by the actuary for valuation purposes. This may be the market or fair value of plan assets or a smoothed value in order to reduce the year-to-year volatility of calculated results, such as the funded ratio and the actuarially required contribution (ARC).

GLOSSARY

AFC	Average Final Compensation.
Amortization Method	A method for determining the Amortization Payment. The most common methods used are level dollar and level percentage of payroll. Under the Level Dollar method, the Amortization Payment is one of a stream of payments, all equal, whose Actuarial Present Value is equal to the UAAL. Under the Level Percentage of Pay method, the Amortization payment is one of a stream of increasing payments, whose Actuarial Present Value is equal to the UAAL. Under the Level Percentage of Pay method, the stream of payments increases at the rate at which total covered payroll of all active members is assumed to increase.
Amortization Payment	That portion of the plan contribution or ARC which is designed to pay interest on and to amortize the Unfunded Actuarial Accrued Liability.
Amortization Period	The period used in calculating the Amortization Payment.
Closed Amortization Period	A specific number of years that is reduced by one each year, and declines to zero with the passage of time. For example if the amortization period is initially set at 30 years, it is 29 years at the end of one year, 28 years at the end of two years, etc.
Employer Normal Cost	The portion of the Normal Cost to be paid by the employer. This is equal to the Normal Cost less expected member contributions.
Equivalent Single Amortization Period	For plans that do not establish separate amortization bases (separate components of the UAAL), this is the same as the Amortization Period. For plans that do establish separate amortization bases, this is the period over which the UAAL would be amortized if all amortization bases were combined upon the current UAAL payment.
Experience Gain/Loss	A measure of the difference between actual experience and that expected based upon a set of Actuarial Assumptions, during the period between two actuarial valuations. To the extent that actual experience differs from that assumed, Unfunded Actuarial Accrued Liabilities emerge which may be larger or smaller than projected. Gains are due to favorable experience, e.g., the assets earn more than projected, salaries do not increase as fast as assumed, members retire later than assumed, etc. Favorable experience means actual results produce actuarial liabilities not as large as projected by the actuarial assumptions. On the other hand, losses are the result of unfavorable experience, i.e., actual results that produce Unfunded Actuarial Accrued Liabilities which are larger than projected.

GLOSSARY

Funded Ratio	The ratio of the Actuarial Value of Assets to the Actuarial Accrued Liability.
GASB	Governmental Accounting Standards Board.
GASB No. 25 and GASB No. 27	These are the governmental accounting standards that set the accounting rules for public retirement systems and the employers that sponsor or contribute to them. Statement No. 68 sets the accounting rules for the employers that sponsor or contribute to public retirement systems, while Statement No. 27 sets the rules for the systems themselves.
Normal Cost	The annual cost assigned, under the Actuarial Cost Method, to the current plan year.
Open Amortization Period	An open amortization period is one which is used to determine the Amortization Payment but which does not change over time. In other words, if the initial period is set as 30 years, the same 30-year period is used in determining the Amortization Period each year. In theory, if an Open Amortization Period is used to amortize the Unfunded Actuarial Accrued Liability, the UAAL will never completely disappear, but will become smaller each year, either as a dollar amount or in relation to covered payroll.
POA	The 8th Amended Plan for the Adjustment of the Debt of the City of Detroit.
Reserve Account	An account used to indicate that funds have been set aside for a specific purpose and are not generally available for other uses.
Unfunded Actuarial Accrued Liability	The difference between the Actuarial Accrued Liability and Actuarial Value of Assets.
Valuation Date	The date as of which the Actuarial Present Value of Future Benefits are determined. The benefits expected to be paid in the future are discounted to this date.
VPIF	Variable Pension Improvement Factor. Discussed in Section 6.2 of the Plan Document.
COLA	Cost-of-Living Adjustment
ASF	Annuity Savings Fund of the Component II (Legacy) Plan.
Transition Cost	Initial unfunded liability as described in Section E-16 of the Plan document.

GRS
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January 24, 2017

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

Re: June 30, 2015 Police and Fire Component I Actuarial Valuation

Dear David:

Enclosed are 30 copies of the report of the June 30, 2015 annual actuarial valuation of the Police and Fire Component I (Hybrid) Valuation.

Sincerely,

Kenneth G. Alberts

KGA:sc
Enclosures

cc: Cynthia Thomas, City of Detroit Retirement Systems
Lamonica Arrington-Cabean, City of Detroit Retirement Systems
David T. Kausch, GRS
Judith A. Kermans, GRS