Gabriel Roeder Smith & Company
Consultants & Actuaries

THE POLICE AND FIRE RETIREMENT SYSTEM OF THE CITY OF DETROIT

ANNUAL ACTUARIAL VALUATION OF COMPONENT II

JUNE 30, 2016

GRS

Gabriel Roeder Smith & Company
Consultants & Actuaries

One Towne Square
Suite 800
Southfield, MI 48076-3723

248.799.9000 phone
248.799.9020 fax
www.gabrielroeder.com

May 31, 2017

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

Dear Board Members:

This report provides key results of the **Annual Actuarial Valuation** of the annuity and pension liabilities of the Police and Fire Retirement System of the City of Detroit – Component II benefits. The date of the valuation was **June 30, 2016.**

The City of Detroit filed for bankruptcy on July 18, 2013. A final Plan of Adjustment ("POA") was confirmed on November 7, 2014 and the official exit from bankruptcy was on December 10, 2014. In connection with the POA, very significant changes were made to the benefits that the Police and Fire Retirement System provide and to the contributions that it will receive. In particular, the benefits provided by the Retirement System were divided into two separate plans, referred to as "Component I" and "Component II." The benefits provided in each component are effective July 1, 2014 and are described in detail in the Emergency Manager Order No. 44, dated December 8, 2014. In very general terms, Component I provides benefits for service rendered on and after July 1, 2014 and Component II provides benefits for service rendered prior to July 1, 2014.

The results provided herein relate solely to the **Component II** benefits. Component I benefits will be the subject of a separate report. The purposes of the valuation are to measure the funding progress of Component II in accordance with the terms of the POA and to provide alternate illustrative actuarially determined contribution amounts for comparison with the contribution amounts provided in the POA. The results of the valuation are not applicable for other purposes. In particular, the information provided in this report is not suitable for financial reporting in connection with GASB Statement No. 67. Such information was provided in a separate report. Information regarding potential benefit restoration as allowed for in the POA will also be provided in a separate report at the Board's request.

The contribution amounts on page 4 include POA stipulated contributions plus two illustrative contribution amounts from alternate funding policies. Users of this report should be aware that contributions made at any of these amounts do not guarantee benefit security.

This report was prepared at the request of the Board and is intended for use by the Retirement System and those designated or approved by the Board. This report may be provided to parties other than the System only in its entirety and only with the permission of the Board. GRS is not responsible for unauthorized use of this report.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as: plan experience differing from that anticipated by the economic and 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. Due to the limited scope of the actuary's assignment, the actuary did not perform an analysis of the potential range of such future measurements.

The valuation was based upon records maintained and furnished by the Retirement System staff concerning active members, retirees and beneficiaries, and financial accounts as of the valuation date. Data was checked for year-to-year consistency, but was not audited by the actuary. We are not responsible for the completeness or accuracy of the data. Certain data was not available in time to produce the results in this report and it was necessary for us to use approximations. Please see related discussion in the Comments section of this report.

The data supplied by the Retirement System was contained in one file this year. However, reported pays and Average Final Compensation amounts were determined under Component II rules without regard to the freeze date. In addition, reported service was total service (Component I benefit service plus Component II benefit service). We therefore collected additional Component I pays and performed several manual adjustments (after confirming with System staff) to create data that could be used for this valuation. More details (as they relate to Component II) are provided in the data section of this report.

The assumptions used in the valuations concerning future experience are summarized in the Appendix of this report. Except for the assumed rate of investment return, the actuarial assumptions used for the valuation are set by the Board based upon discussion with the actuary and other parties. The assumed rate of investment return was set to 6.75% in the POA and is therefore a "prescribed assumption set by another party" as discussed in Actuarial Standard of Practice No. 4. In our judgement, all of the actuarial assumptions used for the valuation are reasonable for purposes of the measurement being taken.

This report has been prepared by individuals who have substantial experience valuing public sector retirement systems. To the best of our knowledge, this report is complete and accurate and was made in accordance with standards of practice promulgated by the Actuarial Standards Board.

The individuals signing the report 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.

This report does not evaluate the plan sponsor's ability or willingness to make contributions to the Retirement System. Given the funded level of Component II, plan sponsor contributions are critical if further benefit reductions are to be avoided. Indeed, the employer contributions set forth in the POA are expected to lead to a decrease in the funded status through June 30, 2023 (as contemplated by the POA), even if all assumptions are met.

Respectfully submitted,

David T Kausch

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

Judith A. Kermans

Judith A. Kermans, EA, FCA, MAAA

Kenneth G. Alberts

Kenneth G. Alberts

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VALUATION RESULTS

Actual POA Contributions

The expected contributions for fiscal year 2017 through 2023 are provided in the POA. The DIA entered into an agreement to pay part of its contribution requirement in a single lump sum payment in fiscal year 2016. A contribution schedule showing the remaining POA mandated contributions through 2023 follows:

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

We have assumed that the contributions outlined above (as called for in the POA with adjustments) will not change. An estimate of the probability of those payments being made was outside the scope of this project, not required by Actuarial Standards, and was not made.

Estimated 2024 Contributions

In order to help the Board access the longer term implications of the funding policy dictated in the POA, we have estimated the contribution that will be needed in 2024 when actuarially determined contributions will again be required according to the Plan.

The Estimated Employer Contribution for FY 2024 shown below is based on a projection of results assuming only the POA contributions are made and all future experience between the valuation date and FY 2024 is as assumed. Actual experience will impact the final result (which will be based on the June 30, 2023 actuarial valuation) and could be materially different than shown.

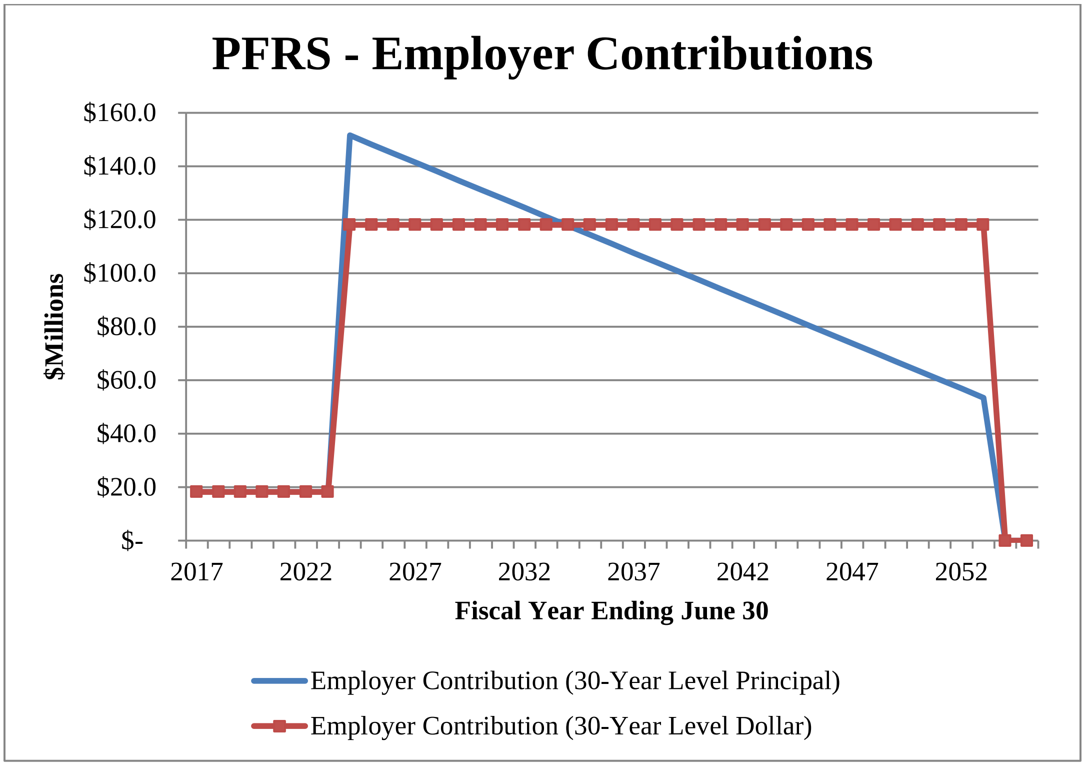
	($ millions)
UAAL * as of June 30, 2016	$ 1,051.3
Anticipated POA Contribution for FY 2017	18.3
Anticipated Expenses@	-
Interest at 6.75%	71.0
Projected UAAL * as of June 30, 2017	$ 1,103.9
Anticipated POA Contributions for FY 2018	**18.3**
Estimated Employer Contributions for FY 2024 !	
Level Principal (30-year period beginning in FY 2024)	**$ 151.6**
Level Dollar (30-year period beginning in FY 2024)	**$ 118.1**

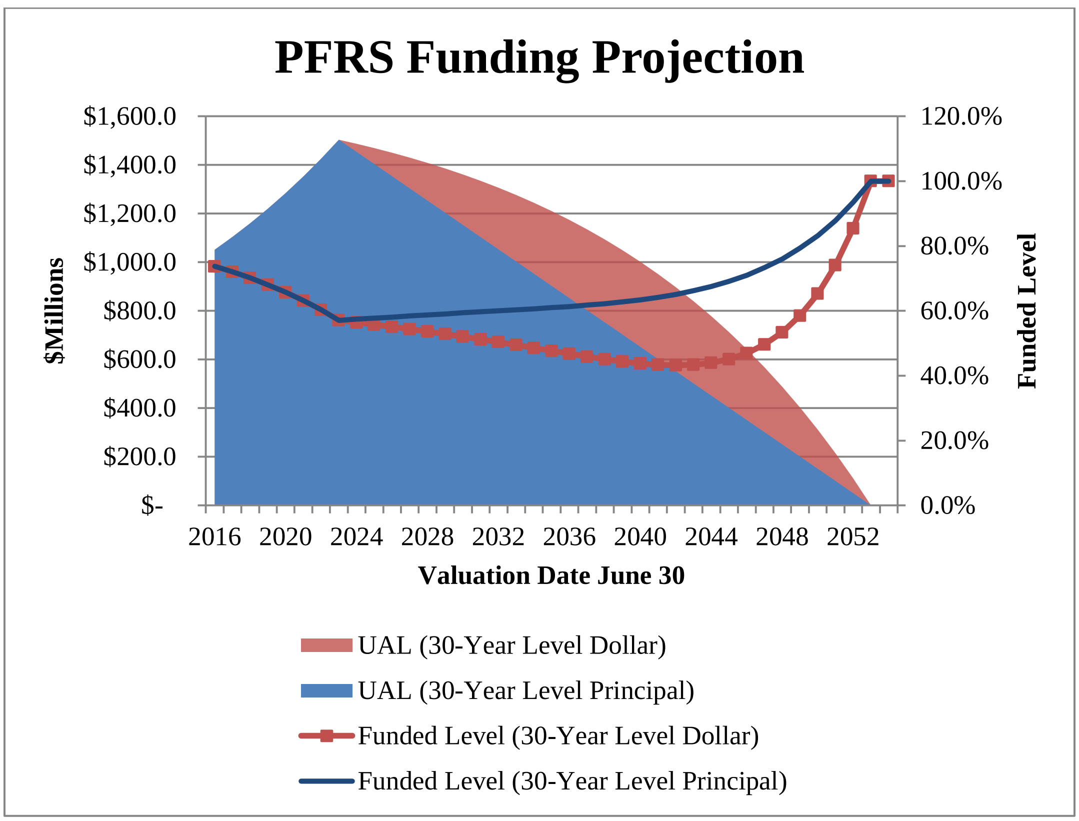
* *Unfunded Actuarial Accrued Liability.*

@ *In accordance with the Plan Document, the mandated 6.75% rate of return is net of investment and administrative expenses. Contributions are assumed to be made at the end of the year.*

! *Total estimated employer contributions needed, including amounts paid by employer but funded from other sources as required by the POA.*

The POA contributions result in a defunding of the plan between now and June 30, 2023, which was contemplated by the POA. In fact, the anticipated POA contribution for FY 2017 is about a fourth of the interest that will accrue on the UAAL.





Notes: 30-year amortization periods are assumed to begin in FY 2024.
30-year level dollar is expected to result in a declining funded status long after June 30, 2023.

At the request of the Board, in addition to the status valuation calculations on page 3, we illustrate two alternatives of what the funding requirements would be if the FY 2018 contributions were determined by actuarial funding.

In the chart below, the first policy funds the UAAL over the expected remaining active service life of this group. The second policy is similar to the Board's pre-bankruptcy policy, but with accelerated principle payments of the UAAL to prevent insolvency prior to the end of the funding period. The illustrations are intended to show that there are a broad range of possible funding policies, but are not intended to provide specific recommendation or a minimum or maximum level of contributions.

Funding Policy 1 is based on amortizing the UAAL over the average remaining service life of active members (6 years) using level dollar amortization.

Funding Policy 2 is based on amortizing the UAAL with level principal payments over a 30-year period plus interest. This method is also known as level principal declining interest amortization.

Illustrative Contribution Shortfall	($ millions)
(1) Illustrative Contribution for FY 2018 (Funding Policy 1)	$ 229.8
(2) Illustrative Contribution for FY 2018 (Funding Policy 2)	111.3
(3) POA Contribution for FY 2018	18.3
Fiscal Year 2018 Shortfall - Funding Policy 1: (1) - (3)	$ 211.5
Fiscal Year 2018 Shortfall - Funding Policy 2: (2) - (3)	$ 93.0

Recommendation: As shown above, even illustrative funding policy two, which uses the maximum amortization period allowed under current Michigan law, results in a shortfall. We recommend that additional contributions be made to the Component II Plan. Increasing contributions potentially increases the benefit security of the plan members.

We understand the Employer has set aside some money to contribute to the Pension Plans in the future. Since the portion of the fund this Plan will receive has not been determined, we have not taken those assets into account in our calculations.

Present Value	June 30, 2016	June 30, 2015
Accrued Pension Liabilities		
Retirees and beneficiaries	$3,087,133,661	$3,096,558,677
Inactive members future deferred pensions	53,470,314	43,256,874
Active members	705,781,125	747,941,700
Total accrued pension liabilities	3,846,385,100	3,887,757,251
Pension fund balances	2,795,133,593	3,029,159,749
Unfunded accrued pension liabilities	$1,051,251,507	$ 858,597,502
Accrued Annuity Liabilities		
Retirees and beneficiaries		
Future annuities	$ 3,998,271	$ 4,161,009
Reserve for outstanding refunds & contingencies	26,668,368	46,800,981
Reserve for Transfer to Component I #	20,000,000	0
Total	$ 50,666,639	$ 50,961,990
Members annuities & future refunds	104,670,218	114,632,702
Total accrued annuity liabilities	155,336,857	165,594,692
Annuity fund balances	155,336,857	165,594,692
Unfunded accrued annuity liabilities	$ 0	$ 0
System Totals		
Actuarial accrued liabilities	$4,001,721,957	$4,053,351,943
Accrued assets	2,950,470,450	3,194,754,441
Unfunded actuarial accrued liabilities#	$ 1,051,251,507	$ 858,597,502

The Board has passed a motion to transfer $20 million from the Annuity Reserve Fund of Component II to the Pension Accumulation Fund of Component I to fund transition costs, in accordance with the Plan.

FUNDED RATIO - POA

		Defined Benefit	Annuity Funds[1]	Total
A	Actuarial Accrued Liability	$ 3,846,385,100	$ 155,336,857	$ 4,001,721,957
B	Market Value of Assets	$ 2,795,133,593	$ 155,336,857	$ 2,950,470,450
C	Unfunded Actuarial Accrued Liability (A - B)	$ 1,051,251,507	$ -	$ 1,051,251,507
D	Funded Ratio (B/A)	72.7%	100.0%	73.7%

The POA Funded Ratio is an expected return based measurement of the pension obligations. It is based upon the POA mandated 6.75% interest rate assumption (assumption prescribed by another party). It determines an amount that will be sufficient to provide benefits if the portfolio earns the expected 6.75% return on assets and all other assumptions are met. This measure is appropriate for assessing the need for or amount of future contributions if all assumptions are met. This measure is not appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligation, in other words, of transferring the obligation to a third party in a market value type transaction.

FUNDED RATIO - SOLVENCY

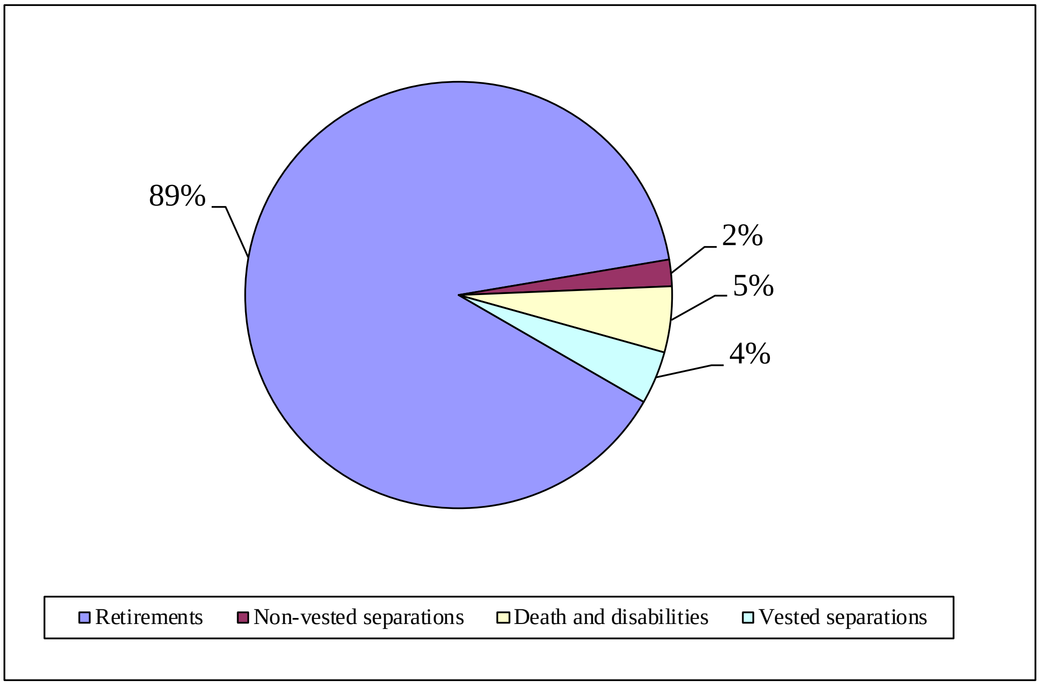
		Defined Benefit	Annuity Funds[1]	Total
A	Actuarial Accrued Liability	$ 6,177,508,311	$ 155,336,857	$ 6,332,845,168
B	Market Value of Assets	$ 2,795,133,593	$ 155,336,857	$ 2,950,470,450
C	Unfunded Actuarial Accrued Liability (A - B)	$ 3,382,374,718	$ -	$ 3,382,374,718
D	Funded Ratio (B/A)	45.2%	100.0%	46.6%

[1] *Prior to adjustment for $20 million transfer.*

The Solvency Liability is a market-based measurement of the pension obligations. It represents the amount the plan would need to invest in low risk securities to provide the benefits with greater certainty. For this purpose, the solvency liability is computed at 2.85% as of June 30, 2016, based on the long-term municipal bond rate ("State & local bonds" rate from Federal Reserve statistical release (H.15) as of June 30, 2016). No adjustment has been made for the credit quality of the plan sponsor. This measure may not be appropriate for assessing the need for or amount of future contributions. This measure may not be appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligation.

The difference between the two measures (POA and Solvency) is one illustration of the savings the sponsor anticipates by taking on the risk in a diversified portfolio.

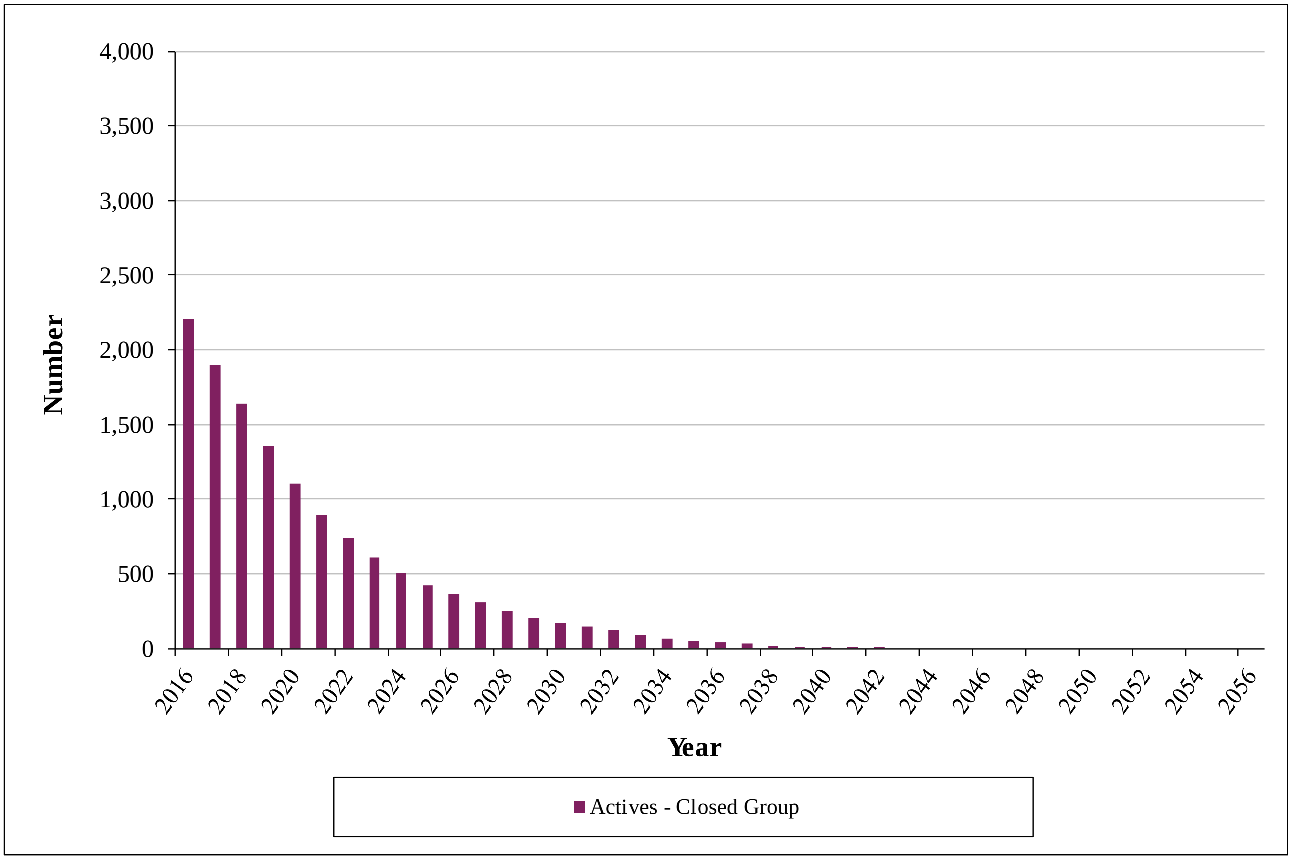
EXPECTED TERMINATIONS FROM ACTIVE EMPLOYMENT FOR CURRENT ACTIVE MEMBERS



The chart above shows the expected future development of the present population in simplified terms. The Retirement System presently covers 2,205 active members (excluding 631 members currently in the DROP). Eventually, 48 members are expected to terminate covered employment prior to retirement and forfeit eligibility for an employer provided benefit. 2,037 members are expected to receive monthly retirement benefits either by retiring directly from active service (including DROP), or by retiring from vested deferred status. 120 members are expected to become eligible for death-in-service or disability benefits.

EXPECTED TERMINATIONS FROM ACTIVE EMPLOYMENT FOR CURRENT ACTIVE MEMBERS

Shown below is a graph of projected active members (excluding 631 members currently in the DROP) remaining in the Retirement System. It is projected that less than half of the current active population will be active by 2020.



Comments and Conclusion

Experience

Experience was less favorable than assumed during the year ending June 30, 2016. The chart below shows the estimated experience loss.

Development of Actuarial Gain/(Loss)
($ millions)

	$ Millions
(1) UAAL as of June 30, 2015	$ 858.6
(2) POA Contribution FY2016	37.8
(3) Interest at 6.75%	58.0
(4) Assumption and method changes	3.0
(5) Projected UAAL* as of June 30, 2016 (1) - (2) + (3) + (4)	$ 881.8
(6) Actual UAAL* as of June 30, 2016	1,051.3
Gain (Loss): (5) - (6)	$ (169.5)
Gain (Loss) from Investments	(184.3)
Gain (Loss) from Liabilities	14.8

** Unfunded Actuarial Accrued Liability.*

The main source of the loss was investment activity. Other gains and losses during the year were smaller and mostly offsetting. They include gains on turnover (less retirements and more quits than expected) and losses from benefit amounts (benefits were larger than projected from prior years' data).

Year-to-Year Reconciliation of Projected June 30, 2024 Contributions

The estimated FY 2024 contributions are very sensitive to changes in year-to-year experience. The chart below reconciles our estimate from the June 30, 2015 valuation to our estimate from this valuation (June 30, 2016).

	$ Millions
Estimated FY 2024 Employer Contribution from 6/30/2015 Valuation	$ 124.1
Assumption and Method Changes	0.5
Investment Loss	29.4
Other Experience	(2.4)
Estimated FY 2024 Employer Contribution (Level Principal) from 6/30/2016 Valuati	$ 151.6

Annuity Reserve Fund

The Annuity Reserve Fund (ARF), as reported, was $47 million higher than the related accrued liabilities for Retirees and Beneficiaries. The Board adopted a motion to transfer $20 million to Component I to fund transition costs, leaving a contingency reserve of approximately $27 million. If the Board chooses to transfer some or all of the $27 million from the ARF to the Pension Accumulation Fund (PAF) within Component II, the transfer would reduce the UAAL.

Annuity Savings Fund (ASF) Interest Credits

The ASF fund is credited with the lesser of 5.25% interest and the total fund earnings. We understand that any earning in excess of 5.25% (that otherwise would have been credited to the ASF fund if not for the 5.25% cap) will be transferred to Component I assets, to the extent needed, for funding of transition liability. Since ASF liabilities are equal to ASF balances, we did not model any such excess earnings as part of this valuation.

Reserves

The Annuity Reserve Fund was not credited with any interest during the year. The interest credit to the Annuity Savings Fund is approximately 7.5% of the beginning year ASF balance. However, that amount is approximately 5.2% of the sum of the ASF and ARF at the beginning of the year. We therefore recommend that the development of these reserves be reviewed. Note ASF interest credits are determined by Plan provisions and Board policy and are calculated by System staff.

Census Data and Approximations

The data provided for this valuation did not reflect the plan freeze or changes to active member benefits that were instituted in connection with the POA. Consequently, it was necessary to use approximations to estimate the frozen accrued benefits. While in our judgement the approximations are reasonable, an estimate of the potential range of error in those approximations was outside the scope of this study. It is important that complete census data be provided to us for the valuation to minimize the probability of an important decision being made based upon estimated data. We would be pleased to redo this valuation with revised data if such can be made available.

For active members, Average Final Compensation (AFC) amounts and total service were reported as of June 30, 2016 (with an additional year of service and pay after the freeze). For purposes of this valuation, we matched the June 30, 2016 actives to the active data reported for the June 30, 2014 valuation to obtain the AFC and benefit service amounts as of June 30, 2014 (the date of the Plan freeze). We reviewed sample benefit calculations and updated any adjustments, as needed. This process was based on discussions with System staff and the Plan’s auditors.

Data was reported separately for Component I and Component II. Additional time was needed to reconcile these two data sets as they came from different source data. Processing time for the valuation could be shortened if data for future valuations is reconciled before being provided to GRS. We would be happy to work with the Retirement System staff to help them provide the information that is needed for the valuation.

COMMENTS AND CONCLUSION

Disability Retirees

The Police and Fire Retirement System Combined Plan provides disability benefits from both Component I and Component II. Our understanding of the Component II freeze as it relates to duty disability benefits was that the only benefit payable from Component II would be the frozen accrued benefit, payable at the time of conversion to normal retirement (for members becoming disabled after 6/30/2014) and that any benefits payable during the period of disability would be paid from Component I. Data reported for this valuation is not consistent with that understanding. In addition, assets reported for Component I do not appear to be consistent with that interpretation. We recommend the administration of the post-2014 duty disability benefits be reviewed.

Option Factors

The Board adopted new option factors for the Plan. However, we have not been provided with an effective date for the new factors. For the sake of simplicity, we have assumed the new factors apply to all retirements after the valuation date.

Actuarial Assumptions

The Retirement System routinely has five-year experience studies in accordance with the City ordinance. The last experience study for the period from July 1, 2007 through June 30, 2012 was started but not completed due to the bankruptcy. We conducted a review of the mortality experience in 2013. We recommend that the System consider the experience study schedule. The next experience study would be scheduled for the period from July 1, 2012 through June 30, 2017. However, in order to avoid distortions from the bankruptcy, the next experience study could be scheduled to begin just after the City emerged from bankruptcy. This, however, would suggest a study based on the period July 1, 2015 through June 30, 2020.

Additional Contributions

We understand the City has set aside a total of $30 million to be contributed to the General and Police and Fire Component II (Legacy) plans. We have not included any of this money in the valuations or projections since: 1) it has not been determined how the money will be split between the two legacy plans; and 2) there is no legal opinion of which we are aware that would indicate that the City could not decide to use the money for another purpose rather than contributing to the funds. Once the money has been contributed (or has been legally determined to be irrevocably allocated to the trust), we will reflect it.

Restoration

This valuation assumes no future restoration of Component II benefits. Calculations related to restoration will be provided in a separate report at the Board's request. Any future restoration will be reflected beginning in the next valuation after being granted.

Future Results

While FY 2017 investment performance has not yet been provided to us, the S&P 500 and the DOW have so far both returned more than 6.75%. If the Retirement System's experience is similar, this will result in upward pressure on the funded status and downward pressure on the FY 2024 contribution requirements (below what is shown in this report).

The POA mandated contributions for FY 2017 and beyond are expected to defund the Retirement System, even if all assumptions are realized. In FY 2017, the POA mandated contributions will be about ¼ of the interest accrued on the UAAL.

Recommendation 1

We recommend that every potential action be taken to generate contributions to the Retirement System above those provided in the POA.

Recommendation 2

We recommend that the Retirement System compute frozen accrued benefits as soon as possible and report them to the Actuary for the June 30, 2017 valuation. If important decisions are to be made based on this valuation, we recommend that the valuation be redone based upon actual computed frozen accrued benefits before any such decisions are made.

Recommendation 3

We recommend that a study be undertaken to develop a Board funding policy for FY 2024 and beyond. The increase in contributions that is expected at that time is so extreme that it cannot be ignored until then. All stakeholders should agree on the funding policy well before that date comes. If not, there could be an increased risk of contribution defaults increasing benefit security risk.

Conclusion

The POA contributions fall short of contributions that would result from either of the funding policies illustrated in this report by a significant amount. Given these contribution shortfalls it is unlikely that investment gains in FY 2017 will be significant enough to offset the shortfalls, so the funding status is expected to decline in the next valuation.

The FY 2024 contribution is expected to be very high compared to City contributions in the immediately preceding years. Planning for the FY 2024 contribution level is very important. **Once again, we recommend that every potential action be taken to generate contributions to the Retirement System above and beyond those provided in the POA.**

DATA FURNISHED FOR VALUATION

Component II Frozen Benefits

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

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

Age and Service Retirement

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

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

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

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

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

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

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

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

Deferred Retirement (vested benefit)

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

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

Benefit Commencement - DPOA and Fire equivalent members hired after 6/30/1985: Unreduced benefit begins at age 62. ***All other members***: Unreduced benefit begins at the age when the member would have first been eligible for regular retirement had the member continued in City service. **All** members may elect a reduced benefit payable immediately.

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

Duty Disability Retirement

Eligibility - No age or service requirement.

***Annual Amount* –** A basic benefit of 50% of final compensation as of June 30, 2014 and a supplemental benefit of 16-2/3% of final compensation as of June 30, 2014 is payable for 24 months. After 24 months, members disabled from any occupation continue to receive both benefits; otherwise, only the 50% benefit is then payable. Upon attaining 25 years of service, the disability benefit is 50% of final compensation as of June 30, 2014. Members convert to regular retirement benefit at age 65. Worker’s compensation payments are offset. Members who have already filed under the old duty disability plan will receive 66-2/3% of final compensation as of June 30, 2014 payable to eligibility date for regular retirement.

Non-Duty Disability Retirement

Eligibility - 5 years of service.

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

Duty Death Before Retirement

Eligibility - No age or service requirement.

Annual Amount **-** Surviving spouse receives 5/11 of police officer's or firefighter's compensation and each child under age 18 receives 1/10 of such compensation with a maximum total of 7/33 of such compensation as of June 30, 2014. If there is no surviving spouse, each child receives 1/4 of such compensation with a maximum total of 1/2 of such compensation. If there is no surviving spouse or children, each dependent parent receives 1/6 of such compensation. Worker's compensation payments are offset.

Non-Duty Death Before Retirement

Eligibility - No age or service requirement.

Annual Amount - Same as a regular retirement benefit to a surviving spouse, but reduced in accordance with a 100% joint and survivor option election. Minimum benefit is 20% of average final compensation as of June 30, 2014. Each child under 18 receives 1/7 of Police Officer's or Firefighter's compensation with a maximum total of 2/7 of such compensation. If there is no spouse or children, each dependent parent receives 1/7 of such compensation.

Post-Retirement Cost-of-Living Adjustments

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

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

Member Contributions

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

DROP Plan

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

Reported Assets
(Market Value)

Market Value - June 30, 2016	
Cash & Deposits	N/A
Receivables	N/A
Domestic Equities	N/A
Fixed Income	N/A
Real Estate	N/A
Other	N/A
Accounts Payable	N/A
Total Current Assets	**$ 2,950,470,450**

Reserve Accounts

Funds	Fund Balances June 30, 2016	Fund Balances June 30, 2015
Annuity Savings	$ 104,670,218	$ 114,632,702
Annuity Reserve	50,666,639	50,961,990
Total Annuity Funds	155,336,857	165,594,692
Pension Accumulation	(32,359,899)	(195,070,640)
Pension Reserve	2,821,565,851	3,218,090,945
Accrued Liability Fund Reserve	0	0
Survivor Benefit	5,927,641	6,139,444
Market Stabilization Fund	0	0
Total Pension Funds	2,795,133,593	3,029,159,749
Total Fund Balances	$2,950,470,450	$3,194,754,441

Revenues and Expenditures

	Pension Funds	Annuity Funds +	Total Funds
Market Value July 1, 2015	$ 3,029,159,749	$ 165,594,692	$3,194,754,441
Revenues			
Member Contributions	24,801	0	24,801
Employer Contributions	37,787,744	0	37,787,744
Investment Income	29,216,225	8,568,005	37,784,230
Less Investment Expense	(13,165,657)	0	(13,165,657)
Other Income	855,743	0	855,743
Total	$ 54,718,856	$ 8,568,005	$ 63,286,861
Expenditures			
Benefit Payments	285,641,323	295,351	285,936,674
Refund of Member Contributions	0	18,530,489	18,530,489
Adjustment (Prior Year Cont.)	0	0	0
Administrative Expenses	3,103,689	0	3,103,689
Total	$ 288,745,012	$ 18,825,840	$ 307,570,852
Other Adjustment	$ 0	$ 0	$ 0
Market Value June 30, 2016	$2,795,133,593	$ 155,336,857	$2,950,470,450
Market Value Rate of Return	0.4%	5.5%	0.7%

\+ *Reported Market Value of Annuity Savings Fund (ASF) and Annuity Reserve Fund (ARF). The ARF is credited with a fixed rate of return by the Plan document/ordinance. ASF interest credit is determined by the Board based on parameters set forth in the Plan document/ordinance.*

Rates of return are dollar weighted estimates assuming mid-year cash flows.

RETIREES AND BENEFICIARIES AS OF JUNE 30, 2016
TABULATED BY ATTAINED AGE@

Attained Age	Age & Service No.	Age & Service Monthly Allowances	Disability No.	Disability Monthly Allowances	Death-in-Service No.	Death-in-Service Monthly Allowances	Totals No.	Totals Monthly Allowances
Under 20*	5	$ 20,949			42	$ 20,856	47	$ 41,805
20-24	3	6,092					3	6,092
25-29	1	1,792	1	$ 2,960			2	4,752
30-34	3	5,528	3	9,792	0	0	6	15,320
35-39	9	13,896	56	168,692	8	13,604	73	196,192
40-44	33	62,127	78	243,949	16	25,986	127	332,062
45-49	158	336,607	104	324,111	11	18,273	273	678,991
50-54	319	886,176	125	371,670	12	23,289	456	1,281,135
55-59	440	1,258,681	122	330,107	22	43,779	584	1,632,567
60-64	905	2,778,765	237	652,993	32	56,063	1,174	3,487,821
65-69	1,453	4,616,244	462	1,139,476	55	99,384	1,970	5,855,104
70-74	1,056	3,074,140	295	707,477	29	47,240	1,380	3,828,857
75-79	594	1,602,013	110	257,993	16	28,939	720	1,888,945
80-84	410	931,989	44	116,176	12	26,281	466	1,074,446
85-89	445	971,721	60	149,958	23	46,466	528	1,168,145
90-94	282	568,041	27	66,445	8	16,438	317	650,924
95 & Over	67	112,888	11	30,003	0	0	78	142,891
Totals	**6,183**	**$17,247,649**	**1,735**	**$4,571,802**	**286**	**$466,598**	**8,204**	**$22,286,049**

@ *Includes both pre-1969 and 1969 retirees. Allowances being paid to DROP members are not reflected. Allowances shown are amounts as reported in the data.*

* *May include records with incorrect birth dates reported.*

INACTIVE VESTED MEMBERS JUNE 30, 2016

Attained Age	No.	Estimated Annual Allowances
Under 40	75	$1,338,365
40-44	96	1,880,905
45-49	81	1,803,706
50-54	45	1,040,491
55-59	31	770,005
60-64	15	351,501
65 & over	26	735,439
Totals	**369**	**$7,920,412**

PRE-1969 RETIREES AND BENEFICIARIES AS OF JUNE 30, 2016
TABULATED BY ATTAINED AGE

Attained Age	Age & Service# No.	Age & Service# Monthly Allowances	Disability# No.	Disability# Monthly Allowances	Death-in-Service No.	Death-in-Service Monthly Allowances	Totals No.	Totals Monthly Allowances
Under 20*								
35-39	2	$ 2,834	1	$ 2,554			3	$ 5,388
45-49	1	1,093					1	1,093
55-59	7	6,703			0	$ 0	7	6,703
60-64	6	9,658			2	4,010	8	13,668
65-69	75	133,575	12	26,275	11	21,786	98	181,636
70-74	308	626,800	124	282,831	13	25,422	445	935,053
75-79	327	707,508	82	184,252	14	23,973	423	915,733
80-84	279	552,077	32	71,923	8	16,097	319	640,097
85-89	305	583,229	55	136,592	21	40,726	381	760,547
90-94	246	472,225	26	62,786	8	16,438	280	551,449
95 & Over	64	107,807	11	30,003	0	0	75	137,810
Totals	**1,620**	**$3,203,509**	**343**	**$797,216**	**77**	**$148,452**	**2,040**	**$4,149,177**

** May include records with incorrect birth dates reported.*
 # Includes survivor beneficiaries of service and disability retirees.

DROP PARTICIPANTS JUNE 30, 2016

Attained Age	No.	Estimated Monthly Allowances &
20-24	1	$ 1,397
35-39	2	2,673
40-44	37	55,012
45-49	124	243,706
50-54	208	515,307
55-59	173	502,362
60-64	65	231,901
65-69	19	73,213
70-74	2	8,857
Totals	**631**	**$1,634,428**

& Reflects the 75% of reported monthly benefits being paid into DROP accounts.

ACTIVE MEMBERS AS OF JUNE 30, 2016
BY ATTAINED AGE AND YEARS OF SERVICE (EXCLUDES DROP)

Note the following active member schedules show eligibility service (total service) and reported payroll as of the valuation date. However, benefits are based on service and AFC as of June 30, 2014.

Police Members

Attained Age	Years of Service to Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation Payroll *
20-24	22							22	$ 961,406
25-29	61	39						100	4,962,547
30-34	29	70	29	4				132	7,094,526
35-39	12	47	62	167	1			289	16,362,664
40-44	5	26	31	330	55			447	26,640,575
45-49	3	16	23	257	108	9		416	25,452,692
50-54	3	5	6	103	45	9	2	173	10,409,389
55-59	1	2	2	33	11	3	1	53	3,138,237
60			1	2	3			6	394,886
61					1	1		2	201,530
62				1		1		2	110,328
63							1	1	76,783
65							1	1	46,600
67				1				1	56,268
68						1		1	57,095
Totals	**136**	**205**	**154**	**898**	**224**	**24**	**5**	**1,646**	**$95,965,526**

Fire Members

Attained Age	Years of Service to Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation Payroll *
20-24	11							11	$ 477,356
25-29	23	3	2					28	1,209,356
30-34	18	5	7					30	1,505,868
35-39	6	13	34	44				97	5,123,676
40-44	2	4	27	90	15			138	7,591,113
45-49	2	2	16	66	47	17		150	8,503,781
50-54		2	6	20	18	32	3	81	5,056,883
55-59			1	7	8	2	4	22	1,314,205
60			1			1		2	117,412
Totals	**62**	**29**	**94**	**227**	**88**	**52**	**7**	**559**	**$30,899,650**

* *Valuation payroll is the greater of the current year and prior year reported pay.*

TOTAL ACTIVE MEMBERS AS OF JUNE 30, 2016
BY ATTAINED AGE AND YEARS OF SERVICE (EXCLUDES DROP)

Note the following active member schedules show eligibility service (total service) and reported payroll as of the valuation date. However, benefits are based on service and AFC as of June 30, 2014.

Total Members

Attained Age	Years of Service to Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation Payroll *
Under 20									
20-24	33							33	$ 1,438,762
25-29	84	42	2					128	6,171,903
30-34	47	75	36	4				162	8,600,394
35-39	18	60	96	211	1			386	21,486,340
40-44	7	30	58	420	70			585	34,231,688
45-49	5	18	39	323	155	26		566	33,956,473
50-54	3	7	12	123	63	41	5	254	15,466,272
55-59	1	2	3	40	19	5	5	75	4,452,442
60			2	2	3	1		8	512,298
61					1	1		2	201,530
62				1		1		2	110,328
63							1	1	76,783
64									
65							1	1	46,600
66									
67				1				1	56,268
68						1		1	57,095
72									
Totals	**198**	**234**	**248**	**1,125**	**312**	**76**	**12**	**2,205**	**$126,865,176**

* *Valuation payroll is the greater of the current year and prior year reported pay.*

	Group Averages		
	Police	**Fire**	**Total**
Age:	42.1 years	42.8 years	42.3 years
Service:	15.4 years	16.1 years	15.5 years
Annual Pay:	$58,302	$55,277	$57,535

Reconciliation of Reported Data as of June 30, 2016

Active Data

A)	Number reported in PF_Benefits table	3,346
B)	Excluded due to inactive status/DROP	(755)
C)	Non Benefit Class Code	(21)
D)	Active members hired after June 30, 2014	(284)
E)	Adjustments per data questions	(81)
F)	Number of records valued	2,205

Retired Data

A)	Number of records reported on data file	41,701
B)	Number of records not in P/F plan	(26,254)
C)	Records not currently in receipt of benefits	(6,514)
D)	Component I (Hybrid) records	(98)
E)	Records in DROP	(631)
F)	Number of records valued:	8,204

Deferred Data

A)	Number of records reported on data file	342
B)	Records with service less than 8 years	(22)
C)	From General File	12
D)	Adjustments per data questions	41
E)	Number of records valued	373

DATA APPROXIMATIONS AND ASSUMPTIONS

Active

For active members, AFC amounts and total service as of June 30, 2016 (rather than at the freeze date) were reported. For purposes of this valuation, we matched the June 30, 2016 actives to the active data reported for the June 30, 2014 valuation to obtain the AFC and benefit service amounts as of June 30, 2014. In cases where June 30, 2014 AFC was not available, June 30, 2016 AFC was used. The class code used to distinguish between LSA and DPOA was taken from the data as of June 30, 2014 valuation.

Deferred

Data provided for deferred vested members was incomplete. As part of the processing of deferred member data, we attempted to fill in missing data with data from; 1) the previous year's deferred file; 2) the current year's active file and/or; 3) the previous year's active files. In cases where AFC was still incomplete after comparing to other files, we used $30,000 to estimate the AFC. Since vesting service is not directly provided on the file, we estimated vesting service based on reported benefit service increased by the elapsed time between date of termination and June 30, 2014. Members with estimated vesting service of less than 8 years were assumed to be non-vested and were not valued.

Retired and Beneficiary

Adjustment assumptions include:

- In cases where the benefit is identified to be a joint and survivor benefit and a beneficiary is not listed in the data, it was assumed that male spouses were 3 years older than females;
- For non-equated members that elected a pop-up benefit, the pop-up amount is estimated based on the chosen option and benefit amounts provided in the data;
- Benefits for dependent children are assumed to cease at age 21; and
- For non-converted disabled members, converted benefits are:
    - assumed to commence at age 65; and
    - estimated, reflecting the changes from 66-2/3% of Final Compensation to 50% of Final Compensation.

APPENDIX

ASSUMPTION REVIEW

All assumptions are estimates of future experience except as noted. If the rationale for the assumptions is based on experience studies, it is noted.

ECONOMIC ASSUMPTIONS

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

Price inflation is not directly used in the valuation. For purposes of assessing the reasonability of the investment return assumption we assumed price inflation of 2.25% 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. This table was first used as of June 30, 2014. The rationale for the mortality assumption is based on the 2008-2013 Mortality Experience Study issued February 13, 2015.

The probabilities of age/service retirement for members eligible to retire are shown on page 28. The rationale is based on the 2002-2007 Experience Study. However, probabilities were modified effective with the June 30, 2014 valuation to reflect a change in the modeling of future DROP members, consistent with the plan closure. The revised probabilities were selected so that, when combined with the model change, the effect on the present value of benefits would be immaterial.

The probabilities of separation from service (including *death-in-service*) are shown for sample ages on page 29. These probabilities were first used for the June 30, 2008 valuation. The rationale is based on the 2002-2007 Experience Study.

MISCELLANEOUS AND TECHNICAL ASSUMPTIONS
JUNE 30, 2016

Marriage Assumption:	100% of males and 100% of females are assumed to be married for purposes of death-in-service benefits. This assumption accounts for potential dependent children/dependent parent death benefits. No other assumption is made for surviving children/dependent parents. Male spouses are assumed to be three years older than female spouses.
Pay Increase Timing:	N/A
Decrement Timing:	Decrements are assumed to occur mid-year.
Eligibility Testing:	Eligibility for benefits is determined based upon the age nearest birthday and service nearest whole year on the date of decrement.
Decrement Relativity:	Decrement rates are used directly from the experience study, without adjustment for multiple decrement table effects.
Decrement Operation:	Disability and mortality decrements do not operate during the first 5 years of service. Disability and withdrawal do not operate during retirement eligibility.
Incidence of Contributions:	Employer contributions are assumed to be received on the last day of the fiscal year.
Longevity in AFC:	Longevity payments were included directly in the AFC data provided by the System. No further adjustment was included.
Unused Sick Leave Payout:	Sick leave banks as of June 30, 2014 were included in data provided by the System. No further adjustment was included.
Post-Retirement COLA:	Active members are assumed to receive a 0.9% COLA rather than 1.0125% because the annuity portion is not subject to the COLA. Post-retirement increases for retired members were based on the plan in effect at retirement. For the pre-69 plan members, future COLA's are assumed to be the same as wage inflation for active members (not reduced in POA). For other members retiring before 2014, the COLA rate is prorated by the ratio of COLA eligible service to total service at retirement before applying the POA mandated reduction to 1.0125%. The service ratio is provided on the data file.
AFC Period:	AFC data was provided by the System for the June 30, 2014 (date of freeze) valuation.
Disability Change Age:	The duty disability benefit is assumed to change at normal retirement age.

MISCELLANEOUS AND TECHNICAL ASSUMPTIONS
JUNE 30, 2016
(CONCLUDED)

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

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

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

FUNDING METHODS

The unit credit cost method was used in determining liabilities and normal cost. Under this method, there is no normal cost since benefits are frozen and there are no future accruals and Actuarial Accrued Liability is the present value of each individual's accrued benefit.

Unfunded Actuarial Accrued Liabilities (UAAL). UAAL contribution is not actuarially determined. Actual employer contributions through June 30, 2023 are set by the POA. The funding policy after 2023 has not yet been established by the Board.

Employer contribution dollars were assumed to be *paid in a single sum on the last day* of the employer fiscal year. (Adopted for the June 30, 1979 actuarial valuation.)

Present assets are set equal to the Market Value in accordance with the POA.

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.

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	38.98	42.36
50	34.03	37.30
55	29.26	32.39
60	24.71	27.62
65	20.38	23.03
70	16.35	18.69
75	12.68	14.70
80	9.46	11.15

	Percent of Eligible Active Members Retiring 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

	Percent of Eligible Active Members Retiring 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 (and experience of) 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 (and experience of) purchase service. Members are also eligible to retire at age 60 with no service requirement. The rationale for these assumptions is the 2002-2007 Experience Study.

Sample Ages	Years of Service	% of Active Members Withdrawing within Next Year	
		Police	Fire
ALL	0	8.50%	5.00%
	1	7.50%	4.00%
	2	6.00%	3.00%
	3	5.00%	2.00%
	4	4.50%	2.00%
25	5 & Over	4.50%	1.96%
30		3.30%	1.62%
35		2.30%	1.11%
40		1.70%	0.77%
45		1.50%	0.60%
50		1.10%	0.51%
55		0.80%	0.51%
60		0.80%	0.51%
Ref		566	230
		207	113 x 0.85

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

The rationale for these assumptions is the 2002-2007 Experience Study.

Actuarial Accrued Liability. The difference between (i) the actuarial present value of future plan benefits, and (ii) the actuarial present value of future normal cost. Sometimes referred to as "accrued liability" or "past service liability."

Accrued Service. The service credited under the plan which was rendered before the date of the actuarial valuation.

Actuarial Assumptions. Estimates of future plan experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income and salary increases. Decrement assumptions (rates of mortality, disability, turnover and retirement) are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (salary increases and investment income) consist of an underlying rate in an inflation-free environment plus a provision for a long-term average rate of inflation.

Actuarial Cost Method. A mathematical budgeting procedure for allocating the dollar amount of the "actuarial present value of future plan benefits" between the actuarial present value of future normal cost and the Actuarial Accrued Liability. Sometimes referred to as the "actuarial funding method."

Actuarial Equivalent. A single amount or series of amounts of equal value to another single amount or series of amounts, computed on the basis of the rate(s) of interest and mortality tables used by the plan.

Actuarial Present Value. The amount of funds presently required to provide a payment or series of payments in the future. It is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

AFC. Average Final Compensation

Amortization. Paying off an interest-bearing liability by means of periodic payments of interest and principal, as opposed to paying it off with a lump sum payment.

ARF. Annuity Reserve Fund.

ASF. Annuity Savings Fund.

Contribution Budgeting Liability. An expected return based measure of pension obligation.

DPOA. Detroit Police Officers Association

DFFA. Detroit Fire Fighters Association

DPCOA. Detroit Police Command Officers Association

DROP. Deferred Retirement Option Program

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 valuation dates, in accordance with the Actuarial Cost Method being used.

LSA. Lieutenants and Sergeants Association

Normal Cost. The annual cost assigned, under the actuarial funding method, to current and subsequent plan years. Sometimes referred to as "current service cost." Any payment toward the Unfunded Actuarial Accrued Liability is not part of the Normal Cost.

PAF. Pension Accumulation Fund.

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.

Solvency Liability. A market-based measure of the present value of accrued benefits at a municipal bond discount rate unadjusted for the credit quality of the plan sponsor.

Unfunded Actuarial Accrued Liability. The difference between the Actuarial Accrued Liability and Valuation Assets. Sometimes referred to as "unfunded accrued liability."

Valuation Assets. The value of current plan assets recognized for valuation purposes.