



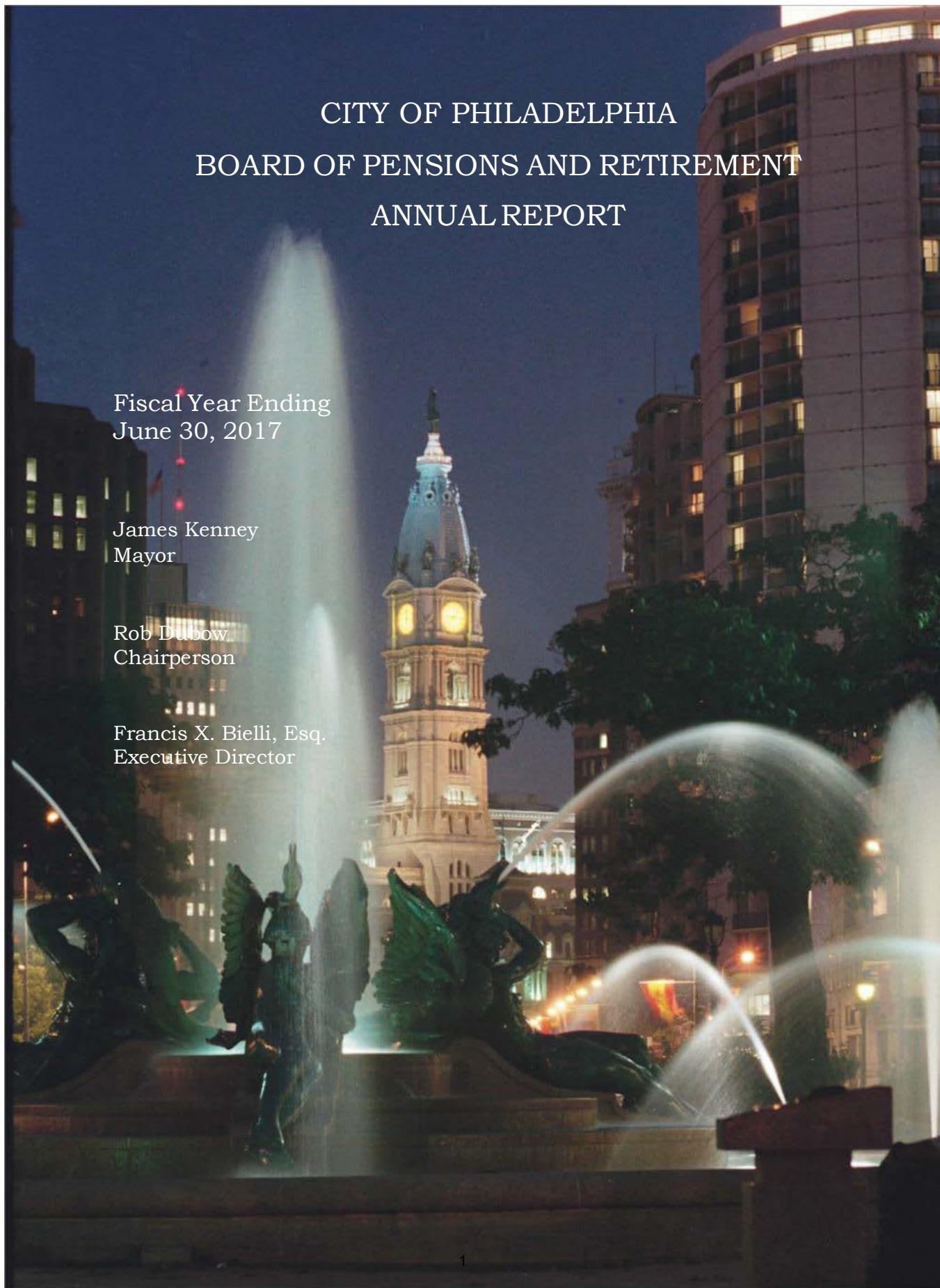
CITY OF PHILADELPHIA BOARD OF PENSIONS AND RETIREMENT ANNUAL REPORT

Fiscal Year Ending
June 30, 2017

James Kenney
Mayor

Rob Dubow
Chairperson

Francis X. Bielli, Esq.
Executive Director



City of Philadelphia

BOARD OF PENSIONS AND RETIREMENT

Annual Report

Fiscal Year July 1, 2016 – June 30, 2017



**16th Floor, Two Penn Center
Plaza Philadelphia, PA 19102**

215-685-3434

To the People of the City of Philadelphia:

The Board of Pensions and Retirement hereby submits the Annual Report of the Retirement System for City of Philadelphia employees for the fiscal year ending June 30, 2017.

The report consists of three sections:

- An introductory section, which contains a summary of the Fund and identifies the administrators, trustees, investment managers and professional consultants of the Retirement System
- A financial section as prepared by the City of Philadelphia Finance Department, which contains the System's financial statements, membership pension data, and investment statistics.
- The Board's Annual Actuarial Valuation Report as prepared by Cheiron Inc., which details the methods of costing and funding current and future benefits to members and beneficiaries of the Retirement System.

If you require more detailed information on the Board's Investment Portfolio, please write to Francis X. Bielli, Esq., Executive Director, Two Penn Center Plaza, 16th Floor, Philadelphia, PA 19102, or call 215-685-3434 or 1-800-544-1173. Additional copies of this report can be downloaded from <http://www.phila.gov/pensions>.

Cover photo provided courtesy of the City of Philadelphia, Office of the City Representative.

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SECTION 1 - INTRODUCTION

CITY OF PHILADELPHIA PUBLIC EMPLOYEES RETIREMENT SYSTEM

Francis X. Bielli, Esquire

Executive Director

MEMBERS OF THE BOARD

Rob Dubow, Chairperson

Director of Finance
Appointed January 7,
2008.

Alan L. Butkovitz, Esquire

City Controller, Elected by voters of
Philadelphia. Serving as Board
Member since January 2, 2006.

Brian Coughlin

Philadelphia Firefighters Union
Local No. 22. Elected Employee
Representative, Serving since
August 2015.

Michael DiBerardinis

Managing Director
Appointed January 6, 2016

Pedro Rodriguez

Director of Human
Resources, Appointed May
2, 2016

Veronica M. Pankey

AFSCME District Council 33.
Elected Employee
Representative Serving since
February 2011.

Ronald Stagliano, Vice-Chairperson

Fraternal Order of Police.
Employee Elected Representative
Serving since November 2004.

Carol Stukes

AFSCME District Council 47.
Elected Employee Representative
Serving since September 1994.

Sozi Pedro Tulante, Esquire

City Solicitor
Appointed January 4, 2016.

Consultants

ACTUARY

Cheiron, Inc. McLean, VA

PRE-AUDIT FUNCTIONS

City of Philadelphia - Office of the City Controller Philadelphia, PA

AUDITOR

CliftonLarsonAllen LLP Timonium, MD

LEGAL COUNSEL

City of Philadelphia Law Department Philadelphia, PA

GENERAL INVESTMENT CONSULTANT

Marquette Associates, Inc. Chicago, IL

ALTERNATIVE INVESTMENT CONSULTANTS

Torrey Cove Capital Partners San Diego, CA

PROXY CONSULTANT

Segal Marco Advisors Chicago, IL

CUSTODIAN BANK

J.P. Morgan Chase New York, NY

Investment Managers

Domestic Equity

Apex Capital Management	Dayton, OH
Ariel	Chicago, IL
Aronson+Johnson+Ortiz LP	Philadelphia, PA
Emerald Advisors	Lancaster, PA
Fisher Asset Management	Woodside, CA
O'Shaughnessy Asset Management	Stamford, CT
Rhumblin Advisors	Boston, MA

International Equity

Causeway Capital Management	Los Angeles, CA
Northern Trust	Chicago, IL

Master Limited Partnership

Harvest Fund Advisors LLC	Wayne, PA
Tortoise Capital Advisors LLC	Leawood, KS

High Yield

Strategic Income Management	Seattle, WA
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Emerging Markets

Logan Circle - EMD	Philadelphia, PA
Rhumblin Emerging Markets Index	Boston, MA

Core Bond, Global Fixed & Fixed Income

Brandywine Investment Management	Philadelphia, PA
Garcia Hamilton & Associates	Boston, MA
Logan Circle	Philadelphia, PA
Longfellow	Boston, MA
Rhumblin Core Bond Index	Boston, MA

Terminated Hedge Funds¹

400 Capital Credit Opportunity Fund	New York, NY
Apollo Franklin Partnership, L.P.	New York, NY
Archview Offshore Fund. LTD	New York, NY
Avenue Coppers Opportunity Fund LP	New York, NY
KKR-PBPR Capital Partners LP	New York, NY

Hedge Funds

Elizabeth Park Capital Management	Pepper Pike, OH
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Real Estate Investment Trusts

Rhumblin FTSE NAREIT	Boston, MA
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Real Assets Infrastructure

Rhumblin Infrastructure Index	Boston, MA
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Private Real Estate Investments

Almanac Realty Securities VI, LP	New York, NY
Arsenal Real Estate Fund IA, LP	Morristown, NJ
Beacon Capital Strategic Partners V & IV, LP	Boston, MA
CIM Urban REIT, LLC	Los Angeles, CA
Colony Investors VIII, LP	Los Angeles, CA
Exeter Industrial Value Fund II	Plymouth Meeting, PA
Gaw Capital U.S. Value Add Fund I, LP	Los Angeles, CA
LEM Multifamily Senior Equity Fund III & IV	Philadelphia, PA
Lone Star Fund II, L.P.	Dallas, TX
Lyrical - Philadelphia Realty Partners LP & SOTP	Englewood, NJ
Tishman Speyer European Real Estate Venture	New York, NY
UBS Trumbull Fund	Hartford, CT

¹ Hedge Funds have been terminated, however The City of Philadelphia Board of Pensions is awaiting Redemptions

Private Markets

Advent International GPE VI A	Boston, MA
Altaris Health Partners II	New York, NY
Asian Financial Bank	Philadelphia, PA
Audax Mezzanine Fund III	Boston, MA
Avenue Special Situations Fund V	New York, NY,
Bay Partners XI	Woodside, CA
Blackstone Capital Partners IV, V, V-S & VI	New York, NY
Capital Dynamics Mid-Market Direct IV (U.S.)	New York, NY
Carlyle Europe Partners III	Washington DC
Castile Ventures III	Wellesley
Columbia Capital Equity Partners III (QP)	Alexandria
Court Square Capital Partners II	New York, NY
EIV Capital Fund II & III	Houston, TX
European Strategic Partners I & II	Edinburgh, Scotland
Fairview Capital II & III	Hartford, CT
Fenway Partners Capital Fund II	New York, NY
Franklin Park Venture Fund Series 2008	Bala Cynwyd, PA
Green Equity Investors IV	Los Angeles, CA
ICV Partners II	New York, NY
Keystone Venture V	Beijing, China
KKR 2006 Fund	New York, NY
Kohlberg Investors V	Mt. Kisco, NY
KPS Special Situations Fund III	New York, NY
Levine Leichtman Capital Partners IV & V	Beverly Hills, CA
Lindsay Goldberg & Bessemer I and II	New York, NY
Littlejohn Fund III	Greenwich, CT
LLR Equity Partners II & III	Philadelphia, PA
Market Street Opportunities Fund	New York, NY
Mason Wells Buyout Fund III	Milwaukee, WI
Meridian Venture Partners	Radnor, PA
Morgan Stanley Dean Witter Venture Partners IV	New York, NY

Morgan Stanley Venture Partners 2002	New York, NY
Natural Gas Partners IX	Irving, TX
Nogales Investors Fund I & II	Los Angeles, CA
OCM Opportunities Fund III	Los Angeles, CA
OCM Opportunities Fund IV & VIIb	Los Angeles, CA
Pharos Capital Partners II	Brentwood, TN
Platinum Equity Capital Partners I & II	Beverly Hills, CA
Quaker BioVentures	Philadelphia, PA
Raspberry Street Fund I	Bala Cynwyd, PA
Relativity Fund	Arlington, VA
Riverside Capital Appreciation Fund V	New York, NY
SCP Private Equity Partners I & II	Malvern, PA
Sterling Capital Partners II & III	Chicago, IL
Summit Partners Subordinated Debt Fund IV-A	Boston, MA
TA XI	Boston, MA
TCW Crescent Mezzanine Partners III	Los Angeles, CA
TL Ventures V	Wayne, PA
TPG Partners III	Boston, PA
United Bank of Philadelphia, PA	Philadelphia, PA
Veritas Capital Fund III, V, & VI	New York, NY
Vista Equity Partners Fund III	Austin, TX
Vista Foundation Fund II	Austin, TX
Wellspring Capital Partners IV	New York, NY
Wicks Capital Partners IV	New York, NY
Wicks Communications & Media Partners III	New York, NY

MISSION STATEMENT

The Board of Pensions and Retirement was charged under the Philadelphia Home Rule Charter with the creation and maintenance of an actuarially sound Retirement System providing benefits for all City employees. The Ordinance (Bill No. 907) implementing the present Retirement System was formally approved by City Council on December 3, 1956, and the System became operational effective January 1, 1957. The enactment of Bill No. 907 superseded the Act of Assembly approved May 20, 1915, P.L. 566, under which the Pension Fund had previously been governed.

The Board, as defined in the Home Rule Charter, is composed of the Director of Finance, who serves as chairperson, the Managing Director, the City Solicitor, the Personnel Director, the City Controller and four members who are elected by the Civil Service employees of the City of Philadelphia. The elected members serve a four-year term of office.

The 9-member Board formally approves all benefit applications, but its major role is that of “trustee”, to ensure that the Retirement System remains actuarially and financially sound for the benefit of current and future benefit recipients. The Board, with the assistance of its professional consultants, develops the policies and strategies which will enable the Board to successfully execute its fiduciary obligations.

The Executive Director, aided by staff, administers the day-to-day activities of the Retirement System, providing services to all system members.

MEMBERSHIP

The Public Employees Retirement System provides benefits to police, fire and civilian workers of the City of Philadelphia through the administration of multiple plans adopted from 1915 to the present. In addition, the Board of Pensions administers (but does not fund) a pension plan for the employees of some quasi-public agencies (the Philadelphia Parking Authority, the Philadelphia Municipal Authority, and the Philadelphia Housing Development Corporation). Membership details, as well as membership activity information for fiscal year 2017, may be found in the Actuarial Section of this report.

FUNDING

The Municipal Pension Plan Funding Standard and Recovery Act of December 1984 (Act 205) mandated funding methods for all municipal pension plans in the Commonwealth of Pennsylvania. Under the provisions of Act 205, the Municipal Retirement System is required to fund the actuarial liability accrued after July 1, 1985 on a level dollar payment method. In effect, the cost of current pension obligations must be satisfied annually.

The unfunded actuarial liability which had accrued prior to July 1, 1985 is being amortized over a 40-year period with payments increasing at the rate of 6% per year. This debt portion will be satisfied on June 30, 2019.

Act 205 requires that an actuarial valuation be performed annually and that an experience study, covering a 5-year period, be conducted every 4 years to ensure that the pension costs derived by the actuary are accurate and based on valid historical experience.

In January 1999, the City issued \$1.29 billion of 30-year pension obligation bonds having an overall rate of 6.61% with a goal of reducing the City's unfunded pension obligation liability.

The Actuarial Section of this report contains fiscal year 2017 information regarding normal cost; total unfunded accrued liability; recommended contribution under the City's funding policy; actual contributions; and the Minimum Municipal Obligation (MMO) as required by the Commonwealth of Pennsylvania's Acts 205 and 189.

In Fiscal Year 2017, the Board lowered the assumed rate of interest from 7.75% to 7.70%.

INCOME

The City of Philadelphia is the largest single contributor to the Public Employees Retirement System. Employees contribute a percentage of their pay, which varies with plan membership. Contributions are also paid by the quasi-public agencies whose employees' pension benefits are administered by the Board of Pensions. A major source of income is the earnings of the System's investment portfolio. Both the Actuarial and Financial Sections of this report provide further information on the Board's fiscal year 2017 income.

INVESTMENTS

The 9-member Board of Pensions and Retirement plays an active role in the determination of investment policy and strategy. All major decisions regarding the portfolio are approved by the Board based upon the recommendations of its investment consultants and managers and the Board's in-house investment staff. Cliffwater LLC, the Board's Investment Consultant, oversees the management of the portfolio by investment management firms (a listing of these firms is presented on pages 6-11).

The investment policy developed by the Board provides the framework for the investment of funds. However, the way the Board invests its funds is constrained by legal statutes. Investments of the Public Employees Retirement System must be made in compliance with Section 22-1001 of the Public Employees Retirement Code and the regulations for the investment of similar State funds as set forth in the Act of March 1, 1974 (P.L. 125, No. 31), as amended (71 Pa. C.S. Section 5931).

As part of its overall investment policy, the Board approved an asset allocation strategy which has as its goal the identification of the mix of broad asset classes that most efficiently balances the need for achieving a 7.75% rate of return with the desire to minimize the possibility of capital loss. This strategy is periodically reviewed by the Board for possible fine-tuning to ensure that it remains dynamic and reflective of market conditions.

The Financial Section of this report provides further information on the Board's fiscal year 2017 assets.

EXPENSES

Pension benefit payments are the Board's greatest current normal expense. Other expenses include the refund of pension contributions to employees who left City employment and the administrative expenses of operating the Board.

AMENDMENTS TO CITY OF PHILADELPHIA PUBLIC EMPLOYEES RETIREMENT CODE

Bill #161013 (Enacted by City Council on 12/8/16)

Amending Title 22 of The Philadelphia Code, entitled "Public Employees Retirement Code," to create a new Plan, entitled "Plan 16," for certain employees, to expand the scope of "DC Plan" to cover additional employees, to change contribution rates for certain employees, to amend various provisions relating to the Deferred Retirement Option Plan ("DROP"), and to make technical amendments; and amending Bill No. 110443 (became law Sept. 15, 2011) to revise certain effective dates relating to the DROP; all under certain terms and conditions.

Bill #161007 (Enacted by City Council on 12/8/16)

Amending Section 3(b) of an ordinance approved March 1, 1963, as amended, relating to agreements to administer employee retirement benefits for certain quasi-public agencies under certain terms and conditions.

The full text of these amendments, as well as the entirety of the City of Philadelphia Public Employees Retirement Code (Section 22 of the Philadelphia Code) is available on the City of Philadelphia City Council website at <http://citynet/citycouncil/index.html>.

PROFESSIONAL SERVICES

Professional consultants are retained by the Board of Pensions and Retirement to provide expertise and support necessary for the administration of the Public Employees Retirement System. A list of those firms rendering professional services to the Board is presented on Page 6.

AUDIT

The City Controller's Office, which is independent of the City of Philadelphia Administration, audits all operational transactions of the Board of Pensions and Retirement. For the Fiscal year ending June 30, 2017, the Board elected to have the annual financial audit of the Municipal Pension Fund performed by the accounting firm of CliftonLarsonAllen, LLP.

SECTION 2 – FINANCIAL SECTION

CITY OF PHILADELPHIA
STATEMENT OF FIDUCIARY NET POSITION
FOR THE PERIOD ENDING JUNE 30, 2017

ASSETS

Cash and cash equivalents		\$ 164,144,341.34
Contributions receivable from plan members		60,634,587.49
Accrued interest and other receivables		141,678,705.61
Investments, at fair value		
Equity	\$ 2,872,063,494.37	
Fixed income	1,040,781,515	
Private market	442,257,227	
Real estate	258,320,778	
Hedge funds	<u>50,277,222</u>	
Total investments		4,663,700,235.71
Collateral on loaned securities	369,181,268.00	
Add: Allowance on loaned securities	<u>42,655.87</u>	
Total collateral at FV		369,223,923.87
Total assets		<u>5,399,381,794.02</u>

Liabilities

Accrued expenses and other liabilities		156,125,700.28
Due on return of securities loaned		369,181,268.00
Total liabilities		<u>525,306,968.28</u>
NET POSITION RESTRICTED FOR PENSIONS		<u><u>\$ 4,874,074,825.74</u></u>

**CITY OF PHILADELPHIA
MUNICIPAL PENSION FUND
SUMMARY OF INVESTMENT TYPE
FYE 6/30/17**

	Cost	Market
Cash & Cash Equivalents	158,347,379.21	164,144,341.34
U.S. Government Securities	185,660,609.01	183,660,349.30
U.S. Government Agency Securities	68,308,397.22	68,382,476.85
Government Bonds (foreign)	163,268,452.38	153,513,236.33
Corporate Bonds	297,603,464.37	300,975,358.92
Equity	2,826,826,863.97	3,179,523,190.25
Limited Partnerships	647,876,360.84	574,889,181.42
Mutual Fund	51,224,067.56	51,855,770.64
Mortgage Backed Securities	115,458,711.85	113,717,302.25
Municipal Bonds	13,480,529.37	13,574,040.00
Asset Backed Securities	20,993,234.31	20,970,026.48
ETF	2,769,235.70	2,630,194.88
MISCELLANEOUS	75,965.09	9,108.39
	<hr/>	<hr/>
Total	<u><u>4,551,893,270.88</u></u>	<u><u>4,827,844,577.05</u></u>

CITY OF PHILADELPHIA
STATEMENT OF CHANGES IN PLAN NET POSITION
YEAR ENDED JUNE 30, 2017

Additions:

Contributions:

Employers	706,236,697.55	
Plan members	<u>73,607,359.26</u>	
Total contributions		779,844,056.81

Investment Income:

Interest and dividends income	108,463,191.70	
Net gain in fair value of investments	462,934,318.25	
Less: Investments expenses	<u>(8,025,241.67)</u>	
Net investment gain		563,372,268.28

Securities lending income	1,798,121.48	
Less: Securities lending expenses	<u>(299,969.69)</u>	
Net income from securities lending Activities		1,498,151.79

Miscellaneous operating revenues		<u>1,754,160.49</u>
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Total additions		1,346,468,637.37
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Deductions

Benefits payments	813,292,952.96
Refunds of members' contributions	8,202,274.51
Administrative expenses	<u>8,873,657.03</u>

Total deductions		<u>830,368,884.50</u>
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INCREASE IN NET POSITION		<u><u>516,099,752.87</u></u>
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NET POSITION HELD IN TRUST, BEGINNING OF YEAR		4,357,975,072.87
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NET POSITION HELD IN TRUST, END OF YEAR		<u><u>4,874,074,825.74</u></u>
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CITY OF PHILADELPHIA
MUNICIPAL PENSION FUND
ANALYSIS OF MEMBER'S CONTRIBUTION
FOR THE PERIOD ENDED JUNE 30, 2017

Employee Receipts by plan	Fire Division New 330	Fire Division Old & 1987 337	Police Division New 340	Police Division Old & 1987 347	Elected Officials Plan 350	Municipal Revised Plan 360	Municipal Division Plan 93 361	Municipal Division Hybrid 363	Municipal Division Hybrid-Stacked 364	Undistributed Pension Plan 390	Total
Regular Payroll Deductions (7701)	541,654.70	8,498,990.34	1,718,192.67	22,552,609.01	323,012.96	4,874,072.99	30,284,876.69	-	115,897.60	611,766.91	69,521,073.87
Direct Pension Contributions (7702)	133,357.90	261,848.27	58,228.02	244,761.99	-	401,074.92	1,891,240.79	136,600.35	17,352.70	-	3,144,464.94
Retirees' Direct Pension Contributions (7703)	526.15	174.42	101.85	3,500.17	-	-	2,242.75	-	-	-	6,545.34
Installment Penalty Deduction (7705)	-	-	-	-	-	-	320.59	-	-	-	320.59
Employees Install Pension Payments (7706)	4,459.38	214,202.94	17,681.25	201,368.91	34,362.96	22,147.76	440,331.48	-	399.84	-	934,954.52
	679,998.13	8,975,215.97	1,794,203.79	23,002,240.08	357,375.92	5,297,295.67	32,619,012.30	136,600.35	133,650.14	611,766.91	73,607,359.26

**CITY OF PHILADELPHIA
MUNICIPAL PENSION FUND
FOR THE PERIOD ENDED JUNE 30, 2017**

Receipts and Disbursement by Division

Plan and Index Code	Employee Contributions	Other Operating Revenues	Pension Benefits (includes drop payments)	Withdrawals (refunds)	Operating Expenses
Fire Division plan 1967 - 530330	684,807		87,769,938	229,450	
Fire Division plan 1987 - 530337	9,050,669	2,338	7,687,329	167,194	
Police Division plan 1967 - 530340	1,809,458		222,489,241	1,351,147	
Police Division plan 1987 - 530347	23,202,459	1,200	30,852,679	1,797,105	
Elected Officials plan 1987 - 530350	360,244		1,633,208	-	
Municipal plan 1967 - 530360	5,340,567		416,779,302	1,595,428	
Municipal Plan 1987 - 530361	31,066,819		46,209,980	3,058,342	
Municipal Division New - 530362	-		135,865	-	-
Municipal Division Hybrid - 530363	1,685,144		-	-	
Municipal Division Hybrid-Stacked P	407,193		-	3,608	
Municipal Plan 1987 - 530367	-		247,583	-	
Undistributed Pension Plan - 53039	-	1,750,622	-	-	8,873,657
TOTAL	73,607,359	1,754,160	813,805,125	8,202,275	8,873,657

Less - Unclaimed checks

512,171.88

813,292,952.96 Tied to the financial statements

**MUNICIPAL PENSION FUND
FISCAL 2017**

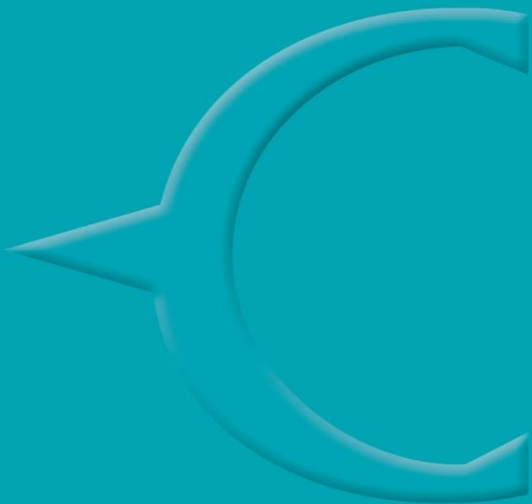
Cash and Accrued Contributions from the City - Fiscal 2017*

Category	Amount	
Cash received	\$ 560,966,921.00	
Accrued 6/30/17	<u>49,177,417.00</u>	
		610,144,338.00
 Cash and Accrued Contributions from Quasi-Agencies - Fiscal 2017		
Cash received	18,900,630.17	
Accrued 6/30/2017	<u>8,538,650.38</u>	
		<u>27,439,280.55</u>
Total City & Quasi Agencies		<u>637,583,618.55</u>
Contribution from the Commonwealth		68,653,079.00
Total Contribution requirement		<u><u>\$ 706,236,697.55</u></u>

* Analysis of Contributions from the City - Fiscal 2017

Date	Amount
12/21/2016	\$ 54,435,000.00
3/24/2017	506,531,921.00
10/20/2017	<u>49,177,417.00</u>
	<u>\$ 610,144,338.00</u>

SECTION 3 -ACTUARIAL VALUATION



City of Philadelphia Municipal Retirement System

Actuarial Valuation Report as of July 1, 2017

Produced by Cheiron

March 2018

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LETTER OF TRANSMITTAL

March 28, 2018

City of Philadelphia Municipal Retirement System
Two Penn Center Plaza – 16th Floor
Philadelphia, Pennsylvania 19102-1721

Dear Board Members:

At your request, we have performed the July 1, 2017 Actuarial Valuation of the City of Philadelphia Municipal Retirement System (the System).

In preparing our report, we relied on information (some oral and some written) supplied by the System's staff. This information includes, but is not limited to, plan provisions, employee data, and financial information. We performed an informal examination of the obvious characteristics of the data for reasonableness and consistency in accordance with Actuarial Standard of Practice No. 23. The results of this report are only applicable to the System's contribution for Fiscal Year Ending 2019. Future results may differ significantly from the current results presented in this report due to such factors as the following: plan experience differing from that anticipated by the assumptions; changes in assumptions; and changes in plan provisions or applicable law.

To the best of our knowledge, this report has been prepared in accordance with generally recognized and accepted actuarial principles and practices which are consistent with the Code of Professional Conduct and applicable Actuarial Standards of Practice set out by the Actuarial Standards Board. Furthermore, as credentialed actuaries we meet the Qualification Standards, as defined by the American Academy of Actuaries, to render the opinion contained in this report. This report does not address any contractual or legal issues. We are not attorneys, and our firm does not provide any legal services or advice.

This actuarial valuation report was prepared exclusively for the City of Philadelphia Municipal Retirement System for the purposes described herein and for the plan auditor in completing an audit related to the matters herein. Other users of this report are not intended users as defined in the Actuarial Standards of Practice, and Cheiron assumes no duty or liability to such other users.

Finally, in preparation of this report we have accepted the assumptions and methodologies as adopted by the Board of Pensions and Retirement for the City of Philadelphia Municipal Retirement System.

Sincerely,
Cheiron



Kenneth A. Kent, FSA, FCA, MAAA, EA
Principal Consulting Actuary



Anu Patel, FSA, MAAA, EA
Principal Consulting Actuary

**CITY OF PHILADELPHIA MUNICIPAL RETIREMENT SYSTEM
JULY 1, 2017 ACTUARIAL VALUATION**

SECTION I – BOARD SUMMARY

The primary purpose of the actuarial valuation and this report is to disclose the following as of the valuation date:

- The financial condition of the City of Philadelphia Municipal Retirement System (the System),
- Past and expected future trends and risks to the Retirement System’s financial condition,
- The City’s Minimum Municipal Obligation (MMO) representing the required contribution in accordance with Act 205 of Pennsylvania Law for Fiscal Year End (FYE) 2019,
- The Revenue Recognition Policy (RRP) contribution amount requested by the City, and
- The Retirement Board’s Funding Policy recommended City contribution.

Cheiron has issued a separate report containing the information required by the Governmental Accounting Standards Board (GASB) and therefore that accounting information is not included in this valuation report.

In this Section, we present a summary of the principal valuation results. This includes the basis upon which the July 1, 2017 valuation was completed and an examination of the current financial condition of the System. In addition, we present a review of the key historical trends followed by the System’s projected financial outlook.

**CITY OF PHILADELPHIA MUNICIPAL RETIREMENT SYSTEM
JULY 1, 2017 ACTUARIAL VALUATION**

SECTION I – BOARD SUMMARY

A. Valuation Basis

The June 30, 2017 valuation results are based on the same actuarial methods and assumptions as used in the June 30, 2016 valuation except for the decrease in interest rate from 7.70% to 7.65% as of July 1, 2017.

The Pension Award between the Fraternal Order of Police Lodge #5 and City of Philadelphia dated August 15, 2017 made the following changes to member contributions to Police Officer plan members:

- Member contributions for current Police Officers in Plan 87 and Plan ‘10 were increased by 0.92% effective July 1, 2017 and an additional 0.92% effective July 1, 2018.
- For new Police Officers hired or rehired on or after July 1, 2017 member contributions rate shall be increased by 2.5% over the rate which would otherwise be in effect as of July 1, 2017.
- No changes in member contributions will be made for Police Officers in Plan 67 Police.

There are three sources of anticipated additional revenue that will be received by the System – 1) a portion of the sales tax revenue according to the State Legislation, 2) additional tiered member contributions based on salary level for current and future DC #33 members and 3) additional member contributions for current and future members in Plan 87 Police. Typically, as additional contributions are received, the following years’ MMOs are reduced as a function of the additional assets. However, the objective is for these additional revenue sources to be specifically dedicated toward paying down the unfunded liability and not to reduce future costs for the City. Under the **Revenue Recognition Policy (RRP)** the additional revenue is tracked and accumulated in a notional account which is then deducted from the Actuarial Asset Value to determine the contribution under this policy resulting in a higher contribution than the Minimum Municipal Obligation (MMO). These amounts will be paid in addition to what the MMO would be without the additional assets attributable to the sales tax and tiered member contributions.

At the same time we calculate the MMO for state reporting purposes and for Government Accounting Standards purpose including all assets.

For a detailed description of all methods and assumptions used, refer to Appendix C of this report.

This report was prepared using census data and financial information as of July 1, 2017 and does not reflect any subsequent changes in the membership or the assets.

Below we highlight significant results of this valuation. Table I-1 summarizes these results:

- **Financial Performance:** The return on market value of assets at 13.08% for the year ending June 30, 2017 was higher than expected when benchmarked against the assumed 7.70% return rate. For funding purposes the System applies an asset smoothing method to determine the Actuarial Value of Assets which phases in actuarial investment gains and losses over ten years. On an actuarial asset value basis the return as of June 30, 2017 was 4.40% resulting in an experience loss when compared to the 7.70% assumption.

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- The smoothing method also limits the actuarial asset method to not be greater than 120% nor less than 80% of the underlying market value of assets. The ratio of actuarial assets to market assets decreased from 113.5% in the prior year to 104.8% for the current year.
- ***Pension Adjustment Fund (PAF):*** As defined in the Philadelphia Code the PAF provides for additional benefits to current retirees through the use of excess earnings. Excess earnings are defined as returns in excess of the assumed return rate plus 1%. The asset return for the adjusted market value which is based on five-year smoothing of asset gains and losses was 6.28%. Because the return is below 8.70% (the assumed prior year rate of return of 7.70% plus 1.00%), there are no additional amounts transferred into the PAF as of June 30, 2017.
- ***Unfunded Actuarial Liability (UAL):*** The UAL is the excess of the System’s actuarial liability (AL) over the actuarial value of assets (AVA). The UAL increased from \$6.089 billion as of July 1, 2016 to **\$6.167 billion as of July 1, 2017** reflecting the effect of asset and liability losses from July 1, 2016 through June 30, 2017 as well as the decrease in discount rate as of July 1, 2017.
 - The UAL increase of \$78.3 million is comprised of a \$23.9 million liability loss attributable to losses from new entrants with past service, salary growth higher than expected and mortality experience on retirees plus \$152.0 million asset loss. There was an increase in UAL of \$52.4 million due to the decrease in interest rate. These values are offset by contributions towards paying down the unfunded, differences in benefit accruals and payments and interest on payment timing of \$150.0 million.
- ***Funding Ratio:*** This is the ratio of the System’s AVA to AL. The funding ratio increased from 44.8% as of July 1, 2016 to **45.3% as of July 1, 2017** mainly due to underlying growth in assets and slower liability growth. While this ratio may appear to show slow progress in funding, the decrease in the assumed rate of return represents improvement of System’s risk profile improving the likelihood of achieving this assumption in the future. The funding ratio on market assets to liability basis increased from 39.5% to 43.2%.
- ***Plan Changes:*** The change in plan provisions for increased member contributions for Police Officers impact future costs and do not have an impact on the AVA or AL as of July 1, 2017.
- ***Minimum Municipal Obligation (MMO):*** The MMO is the required minimum amount the City must contribute under Pennsylvania State Law. The MMO increased from \$661.3 million for FYE 2018 to **\$668.3 million for FYE 2019**.
- ***Revenue Recognition Policy (RRP):*** The contribution based on the RRP increased from \$662.1 million for FYE 2018 to **\$680.8 million for FYE 2019**. The balance of the notional account removed from the assets in calculating this contribution increased from \$9.5 million as of July 1, 2016 to \$30.0 million as of July 1, 2017.

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- **Contribution under the City’s Funding Policy:** The beginning-of-year contribution under the City’s Funding Policy increased from \$1,049.4 million for FYE 2018 based upon actual FYE 2017 payroll to an estimated **\$1,051.8 million for FYE 2019**.

Table I-1 summarizes the comparative UAL and fiscal year funding amounts discussed above.

Table I-1 Key Results (\$ thousands)			
Valuation Date	7/1/2017	7/1/2016	
Unfunded Actuarial Liability	\$ 6,167,057	\$ 6,088,778	
Funding Ratio	45.3%	44.8%	
	Fiscal Year 2019	Fiscal Year 2018	
Minimum Municipal Obligation	\$ 668,281	\$ 661,257	
Revenue Recognition Policy Contribution	\$ 680,808	\$ 662,139	
City's Funding Policy Contribution*	\$ 1,051,783	\$ 1,049,407	

*The City’s funding policy contribution for FYE 2018 was updated based upon the actual payroll of \$1,744.7 million (provided as pay rates in the data) as of July 1, 2017. In the July 1, 2016 actuarial valuation report, the estimated FYE 2018 payroll was \$1,731.9 million based on July 1, 2016 pay rates and increased with the payroll assumption.

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B. Current Financial Condition

On the following pages, we summarize the key results of the July 1, 2017 valuation and how they compare to the results from the July 1, 2016 valuation.

1. City Membership:

As shown in Table I-2 below, total membership in the Retirement System increased by 0.3% from 2016 to 2017.

Table I-2 Membership Total				
	July 1, 2017	July 1, 2016	% Change	
Actives	28,615	28,308	1.1%	
Terminated Vesteds	1,157	1,248	-7.3%	
Disabled	3,942	4,005	-1.6%	
Retirees	22,288	22,412	-0.6%	
Beneficiaries	8,552	8,567	-0.2%	
DROP	1,767	1,614	9.5%	
Total City Members	66,321	66,154	0.3%	
Annual Salaries	\$ 1,744,728,288	\$ 1,676,548,962	4.1%	
Average Salary per Active Member	\$ 60,973	\$ 59,225	3.0%	
Annual Retirement Allowances	\$ 750,204,529	\$ 741,828,339	1.1%	
Average Retirement Allowance	\$ 21,569	\$ 21,205	1.7%	

The active participant population increased by 1.1% during the 2016-2017 plan year. Deferred Retirement Option Plan (DROP) participants increased 9.5% from 2016 to 2017 as more members enrolled in DROP than retired from DROP. The average salary per active member increased by 3.0% during the plan year. The result of higher active membership paired with the salary growth produced a total payroll growth higher than expected of 4.1% versus the expected 3.3% payroll growth assumption.

Annual retirement allowances increased by 1.1% and reflect a 1.7% increase in the average benefits provided. The total number of participants in pay status decreased 0.6%.

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2. City Assets and Liabilities:

Table I-3 presents a comparison between the July 1, 2017 and July 1, 2016 system assets, liabilities, UAL, and funding ratios. The Funding Ratio increased from 44.8% as of July 1, 2016 to **45.3%** as of July 1, 2017 despite the asset losses, liability losses, and decrease in interest rate assumption. Prior to the interest rate assumption changes the funded ratio would have been 45.5%.

Table I-3 Assets and Liabilities (\$ thousands)				
	July 1, 2017	July 1, 2016	% Change	
Actuarial Liabilities by Membership:				
Actives	\$ 3,900,095	\$ 3,759,083	3.8%	
Terminated Vesteds	111,367	120,291	-7.4%	
Disabled	758,314	750,685	1.0%	
Retirees	5,038,627	5,029,339	0.2%	
Beneficiaries	651,804	635,323	2.6%	
DROP	807,195	722,743	11.7%	
Non-Vested Refunds	8,274	7,334	12.8%	
Total Actuarial Liability (AL)	\$ 11,275,676	\$ 11,024,798	2.3%	
Market Value of Assets (MVA net of PAF)*	\$ 4,872,977	\$ 4,350,752	12.0%	
Actuarial Value of Assets (AVA net of PAF)*	\$ 5,108,619	\$ 4,936,020	3.5%	
Actuarial Assets minus Market Assets	\$ 235,642	\$ 585,267	-59.7%	
Unfunded Actuarial Liability	\$ 6,167,057	\$ 6,088,778	1.3%	
Funding Ratio (AVA ÷ AL)	45.3%	44.8%	0.5%	
Funding Ratio (MVA ÷ AL)	43.2%	39.5%	3.7%	

*The PAF is available for distribution under title §22-311 of the Philadelphia Code. In general, the PAF provides for enhanced benefit distribution to retirees and beneficiaries through the use of excess earnings. For more details on the PAF, see Section II – E

The market asset value average return was 13.08% compared to the 7.70% assumption for the previous year. For the actuarial value of assets, the investment gains and losses are smoothed over future years, which yielded a rate of return of 4.40%.

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3. Components of UAL Change between July 1, 2016 and July 1, 2017:

The Retirement System’s unfunded actuarial liability increased by \$78.3 million, from \$6,088.8 million as of July 1, 2016 to \$6,167.1 million as of July 1, 2017. Table I-4 presents the specific components of this change in the UAL.

The System experienced a \$152.0 million asset loss based upon the actuarial value of assets and a \$23.9 million liability loss which is attributable to demographic experience. Actual FYE 2017 contributions when compared to the expected MMO created a net gain of \$9.3 million due to higher than expected contributions and timing of contributions. **The higher contributions under RRP in comparison to MMO resulted in a gain of \$19.2 million.** There was a \$19.1 million loss due to the one year deferral of gains and losses under the MMO funding requirements. When these changes are compared to the expected pay down of the UAL as part of the MMO there is a net increase in the UAL of \$78.3 million over what is expected as of July 1, 2017.

Table I-4	
Change in Unfunded Actuarial Liability (UAL)	
(\$ thousands)	
Experience	
1. UAL change due to asset (gain)/loss*	\$ 152,017.7
2. UAL change due to overall liability (gain)/loss	\$ 23,874.0
Contributions	
3. UAL change due to difference in benefit accruals, actual contributions and timing	\$ (9,301.2)
4. UAL change due to one-year delay in MMO contributions	\$ 19,811.1
5. UAL change due to RRP contributions in excess of the MMO contributions	\$ (19,177.4)
Total (Gain)/Loss Amortization Base	
6. Total UAL change due to gains and losses: sum 1 through 5	\$ 167,224.2
Plan Changes	
7. UAL change due to plan changes	\$ 0
Assumption Changes	
8. UAL change due to assumption changes	\$ 52,433.0
Total	
9. Total net overall change: 6 + 7 + 8	\$ 219,657.2
10. UAL change due to benefit accruals and payments, contributions, and interest	<u>(141,377.9)</u>
11. Net increase/(decrease) in UAL: 9 + 10	<u>\$ 78,279.3</u>

* Includes loss due to PAF transfer, if applicable

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4. Contributions:

Table I-5 below summarizes the City contribution amounts. The **Minimum Municipal Obligation** for FYE 2019 measured as of the beginning of the year decreased by 1.10% of payroll, from 38.18% to 37.08%. In dollar terms, the required beginning of year contribution increased from \$661.3 million to \$668.3 million, a \$7.0 million increase. Though the MMO increased in dollar amounts, it decreased as a percent of pay because total payroll increased more than the increase in MMO over the last year. This is because the amortization of experience losses and assumption changes had less of a relative impact than the increase in active members and salary increases coupled with an increase in employee contribution rates. So while growth in active membership will result in the dollar normal cost increasing, the new employee contribution rates and higher payroll over which the unfunded liability is paid down as a level payment amount will result in lower costs as a percent of pay.

The contribution under the **Revenue Recognition Policy** decreased by 0.46% as a percent of payroll, from 38.23% to 37.77% for FYE 2019. The contribution in dollar amount increased from \$662.1 million in the prior year to \$680.8 million for FYE 2019. The RRP contribution is higher than the MMO due to excluding accumulated sales tax revenue and additional member contributions received, from the assets when determining the RRP contributions.

For Fiscal Year 2019, the **City Funding Policy** contributions decreased by 1.79% of payroll, from 60.15% to 58.36%. In dollar terms, the contributions under the City's Funding Policy increased from \$1,049.4 million to \$1,051.8 million, a \$2.4 million increase. Along with changes in assumptions and experience, the increase in the funding policy is attributable to experience losses for each year the actual City contributions are less than the policy amount. The FYE 2019 contributions under the City's Funding Policy will be updated next year based on actual payroll. All contributions for the City's Funding Policy are provided as of the beginning of the year.

The FYE 2018 contribution amounts were updated from last year's reporting to reflect the adoption of the minimum benefit of \$1,000 per month for Police and Fire retirees as an inactive benefit change as of July 1, 2016. As an inactive plan amendment, the increase in liabilities is amortized over 1 year in accordance with Act 205.

In Section IV of this report, we provide more detail on the development of these contributions.

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**Table I-5
Contributions
(\$ thousands)**

Fiscal Year Ending in Year:	2019	% of Pay	2018	% of Pay
Minimum Municipal Obligation ¹				
Estimated FY Payroll	\$ 1,802,304		\$ 1,731,875	
Normal Cost (with Expenses)	\$ 170,096	9.44%	\$ 164,427	9.49%
Regular Employee Contributions	(74,053)	4.11%	(69,756)	4.03%
Extra Employee Contributions for Funding ³	<u>(9,740)</u>	0.54%	<u>(0)</u>	0.00%
City Normal Cost	\$ 86,303	4.79%	\$ 94,671	5.47%
Amortization Payment	<u>581,978</u>	32.29%	<u>566,586</u>	32.72%
Minimum Municipal Obligation	\$ 668,281	37.08%	\$ 661,257	38.18%
Revenue Recognition Policy ²				
Estimated FY Payroll	\$ 1,802,304		\$ 1,731,875	
Normal Cost (with Expenses)	\$ 170,096	9.44%	\$ 164,427	9.49%
Regular Employee Contributions	(74,053)	4.11%	(69,756)	4.03%
Extra Employee Contributions for Funding ³	<u>(0)</u>	0.00%	<u>(0)</u>	0.00%
City Normal Cost	\$ 96,043	5.33%	\$ 94,671	5.47%
Amortization Payment	<u>584,765</u>	32.45%	<u>567,468</u>	32.77%
Revenue Recognition Policy	\$ 680,808	37.77%	\$ 662,139	38.23%
City's Funding Policy ⁴				
Estimated FY Payroll	\$ 1,802,304		\$ 1,744,728 ⁵	
Normal Cost (with Expenses)	\$ 170,096	9.44%	\$ 163,369	9.36%
Regular Employee Contributions	(74,053)	4.11%	(70,273)	4.03%
Extra Employee Contributions for Funding ³	<u>(9,740)</u>	0.54%	<u>(0)</u>	0.00%
City Normal Cost	\$ 86,303	4.79%	\$ 93,095	5.34%
Amortization Payment	<u>965,480</u>	53.57%	<u>956,312</u>	54.81%
City's Funding Policy	\$ 1,051,783	58.36%	\$ 1,049,407	60.15%

¹ The MMO does not include Quasi-Agency contributions.

² Revenue Recognition Policy (RRP) is based on the calculation of MMO without including accumulated sales tax revenue and additional member contribution amounts received.

³ Additional tier member contributions under Plan 16 and the 2017 Police Arbitration for Plan 87 are specifically dedicated to paying down the unfunded liability and are recognized as employee contributions under MMO and Funding Policy but not under the RRP contribution.

⁴ Assuming beginning-of-year payment.

⁵ FY 2018 Payroll for the City's Funding Policy is based upon the 7/1/2017 pay rates and will be finalized when the FYE 2018 payroll is available. All other payroll is estimated based upon the prior year's data used for the actuarial valuation.

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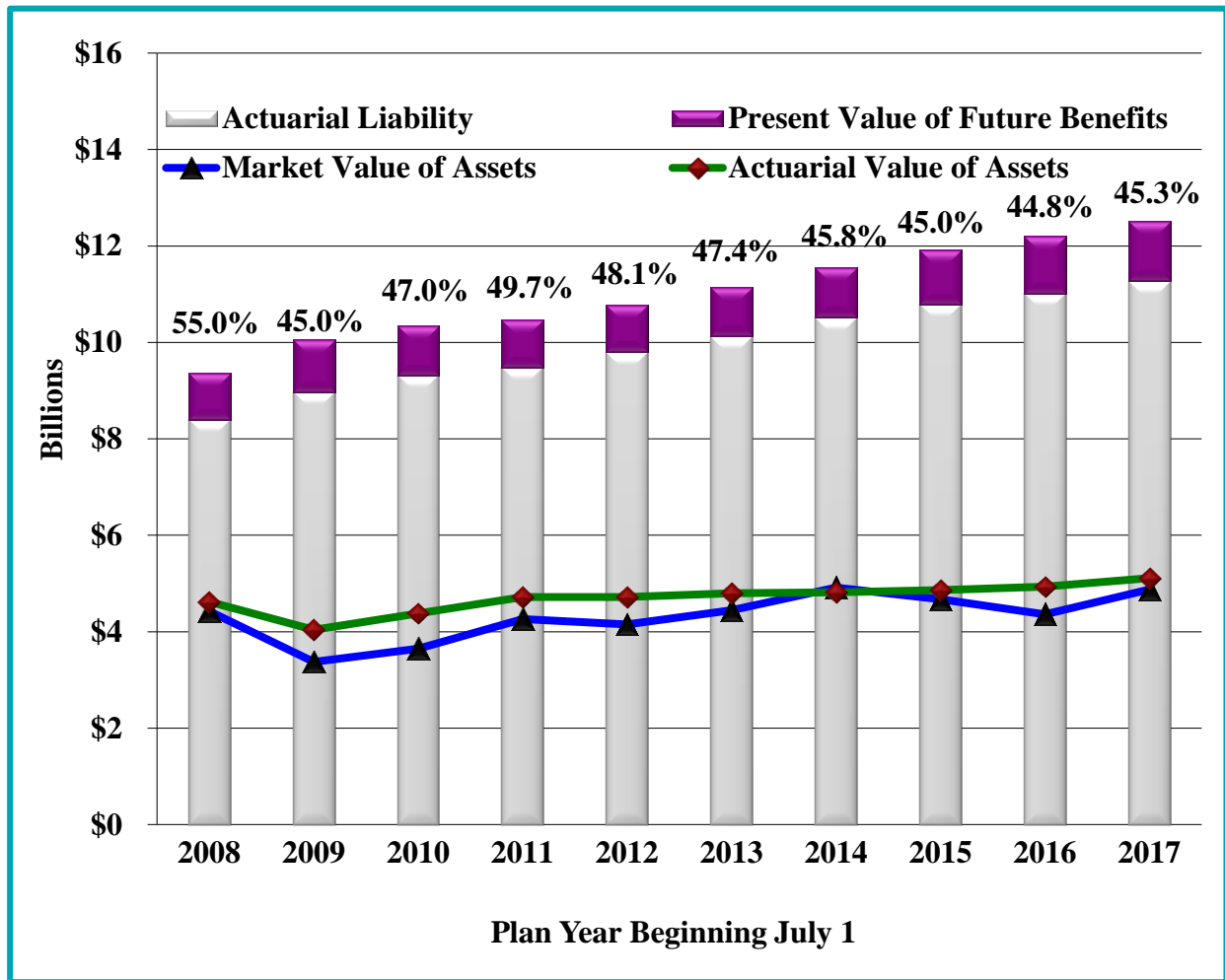
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C. Historical Trends

Although most of the attention given to the valuation reflects the most recently computed unfunded actuarial liability, funding ratio, and contribution amounts, it is important to remember that each valuation is merely a snapshot of the long-term progress of a pension fund. It is equally important to judge a current year’s valuation result relative to historical trends, as well as trends expected into the future.

In the chart below, we present the historical trends for the market and actuarial value of assets compared to the actuarial liabilities and present value of future benefits; we also show the progress of the Retirement System’s funding ratios on an actuarial value of asset basis (provided above each bar) since 2008.

City of Philadelphia Assets* and Liabilities – 2008 to 2017



* Market value of assets includes the PAF, which is not available for funding purposes.

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The System’s funding ratio has declined significantly since 2008. In 2009, the funding ratio declined by 10% due to the investment losses during the year 2009 and the change in the actuarial liability interest rate assumption. In particular, the assumed interest rate assumption has been decreased during this period from 8.75% to 7.65%. Besides the regular reductions of the interest rate assumption during this period the changes in the ratio are also due to the volatility of the markets. In 2017, the funding ratio increased by 0.5%.

This historic trend emphasizing the relatively low funded status highlights the potential risk of running out of assets to pay benefits. However, as long as the City adheres to the continued policy of contributing at least the Minimum Municipal Obligation this risk will be avoided.

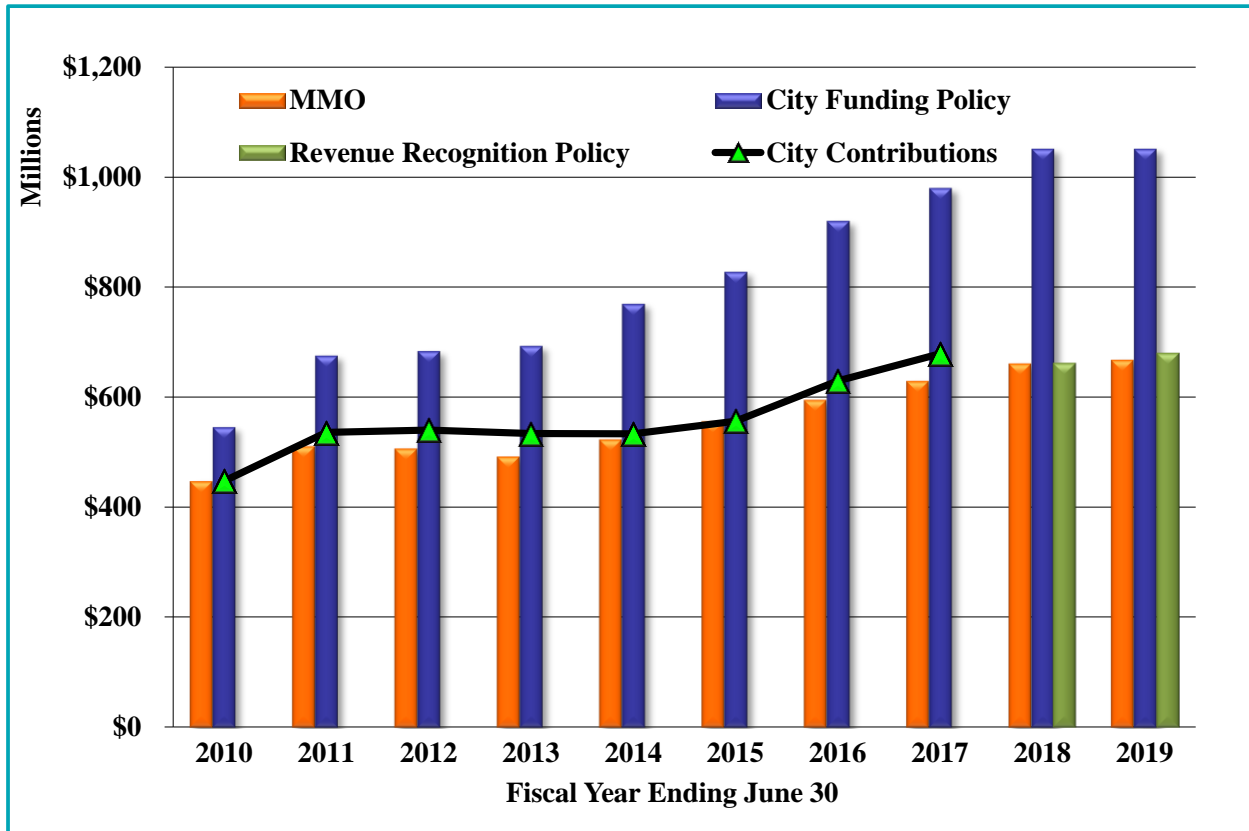
Another observation relevant to this System is that assets have remained relatively flat over the projection period. This is a function of the negative cash flow as contributions and investment income have to keep pace with benefit payouts and expenses before the absolute value of assets can grow. This is demonstrated later in the summary section.

In the chart on the next page, we present historical trends for the Minimum Municipal Obligation (MMO), the contributions under the City’s Funding Policy, the Revenue Recognition Policy (RRP) beginning in 2018, and the actual City contributions made for fiscal years since 2010. Because there is a two-year lag in the determination of the City Funding Policy, RRP and MMO requirements, we show the contributions to date and the estimated amounts for fiscal years 2018 and 2019. The FYE 2010 and 2011 City contributions include the \$150 million and \$80 million deferred contributions which have been fully paid during FYE 2013. The deferred contributions are subsequently included in the asset value as if they were made when due in accordance with special funding provisions under Act 205, and treated as if they are short-term investments and therefore not reflected in the actual City contributions received during FYE 2013. The City contributions include sales tax revenue amounts contributed to the System by the City. FYE 2017 was the second year sales tax revenue was received in the amount of \$19.2 million.

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City of Philadelphia Contributions for Fiscal Years 2010-2019



The key trend illustrated in this chart is the continuous growth in all measures since FYE 2010 due in part to ten year smoothing of investment losses, assumption changes and the City’s decision to fund based on the MMO instead of the funding policy. This has slowed the funding progress in maintaining the funding policy and has resulted in losses under the funding policy due to contribution amounts being lower than what the policy calls for. These losses result in the increasing gap between the funding policy amount and the MMO. In addition, the MMO and City’s Funding Policy amounts for FYE 2011 increased significantly mainly due to the investment losses and changes in assumptions.

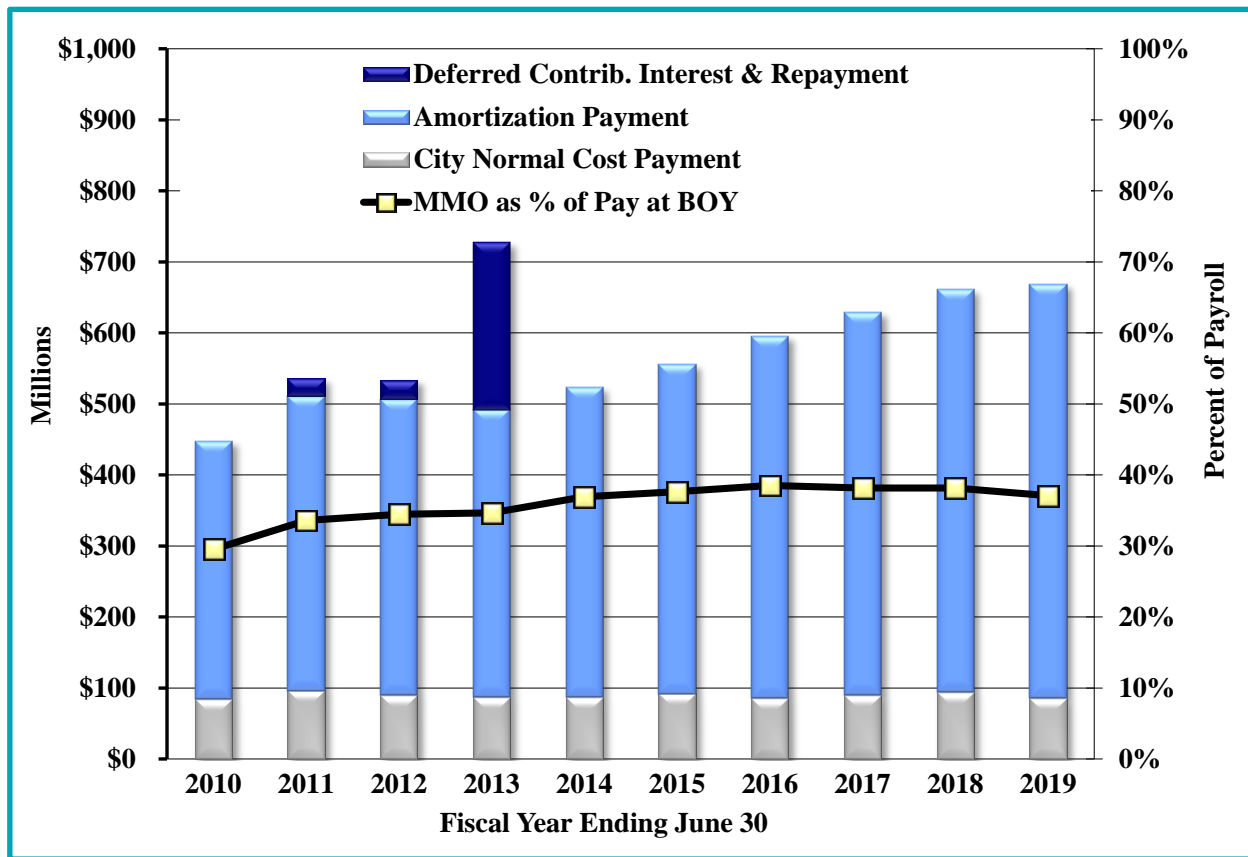
The RRP is shown in the green bar for FYE 2018 and 2019. In FYE 2019, the RRP is approximately \$12.5 million higher than the MMO. In future years, as the tax revenue and tiered and additional Police Officer member contributions paid in excess of the MMO accumulate, the gap between the MMO and the RRP will continue to grow.

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The chart below shows the historical amortization payments, City normal cost payments, and the deferred contribution interest and principal repayment. Also shown is the beginning-of-year MMO (normal cost plus amortization payments only, not including the deferred contributions) as a percentage of payroll based on the values provided in the legend on the right versus the line graph. For example in 2018 the City cost is expected to be about 38% and 2019 it is expected to be about 37%.

MMO Contributions by Source for Fiscal Years 2010-2019



The chart illustrates that the City normal cost payment increased gradually through FYE 2018 and decreased slightly in 2019 due to increased member contributions. The amortization payment to pay off the unfunded actuarial liability has increased from \$363 million for FYE 2010 to just under \$582 million for FYE 2019. Since FYE 2013 the amortization amounts have increased steadily due to the changes in assumptions that have had a net result of increasing liabilities and continued recognition of the 2008 investment losses.

The total City cost (normal cost plus amortization payments) as a percentage of payroll (as shown by the line and on the right hand axis) was about 30% in 2010, and then increased as the investment losses of FYE 2008 and 2009 get recognized over time to the current level of approximately 37% in FYE 2019.

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D. Projected Financial Trends

Our analysis of the City of Philadelphia Municipal Retirement System’s projected financial trends is an important part of this valuation. In this section, we present our assessment of the implications of the July 1, 2017 valuation results on the future outlook in terms of benefit security (assets over liabilities) and the City’s expected cost progression.

In the charts that follow, we project the Retirement System’s assets and liabilities, and the City’s contributions as a percent of payroll. Unless otherwise noted we assume the RRP contributions are made each year. Our illustrations assume the provisions of Act 205 as amended by Act 44 remain in force during the projection period. The projections are based on the assumptions of July 1, 2017 and do not reflect any assumption changes resulting from the experience study.

These projections assume that new employees who have the option to elect out of Plan 10 and into Plan 87 will choose to participate in Plan 87 and pay higher member contributions. All projections also reflect future new hires in DC #33 who will participate in the Stacked Hybrid Plan - Plan 16. Stacked plan benefits and contributions are based on pay up to a cap of \$50,000 resulting in lower future costs for this group.

All projections include expected additional funds from sales tax revenue and additional member contributions for current and future DC #33 members and 1987 Police Officer plan members. The amounts of expected sales tax provided to us by the City (as shown in the table below) reflect a reduction in the sales tax revenue by \$15 million in first years to provide the resources for debt financing.

The treatment of the sales tax and tiered and additional member contributions varies based on whether or not these amounts are used to reduce future City costs. Typically, as additional contributions are received, the following years MMOs are reduced as a function of the additional assets. However, the benefit from the sales tax revenue and additional member contributions are dedicated to fund the unfunded liability over reducing the City’s contribution obligation such that this revenue is in addition to what the MMO would be without these additional assets. Charts shown based on the RRP funding methodology set these assets aside in a notional account which is deducted from actuarial asset value in determining the contributions under the RRP. We show three sets of projections for contributions based on MMO calculated in accordance with Act 205 compared to RRP and finally the Funding Policy.

The following chart reflects the expected projected sales tax revenue provided to us for our analysis as of March 9, 2018.

Fiscal Year Ending	2018	2019	2020	2021	2022
Expected Sales Tax	\$ 27,226,166	\$ 48,262,124	\$ 54,181,070	\$ 59,697,603	\$ 64,994,484
Fiscal Year Ending	2023	2024	2025	2026	2027
Expected Sales Tax	\$ 70,317,157	\$ 75,075,086	\$ 79,951,963	\$ 84,950,762	\$ 90,074,531
Fiscal Year Ending	2028	2029	2030	2031	2032
Expected Sales Tax	\$ 95,326,394	\$ 100,709,554	\$ 106,227,293	\$ 111,882,976	\$ 117,680,050
Fiscal Year Ending	2033	2034	2035	2036	2037
Expected Sales Tax	\$ 123,622,051	\$ 129,712,602	\$ 135,955,418	\$ 142,354,303	\$ 148,913,161

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The projections are provided on two different asset return assumption bases:

- 1) Assuming the new 7.65% return assumption each and every year, and
- 2) Assuming returns in the table below. These are rates of return which vary each year, but over the projection period equal on average the assumed 7.65% return. We do this because the City’s return will never be level from year to year and the System must anticipate the implications of asset return volatility to the funded status and contribution requirements. These rates are shown for illustration purposes only and are not a prediction of actual returns.

Fiscal Year Beginning	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Return	19.0%	9.1%	12.5%	-14.5%	-3.5%	12.8%	22.25%	18.1%	0.0%	10.75%
Fiscal Year Beginning	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
Return	-21%	22.5%	-1.0%	17.25%	16.25%	13.25%	4.2%	6.5%	8.5%	7.5%

In reviewing each of these projections, it is the future trends, not necessarily the actual values that are important to observe in consideration of the risks of the System and the potential volatility of future funding ratios and City contribution levels.

We note that when the System becomes 70% funded or greater, the unfunded liability may be amortized on a rolling 10-year basis. We have not shown the implications of this alternative funding method provided for in Act 205 because it would effectively extend the period to achieve full funding many years beyond the current projection period illustrated.

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Projection Set 1: Assets and Liabilities

The two charts on the following page show asset measures (green and blue lines) compared to liabilities (grey bars). At the top of each chart is the progression of the System's funding ratio which compares the actuarial value of assets (blue lines) to the actuarial liability (grey bars). If the City was to contribute based on the MMO as defined under Act 205 the System is expected to reach 80% in 2031 and 100% funded by 2037. The projections demonstrate a number of issues. Funding at the MMO level with the current ten-year asset smoothing method and the 2009, 30-year fresh start amortization method on a level dollar basis, would result in a relatively slow improvement of funding while the full impact of the 2008/2009 investment losses are fully realized. It also reflects the additional interest rate reduction from 7.70% to 7.65% effective July 1, 2017.

However, on the basis of the City contributions under the RRP the System is expected to reach 80% in 2029 and 100% funded by 2034 which is also demonstrated below. The additional revenue received from sales tax and increased member contributions paid over and above the MMO results in full funding 3 years sooner.

The alternative return expectations reveal insight from these two charts as to how varying investment returns impact the System's funding ratio.

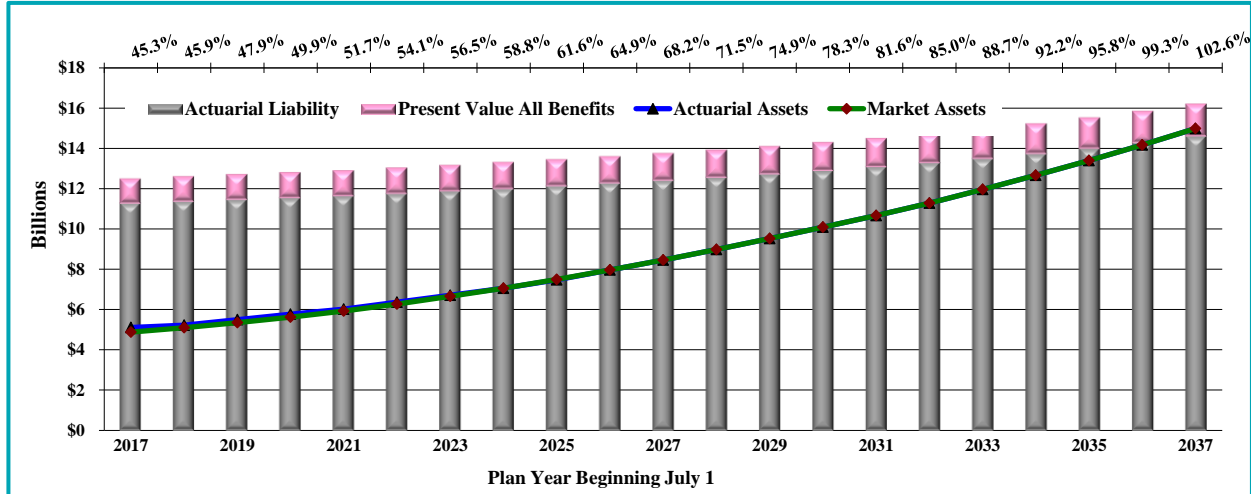
In both projections, the 10-year asset smoothing method has significant influence on the smoothing of assets against market value volatility as well as the relatively slow funding progress. What should be apparent is while achieving the same average return over the projection period, in Chart 2A we demonstrate when returns actually vary the funded ratio can be below the projection of consistent 7.65% returns each year and may not achieve full funding during this same projection period – this demonstrates the implications of negative cash flow.

When a mature system pays out more than it receives in a year and returns are below the assumption, the assets that get paid out are no longer in the system during subsequent years of market recovery. So a system with significant negative cash flow coupled with investment return volatility will grow at a slower rate than the investment return assumption.

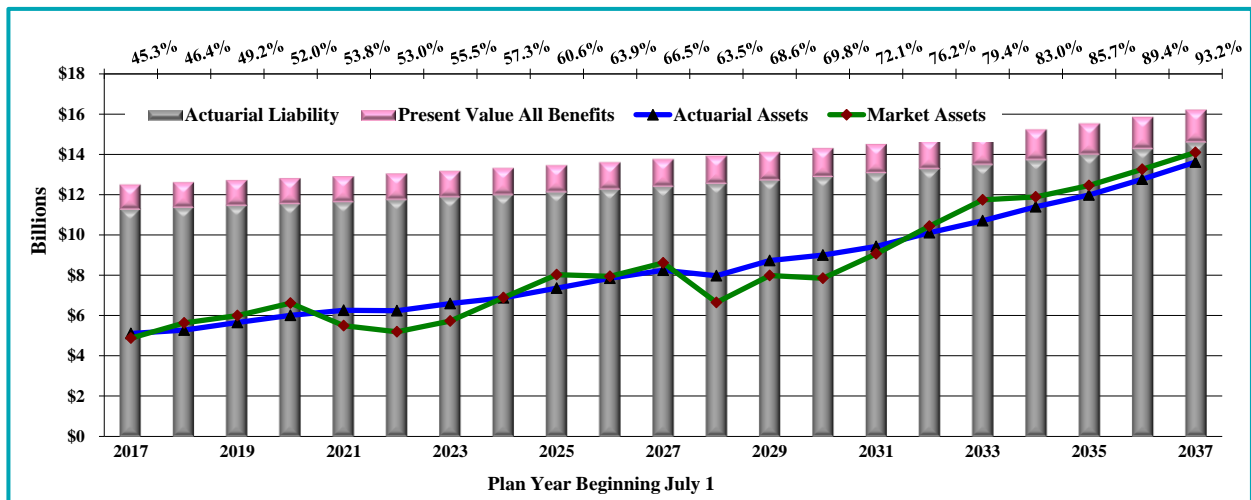
**CITY OF PHILADELPHIA MUNICIPAL RETIREMENT SYSTEM
JULY 1, 2017 ACTUARIAL VALUATION**

SECTION I – BOARD SUMMARY

**Chart 1A: Projection of Assets and Liabilities, 7.65% return each year and
City makes contributions based on MMO**



**Chart 2A: Projection of Assets and Liabilities, varying returns averaging 7.65% and
City makes contributions based on MMO**



It is also important to consider the fact that as long as the System is significantly underfunded, the financial burden on the City will remain relatively high, and the only reason both of these projections show gradual improvement is because the contributions will be adjusted to cover any cost volatility to comply with MMO requirements under Act 205.

However, the impact of these issues is mitigated **under the RRP** by the additional contributions from sales tax revenue, tiered and additional Police Officer member contributions which are anticipated to be contributed above the City’s MMO resulting in a faster improvement in funded status. This is illustrated in the charts for Revenue Recognition Policy where the additional contributions accelerate the year the System is expected to reach 100% funding from the year 2037 to 2034.

**CITY OF PHILADELPHIA MUNICIPAL RETIREMENT SYSTEM
JULY 1, 2017 ACTUARIAL VALUATION**

SECTION I – BOARD SUMMARY

Chart 3A: Projection of Assets and Liabilities, 7.65% return each year and City makes contributions based on Revenue Recognition Policy

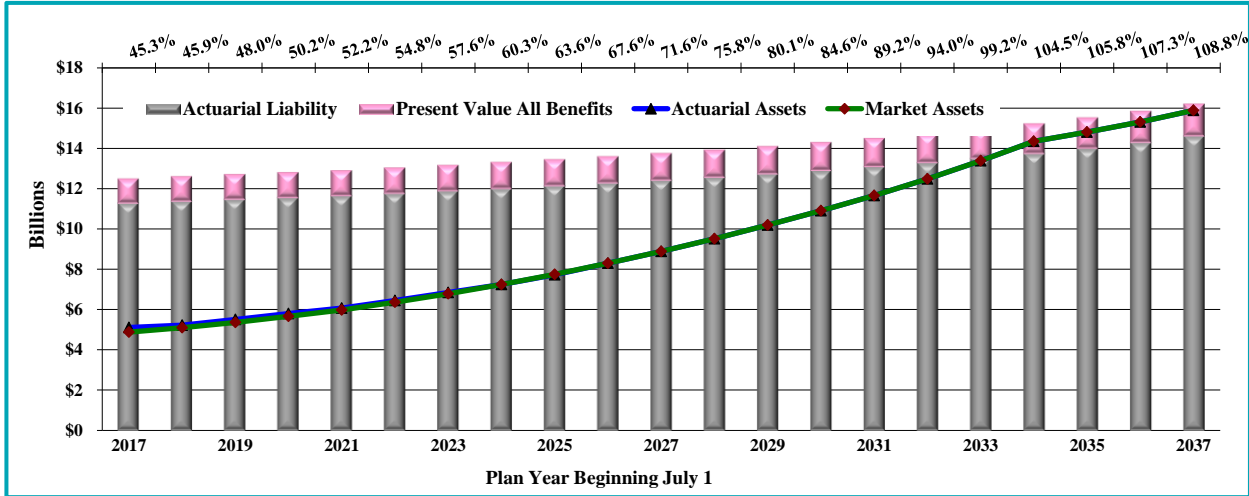


Chart 3A illustrates the impact on the funded status when the additional revenue from sales tax and additional member contributions is specifically used to pay down the unfunded liability under the Revenue Recognition Policy as opposed to reducing future costs. As you can see, while the System will be 80% funded by 2029 and 100% funded by 2034, three years earlier than under the MMO projections. By the end of the projection period the System is expected to be funded at 108.8% compared to 102.6% in chart 1A.

Chart 4A: Projection of Assets and Liabilities, varying returns averaging 7.65% and City makes contributions based on Revenue Recognition Policy

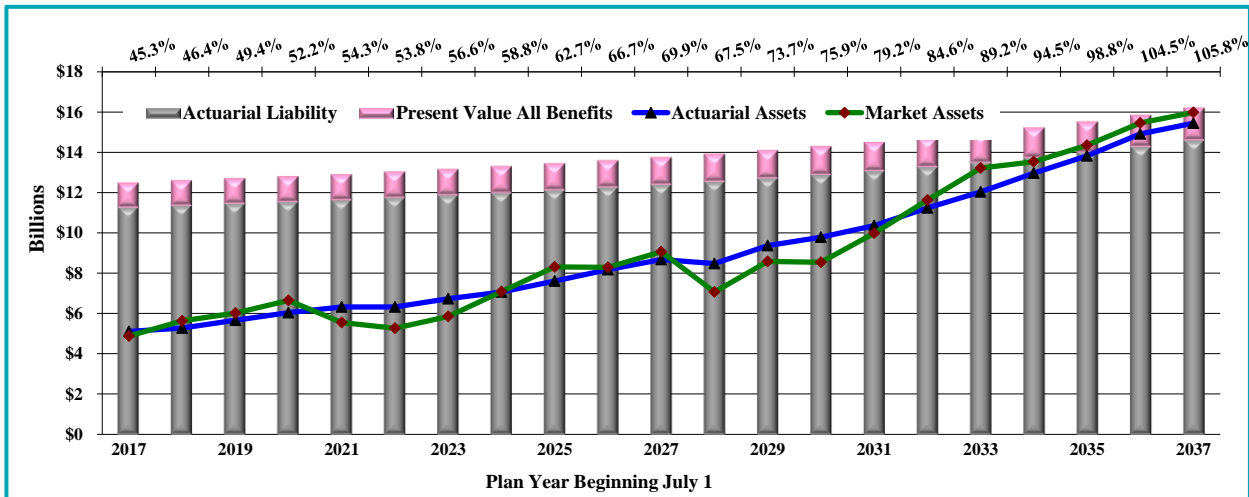
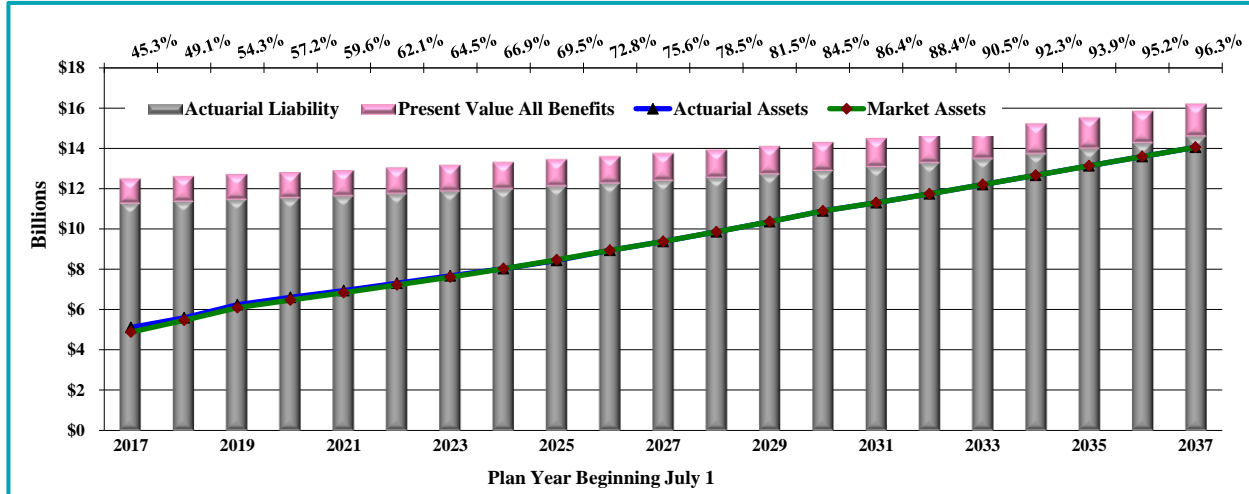


Chart 4A continues to show how negative cash flows can impact the System. The average return over the period of the projection is 7.65% results in a funded ratio of 105.8% as of July 1, 2037 instead of 108.8% which is the result of a constant return rate.

**CITY OF PHILADELPHIA MUNICIPAL RETIREMENT SYSTEM
JULY 1, 2017 ACTUARIAL VALUATION**

SECTION I – BOARD SUMMARY

**Chart 5A: Projection of Assets and Liabilities, 7.65% return each year and
City makes contributions based on the City’s Funding Policy**



In the above scenario, where the City’s Funding Policy is contributed every year, the System reaches a funded ratio of 96.3% at the end of the projection period but achieves 80% funded earlier by 2029 because of the significantly higher contributions due immediately. For this scenario we have assumed that the City may use 1) the sales tax revenue to meet the requirements of the Funding Policy and 2) the additional member contributions to reduce City’s portion of the normal cost and that such amounts would not be in addition to the policy. Over time the contributions under the Funding Policy are lower than the RRP therefore resulting in a lower funded ratio by the end of the projection period. We project the contribution amounts in support of these funding graphs in the next section.

**CITY OF PHILADELPHIA MUNICIPAL RETIREMENT SYSTEM
JULY 1, 2017 ACTUARIAL VALUATION**

SECTION I – BOARD SUMMARY

Chart 6A: Projection of Assets and Liabilities, varying returns averaging 7.65% and City makes contributions based on the Funding Policy

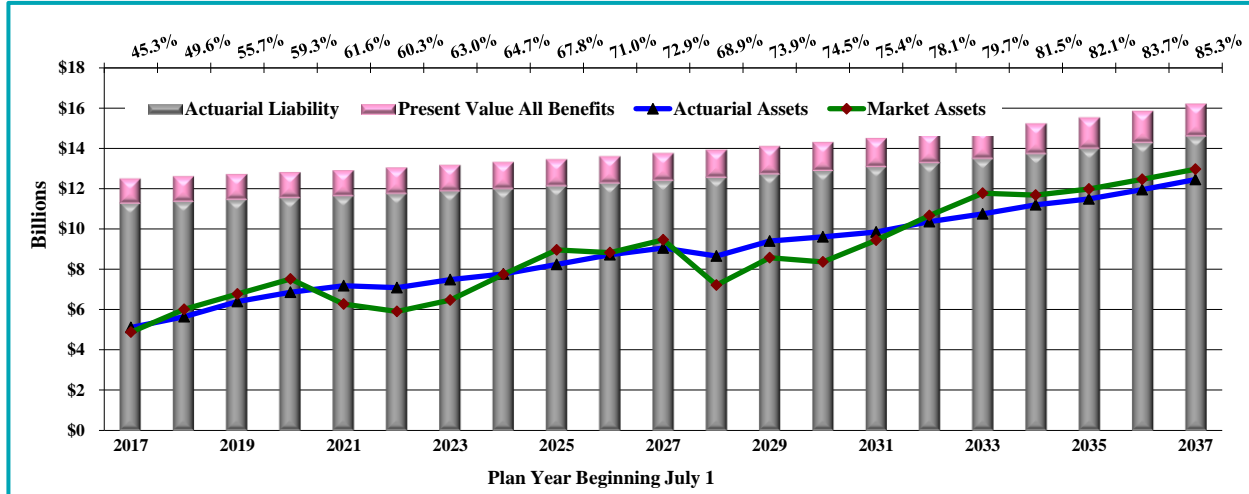


Chart 6A again demonstrates that even if the return is achieved on average, because of negative cash flows the funded ratio could be less than long-term expectations might imply.

Projection Set 2: Projected City Contribution Rate

The chart below shows the MMO (red bars) including the impact on MMO reductions as a function of expected sales tax revenue (blue bars) and expected tiered and Police Officer member contributions (black bars). The blue line shows the Funding Policy and the green line shows the expected City contributions under the RRP which includes the sales tax revenue and additional member contributions that are expected to be contributed on top of the MMO. The decrease in FYE 2020 for the City’s Funding Policy (blue line) is due to the payment in full of the initial unfunded liability. This projection assumes all actuarial assumptions are met, including the 7.65% anticipated investment return assumption, the MMO contributions are made each year and sales tax revenue and additional member contributions are received as anticipated.

**CITY OF PHILADELPHIA MUNICIPAL RETIREMENT SYSTEM
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SECTION I – BOARD SUMMARY

Chart 1B: Projection of City Contributions, 7.65% return each year and the City makes contributions based on MMO

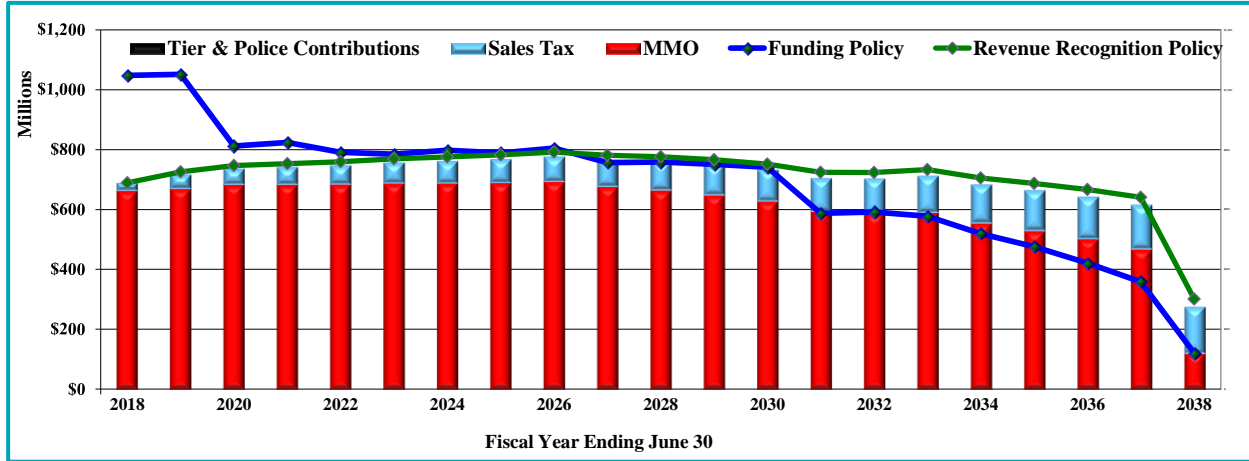
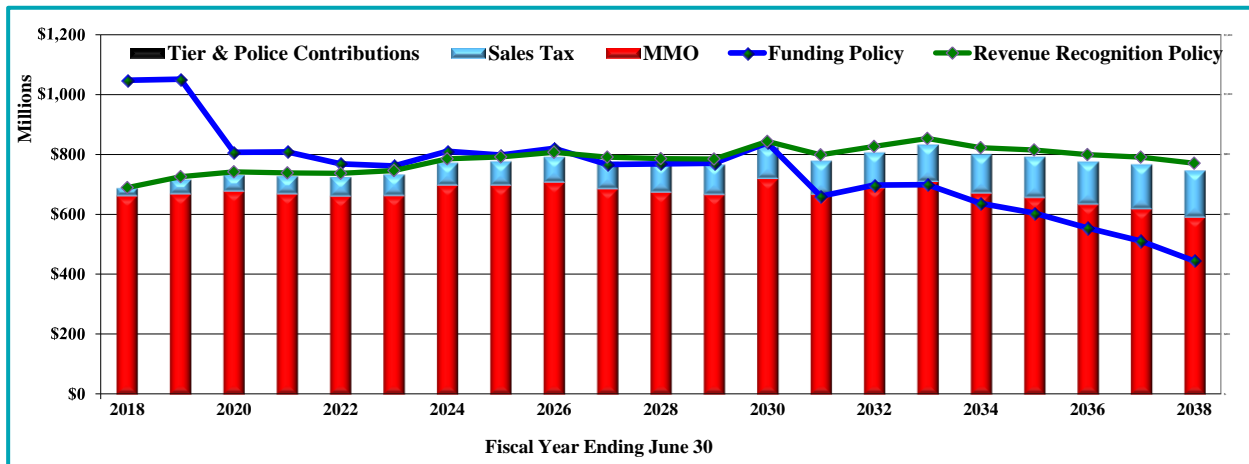


Chart 2B: Projection of City Contributions, varying returns averaging 7.65% and City makes contributions based on the MMO



As shown above, varying returns have an impact on the computed City contributions, especially in the later projection years. However, the volatility is mitigated for two reasons, the 10-year smoothing of assets and 20-year amortization of experience gains and losses. This illustrates that the future contributions should be anticipated to be higher to adjust for the market volatility. Thus, the market volatility can prolong the period of paying down the unfunded when coupled with the impact of negative cash flows in down markets.

**CITY OF PHILADELPHIA MUNICIPAL RETIREMENT SYSTEM
JULY 1, 2017 ACTUARIAL VALUATION**

SECTION I – BOARD SUMMARY

Chart 3B: Projection of City Contributions, 7.65% return each year and City makes contributions based on the Revenue Recognition Policy

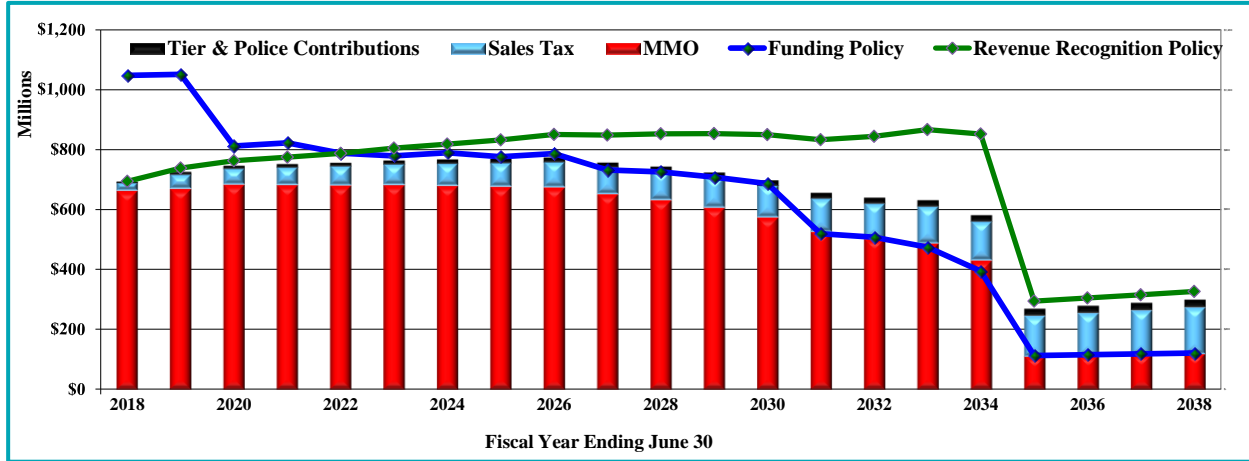


Chart 3B shows the future expected contributions based on the City paying the Revenue Recognition Contribution each year - the sales tax revenue and additional member contributions are included in the green line which shows the RRP contributions. The RRP contribution is higher than the MMO until the System reaches 100% funded in FYE 2034 at which time it drops to the normal cost rate.

Chart 4B: Projection of City Contributions, varying returns averaging 7.65% and City makes contributions based on the Revenue Recognition Policy

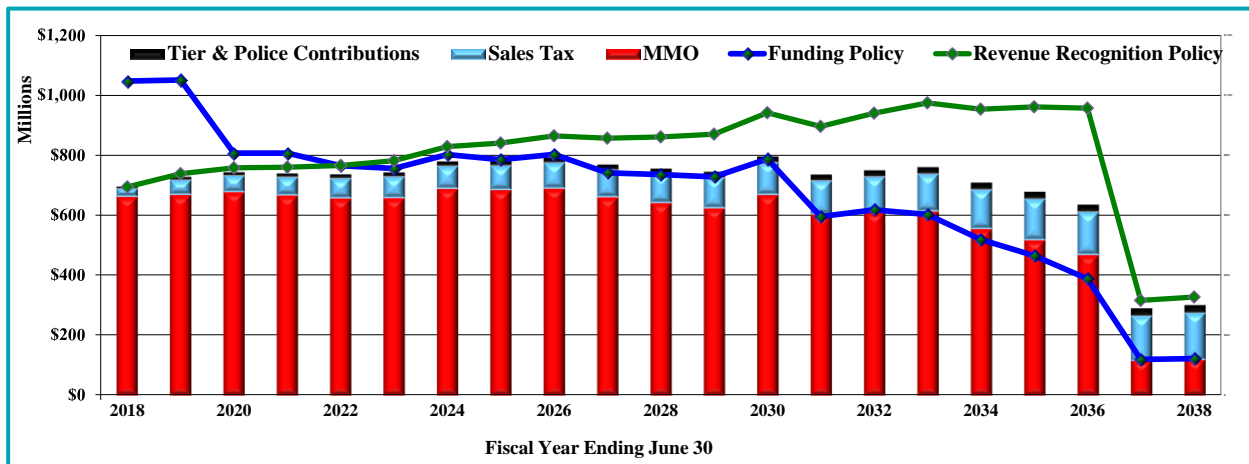


Chart 4B continues to show the impact of negative cash flows on future contributions. Contributions are higher as compared to Chart 3B.

**CITY OF PHILADELPHIA MUNICIPAL RETIREMENT SYSTEM
JULY 1, 2017 ACTUARIAL VALUATION**

SECTION I – BOARD SUMMARY

Chart 5B: Projection of City Contributions, 7.65% return each year and City makes contributions based on the City’s Funding Policy

This chart shows the expected future contribution if the City’s Funding Policy contributions are made each year. Though under this scenario significantly larger contributions are assumed to be made each year up front, projected contributions are expected to decline more rapidly when the initial funded base is expected to be paid off in 2019 when compared to Chart 1B.

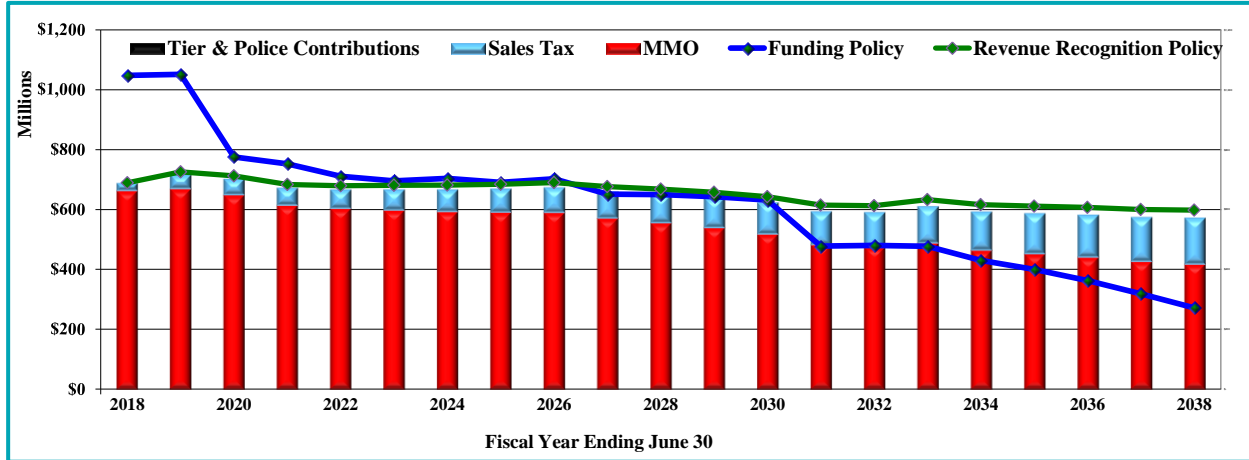
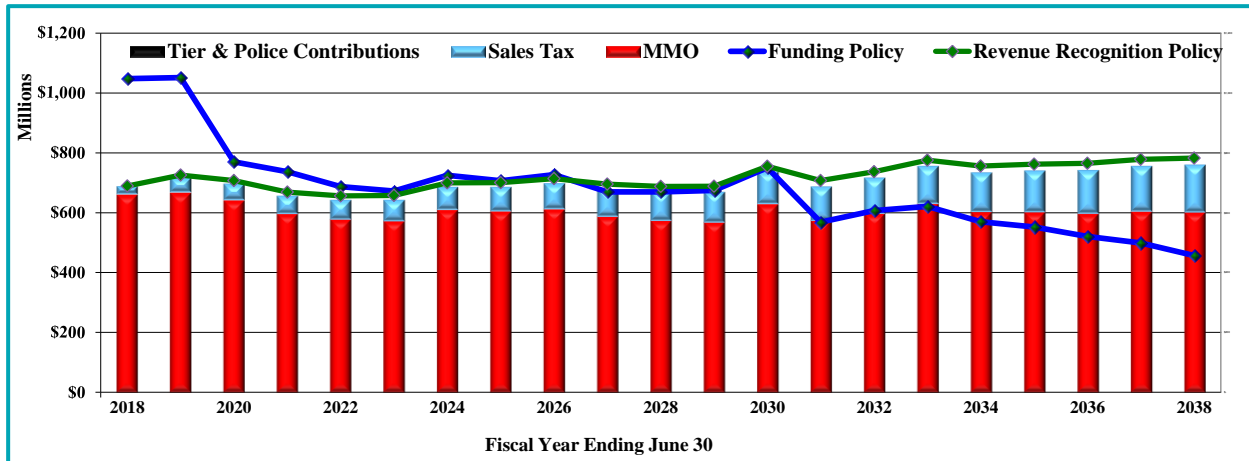


Chart 6B: Projection of City Contributions, varying returns averaging 7.65% and City makes contributions based on the City’s Funding Policy

Chart 6B is similar to Chart 5B, illustrating again the smoothing expectation on a City Funding Policy level when the annual return rates vary from year to year.



**CITY OF PHILADELPHIA MUNICIPAL RETIREMENT SYSTEM
JULY 1, 2017 ACTUARIAL VALUATION**

SECTION II – ASSETS

The Retirement System uses and discloses two different asset measurements for funding, which are presented in this section of the report: market value and actuarial value of assets. The market value represents the value of the assets if they were liquidated on the valuation date and, unless explicitly stated otherwise, this value includes the Pension Adjustment Fund (PAF) which is not available for funding purposes. The actuarial value of assets is a value that smooths annual investment returns over ten years beginning in 2008 (five years before 2008) to reduce annual investment volatility and is used in determining contribution levels. This smoothing method also requires that the actuarial value of assets may not be more than 120% or less than 80% of the market value of assets. By definition, the actuarial value of assets does not include the PAF.

On the following pages, we present detailed information on the Retirement System’s assets:

- Disclosure of assets at July 1, 2016 and July 1, 2017,
- Statement of cash flows during the year,
- Development of the actuarial value of assets,
- Apportionment of assets between plans for valuation purposes,
- Development of the Pension Adjustment Fund as of July 1, 2017,
- Development of the actuarial value of assets for Revenue Recognition Policy, and
- Disclosure of investment performance for the year.

A. Disclosure

The market value of assets represents a “snap-shot” value as of the last day of the fiscal year that provides the principal basis for measuring financial performance from one year to the next. Market values, however, can fluctuate widely with corresponding swings in the value of the investments. Because these fluctuations would cause volatility in employer contributions, an actuarial value of assets is developed. Table II-1 on the following page presents the market value by asset class as of July 1, 2016 and July 1, 2017. Table II-2 presents the System’s net cash flows for the plan year beginning July 1, 2016 and ending June 30, 2017. Table II-3 presents Fiscal 2017 contributions received from the City and members of the System.

**CITY OF PHILADELPHIA MUNICIPAL RETIREMENT SYSTEM
JULY 1, 2017 ACTUARIAL VALUATION**

SECTION II – ASSETS

Table II-1		
Statement of Assets at Market Value*		
	7/1/2017	7/1/2016
<u>Assets</u>		
Cash	\$ 15,077,026	\$ 25,666,811
Investments	4,812,767,551	4,343,555,182
Securities Lending	369,223,924	330,983,374
Accrued Interest and Other Receivables	193,774,643	130,766,974
Due from Other Governmental Units	<u>8,538,650</u>	<u>9,199,136</u>
Total Assets	\$ 5,399,381,794	\$ 4,840,171,476
<u>Liabilities</u>		
Due on Securities Lending	\$ 369,181,268	\$ 330,983,374
Accrued Expenses and Other Liabilities	<u>156,125,700</u>	<u>151,213,029</u>
Total Liabilities	\$ 525,306,968	\$ 482,196,403
Net Assets	\$ 4,874,074,826	\$ 4,357,975,073

* Includes the PAF which is not available for funding purposes.

**CITY OF PHILADELPHIA MUNICIPAL RETIREMENT SYSTEM
JULY 1, 2017 ACTUARIAL VALUATION**

SECTION II – ASSETS

B. System Cash Flows for the Year July 1, 2016 through July 1, 2017

Table II-2		
Changes in Market Values¹		
Value of Assets – July 1, 2016		\$ 4,357,975,073
<u>Additions</u>		
Contributions:		
Employer Contributions	\$ 706,236,698	
Employee Contributions	73,607,359	
Total Contributions		\$ 779,844,057
Investment Income:		
Appreciation in FV of Investments	\$ 462,934,318	
Interest and Dividends	108,463,192	
Total Investment Income	<u>\$ 571,397,510</u>	
Investment Activity Expenses:		
Investment Expenses	<u>(8,025,242)</u>	
Total Investment Activity Expenses	\$ (8,025,242)	
Securities Lending Activities:		
Securities Lending Income	\$ 1,798,121	
Securities Lending Expenses	<u>(299,970)</u>	
Net Income from Securities Lending Activities	\$ 1,498,151	
Miscellaneous Operating Revenues	\$ 1,754,162	
Net Investment Income		<u>566,624,581</u>
Total Additions		\$ 1,346,468,638
<u>Deductions</u>		
Administrative Expenses	\$ (8,873,657)	
Withdrawal Refunds	(8,202,275)	
Benefit Payments	(806,436,966)	
PAF Distributions	<u>(6,855,987)</u>	
Total Deductions		<u>(830,368,885)</u>
<u>Total</u>		
Net Increase (Decrease)		<u>516,099,753</u>
Value of Assets – July 1, 2017		\$ 4,874,074,826

¹ Includes the PAF which is not available for funding purposes

**CITY OF PHILADELPHIA MUNICIPAL RETIREMENT SYSTEM
JULY 1, 2017 ACTUARIAL VALUATION**

SECTION II – ASSETS

Table II-3		
Contributions for the Plan Year Ending June 30, 2017		
City Contributions		
Cash Received from City during Fiscal Year 2017	\$	659,620,000
Sales Tax Revenue		19,177,417
Cash Received from Quasi-Agencies		<u>27,439,281</u>
Total Cash Received from City during Fiscal Year 2017	\$	706,236,698
Member Contributions		
Regular Member Contributions	\$	73,536,084
Tier Member Contributions*		<u>71,276</u>
Total Member Contributions Received during Fiscal Year 2017	\$	73,607,359

* Tier member contributions shows estimated contributions since May 2017

**CITY OF PHILADELPHIA MUNICIPAL RETIREMENT SYSTEM
JULY 1, 2017 ACTUARIAL VALUATION**

SECTION II – ASSETS

C. Actuarial Value of Assets

To determine on-going funding requirements, most pension systems utilize an actuarial value of assets that differs from the market value of assets. The actuarial value of assets represents an asset value based on averaging or smoothing year-to-year market value returns for purposes of reducing contribution volatility. Beginning with investment losses as of Fiscal Year End 2009, gains and losses are prospectively distributed in equal amounts over a ten-year period. The resulting asset value may not be more or less than 20% of the MVA.

Table II-4 Development of Actuarial Value of Assets as of July 1, 2017					
1. Market Value of Assets as of July 1, 2017					\$ 4,874,074,826
2. Pension Adjustment Fund (PAF) as of July 1, 2017 Before Additional Transfers					\$ 1,097,499
3. Market Value of Assets Net of Original PAF*					\$ 4,872,977,327
4. Deferred Asset Gains/(Losses)					
	<u>Fiscal Year</u>	<u>Investment</u>	<u>Percent</u>	<u>Percent</u>	<u>Amount</u>
	<u>Ending</u>	<u>Gains / (Losses)</u>	<u>Recognized</u>	<u>Deferred</u>	<u>Deferred</u>
	2009	\$ (1,235,073,412)	90%	10%	\$ (123,507,341)
	2010	200,524,637	80%	20%	40,104,927
	2011	414,187,915	70%	30%	124,256,375
	2012	(328,486,968)	60%	40%	(131,394,787)
	2013	127,718,278	50%	50%	63,859,139
	2014	347,082,935	40%	60%	208,249,761
	2015	(349,020,722)	30%	70%	(244,314,505)
	2016	(489,127,035)	20%	80%	(391,301,628)
	2017	242,673,428	10%	90%	218,406,085
	Total				\$ (235,641,974)
5. Preliminary Actuarial Value as of July 1, 2017 (5 = 3 - 4)					\$ 5,108,619,301
6. Corridor for Actuarial Value					
a. 80% of Market Value Net of PAF					\$ 3,898,381,861
b. 120% of Market Value Net of PAF					\$ 5,847,572,792
7. Additional PAF Transfer as of July 1, 2017					\$ 0
8. Actuarial Value of Assets Net of Final PAF as of July 1, 2017 8 = max((min of 5 or 6b) and 6a), minus 7					\$ 5,108,619,301
9. As a percent of Market Value Net of Final PAF					104.8%
10. Market Value of Assets Net of Final PAF					\$ 4,872,977,327

* Market value of assets net of original PAF before the determination of the final PAF amount. See section II - E for more details on the development of the total PAF and the additional PAF transfer, if applicable.

**CITY OF PHILADELPHIA MUNICIPAL RETIREMENT SYSTEM
JULY 1, 2017 ACTUARIAL VALUATION**

SECTION II – ASSETS

D. Apportionment of Actuarial Value of Assets

The asset allocation reflects the actual cash flows for each plan and proportional allocation of investment earnings.

Table II-5 Allocation of Assets for Valuation Purposes Between Plans as of July 1, 2017 (\$ thousands)										
	1967 Plan			1987 Plan				Plan '10	Plan '16	Total
	Municipal	Police	Fire	Municipal	Elected	Police	Fire	Municipal	Municipal	
1. Actuarial Value of Assets as of July 1, 2016	\$ 1,449,091	\$ 565,691	\$ 191,031	\$ 1,234,817	\$ 12,369	\$ 1,155,704	\$ 325,861	\$ 1,456	\$ 0	\$ 4,936,020
2. Transactions During Plan Year July 1, 2016 to June 30, 2017										
a. Contributions										
City and Commonwealth Employees	\$ 304,851	\$ 156,122	\$ 67,549	\$ 74,828	\$ 1,268	\$ 53,913	\$ 19,264	\$ 671	\$ 332	\$ 678,797
Quasi-Public Agencies	5,341	1,809	685	31,067	360	23,202	9,051	1,685	407	73,607
Quasi-Public Agencies	23,427	0	0	3,886	0	0	0	53	73	27,439
b. Benefit Payments	(412,850)	(220,635)	(87,126)	(45,933)	(1,628)	(30,640)	(7,626)	0	0	(806,437)
c. Withdrawals	(1,595)	(1,351)	(229)	(3,058)	0	(1,797)	(167)	0	(4)	(8,202)
d. Administrative Expenses	(2,929)	(1,261)	(432)	(2,887)	(7)	(899)	(335)	(125)	0	(8,874)
e. Net Transactions	\$ (83,755)	\$ (65,316)	\$ (19,553)	\$ 57,903	\$ (7)	\$ 43,779	\$ 20,187	\$ 2,284	\$ 808	\$ (43,670)
3. Total Fund Balance Prior to Allocation of Investment Income [1. + 2e.]	\$ 1,365,336	\$ 500,375	\$ 171,478	\$ 1,292,720	\$ 12,362	\$ 1,199,483	\$ 346,048	\$ 3,740	\$ 808	\$ 4,892,350
4. Investment Income During Plan Year July 1, 2016 to June 30, 2017	\$ 60,355	\$ 22,119	\$ 7,580	\$ 57,145	\$ 547	\$ 53,024	\$ 15,297	\$ 165	\$ 36	\$ 216,268
5. Preliminary Actuarial Value of Assets as of July 1, 2017 [3. + 4.]	\$ 1,425,691	\$ 522,495	\$ 179,058	\$ 1,349,865	\$ 12,909	\$ 1,252,508	\$ 361,344	\$ 3,905	\$ 844	\$ 5,108,619
6. Allocation of PAF Transfer	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
7. Final Actuarial Value of Assets With Corridor as of July 1, 2017	\$ 1,425,691	\$ 522,495	\$ 179,058	\$ 1,349,865	\$ 12,909	\$ 1,252,508	\$ 361,344	\$ 3,905	\$ 844	\$ 5,108,619
8. Final Actuarial Value of Assets Less RRP Additional Revenue Account	\$ 1,417,310	\$ 519,423	\$ 178,005	\$ 1,341,929	\$ 12,834	\$ 1,245,144	\$ 359,220	\$ 3,882	\$ 839	\$ 5,078,586

Note: Numbers may not add due to rounding

**CITY OF PHILADELPHIA MUNICIPAL RETIREMENT SYSTEM
JULY 1, 2017 ACTUARIAL VALUATION**

SECTION II – ASSETS

E. Development of the Pension Adjustment Fund as of July 1, 2017

This table provides the funds available for distribution consideration under title §22-311 of the Philadelphia Code. In general, the Pension Adjustment Fund (PAF) provides for additional benefit distributions to retirees and beneficiaries through the use of excess earnings. This may include a lump-sum bonus payment, monthly pension increases, ad-hoc cost of living adjustments, or other increases determined by the Board. The adjusted market value of assets reflects a five-year smoothing of asset gains and losses, as described in the Philadelphia Code.

Table II-6 Development of the Pension Adjustment Fund as of July 1, 2017		
1. PAF on July 1, 2016	\$	7,222,828
2. PAF Distribution		(6,855,987)
3. Market Value Asset Return Through June 30, 2017 *		13.08%
4. PAF on July 1, 2017 Before Additional Transfers** =(1) x [1 + (3)] + (2)	\$	1,097,499
5. Adjusted Market Value of Assets Through June 30, 2017	\$	5,042,506,506
6. Adjusted Market Value of Assets Return Through June 30, 2017 ***		6.28%
7. Return in Excess of Investment Assumption Plus 1.0%, Limited to 5.0% =(6) - [7.7% + 1.00%]		0.00%
8. Additional Transfer as of July 1, 2017 =50% of (7) x (5)	\$	0
9. Total PAF as of July 1, 2017 = (4) + (8)	\$	1,097,499

* Market Value Asset Return including the PAF

** Calculations are based upon the unrounded percents for items (3) and (7)

*** Asset Return based upon the Adjusted Market Value of Assets using a 5 year smoothing of the gains/losses as outlined in Title 22-311

**CITY OF PHILADELPHIA MUNICIPAL RETIREMENT SYSTEM
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SECTION II – ASSETS

F. Actuarial Value of Assets for Revenue Recognition Policy

The System is expected to receive additional revenue from sales tax, tier member contributions and additional Police Officer member contributions, which is anticipated to be contributed over and above the City’s contribution of the MMO. These additional sources of revenue are tracked separately and accumulated in a notional account. For determining the actuarial value of assets for the RRP, the additional revenue account is excluded from the assets. Below is the development of the assets used for the RRP.

Table II-7 Actuarial Value of Assets for Revenue Recognition Policy as of July 1, 2017	
1. Additional Revenue Account on July 1, 2016	\$9,536,352
2. Sales Tax Revenue Received During FYE June 30, 2017	\$19,177,417
3. Tier Member Contributions Received During FYE June 30, 2017*	71,276
4. Market Value Asset Return Through June 30, 2017	13.08%
5. Interest Through June 30, 2017	1,247,881
6. Additional Revenue Account on July 1, 2017 =(1) + (2) + (3) + (5)	\$30,032,925
7. Actuarial Value of Assets on June 30, 2017	\$5,108,619,301
8. Actuarial Value of Assets Net of Additional Revenue on June 30, 2017** =(7) - (6)	\$5,078,586,375

* Tier member contributions started May 2017 and are estimated

** Actuarial Value of Assets used in calculation of the RRP contribution is net of sales tax revenue and tier member and additional Police contributions

**CITY OF PHILADELPHIA MUNICIPAL RETIREMENT SYSTEM
JULY 1, 2017 ACTUARIAL VALUATION**

SECTION II – ASSETS

G. Investment Performance

The market value of assets internal rate of return was 13.08% for the year ending June 30, 2017. This is compared to an assumed return of 7.70% for the same period. This return produced an overall investment gain of \$242.7 million for the year ending June 30, 2017. On an actuarial value of assets basis (net of PAF), the return for FYE 2017 was 4.40%. In the table below, we also provide returns from two broad asset classes for comparison.

Table II-8 Annual Rates of Return					
Year Ending June 30,	Investment Return Assumption	Market Value	Actuarial Value *	Total Return Standard & Poor's 500 Index	Barclays Aggregate Bond Index**
1995	9.00%	11.70%	7.80%	26.10%	12.80%
1996	9.00%	15.10%	10.10%	26.00%	4.70%
1997	9.00%	18.30%	12.20%	34.60%	8.20%
1998	9.00%	14.30%	13.10%	30.20%	10.50%
1999	9.00%	10.00%	13.10%	22.70%	3.10%
2000	9.00%	9.60%	11.10%	7.30%	4.60%
2001	9.00%	-6.00%	8.30%	-14.80%	11.20%
2002	9.00%	-5.80%	3.40%	-18.00%	8.60%
2003	9.00%	1.80%	-2.20%	0.30%	10.40%
2004	9.00%	16.60%	4.60%	19.10%	0.30%
2005	8.75%	9.90%	1.80%	6.31%	6.81%
2006	8.75%	11.30%	6.10%	8.60%	-0.80%
2007	8.75%	16.98%	10.71%	20.60%	6.10%
2008	8.75%	-4.53%	10.13%	-13.10%	7.10%
2009	8.75%	-19.87%	-9.28%	-26.21%	5.98%
2010	8.25%	13.81%	12.89%	14.40%	9.19%
2011	8.15%	19.40%	9.90%	28.13%	3.56%
2012	8.10%	0.18%	2.42%	3.14%	7.30%
2013	7.95%	10.94%	5.08%	17.91%	-0.85%
2014	7.85%	15.70%	4.81%	22.04%	4.36%
2015	7.80%	0.29%	5.80%	5.25%	1.86%
2016	7.75%	-3.17%	4.45%	1.73%	6.00%
2017	7.70%	13.08%	4.40%	15.46%	-0.31%

* Net of PAF

** Formerly Lehman Brothers Aggregate Bond Index

**CITY OF PHILADELPHIA MUNICIPAL RETIREMENT SYSTEM
JULY 1, 2017 ACTUARIAL VALUATION**

SECTION II – ASSETS

H. Asset Gain/(Loss)

There was a \$242.7 million investment gain on market value of assets when compared to the expected as of July 1, 2017. Table II-9 reconciles the 2017 asset gain (expected versus actual) for the market value of assets both net of the PAF and in total. This investment gain is smoothed over a ten-year period to determine the actuarial value of assets (see Table II – 4). Also provided below is a reconciliation of the PAF.

Table II-9 Calculation of Asset Gain/(Loss)				
	Market Value (Net of PAF)	PAF		Total Market Value
1. Market Value of Assets as of July 1, 2016	\$ 4,350,752,245	\$ 7,222,828		\$ 4,357,975,073
2. Transactions During Plan Year July 1, 2016 to June 30, 2017				
a. Contributions				
City and Commonwealth	\$ 678,797,417	\$ 0		\$ 678,797,417
Employees	73,607,359	0		73,607,359
Quasi-Public Agencies	27,439,281	0		27,439,281
b. Benefit Payments	(806,436,966)	(6,855,987)		(813,292,953)
c. Withdrawals	(8,202,275)	0		(8,202,275)
d. Administrative Expenses	(8,873,657)	0		(8,873,657)
e. Net Transactions	\$ (43,668,841)	\$ (6,855,987)		\$ (50,524,828)
3. Expected Investment Income from July 1, 2016 to June 30, 2017	\$ 323,220,494	\$ 730,658 *		\$ 323,951,152
4. PAF transfer at July 1, 2017	\$ 0	\$ 0		\$ 0
5. Expected Market Value of Assets as of July 1, 2017 [1. + 2.e. + 3. + 4]	\$ 4,630,303,899	\$ 1,097,499		\$ 4,631,401,397
6. Market Value of Assets as of July 1, 2017	\$ 4,872,977,327	\$ 1,097,499		\$ 4,874,074,826
7. Investment Gain/(Loss) [6. - 5.]	\$ 242,673,428	\$ 0		\$ 242,673,428

* The PAF is credited with investment income at the market rate of return earned by plan assets.

**CITY OF PHILADELPHIA MUNICIPAL RETIREMENT SYSTEM
JULY 1, 2017 ACTUARIAL VALUATION**

SECTION III – LIABILITIES

In this section, we present detailed information on liabilities for the City of Philadelphia Municipal Retirement System, including:

- Disclosure of liabilities at July 1, 2016 and July 1, 2017,
- Statement of changes in these liabilities and the unfunded liabilities during the year,
- Development of the normal cost rates by plan, and
- The reconciliation of the changes in the unfunded liability by plan as well as the expected unfunded liability as of July 1, 2018.

Disclosure

Two types of liabilities are calculated and presented in this report. Each type is distinguished by the purpose for which the figures are ultimately used.

- **Present Value of all Future Benefits:** Used for measuring all future obligations, this represents the amount of money needed today to fully fund all benefits both earned as of the valuation date and those to be earned in the future by current plan participants, under the current plan provisions and assumptions.
- **Actuarial Liability:** Used for determining employer contributions and GASB accounting disclosures. This liability is calculated by subtracting the present value of future member contributions and future employer normal cost contributions as determined under the Entry Age Normal Cost (EAN) actuarial funding method from the present value of all future benefits.

These liabilities are for funding purposes and are not appropriate for measuring the cost of settling plan liabilities by purchasing annuities or paying lump sums.

**CITY OF PHILADELPHIA MUNICIPAL RETIREMENT SYSTEM
JULY 1, 2017 ACTUARIAL VALUATION**

SECTION III – LIABILITIES

Table III-1 shows the present value of future benefits, actuarial liability, and unfunded actuarial liability as of July 1, 2017, and July 1, 2016, for the Retirement System.

Table III-1 Disclosure of Liabilities (\$ thousands)		
	July 1, 2017	July 1, 2016
Present Value of Future Benefits		
Actives	\$ 5,149,988	\$ 4,950,643
Terminated Vesteds	111,367	120,291
Disabled	758,314	750,685
Retirees	5,038,627	5,029,339
Beneficiaries	651,804	635,323
DROP Account plus Deferred Annuities	807,195	722,743
Non-Vested Refunds	8,274	7,334
Total City PVFB	\$ 12,525,569	\$ 12,216,358
Market Value of Assets (Net of PAF)	(4,872,977)	(4,350,752)
Present Value Future Member Contrib.	(602,656)	(504,926)
City's Unfunded Future Obligation	\$ 7,049,936	\$ 7,360,680
Actuarial Liability		
Actives	\$ 3,900,095	\$ 3,759,083
Terminated Vesteds	111,367	120,291
Disabled	758,314	750,685
Retirees	5,038,627	5,029,339
Beneficiaries	651,804	635,323
DROP	807,195	722,743
Non-Vested Refunds	8,274	7,334
Total City AL	\$ 11,275,676	\$ 11,024,798
Actuarial Value of Assets	(5,108,619)	(4,936,020)
Unfunded Actuarial Liability	\$ 6,167,057	\$ 6,088,778

**CITY OF PHILADELPHIA MUNICIPAL RETIREMENT SYSTEM
JULY 1, 2017 ACTUARIAL VALUATION**

SECTION III – LIABILITIES

Table III-2 shows the present value of future benefits, actuarial liability, and unfunded actuarial liability for each Plan in the Retirement System.

Table III-2 Liabilities Detail as of July 1, 2017 (\$ thousands)										
	1967 Plan			1987 Plan				Plan '10	Plan '16	Total
	Municipal	Police	Fire	Municipal	Elected	Police	Fire	Municipal	Municipal	
Present Value of Future Benefits										
Actives	\$ 673,375	\$ 217,058	\$ 67,787	\$ 1,839,480	\$ 18,202	\$ 1,727,237	\$ 574,550	\$ 22,780	\$ 9,520	\$ 5,149,988
Terminated Vesteds	39,425	143	0	55,054	0	14,384	2,361	0	0	111,367
Disabled	222,842	189,346	44,390	91,535	0	179,807	30,393	0	0	758,314
Retirees	2,694,515	1,320,982	589,460	275,218	10,440	110,207	37,806	0	0	5,038,627
Beneficiaries	330,329	176,139	76,685	35,188	651	24,179	8,633	0	0	651,804
DROP	413,946	141,380	46,671	103,030	1,401	80,928	19,838	0	0	807,195
Non-Vested Refunds	1,650	155	52	5,305	10	816	286	0	0	8,274
Total PVFB	\$ 4,376,082	\$ 2,045,203	\$ 825,045	\$ 2,404,811	\$ 30,704	\$ 2,137,557	\$ 673,867	\$ 22,780	\$ 9,520	\$ 12,525,569
Actuarial Liability										
Actives	\$ 637,814	\$ 202,655	\$ 63,577	\$ 1,434,465	\$ 15,702	\$ 1,181,913	\$ 359,026	\$ 4,292	\$ 652	\$ 3,900,095
Terminated Vesteds	39,425	143	0	55,054	0	14,384	2,361	0	0	111,367
Disabled	222,842	189,346	44,390	91,535	0	179,807	30,393	0	0	758,314
Retirees	2,694,515	1,320,982	589,460	275,218	10,440	110,207	37,806	0	0	5,038,627
Beneficiaries	330,329	176,139	76,685	35,188	651	24,179	8,633	0	0	651,804
DROP	413,946	141,380	46,671	103,030	1,401	80,928	19,838	0	0	807,195
Non-Vested Refunds	1,650	155	52	5,305	10	816	286	0	0	8,274
Total AL	\$ 4,340,521	\$ 2,030,800	\$ 820,835	\$ 1,999,796	\$ 28,204	\$ 1,592,233	\$ 458,343	\$ 4,292	\$ 652	\$ 11,275,676
Actuarial Value of Assets	(1,425,691)	(522,495)	(179,058)	(1,349,865)	(12,909)	(1,252,508)	(361,344)	(3,905)	(844)	(5,108,619)
Unfunded Actuarial Liability	\$ 2,914,830	\$ 1,508,305	\$ 641,777	\$ 649,932	\$ 15,295	\$ 339,726	\$ 96,998	\$ 387	\$ (193)	\$ 6,167,057
Funding Percent	32.8%	25.7%	21.8%	67.5%	45.8%	78.7%	78.8%	91.0%	129.6%	45.3%

Note: Numbers may not add due to rounding.

**CITY OF PHILADELPHIA MUNICIPAL RETIREMENT SYSTEM
JULY 1, 2017 ACTUARIAL VALUATION**

SECTION III – LIABILITIES

Table III-3 shows the derivation of the City normal cost as a percent of pay for each Plan in the System.

Table III-3 Derivation of the Normal Cost as of July 1, 2017 (\$ thousands)										
	1967 Plan			1987 Plan				Plan '10	Plan '16	Total
	Municipal	Police	Fire	Municipal	Elected	Police	Fire	Municipal	Municipal	
Retirement	\$ 5,906	\$ 3,625	\$ 1,141	\$ 30,452	\$ 243	\$ 40,259	\$ 15,880	\$ 1,110	\$ 641	\$ 99,257
Death	183	99	32	1,499	11	1,740	707	68	38	4,377
Disability	737	549	161	6,051	33	8,126	2,971	325	118	19,073
Termination	3,060	341	100	23,132	180	4,376	1,428	888	388	33,892
Administrative Expenses	2,920	1,269	434	2,961	7	961	349	181	83	9,166
Total Normal Cost (with Expenses)	\$ 12,806	\$ 5,883	\$ 1,869	\$ 64,097	\$ 474	\$ 55,462	\$ 21,335	\$ 2,572	\$ 1,268	\$ 165,766
Expected Employee Contributions	\$ 4,909	\$ 1,631	\$ 511	\$ 30,178	\$ 329	\$ 26,819	\$ 8,650	\$ 1,284	\$ 695	\$ 75,006
City Normal Cost	\$ 7,897	\$ 4,252	\$ 1,358	\$ 33,919	\$ 145	\$ 28,643	\$ 12,685	\$ 1,288	\$ 573	\$ 90,760
Current Annual Payroll	\$ 101,368	\$ 27,186	\$ 8,510	\$ 922,850	\$ 3,418	\$ 441,826	\$ 163,513	\$ 58,110	\$ 17,946	\$ 1,744,728
City Normal Cost as % of Pay, Beginning of Year Payment	7.790%	15.639%	15.963%	3.675%	4.252%	6.483%	7.758%	2.216%	3.195%	5.202%
City Normal Cost as % of Pay, End of Year Payment	8.386%	16.836%	17.184%	3.957%	4.578%	6.979%	8.351%	2.385%	3.439%	5.600%

Note: Numbers may not add due to rounding.

**CITY OF PHILADELPHIA MUNICIPAL RETIREMENT SYSTEM
JULY 1, 2017 ACTUARIAL VALUATION**

SECTION III – LIABILITIES

Table III-4 shows changes in the unfunded actuarial liability from July 1, 2016 to July 1, 2017 due to actuarial experience and assumption changes. The plan changes to future member contributions has no impact on the UAL. The table also shows the development of the expected unfunded actuarial liability from July 1, 2017 to July 1, 2018 based upon the City’s Funding Policy, which is used to develop the end of year amortization amounts for the City’s Funding Policy in Table IV – 10 and in Appendix B. The actuarial experience of each of the plans is calculated based on the plans’ actual asset and liability values compared to the expected values.

Table III-4 Expected Unfunded Actuarial Liability for the Plan Year Ending June 30, 2018 (\$ thousands)										
	1967 Plan			1987 Plan				Plan '10	Plan '16	Total
	Municipal	Police	Fire	Municipal	Elected	Police	Fire	Municipal	Municipal	
1. Expected Unfunded Actuarial Liability (UAL) as of July 1, 2017 Based on July 1, 2016 Valuation*	\$ 2,696,533	\$ 1,385,263	\$ 591,331	\$ 556,667	\$ 14,851	\$ 277,366	\$ 80,070	\$ 195	\$ 0	\$ 5,602,276
2. Changes in UAL due to										
a. Actuarial Experience	\$ 202,493	\$ 115,878	\$ 47,634	\$ 80,133	\$ 327	\$ 51,993	\$ 13,933	\$ 158	\$ (198)	\$ 512,351
b. Assumption Changes	15,806	7,164	2,814	13,131	117	10,367	2,996	34	5	52,433
c. Active Plan Changes	0	0	0	0	0	0	0	0	0	0
d. Inactive Plan Changes	0	0	0	0	0	0	0	0	0	0
e. Subtotal	\$ 218,299	\$ 123,042	\$ 50,448	\$ 93,264	\$ 444	\$ 62,360	\$ 16,928	\$ 191	\$ (193)	\$ 564,784
3. Actual UAL as of July 1, 2017 [1. + 2e.]	\$ 2,914,831	\$ 1,508,306	\$ 641,778	\$ 649,932	\$ 15,295	\$ 339,725	\$ 96,998	\$ 387	\$ (193)	\$ 6,167,059
4. Expected Changes in UAL from July 1, 2017 to July 1, 2018 due to										
a. Interest on Changes in UAL	\$ 16,700	\$ 9,413	\$ 3,859	\$ 7,135	\$ 34	\$ 4,771	\$ 1,295	\$ 15	\$ (15)	\$ 43,206
b. FY 2018 Amortization Contribution	(310,073)	(165,928)	(68,420)	(31,483)	(1,045)	(17,488)	(4,931)	(5)	(0)	(599,373)
c. Subtotal	\$ (293,373)	\$ (156,515)	\$ (64,561)	\$ (24,348)	\$ (1,011)	\$ (12,717)	\$ (3,636)	\$ 10	\$ (15)	\$ (556,167)
5. Expected UAL as of July 1, 2018 [3. + 4c.]	\$ 2,621,458	\$ 1,351,791	\$ 577,217	\$ 625,584	\$ 14,284	\$ 327,008	\$ 93,362	\$ 397	\$ (208)	\$ 5,610,892

* Expected UAL is based upon the City's funding policy
Note: Numbers may not add due to rounding.

**CITY OF PHILADELPHIA MUNICIPAL RETIREMENT SYSTEM
JULY 1, 2017 ACTUARIAL VALUATION**

SECTION IV – CONTRIBUTIONS AND MINIMUM MUNICIPAL OBLIGATION

In the process of evaluating the financial condition of any pension system, the actuary analyzes the assets and liabilities to determine what level (if any) of contributions are needed based on the funding methods either required by law or adopted by the plan sponsor. For an actuarial funding method to be effective, it should result in a pattern of contributions that are both stable, predictable and systematically fund the plan obligations.

The actuarial funding method used to determine the normal cost and the unfunded actuarial liability is the Entry Age Normal (EAN) cost method. The normal cost is based on taking the value, as of entry age into the plan, of each member's projected future benefits. This value is then divided by the value, also at entry age, of each member's expected future salary producing a normal cost rate as a percent of salary that should remain relatively constant over a participant's career. The normal cost rate is multiplied by current salary to determine each member's normal cost which is then all summed to get the total normal cost for all members. Finally, the total normal cost is reduced by the member contribution to produce the employer normal cost. The unfunded actuarial liability is the difference between the EAN actuarial liability and the actuarial value of assets.

Within this section of the report, three contribution amounts are determined based on three different sets of funding policies for determining the way the unfunded actuarial liability is funded. The first policy is defined in accordance with Act 205 and defines the Minimum Municipal Obligation (MMO), which is the City's minimum required contribution under Pennsylvania State law. The second approach is the Revenue Recognition Policy (RRP), which is similar to the MMO calculations except the assets used for determining the contributions exclude the accumulated value of sales tax revenue and tier and additional Police Officer member contributions received by the System. The third approach is in accordance with the City's Funding Policy implemented in 1984, which predates the Act 205 rules and calls for contributions that are greater than the MMO until the initial unfunded liability determined in 1984 is fully funded. Under all funding methods there are two components: the normal cost and the amortized unfunded actuarial liability. The amortized unfunded actuarial liability is the amount of the unfunded actuarial liability that is paid each year based upon the given or defined amortization periods. The amortization periods are different under the MMO/RRP and the City's Funding Policy. These amortization periods are outlined in more detail in Appendix C, Section B.

As of July 1, 2010, gains and losses are recognized annually to determine the amortization base used to calculate the MMO, as opposed to biennially. This change is implemented in accordance with section 1002 of Act 205 and has been continued since then to provide greater transparency in the determination of the period and amount of such amounts.

In addition, the MMO, excluding the Pension Obligation Bond (POB), is also provided in this section, as required for reporting purposes under Act 205.

**CITY OF PHILADELPHIA MUNICIPAL RETIREMENT SYSTEM
JULY 1, 2017 ACTUARIAL VALUATION**

SECTION IV – CONTRIBUTIONS AND MINIMUM MUNICIPAL OBLIGATION

In Table IV-1 we provide the employee contribution rates as a percent of pay effective for the plan year starting July 1, 2018. The rates shown include the 1% increase in contributions for certain municipal employees and elected officials as required by legislation in 2015 as well as the additional 1% for new employees in these groups entering Plan 87 Municipal prime. This year we also included a new rate for Plan 10 participants eligible for accelerated vesting. The rates shown for Police Officers in Plan 87 and 87 Prime include the increases effective July 1, 2017 resulting from the Pension Award.

Table IV-1 Employee Contribution Rates for the Plan Year Beginning July 1, 2018				
	Municipal¹	Elected²	Police	Fire
Plan 67	7.00%	N/A	6.00%	6.00%
Plan 67- 50% of Aggregate NC ³	6.32%	N/A	N/A	N/A
Plan 87	3.08%	9.62%	6.84%	5.00%
Plan 87- 50% of Aggregate NC ⁴	3.47%	N/A	N/A	N/A
Plan 87 - Accelerated Vesting ⁵	3.60%	11.72%	N/A	N/A
Plan 87 Prime ⁶	4.08%	10.62%	7.84%	6.00%
Plan '10 ⁷	2.21%	N/A	5.50%	5.50%
Plan '10 - Accelerated Vesting	2.51%	N/A	N/A	N/A
Plan '16	3.87%	N/A	N/A	N/A

¹For Municipal Plan 67 members who participate in the Social Security System, employee contributions are 4.75% of compensation up to the social security wage base and 6% above it.

²The employee contribution rate is based upon the normal cost of \$474,193 under Plan 87 Elected, normal cost of \$256,466 under Plan 87 Municipal and current annual payroll of \$3,418,294.

³Effective November 2014 guards represented by DC 33 contribute at 50% of the aggregate Normal Cost of all members in Plan J.

⁴This represents 50% of Aggregate Normal Cost for all members in Plan Y.

⁵Member rate for Municipal Plan 87 (Y5) members eligible to vest in 5 years and Elected Officials (L8) eligible to be vested in 8 years instead of 10 years.

⁶Plan 87 Prime refers to new hires who have the option to elect Plan '10 but have elected to stay in Plan '87.

⁷There were 603 participants in Plan S16 Municipal as of the valuation date. Because this group is relatively small the employee contribution rate is phased in over 10 years beginning in 2016 with the employee contribution rate calculated for DC 33 members from Plan 87 valued under Plan 16.

**CITY OF PHILADELPHIA MUNICIPAL RETIREMENT SYSTEM
JULY 1, 2017 ACTUARIAL VALUATION**

SECTION IV – CONTRIBUTIONS AND MINIMUM MUNICIPAL OBLIGATION

Table IV-2a and Table IV-2b isolate the contribution requirements for the Quasi Agencies that participate in the System broken out for Municipal Plans 1967, 1987, 2010, and 2016 both under the Funding Policy and MMO.

Table IV-2a Quasi Agency Funding Rate as a Percent of Payroll (Based on Funding Policy)		
Valuation Date	July 1, 2017	July 1, 2016
Fiscal Year Ending in Year	2019	2018
67 Municipal		
1. Normal Cost Rate	8.386%	8.036%
2. Amortization Rate under the City's Funding Policy	<u>508.863%</u>	<u>439.827%</u>
3. Total Year-End Rate [1. + 2.]	517.249%	447.863%
4. Quarterly adjustment factor	0.97253	0.97236
5. Total, adjusted for Quarterly Payments [3. x 4.]	503.040%	435.483%
87 Municipal		
1. Normal Cost Rate	3.957%	4.060%
2. Amortization Rate under the City's Funding Policy	<u>8.836%</u>	<u>8.242%</u>
3. Total Year-End Rate [1. + 2.]	12.793%	12.302%
4. Quarterly adjustment factor	0.97253	0.97236
5. Total, adjusted for Quarterly Payments [3. x 4.]	12.441%	11.962%
Plan 10 Municipal		
1. Normal Cost Rate	2.385%	1.434%
2. Amortization Rate under the City's Funding Policy	<u>0.070%</u>	<u>0.050%</u>
3. Total Year-End Rate [1. + 2.]	2.455%	1.484%
4. Quarterly adjustment factor	0.97253	0.97236
5. Total, adjusted for Quarterly Payments [3. x 4.]	2.388%	1.443%
Plan 16 Municipal		
1. Normal Cost Rate	3.439%	N/A
2. Amortization Rate under the City's Funding Policy	<u>-0.114%</u>	N/A
3. Total Year-End Rate [1. + 2.]	3.325%	N/A
4. Quarterly adjustment factor	0.97253	N/A
5. Total, adjusted for Quarterly Payments [3. x 4.]	3.234%	N/A

**CITY OF PHILADELPHIA MUNICIPAL RETIREMENT SYSTEM
JULY 1, 2017 ACTUARIAL VALUATION**

SECTION IV – CONTRIBUTIONS AND MINIMUM MUNICIPAL OBLIGATION

**Table IV-2b
Quasi Agency Funding Rate as a
Percent of Payroll (Based on MMO)**

Valuation Date	July 1, 2017	July 1, 2016
Fiscal Year Ending in Year	2019	2018
67 Municipal		
1. Normal Cost Rate	8.386%	8.036%
2. Amortization Rate under MMO*	<u>294.232%</u>	<u>252.262%</u>
3. Total Year-End Rate [1. + 2.]	302.619%	260.299%
4. Quarterly adjustment factor	0.97253	0.97236
5. Total, adjusted for Quarterly Payments [3. x 4.]	294.306%	253.103%
87 Municipal		
1. Normal Cost Rate	3.957%	4.060%
2. Amortization Rate under MMO*	<u>7.206%</u>	<u>6.409%</u>
3. Total Year-End Rate [1. + 2.]	11.163%	10.470%
4. Quarterly adjustment factor	0.97253	0.97236
5. Total, adjusted for Quarterly Payments [3. x 4.]	10.856%	10.180%
Plan 10 Municipal		
1. Normal Cost Rate	2.385%	1.434%
2. Amortization Rate under MMO*	<u>0.068%</u>	<u>0.047%</u>
3. Total Year-End Rate [1. + 2.]	2.453%	1.481%
4. Quarterly adjustment factor	0.97253	0.97236
5. Total, adjusted for Quarterly Payments [3. x 4.]	2.386%	1.440%
Plan 16 Municipal		
1. Normal Cost Rate	3.439%	N/A
2. Amortization Rate under MMO*	<u>-0.110%</u>	N/A
3. Total Year-End Rate [1. + 2.]	3.330%	N/A
4. Quarterly adjustment factor	0.97253	N/A
5. Total, adjusted for Quarterly Payments [3. x 4.]	3.238%	N/A

* The amortization amounts were derived based on the proportional share of the Unfunded Actuarial Liability.

**CITY OF PHILADELPHIA MUNICIPAL RETIREMENT SYSTEM
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SECTION IV – CONTRIBUTIONS AND MINIMUM MUNICIPAL OBLIGATION

Table IV-3a shows the development of the FYE 2019 Minimum Municipal Obligation (MMO) and Table IV-3b shows the Revenue Recognition Policy (RRP) for each division. Table IV-4 on the following page shows a schedule of amortization payments toward the MMO.

Table IV-3a				
Development of the Minimum Municipal Obligation for Fiscal Year End 2019				
(\$ thousands)				
	Non-Uniformed	Police	Fire	Total
Estimated FY 2018-2019 Payroll	\$ 1,140,116	\$ 484,489	\$ 177,700	\$ 1,802,304
Normal Cost %	6.801%	12.604%	13.033%	8.976%
Normal Cost	\$ 76,848	\$ 60,723	\$ 23,055	\$ 160,627
Amortization Payment	340,314	171,980	69,684	581,978
Administrative Expenses	6,356	2,303	810	9,469
Subtotal	\$ 423,518	\$ 235,006	\$ 93,549	\$ 752,074
Expected Employee Contributions*	(40,268)	(34,010)	(9,514)	(83,793)
Minimum Municipal Obligation	\$ 383,250	\$ 200,996	\$ 84,035	\$ 668,281

* Includes expected member contributions from Police Plan 87 and Tier Contributions

Table IV-3b				
Development of the Revenue Recognition Policy for Fiscal Year End 2019				
(\$ thousands)				
	Non-Uniformed	Police	Fire	Total
Estimated FY 2018-2019 Payroll	\$ 1,140,116	\$ 484,489	\$ 177,700	\$ 1,802,304
Normal Cost %	6.801%	12.604%	13.033%	8.976%
Normal Cost	\$ 76,848	\$ 60,723	\$ 23,055	\$ 160,627
Amortization Payment	341,838	172,948	69,979	584,765
Administrative Expenses	6,356	2,303	810	9,469
Subtotal	\$ 425,042	\$ 235,974	\$ 93,844	\$ 754,861
Expected Employee Contributions *	(39,212)	(25,327)	(9,514)	(74,053)
Revenue Recognition Policy	\$ 385,830	\$ 210,649	\$ 84,330	\$ 680,808

* Does not include expected member contributions from Police Plan 87 and Tier Contributions for RRP

Note: Numbers may not add due to rounding.

**CITY OF PHILADELPHIA MUNICIPAL RETIREMENT SYSTEM
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SECTION IV – CONTRIBUTIONS AND MINIMUM MUNICIPAL OBLIGATION

Table IV-4 Unfunded Liability Payments toward the MMO for Fiscal Year 2019 (\$ thousands)												
Type of Base	Municipal			Police			Fire			Total		
	7/1/2017 Balance	Years Left	FY 2019 Payment	7/1/2017 Balance	Years Left	FY 2019 Payment	7/1/2017 Balance	Years Left	FY 2019 Payment	7/1/2017 Balance	Years Left	FY 2019 Payment
Fresh Start Base												
est. July 1, 2009	\$ 2,506,723	22	\$ 221,993	\$ 1,410,996	22	\$ 124,956	\$ 546,787	22	\$ 48,423	\$ 4,464,506	22	\$ 395,372
Gain/Loss Base												
est. July 1, 2010	\$ (48,376)	13	\$ (5,577)	\$ (34,495)	13	\$ (3,977)	\$ (2,582)	13	\$ (298)	\$ (85,453)	13	\$ (9,851)
Assumption Change												
est. July 1, 2010	\$ 57,292	8	\$ 9,139	\$ 22,988	8	\$ 3,667	\$ 20,979	8	\$ 3,346	\$ 101,260	8	\$ 16,152
Gain/Loss												
est. July 1, 2011	\$ (96,222)	14	\$ (10,623)	\$ (19,498)	14	\$ (2,153)	\$ (19,174)	14	\$ (2,117)	\$ (134,894)	14	\$ (14,892)
Assumption Change												
est. July 1, 2011	\$ 17,051	9	\$ 2,499	\$ 10,252	9	\$ 1,502	\$ 3,457	9	\$ 507	\$ 30,760	9	\$ 4,508
Gain/Loss												
est. July 1, 2012	\$ 134,528	15	\$ 14,289	\$ 71,151	15	\$ 7,558	\$ 18,426	15	\$ 1,957	\$ 224,105	15	\$ 23,804
Assumption Change												
est. July 1, 2012	\$ 47,878	10	\$ 6,524	\$ 27,353	10	\$ 3,727	\$ 9,557	10	\$ 1,302	\$ 84,788	10	\$ 11,553
Gain/Loss												
est. July 1, 2013	\$ 120,469	16	\$ 12,362	\$ 35,092	16	\$ 3,601	\$ (4,953)	16	\$ (508)	\$ 150,608	16	\$ 15,454
Assumption Change												
est. July 1, 2013	\$ 66,107	11	\$ 8,457	\$ 39,642	11	\$ 5,071	\$ 13,222	11	\$ 1,691	\$ 118,971	11	\$ 15,219
Gain/Loss												
est. July 1, 2014	\$ 98,344	17	\$ 9,783	\$ 40,276	17	\$ 4,006	\$ 46,745	17	\$ 4,650	\$ 185,366	17	\$ 18,439
Assumption Change												
est. July 1, 2014	\$ 229,078	12	\$ 27,727	\$ (8,023)	12	\$ (971)	\$ 9,213	12	\$ 1,115	\$ 230,268	12	\$ 27,871
Gain/Loss												
est. July 1, 2015	\$ 166,370	18	\$ 16,092	\$ 37,775	18	\$ 3,654	\$ 36,400	18	\$ 3,521	\$ 240,545	18	\$ 23,267
Assumption Change												
est. July 1, 2015	\$ 25,692	13	\$ 2,962	\$ 37,130	13	\$ 4,280	\$ 11,855	13	\$ 1,367	\$ 74,677	13	\$ 8,609
Gain/Loss												
est. July 1, 2016	\$ 115,259	19	\$ 10,870	\$ 76,187	19	\$ 7,185	\$ 21,196	19	\$ 1,999	\$ 212,642	19	\$ 20,053
Assumption Change												
est. July 1, 2016	\$ 27,451	14	\$ 3,030	\$ 16,373	14	\$ 1,808	\$ 5,428	14	\$ 599	\$ 49,251	14	\$ 5,437
Gain/Loss												
est. July 1, 2017	\$ 83,515	20	\$ 7,697	\$ 67,301	20	\$ 6,203	\$ 16,408	20	\$ 1,512	\$ 167,224	20	\$ 15,412
Assumption Change												
est. July 1, 2017	\$ 29,092	15	\$ 3,090	\$ 17,531	15	\$ 1,862	\$ 5,809	15	\$ 617	\$ 52,433	15	\$ 5,569
Total	\$ 3,580,251		\$ 340,314	\$ 1,848,031		\$ 171,980	\$ 738,776		\$ 69,684	\$ 6,167,057		\$ 581,978

Note: Numbers may not add due to rounding.

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Table IV-5 (a) – (d) provides more detail by plan on the expected and actual unfunded actuarial liability and the new amortization bases established as of July 1, 2017 for the MMO.

Table IV-5a			
Development of the Fiscal Year 2019 Amortization Payment under MMO			
Municipal and Elected			
(\$ thousands)			
	7/1/2017 Outstanding Balance	Remaining Years	FY 2019 Payment
1. Expected Unfunded Actuarial Liability (UAL) as of July 1, 2017 Based on July 1, 2016 Valuation	\$ 3,467,644		\$ 329,526
2. Changes in UAL due to			
a. Actuarial Experience	\$ 83,515	20	\$ 7,697
b. Assumption Changes	29,092	15	3,090
c. Active Plan Changes	0	10	0
d. Inactive Plan Changes	<u>0</u>	<u>1</u>	<u>0</u>
e. Subtotal	\$ 112,607		\$ 10,787
3. Total [1c. + 2e.]	\$ 3,580,251		\$ 340,314

Note: Numbers may not add due to rounding.

Table IV-5b			
Development of the Fiscal Year 2019 Amortization Payment under MMO			
Police			
(\$ thousands)			
	7/1/2017 Outstanding Balance	Remaining Years	FY 2019 Payment
1. Expected Unfunded Actuarial Liability (UAL) as of July 1, 2017 Based on July 1, 2016 Valuation	\$ 1,763,198		\$ 163,915
2. Changes in UAL due to			
a. Actuarial Experience	\$ 67,301	20	\$ 6,203
b. Assumption Changes	17,531	15	1,862
c. Active Plan Changes	0	10	0
d. Inactive Plan Changes	<u>0</u>	<u>1</u>	<u>0</u>
e. Subtotal	\$ 84,832		\$ 8,065
3. Total [1c. + 2e.]	\$ 1,848,030		\$ 171,980

Note: Numbers may not add due to rounding.

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Table IV-5c			
Development of the Fiscal Year 2019 Amortization Payment under MMO			
Fire			
(\$ thousands)			
	7/1/2017 Outstanding Balance	Remaining Years	FY 2019 Payment
1. Expected Unfunded Actuarial Liability (UAL) as of July 1, 2017 Based on July 1, 2016 Valuation	\$ 716,558		\$ 67,555
2. Changes in UAL due to			
a. Actuarial Experience	\$ 16,408	20	\$ 1,512
b. Assumption Changes	5,809	15	617
c. Active Plan Changes	0	10	0
d. Inactive Plan Changes	0	1	0
e. Subtotal	\$ 22,218		\$ 2,129
3. Total [1c. + 2e.]	\$ 738,776		\$ 69,684

Note: Numbers may not add due to rounding.

Table IV-5d			
Development of the Fiscal Year 2019 Amortization Payment under MMO			
Total			
(\$ thousands)			
	7/1/2017 Outstanding Balance	Remaining Years	FY 2019 Payment
1. Expected Unfunded Actuarial Liability (UAL) as of July 1, 2017 Based on July 1, 2016 Valuation	\$ 5,947,400		\$ 560,996
2. Changes in UAL due to			
a. Actuarial Experience	\$ 167,224	20	\$ 15,412
b. Assumption Changes	52,433	15	5,569
c. Active Plan Changes	0	10	0
d. Inactive Plan Changes	0	1	0
e. Subtotal	\$ 219,657		\$ 20,981
3. Total [1c. + 2e.]	\$ 6,167,057		\$ 581,978

Note: Numbers may not add due to rounding.

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The tables on the following pages support Exhibit I of the Act 205 filings.

- Table IV-6 is a summary of assets, liabilities, and amortization contributions under the assumption that the Pension Obligation Bond (POB) was never contributed.
- Table IV-7 is a schedule of modified amortization payments under the assumption that the proceeds from the POB were never contributed.
- Table IV-8a, IV-8b, and IV-8c are debt service schedules for the POB, allocated for the Municipal, Police, and Fire divisions.
- Tables IV-9a and IV-9b are statements of receipts and disbursements for each division excluding and including bond issue assets, respectively, excluding the PAF.

Table IV-6				
Summary of Modified Actuarial Data				
(\$ thousands)				
	Municipal	Police	Fire	Total
Actuarial Liability	\$ 6,373,466	\$ 3,623,033	\$ 1,279,178	\$ 11,275,676
Market Value of Assets (less POB)	\$ 2,401,442	\$ 1,607,509	\$ 410,938	\$ 4,419,889
Actuarial Value of Assets (less POB)	\$ 2,382,493	\$ 1,557,764	\$ 416,885	\$ 4,357,142
Unfunded Actuarial Liability (AL - AVA)	\$ 3,990,973	\$ 2,065,269	\$ 862,293	\$ 6,918,535
Amortization Contributions				
Total Amortization Amount	\$ 377,149	\$ 191,869	\$ 80,871	\$ 649,889
Remaining Years	19	20	19	19

Note: Numbers may not add due to rounding.

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Table IV-7 Modified Unfunded Liability Payments toward the MMO for Fiscal Year 2019 (\$ thousands)												
Type of Base	Municipal			Police			Fire			Total		
	7/1/2017 Balance	Remaining Years	FY 2019 Payment	7/1/2017 Balance	Remaining Years	FY 2019 Payment	7/1/2017 Balance	Remaining Years	FY 2019 Payment	7/1/2017 Balance	Remaining Years	FY 2019 Payment
Fresh Start UAL Base est. July 1, 2009	\$ 2,939,518	22	\$ 260,321	\$ 1,592,191	22	\$ 141,003	\$ 674,522	22	\$ 59,735	\$ 5,206,231	22	\$ 461,059
July 1, 2010 Charges												
Experience (Gain)/Loss	\$ (42,846)	13	\$ (4,939)	\$ (29,972)	13	\$ (3,455)	\$ 1,471	13	\$ 170	\$ (71,346)	13	\$ (8,225)
Assumption Change	57,292	8	9,139	22,988	8	3,667	20,979	8	3,346	101,260	8	16,152
July 1, 2011 Charges												
Experience (Gain)/Loss	\$ (75,282)	14	\$ (8,311)	\$ (7,588)	14	\$ (838)	\$ (10,163)	14	\$ (1,122)	\$ (93,033)	14	\$ (10,271)
Assumption Change	\$ 17,051	9	\$ 2,499	\$ 10,252	9	\$ 1,502	\$ 3,457	9	\$ 507	\$ 30,760	9	\$ 4,508
July 1, 2012 Charges												
Experience (Gain)/Loss	\$ 135,150	15	\$ 14,356	\$ 75,026	15	\$ 7,969	\$ 19,240	15	\$ 2,044	\$ 229,417	15	\$ 24,368
Assumption Change	\$ 47,878	10	\$ 6,524	\$ 27,353	10	\$ 3,727	\$ 9,557	10	\$ 1,302	\$ 84,788	10	\$ 11,553
July 1, 2013 Charges												
Experience (Gain)/Loss	\$ 129,179	16	\$ 13,255	\$ 43,762	16	\$ 4,490	\$ (2,989)	16	\$ (307)	\$ 169,953	16	\$ 17,439
Assumption Change	\$ 66,107	11	\$ 8,457	\$ 39,642	11	\$ 5,071	\$ 13,222	11	\$ 1,691	\$ 118,971	11	\$ 15,219
July 1, 2014 Charges												
Experience (Gain)/Loss	\$ 98,855	17	\$ 9,833	\$ 45,051	17	\$ 4,481	\$ 46,244	17	\$ 4,600	\$ 190,149	17	\$ 18,915
Assumption Change	\$ 229,078	12	\$ 27,727	\$ (8,023)	12	\$ (971)	\$ 9,213	12	\$ 1,115	\$ 230,268	12	\$ 27,871
July 1, 2015 Charges												
Experience (Gain)/Loss	\$ 162,187	18	\$ 15,688	\$ 41,541	18	\$ 4,018	\$ 35,316	18	\$ 3,416	\$ 239,044	18	\$ 23,122
Assumption Change	\$ 25,692	13	\$ 2,962	\$ 37,130	13	\$ 4,280	\$ 11,855	13	\$ 1,367	\$ 74,677	13	\$ 8,609
July 1, 2016 Charges												
Experience (Gain)/Loss	\$ 90,832	19	\$ 8,566	\$ 76,982	19	\$ 7,260	\$ 12,795	19	\$ 1,207	\$ 180,609	19	\$ 17,032
Assumption Change	\$ 27,451	14	\$ 3,030	\$ 16,373	14	\$ 1,808	\$ 5,428	14	\$ 599	\$ 49,251	14	\$ 5,437
July 1, 2017 Charges												
Experience (Gain)/Loss	\$ 53,738	20	\$ 4,953	\$ 65,030	20	\$ 5,993	\$ 6,336	20	\$ 584	\$ 125,103	20	\$ 11,530
Assumption Change	\$ 29,092	15	\$ 3,090	\$ 17,531	15	\$ 1,862	\$ 5,809	15	\$ 617	\$ 52,433	15	\$ 5,569
Total	\$ 3,990,973		\$ 377,149	\$ 2,065,269		\$ 191,869	\$ 862,293		\$ 80,871	\$ 6,918,535		\$ 649,888

Note: Numbers may not add due to rounding.



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Table IV-8a

TOTAL DEBT SERVICE REQUIREMENTS: MUNICIPAL

Plan Year	Required Principal Payment	Required Interest Payment	Premium or Discount Amortized	Principal Balance at Valuation Date
1999	\$ 0	\$ 7,041,525.30	\$ 0	\$ 727,185,593.15
2000	9,917,857.50	29,825,175.27	0	717,267,735.65
2001	4,567,730.63	29,324,323.46	0	712,700,005.02
2002	0	29,087,715.02	0	712,700,005.02
2003	6,422,403.75	29,087,715.02	0	706,277,601.27
2004	8,884,981.88	28,728,336.25	0	697,392,619.39
2005	15,161,038.13	28,250,550.75	0	682,231,581.26
2006	18,743,737.50	27,403,048.72	0	663,487,843.76
2007	22,526,257.50	26,345,901.92	0	640,961,586.26
2008	26,486,083.13	25,064,157.87	0	614,475,503.13
2009	30,870,879.38	23,543,856.70	0	583,604,623.75
2010	40,000,711.88	21,756,432.78	0	543,603,911.87
2011	45,151,018.13	19,420,391.21	0	498,452,893.74
2012	22,154,721.72	45,234,066.39	0	476,298,172.02
2013	21,786,233.75	48,416,929.37	0	454,511,938.27
2014	20,545,516.84	50,378,126.28	0	433,966,421.43
2015	20,088,811.07	53,652,021.42	0	413,877,610.36
2016	19,364,886.72	56,464,212.02	0	394,512,723.64
2017	18,085,471.62	57,743,627.12	0	376,427,252.02
2018	16,915,332.51	58,913,766.23	0	359,511,919.51
2019	15,787,131.76	60,041,966.99	0	343,724,787.75
2020	14,758,165.41	61,070,933.33	0	328,966,622.34
2021	13,823,708.03	62,005,390.71	0	315,142,914.31
2022	12,919,375.38	62,909,723.36	0	302,223,538.93
2023	12,071,748.11	63,757,350.63	0	290,151,790.82
2024	11,250,110.80	64,578,987.94	0	278,901,680.02
2025	10,560,195.36	65,268,903.38	0	268,341,484.66
2026	17,271,090.90	58,558,007.84	0	251,070,393.76
2027	60,297,984.38	16,196,263.75	0	190,772,409.38
2028	64,125,534.38	12,367,341.75	0	126,646,875.00
2029	126,646,875.00	4,147,685.16	0	0

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Table IV-8b					
TOTAL DEBT SERVICE REQUIREMENTS: POLICE					
Plan Year	Required Principal Payment	Required Interest Payment	Premium or Discount Amortized	Principal Balance at Valuation Date	
1999	\$ 0	\$ 3,848,228.76	\$ 0	\$ 397,410,560.15	
2000	5,420,158.68	16,299,607.13	0	391,990,401.47	
2001	2,496,287.61	16,025,889.30	0	389,494,113.86	
2002	0	15,896,581.60	0	389,494,113.86	
2003	3,509,875.74	15,896,581.60	0	385,984,238.12	
2004	4,855,686.99	15,705,644.36	0	381,128,551.13	
2005	8,285,583.09	15,439,067.14	0	372,842,968.04	
2006	10,243,546.20	14,975,903.05	0	362,599,421.84	
2007	12,310,712.28	14,398,167.04	0	350,288,709.56	
2008	14,474,776.77	13,697,687.51	0	335,813,932.79	
2009	16,871,089.83	12,866,835.33	0	318,942,842.96	
2010	21,860,588.91	11,889,999.22	0	297,082,254.05	
2011	24,675,257.01	10,613,340.83	0	272,406,997.04	
2012	12,107,666.12	24,720,643.30	0	260,299,330.92	
2013	11,906,285.60	26,460,093.82	0	248,393,045.32	
2014	11,228,227.61	27,531,897.73	0	237,164,817.71	
2015	10,978,635.63	29,321,097.79	0	226,186,182.08	
2016	10,583,007.35	30,857,974.00	0	215,603,174.73	
2017	9,883,800.61	31,557,180.75	0	205,719,374.12	
2018	9,244,313.74	32,196,667.62	0	196,475,060.38	
2019	8,627,746.39	32,813,234.97	0	187,847,313.99	
2020	8,065,411.14	33,375,570.22	0	179,781,902.85	
2021	7,554,725.51	33,886,255.84	0	172,227,177.34	
2022	7,060,503.20	34,380,478.16	0	165,166,674.14	
2023	6,597,270.66	34,843,710.70	0	158,569,403.48	
2024	6,148,241.77	35,292,739.59	0	152,421,161.71	
2025	5,771,199.53	35,669,781.82	0	146,649,962.18	
2026	9,438,737.48	32,002,243.88	0	137,211,224.70	
2027	32,953,149.75	8,851,339.07	0	104,258,074.95	
2028	35,044,924.95	6,758,814.06	0	69,213,150.00	
2029	69,213,150.00	2,266,730.66	0	0	

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Table IV-8c

TOTAL DEBT SERVICE REQUIREMENTS: FIRE

Plan Year	Required Principal Payment	Required Interest Payment	Premium or Discount Amortized	Principal Balance at Valuation Date
1999	\$ 0	\$ 1,620,185.70	\$ 0	\$ 167,318,251.01
2000	2,282,001.44	6,862,479.41	0	165,036,249.57
2001	1,050,989.88	6,747,238.34	0	163,985,259.69
2002	0	6,692,797.06	0	163,985,259.69
2003	1,477,731.92	6,692,797.06	0	162,507,527.77
2004	2,044,346.92	6,612,408.45	0	160,463,180.85
2005	3,488,405.72	6,500,173.80	0	156,974,775.13
2006	4,312,749.60	6,305,171.92	0	152,662,025.53
2007	5,183,070.24	6,061,932.84	0	147,478,955.29
2008	6,094,187.16	5,767,016.15	0	141,384,768.13
2009	7,103,085.64	5,417,209.80	0	134,281,682.49
2010	9,203,770.28	5,005,941.15	0	125,077,912.21
2011	10,388,805.08	4,468,440.96	0	114,689,107.13
2012	5,097,583.51	10,407,913.67	0	109,591,523.62
2013	5,012,798.05	11,140,259.13	0	104,578,725.57
2014	4,727,321.30	11,591,511.24	0	99,851,404.27
2015	4,622,237.80	12,344,802.31	0	95,229,166.47
2016	4,455,669.93	12,991,859.70	0	90,773,496.54
2017	4,161,289.10	13,286,240.52	0	86,612,207.44
2018	3,892,051.60	13,555,478.02	0	82,720,155.84
2019	3,632,463.70	13,815,065.92	0	79,087,692.14
2020	3,395,708.67	14,051,820.95	0	75,691,983.47
2021	3,180,699.22	14,266,830.40	0	72,511,284.25
2022	2,972,621.18	14,474,908.45	0	69,538,663.07
2023	2,777,590.48	14,669,939.14	0	66,761,072.59
2024	2,588,539.82	14,858,989.80	0	64,172,532.77
2025	2,429,797.06	15,017,732.56	0	61,742,735.71
2026	3,973,908.11	13,473,621.52	0	57,768,827.60
2027	13,873,973.00	3,726,600.95	0	43,894,854.60
2028	14,754,654.60	2,845,603.67	0	29,140,200.00
2029	29,140,200.00	954,341.55	0	0

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Table IV- 9a provides the receipts and disbursements of assets *excluding* the Bond issue assets and excluding the PAF.

Table IV-9a				
Receipts and Disbursements Excluding Bond Issue Assets				
	Municipal	Police	Fire	Total
Assets as of July 1, 2016	\$ 2,099,468,899	\$ 1,427,704,241	\$ 347,322,345	\$ 3,874,495,485
Receipts				
Employer Contributions	\$ 418,193,900	\$ 200,531,472	\$ 94,366,131	\$ 713,091,503
Employee Contributions	38,859,967	25,011,917	9,735,476	73,607,360
State Aid	38,630,153	21,242,752	8,780,174	68,653,079
Supplemental State Assistance	0	0	0	0
Investment Income (includes investment expenses)	277,304,042	189,601,395	46,649,121	513,554,559
Other Receipts	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total Receipts	\$ 772,988,062	\$ 436,387,537	\$ 159,530,902	\$ 1,368,906,501
Disbursements				
Benefit Payments	\$ 460,410,700	\$ 251,274,621	\$ 94,751,646	\$ 806,436,967
Refund of Contributions	4,657,378	3,148,252	396,644	8,202,274
Administrative Expenses	5,947,204	2,159,864	766,589	8,873,657
PAF Transfer at Year End	0	0	0	0
Other Disbursements	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total Disbursements	\$ 471,015,282	\$ 256,582,737	\$ 95,914,879	\$ 823,512,898
Assets as of July 1, 2017	\$ 2,401,441,680	\$ 1,607,509,041	\$ 410,938,367	\$ 4,419,889,088

Note: Numbers may not add due to rounding.

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Table IV- 9b provides the market value of assets *including* the Bond issue assets and excluding the PAF.

Table IV-9b				
Receipts and Disbursements Including Bond Issue Assets				
	Municipal	Police	Fire	Total
Assets as of July 1, 2016	\$ 2,369,603,805	\$ 1,533,583,047	\$ 447,565,394	\$ 4,350,752,245
Receipts				
Employer Contributions	\$ 370,759,195	\$ 188,791,891	\$ 78,032,533	\$ 637,583,619
Employee Contributions	38,859,967	25,011,917	9,735,476	73,607,360
State Aid	38,630,153	21,242,752	8,780,174	68,653,079
Supplemental State Assistance	0	0	0	0
Investment Income (includes investment expenses)	308,502,956	198,527,335	58,863,631	565,893,922
Other Receipts	0	0	0	0
Total Receipts	\$ 756,752,271	\$ 433,573,895	\$ 155,411,814	\$ 1,345,737,980
Disbursements				
Benefit Payments	\$ 460,410,700	\$ 251,274,621	\$ 94,751,646	\$ 806,436,967
Refund of Contributions	4,657,378	3,148,252	396,644	8,202,274
Administrative Expenses	5,947,204	2,159,864	766,589	8,873,657
PAF Transfer at Year End	0	0	0	0
Other Disbursements	0	0	0	0
Total Disbursements	\$ 471,015,282	\$ 256,582,737	\$ 95,914,879	\$ 823,512,898
Assets as of July 1, 2017	\$ 2,655,340,794	\$ 1,710,574,205	\$ 507,062,329	\$ 4,872,977,327

Note: Numbers may not add due to rounding.

**CITY OF PHILADELPHIA MUNICIPAL RETIREMENT SYSTEM
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SECTION IV – CONTRIBUTIONS AND MINIMUM MUNICIPAL OBLIGATION

The Table IV – 10 and Table IV – 11 provide information on the City’s Funding Policy for FYE 2017 and FYE 2018. The differences between the MMO and the City’s Funding Policy are:

- The City’s Funding Policy amortizes the initial July 1, 1985 unfunded actuarial liability over 34 years. Chapter 10 under Act 44 allowed for the amortization of the entire unfunded actuarial liability as of July 1, 2009 to be “fresh started” over a 30-year period for MMO purposes.
- The normal cost portion of the City’s Funding Policy payment is based on actual fiscal year payroll, whereas the MMO is based on the prior year’s estimated payroll for that year.
- **Interest does not accumulate on the MMO, as long as the payment is made by the end of the fiscal year.** This has the impact of creating systematic losses each year which get offset by assumed interest on contributions received before year end.
- Both the City’s Funding Policy and the MMO utilize valuation results developed in the previous year (e.g., the July 1, 2017 valuation report will determine FYE 2019 contribution amounts). However, no interest is added to the MMO for this delay.
- The MMO reflects amortization of prior years’ City contributions above past MMOs as actuarial gains.

Starting with FYE 2007-2008, the MMO recognized actuarial gains and losses every other year, in order to coincide with the filing of the Act 205 forms. Beginning for FYE 2012, gains and losses are recognized annually. The City’s Funding Policy recognizes actuarial gains and losses on an annual basis.

Table IV – 10 develops the amortized amounts for the current year under the City’s Funding Policy. For additional details on the amortized amounts by plan, refer to Appendix B.

Table IV – 11 provides the estimated FYE 2019 and updated FYE 2018 contribution amount under the City’s Funding Policy. The estimated FYE 2019 contribution will be updated in next year’s actuarial valuation report based upon the July 1, 2018 payroll.

**CITY OF PHILADELPHIA MUNICIPAL RETIREMENT SYSTEM
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SECTION IV – CONTRIBUTIONS AND MINIMUM MUNICIPAL OBLIGATION

Table IV-10 Development of the Fiscal Year 2019 Amortization Payment under the City's Funding Policy					
Total (\$ thousands)					
	7/1/2017 Outstanding Balance	7/1/2018 Expected Balance	Remaining Years	FY 2019 Payment Beginning-of-Year	FY 2019 Payment End-of-Year
1. Expected Unfunded Actuarial Liability (UAL) as of July 1, 2017 Based on July 1, 2016 Valuation Remaining	\$ 5,602,275	\$ 5,002,903		\$ 908,653	\$ 978,165
2. Changes in UAL due to					
a. Actuarial Experience	\$ 512,349	\$ 551,544	20	\$ 50,832	\$ 54,721
b. Assumption Changes	52,433	56,444	15	5,995	6,454
c. Active Plan Changes	0	0	10	0	0
d. Inactive Plan Changes	0	0	1	0	0
e. Subtotal	<u>\$ 564,782</u>	<u>\$ 607,988</u>		<u>\$ 56,828</u>	<u>\$ 61,175</u>
3. Total [1c. + 2e.]	\$ 6,167,057	\$ 5,610,891		\$ 965,480	\$ 1,039,340

Table IV-11 City's Funding Policy Contributions*				
Fiscal Year	2019	% of Pay	2018	% of Pay
Estimated FY Payroll	\$ 1,802,304		\$ 1,744,728	**
Normal Cost (with Expenses)	\$ 170,096	9.44%	\$ 163,368	9.36%
Employee Contributions	<u>(83,793)</u>	4.65%	<u>(70,273)</u>	4.03%
City Normal Cost	\$ 86,303	4.79%	\$ 93,095	5.34%
Amortization Payment	<u>965,480</u>	53.57%	<u>956,312</u>	54.81%
City's Funding Policy	\$ 1,051,783	58.36%	\$ 1,049,407	60.15%

* Assuming beginning-of-year payment.

** FY 2017 Payroll for the City's Funding Policy is the final payroll for the prior year. All other payroll is estimated based upon the prior year's data used for the actuarial valuation.

**CITY OF PHILADELPHIA MUNICIPAL RETIREMENT SYSTEM
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APPENDIX A – MEMBERSHIP INFORMATION

The data for this valuation was provided by the Board of Pensions as of July 1, 2017. Cheiron did not audit any of the data; however, it was reviewed to ensure that it complies with generally accepted actuarial standards. The following is a list of data charts contained in this section:

- A-1: Active Member Data by Plan
- A-2: Non-Active Member Data, Counts, by Plan
- A-3: Non-Active Member Data, Total Annual Benefits, by Plan
- A-4: Non-Active Member Data, Average Annual Benefits, by Plan
- A-5 through A-24: Age/Service Distribution for Active Participants, Counts and Average Salary for all Plans
- A-25: Reconciliation of Plan Membership
- A-26 through A-30: Age and Benefit Distributions for Non-Active Member Data

**CITY OF PHILADELPHIA MUNICIPAL RETIREMENT SYSTEM
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APPENDIX A – MEMBERSHIP INFORMATION

**Table A-1
Active Member Data**

	July 1, 2017	July 1, 2016	% Change		July 1, 2017	July 1, 2016	% Change
<u>1967 Municipal</u>				<u>1987 Elected</u>			
Count	1,497	1,787	-16.2%	Count	25	26	-3.8%
Average Age	55.4	54.9	0.9%	Average Age	56.9	55.9	1.7%
Average Service	29.9	29.2	2.6%	Average Service	21.4	20.5	4.6%
Average Salary	\$ 67,714	\$ 65,819	2.9%	Average Salary	\$ 136,732	\$ 136,485	0.2%
Total Annual Salary	\$ 101,368,392	\$ 117,618,534	-13.8%	Total Annual Salary	\$ 3,418,294	\$ 3,548,609	-3.7%
<u>1967 Police</u>				<u>1987 Police</u>			
Count	294	350	-16.0%	Count	5,698	5,565	2.4%
Average Age	56.6	55.9	1.3%	Average Age	41.6	41.6	0.1%
Average Service	31.7	30.9	2.7%	Average Service	15.4	15.3	0.8%
Average Salary	\$ 92,470	\$ 87,786	5.3%	Average Salary	\$ 77,540	\$ 75,340	2.9%
Total Annual Salary	\$ 27,186,150	\$ 30,724,988	-11.5%	Total Annual Salary	\$ 441,825,528	\$ 419,266,968	5.4%
<u>1967 Fire</u>				<u>1987 Fire</u>			
Count	93	106	-12.3%	Count	2,180	2,184	-0.2%
Average Age	57.6	56.9	1.3%	Average Age	40.5	39.8	1.7%
Average Service	32.0	31.4	2.0%	Average Service	12.0	11.3	6.3%
Average Salary	\$ 91,501	\$ 88,705	3.2%	Average Salary	\$ 75,006	\$ 71,070	5.5%
Total Annual Salary	\$ 8,509,590	\$ 9,402,718	-9.5%	Total Annual Salary	\$ 163,513,307	\$ 155,216,075	5.3%
<u>1987 Municipal</u>				<u>2010 Municipal</u>			
Count	16,913	17,358	-2.6%	Count	1,312	932	40.8%
Average Age	44.8	44.3	1.2%	Average Age	36.2	35.7	1.5%
Average Service	11.2	10.5	6.4%	Average Service	1.7	1.0	71.7%
Average Salary	\$ 54,565	\$ 51,913	5.1%	Average Salary	\$ 44,291	\$ 42,553	4.1%
Total Annual Salary	\$ 922,850,459	\$ 901,111,541	2.4%	Total Annual Salary	\$ 58,110,267	\$ 39,659,529	46.5%

**CITY OF PHILADELPHIA MUNICIPAL RETIREMENT SYSTEM
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APPENDIX A – MEMBERSHIP INFORMATION

Table A-1							
Active Member Data (continued)							
	July 1, 2017	July 1, 2016	% Change		July 1, 2017	July 1, 2016	% Change
<u>2016 Municipal</u>				<u>Total City</u>			
Count	603	0	0.0%	Count	28,615	28,308	1.1%
Average Age	38.1	0	0.0%	Average Age	44.1	44.0	0.1%
Average Service	0.5	0	0.0%	Average Service	12.7	12.7	-0.2%
Average Salary	\$ 29,762	\$ 0	0.0%	Average Salary	\$ 60,973	\$ 59,225	3.0%
Total Annual Salary	\$ 17,946,301	\$ 0	0.0%	Total Annual Salary	\$ 1,744,728,288	\$ 1,676,548,962	4.1%

**CITY OF PHILADELPHIA MUNICIPAL RETIREMENT SYSTEM
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APPENDIX A – MEMBERSHIP INFORMATION

Table A-2 Non-Active Member Data Count							
	July 1, 2017	July 1, 2016	% Change		July 1, 2017	July 1, 2016	% Change
<u>Total City</u>				<u>1987 Municipal Plan</u>			
Retired	22,288	22,412	-0.6%	Retired	2,293	2,067	10.9%
Disabled	3,942	4,005	-1.6%	Disabled	488	452	8.0%
Beneficiary	<u>8,552</u>	<u>8,567</u>	-0.2%	Beneficiary	<u>419</u>	<u>384</u>	9.1%
In Pay Status Total	34,782	34,984	-0.6%	In Pay Status Total	3,200	2,903	10.2%
DROP	1,767	1,614	9.5%	DROP	532	440	20.9%
Deferred Vested	1,157	1,248	-7.3%	Deferred Vested	781	819	-4.6%
<u>1967 Municipal Plan</u>				<u>1987 Elected Plan</u>			
Retired	12,367	12,604	-1.9%	Retired	19	20	-5.0%
Disabled	1,401	1,463	-4.2%	Disabled	0	0	0.0%
Beneficiary	<u>4,837</u>	<u>4,957</u>	-2.4%	Beneficiary	<u>4</u>	<u>4</u>	0.0%
In Pay Status Total	18,605	19,024	-2.2%	In Pay Status Total	23	24	-4.2%
DROP	761	719	5.8%	DROP	1	0	0.0%
Deferred Vested	265	305	-13.1%	Deferred Vested	0	0	0.0%
<u>1967 Police Plan</u>				<u>1987 Police Plan</u>			
Retired	5,150	5,288	-2.6%	Retired	398	339	17.4%
Disabled	1,258	1,310	-4.0%	Disabled	431	402	7.2%
Beneficiary	<u>2,290</u>	<u>2,244</u>	2.0%	Beneficiary	<u>152</u>	<u>143</u>	6.3%
In Pay Status Total	8,698	8,842	-1.6%	In Pay Status Total	981	884	11.0%
DROP	185	210	-11.9%	DROP	180	143	25.9%
Deferred Vested	1	1	0.0%	Deferred Vested	96	107	-10.3%
<u>1967 Fire Plan</u>				<u>1987 Fire Plan</u>			
Retired	1,912	1,964	-2.6%	Retired	149	130	14.6%
Disabled	288	304	-5.3%	Disabled	76	74	2.7%
Beneficiary	<u>789</u>	<u>781</u>	1.0%	Beneficiary	<u>61</u>	<u>54</u>	13.0%
In Pay Status Total	2,989	3,049	-2.0%	In Pay Status Total	286	258	10.9%
DROP	60	64	-6.3%	DROP	48	38	26.3%
Deferred Vested	0	0	0.0%	Deferred Vested	14	16	-12.5%

**CITY OF PHILADELPHIA MUNICIPAL RETIREMENT SYSTEM
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APPENDIX A – MEMBERSHIP INFORMATION

Table A-3 Non-Active Member Data Total Annual Benefit												
	July 1, 2017			July 1, 2016			% Change					
<u>Total City</u>												
Retired	\$	583,810,766	\$	578,440,018		0.9%	<u>1987 Municipal Plan</u>	\$	30,931,382	\$	27,247,983	13.5%
Disabled		85,745,773		85,036,924		0.8%	Disabled		9,183,040		8,261,001	11.2%
Beneficiary		80,647,990		78,351,397		2.9%	Beneficiary		3,299,584		2,869,500	15.0%
In Pay Status Total	\$	750,204,529	\$	741,828,339		1.1%	In Pay Status Total	\$	43,414,006	\$	38,378,484	13.1%
DROP (pension)	\$	65,134,550	\$	57,918,449		12.5%	DROP (pension)	\$	9,304,348	\$	7,431,568	25.2%
DROP (account balance)		121,206,906		111,988,463		8.2%	DROP (account balance)		14,749,860		11,960,235	23.3%
Deferred Vested	\$	16,192,404	\$	17,941,507		-9.7%	Deferred Vested	\$	10,251,830	\$	10,820,310	-5.3%
<u>1967 Municipal Plan</u>							<u>1987 Elected Plan</u>					
Retired	\$	318,569,625	\$	317,991,347		0.2%	Retired	\$	1,438,184	\$	1,512,097	-4.9%
Disabled		26,760,190		27,466,014		-2.6%	Disabled		0		0	0.0%
Beneficiary		42,053,622		41,991,155		0.1%	Beneficiary		118,681		118,681	0.0%
In Pay Status Total	\$	387,383,437	\$	387,448,516		0.0%	In Pay Status Total	\$	1,556,865	\$	1,630,778	-4.5%
DROP (pension)	\$	32,883,171	\$	28,856,935		14.0%	DROP (pension)	\$	123,864	\$	0	0.0%
DROP (account balance)		61,113,537		52,144,493		17.2%	DROP (account balance)		104,203		0	0.0%
Deferred Vested	\$	4,130,746	\$	5,066,372		-18.5%	Deferred Vested	\$	0	\$	0	0.0%
<u>1967 Police Plan</u>							<u>1987 Police Plan</u>					
Retired	\$	151,005,013	\$	151,488,911		-0.3%	Retired	\$	10,010,578	\$	8,187,247	22.3%
Disabled		24,192,415		24,932,784		-3.0%	Disabled		16,889,302		15,452,251	9.3%
Beneficiary		22,813,021		21,798,921		4.7%	Beneficiary		2,052,179		1,817,171	12.9%
In Pay Status Total	\$	198,010,449	\$	198,220,616		-0.1%	In Pay Status Total	\$	28,952,059	\$	25,456,669	13.7%
DROP (pension)	\$	11,024,522	\$	11,872,800		-7.1%	DROP (pension)	\$	6,530,256	\$	4,760,334	37.2%
DROP (account balance)		23,371,785		29,618,611		-21.1%	DROP (account balance)		11,502,400		9,236,025	24.5%
Deferred Vested	\$	13,436	\$	13,436		0.0%	Deferred Vested	\$	1,559,797	\$	1,776,443	-12.2%
<u>1967 Fire Plan</u>							<u>1987 Fire Plan</u>					
Retired	\$	68,348,211	\$	69,045,549		-1.0%	Retired	\$	3,507,773	\$	2,966,884	18.2%
Disabled		5,825,027		6,169,058		-5.6%	Disabled		2,895,799		2,755,816	5.1%
Beneficiary		9,535,456		9,087,976		4.9%	Beneficiary		775,447		667,993	16.1%
In Pay Status Total	\$	83,708,694	\$	84,302,583		-0.7%	In Pay Status Total	\$	7,179,019	\$	6,390,693	12.3%
DROP (pension)	\$	3,692,244	\$	3,843,900		-3.9%	DROP (pension)	\$	1,576,145	\$	1,152,912	36.7%
DROP (account balance)		7,737,467		7,009,292		10.4%	DROP (account balance)		2,627,653		2,019,808	30.1%
Deferred Vested	\$	0	\$	0		0.0%	Deferred Vested	\$	236,595	\$	264,946	-10.7%

**CITY OF PHILADELPHIA MUNICIPAL RETIREMENT SYSTEM
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APPENDIX A – MEMBERSHIP INFORMATION

Table A-4 Non-Active Member Data Average Annual Benefit											
	July 1, 2017			July 1, 2016			% Change				
<u>Total City</u>				<u>1987 Municipal Plan</u>							
Retired	\$	26,194	\$	25,809	1.5%	Retired	\$	13,489	\$	13,182	2.3%
Disabled		21,752		21,233	2.4%	Disabled		18,818		18,277	3.0%
Beneficiary		9,430		9,146	3.1%	Beneficiary		7,875		7,473	5.4%
In Pay Status Total	\$	21,569	\$	21,205	1.7%	In Pay Status Total	\$	13,567	\$	13,220	2.6%
DROP (pension)	\$	36,862	\$	35,885	2.7%	DROP (pension)	\$	17,489	\$	16,890	3.5%
DROP (account balance)		68,595		69,386	-1.1%	DROP (account balance)		27,725		27,182	2.0%
Deferred Vested	\$	13,995	\$	14,376	-2.7%	Deferred Vested	\$	13,127	\$	13,212	-0.6%
<u>1967 Municipal Plan</u>				<u>1987 Elected Plan</u>							
Retired	\$	25,760	\$	25,229	2.1%	Retired	\$	75,694	\$	75,605	0.1%
Disabled		19,101		18,774	1.7%	Disabled		0		0	0.0%
Beneficiary		8,694		8,471	2.6%	Beneficiary		29,670		29,670	0.0%
In Pay Status Total	\$	20,821	\$	20,366	2.2%	In Pay Status Total	\$	67,690	\$	67,949	-0.4%
DROP (pension)	\$	43,210	\$	40,135	7.7%	DROP (pension)	\$	123,864	\$	0	0.0%
DROP (account balance)		80,307		72,524	10.7%	DROP (account balance)		104,203		0	0.0%
Deferred Vested	\$	15,588	\$	16,611	-6.2%	Deferred Vested	\$	0	\$	0	0.0%
<u>1967 Police Plan</u>				<u>1987 Police Plan</u>							
Retired	\$	29,321	\$	28,648	2.4%	Retired	\$	25,152	\$	24,151	4.1%
Disabled		19,231		19,033	1.0%	Disabled		39,186		38,438	1.9%
Beneficiary		9,962		9,714	2.5%	Beneficiary		13,501		12,707	6.2%
In Pay Status Total	\$	22,765	\$	22,418	1.5%	In Pay Status Total	\$	29,513	\$	28,797	2.5%
DROP (pension)	\$	59,592	\$	56,537	5.4%	DROP (pension)	\$	36,279	\$	33,289	9.0%
DROP (account balance)		126,334		141,041	-10.4%	DROP (account balance)		63,902		64,588	-1.1%
Deferred Vested	\$	13,436	\$	13,436	0.0%	Deferred Vested	\$	16,248	\$	16,602	-2.1%
<u>1967 Fire Plan</u>				<u>1987 Fire Plan</u>							
Retired	\$	35,747	\$	35,156	1.7%	Retired	\$	23,542	\$	22,822	3.2%
Disabled		20,226		20,293	-0.3%	Disabled		38,103		37,241	2.3%
Beneficiary		12,085		11,636	3.9%	Beneficiary		12,712		12,370	2.8%
In Pay Status Total	\$	28,006	\$	27,649	1.3%	In Pay Status Total	\$	25,101	\$	24,770	1.3%
DROP (pension)	\$	61,537	\$	60,061	2.5%	DROP (pension)	\$	32,836	\$	30,340	8.2%
DROP (account balance)		128,958		109,520	17.7%	DROP (account balance)		54,743		53,153	3.0%
Deferred Vested	\$	0	\$	0	0.0%	Deferred Vested	\$	16,900	\$	16,559	2.1%

**CITY OF PHILADELPHIA MUNICIPAL RETIREMENT SYSTEM
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APPENDIX A – MEMBERSHIP INFORMATION

**Table A-5
Distribution of Active Participants (Excludes DROP Participants) as of July 1, 2017 -- Total City**

COUNTS BY AGE/SERVICE

Age	Service								Total
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 & Up	
Under 25	273	452	20	1	0	0	0	0	746
25 to 29	489	1,772	422	92	0	0	0	0	2,775
30 to 34	283	1,411	1,107	726	41	0	0	0	3,568
35 to 39	158	822	765	1,287	474	44	0	0	3,550
40 to 44	156	504	501	928	949	461	21	0	3,520
45 to 49	141	459	430	727	1,005	1,134	441	12	4,349
50 to 54	82	361	333	612	687	914	989	253	4,231
55 to 59	70	309	306	464	563	592	629	555	3,488
60 to 64	34	215	234	307	302	226	187	203	1,708
65 & up	27	88	145	140	112	58	34	76	680
Total	1,713	6,393	4,263	5,284	4,133	3,429	2,301	1,099	28,615

**Table A-6
Distribution of Active Participants (Excludes DROP Participants) as of July 1, 2017 -- Total City**

AVERAGE SALARY BY AGE/SERVICE

Age	Service								Total
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 & Up	
Under 25	\$ 36,808	\$ 34,767	\$ 36,136	\$ 31,696	\$ 0	\$ 0	\$ 0	\$ 0	\$ 35,546
25 to 29	41,828	50,904	54,706	51,129	0	0	0	0	49,890
30 to 34	42,520	53,325	63,026	65,109	59,024	0	0	0	57,941
35 to 39	43,474	52,252	63,867	68,012	68,839	62,216	0	0	62,416
40 to 44	42,825	51,608	63,988	69,490	71,383	73,676	60,126	0	65,968
45 to 49	35,132	50,518	57,351	64,776	68,980	76,138	78,041	56,256	66,832
50 to 54	41,322	48,204	54,433	59,305	62,049	71,091	76,570	72,648	65,451
55 to 59	42,147	46,695	49,775	52,612	55,651	65,495	72,825	78,297	62,038
60 to 64	40,021	49,203	51,761	52,276	57,694	61,732	66,994	79,466	58,627
65 & up	36,773	53,905	45,204	48,166	48,968	51,766	64,436	71,589	51,695
Total	\$ 40,707	\$ 50,127	\$ 58,921	\$ 63,326	\$ 65,082	\$ 71,084	\$ 74,720	\$ 76,508	\$ 60,973



**CITY OF PHILADELPHIA MUNICIPAL RETIREMENT SYSTEM
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APPENDIX A – MEMBERSHIP INFORMATION

**Table A-7
Distribution of Active Participants (Excludes DROP Participants) as of July 1, 2017 -- Municipal (Plan 67)**

COUNTS BY AGE/SERVICE

Age	Service									Total
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 & Up		
Under 25	0	0	0	0	0	0	0	0	0	0
25 to 29	0	0	0	0	0	0	0	0	0	0
30 to 34	0	0	1	0	0	0	0	0	0	1
35 to 39	0	0	0	0	0	0	0	0	0	0
40 to 44	0	0	1	0	0	3	3	0	0	7
45 to 49	0	0	0	0	0	6	101	3	0	110
50 to 54	0	0	1	1	2	11	359	176	0	550
55 to 59	0	1	2	0	2	8	276	319	0	608
60 to 64	0	1	0	1	2	2	66	87	0	159
65 & up	0	0	0	0	0	0	17	45	0	62
Total	0	2	5	2	6	30	822	630	0	1,497

**Table A-8
Distribution of Active Participants (Excludes DROP Participants) as of July 1, 2017 -- Municipal (Plan 67)**

AVERAGE SALARY BY AGE/SERVICE

Age	Service									Total
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 & Up		
Under 25	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
25 to 29	0	0	0	0	0	0	0	0	0	0
30 to 34	0	0	73,942	0	0	0	0	0	0	73,942
35 to 39	0	0	0	0	0	0	0	0	0	0
40 to 44	0	0	57,086	0	0	61,090	50,510	0	0	55,984
45 to 49	0	0	0	0	0	51,547	67,855	66,726	0	66,935
50 to 54	0	0	77,634	34,374	42,254	63,937	65,962	68,290	0	66,544
55 to 59	0	53,991	59,375	0	40,843	60,797	67,177	72,849	0	69,935
60 to 64	0	93,144	0	119,025	45,092	62,327	57,399	73,730	0	66,854
65 & up	0	0	0	0	0	0	45,163	67,162	0	61,130
Total	\$ 0	\$ 73,568	\$ 65,482	\$ 76,700	\$ 42,730	\$ 60,230	\$ 65,429	\$ 71,262	\$ 0	\$ 67,714



**CITY OF PHILADELPHIA MUNICIPAL RETIREMENT SYSTEM
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**Table A-9
Distribution of Active Participants (Excludes DROP Participants) as of July 1, 2017 -- Police (Plan 67)**

COUNTS BY AGE/SERVICE

Age	Service									Total
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 & Up		
Under 25	0	0	0	0	0	0	0	0	0	0
25 to 29	0	0	0	0	0	0	0	0	0	0
30 to 34	0	0	0	0	0	0	0	0	0	0
35 to 39	0	0	0	0	0	0	0	0	0	0
40 to 44	0	0	0	0	0	0	0	0	0	0
45 to 49	0	0	0	0	0	2	5	1		8
50 to 54	0	0	0	0	1	0	40	36		77
55 to 59	0	0	0	0	0	0	26	122		148
60 to 64	0	0	0	0	0	0	2	49		51
65 & up	0	1	0	0	0	0	1	8		10
Total	0	1	0	0	1	2	74	216		294

**Table A-10
Distribution of Active Participants (Excludes DROP Participants) as of July 1, 2017 -- Police (Plan 67)**

AVERAGE SALARY BY AGE/SERVICE

Age	Service									Total
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 & Up		
Under 25	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
25 to 29	0	0	0	0	0	0	0	0	0	0
30 to 34	0	0	0	0	0	0	0	0	0	0
35 to 39	0	0	0	0	0	0	0	0	0	0
40 to 44	0	0	0	0	0	0	0	0	0	0
45 to 49	0	0	0	0	0	81,515	80,574	77,475		80,422
50 to 54	0	0	0	0	76,673	0	88,567	97,633		92,651
55 to 59	0	0	0	0	0	0	82,907	93,423		91,575
60 to 64	0	0	0	0	0	0	82,898	94,694		94,231
65 & up	0	174,900	0	0	0	0	77,475	99,671		104,974
Total	\$ 0	\$ 174,900	\$ 0	\$ 0	\$ 76,673	\$ 81,515	\$ 85,735	\$ 94,570		\$ 92,470

**CITY OF PHILADELPHIA MUNICIPAL RETIREMENT SYSTEM
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**Table A-11
Distribution of Active Participants (Excludes DROP Participants) as of July 1, 2017 -- Fire (Plan 67)**

COUNTS BY AGE/SERVICE

Age	Service									Total
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 & Up		
Under 25	0	0	0	0	0	0	0	0	0	0
25 to 29	0	0	0	0	0	0	0	0	0	0
30 to 34	0	0	0	0	0	0	0	0	0	0
35 to 39	0	0	0	0	0	0	0	0	0	0
40 to 44	0	0	0	0	0	0	0	0	0	0
45 to 49	0	0	0	0	0	0	0	1	0	1
50 to 54	0	0	0	0	0	0	12	4	16	
55 to 59	0	0	0	0	0	0	8	43	51	
60 to 64	0	0	0	0	0	0	4	18	22	
65 & up	0	0	0	0	0	0	1	2	3	
Total	0	0	0	0	0	0	26	67	93	

**Table A-12
Distribution of Active Participants (Excludes DROP Participants) as of July 1, 2017 -- Fire (Plan 67)**

AVERAGE SALARY BY AGE/SERVICE

Age	Service									Total
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 & Up		
Under 25	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
25 to 29	0	0	0	0	0	0	0	0	0	0
30 to 34	0	0	0	0	0	0	0	0	0	0
35 to 39	0	0	0	0	0	0	0	0	0	0
40 to 44	0	0	0	0	0	0	0	0	0	0
45 to 49	0	0	0	0	0	0	100,626	0	100,626	
50 to 54	0	0	0	0	0	0	86,340	80,516	84,884	
55 to 59	0	0	0	0	0	0	82,341	94,367	92,480	
60 to 64	0	0	0	0	0	0	82,849	93,653	91,688	
65 & up	0	0	0	0	0	0	85,171	116,005	105,727	
Total	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 85,077	\$ 93,994	\$ 91,501	

**CITY OF PHILADELPHIA MUNICIPAL RETIREMENT SYSTEM
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**Table A-13
Distribution of Active Participants (Excludes DROP Participants) as of July 1, 2017 -- Municipal (Plan 87)**

COUNTS BY AGE/SERVICE

Age	Service								Total
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 & Up	
Under 25	95	253	16	1	0	0	0	0	365
25 to 29	181	896	314	73	0	0	0	0	1,464
30 to 34	127	799	761	393	31	0	0	0	2,111
35 to 39	67	495	558	710	263	32	0	0	2,125
40 to 44	60	348	396	551	505	169	16	0	2,045
45 to 49	37	357	374	484	654	438	82	8	2,434
50 to 54	40	279	325	535	544	477	123	34	2,357
55 to 59	32	231	302	445	519	439	124	64	2,156
60 to 64	9	175	233	299	285	189	63	46	1,299
65 & up	10	74	145	139	111	54	8	16	557
Total	658	3,907	3,424	3,630	2,912	1,798	416	168	16,913

**Table A-14
Distribution of Active Participants (Excludes DROP Participants) as of July 1, 2017 -- Municipal (Plan 87)**

AVERAGE SALARY BY AGE/SERVICE

Age	Service								Total
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 & Up	
Under 25	\$ 28,201	\$ 26,019	\$ 31,706	\$ 31,696	\$ 0	\$ 0	\$ 0	\$ 0	\$ 26,852
25 to 29	40,396	46,432	47,823	47,108	0	0	0	0	46,018
30 to 34	46,264	49,962	56,759	54,261	53,875	0	0	0	53,048
35 to 39	50,326	48,806	58,971	58,905	59,609	55,972	0	0	56,343
40 to 44	54,204	50,907	60,566	63,131	63,231	60,581	59,873	0	60,081
45 to 49	39,399	49,974	54,322	58,300	62,878	65,545	64,068	49,678	58,880
50 to 54	47,933	48,749	53,503	56,652	57,404	61,465	69,718	66,487	57,106
55 to 59	55,160	45,799	49,361	51,597	53,842	60,129	61,461	64,945	53,957
60 to 64	40,293	46,325	51,426	51,422	56,591	57,961	61,966	66,199	53,779
65 & up	45,150	53,049	45,204	47,552	48,718	49,696	84,231	43,414	48,476
Total	\$ 43,229	\$ 47,104	\$ 54,543	\$ 56,439	\$ 58,760	\$ 61,230	\$ 64,870	\$ 62,823	\$ 54,565

**CITY OF PHILADELPHIA MUNICIPAL RETIREMENT SYSTEM
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**Table A-15
Distribution of Active Participants (Excludes DROP Participants) as of July 1, 2017 -- Elected (Plan 87)**

COUNTS BY AGE/SERVICE

Age	Service								Total
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 & Up	
Under 25	0	0	0	0	0	0	0	0	0
25 to 29	0	0	0	0	0	0	0	0	0
30 to 34	0	0	0	0	0	0	0	0	0
35 to 39	0	0	0	0	0	0	0	0	0
40 to 44	0	0	1	0	0	0	0	0	1
45 to 49	0	1	2	0	1	1	1	0	6
50 to 54	0	0	2	0	1	1	0	0	4
55 to 59	0	0	1	0	0	0	1	1	3
60 to 64	0	0	1	0	0	1	0	2	4
65 & up	0	0	0	1	0	0	1	5	7
Total	0	1	7	1	2	3	3	8	25

**Table A-16
Distribution of Active Participants (Excludes DROP Participants) as of July 1, 2017 -- Elected (Plan 87)**

AVERAGE SALARY BY AGE/SERVICE

Age	Service								Total
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 & Up	
Under 25	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
25 to 29	0	0	0	0	0	0	0	0	0
30 to 34	0	0	0	0	0	0	0	0	0
35 to 39	0	0	0	0	0	0	0	0	0
40 to 44	0	0	129,632	0	0	0	0	0	129,632
45 to 49	0	129,632	134,261	0	129,632	129,632	129,632	0	131,175
50 to 54	0	0	129,632	0	135,000	177,868	0	0	143,033
55 to 59	0	0	129,632	0	0	0	218,255	132,275	160,054
60 to 64	0	0	129,632	0	0	129,632	0	130,954	130,293
65 & up	0	0	0	133,596	0	0	100,104	138,889	132,592
Total	\$ 0	\$ 129,632	\$ 130,955	\$ 133,596	\$ 132,316	\$ 145,711	\$ 149,330	\$ 136,079	\$ 136,732

**CITY OF PHILADELPHIA MUNICIPAL RETIREMENT SYSTEM
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**Table A-17
Distribution of Active Participants (Excludes DROP Participants) as of July 1, 2017 -- Police (Plan 87)**

COUNTS BY AGE/SERVICE

Age	Service								Total
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 & Up	
Under 25	80	55	1	0	0	0	0	0	136
25 to 29	119	346	98	13	0	0	0	0	576
30 to 34	27	162	298	239	7	0	0	0	733
35 to 39	8	51	176	396	184	9	0	0	824
40 to 44	3	21	89	256	356	267	1	0	993
45 to 49	1	7	45	145	248	548	229	0	1,223
50 to 54	0	2	2	39	97	306	378	2	826
55 to 59	0	1	1	13	33	104	140	4	296
60 to 64	0	2	0	5	10	27	38	1	83
65 & up	0	0	0	0	1	3	4	0	8
Total	238	647	710	1,106	936	1,264	790	7	5,698

**Table A-18
Distribution of Active Participants (Excludes DROP Participants) as of July 1, 2017 -- Police (Plan 87)**

AVERAGE SALARY BY AGE/SERVICE

Age	Service								Total
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 & Up	
Under 25	\$ 53,738	\$ 60,682	\$ 52,446	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 56,537
25 to 29	54,208	66,478	74,988	69,273	0	0	0	0	65,454
30 to 34	54,576	69,141	76,776	78,016	74,502	0	0	0	74,654
35 to 39	53,994	69,567	76,767	79,275	80,558	79,781	0	0	78,185
40 to 44	53,659	67,047	76,437	77,917	79,951	81,100	77,037	0	79,065
45 to 49	52,446	64,969	75,809	77,180	79,114	82,224	86,296	0	81,399
50 to 54	0	70,423	75,653	79,042	78,807	80,460	84,671	81,349	82,092
55 to 59	0	75,289	75,653	76,163	77,613	80,754	83,635	79,293	81,509
60 to 64	0	72,466	0	76,163	78,820	80,412	81,144	84,340	80,155
65 & up	0	0	0	0	76,673	80,632	80,186	0	79,914
Total	\$ 54,070	\$ 66,942	\$ 76,384	\$ 78,238	\$ 79,591	\$ 81,379	\$ 84,756	\$ 80,601	\$ 77,540

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**Table A-19
Distribution of Active Participants (Excludes DROP Participants) as of July 1, 2017 -- Fire (Plan 87)**

COUNTS BY AGE/SERVICE

Age	Service								Total
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 & Up	
Under 25	5	32	3	0	0	0	0	0	40
25 to 29	16	215	10	6	0	0	0	0	247
30 to 34	15	236	47	94	3	0	0	0	395
35 to 39	5	136	31	181	27	3	0	0	383
40 to 44	6	42	14	121	88	22	1	0	294
45 to 49	0	18	9	98	102	139	22	0	388
50 to 54	0	9	3	37	42	119	77	1	288
55 to 59	0	2	0	6	9	41	54	2	114
60 to 64	0	0	0	2	5	7	14	0	28
65 & up	0	0	0	0	0	1	2	0	3
Total	47	690	117	545	276	332	170	3	2,180

**Table A-20
Distribution of Active Participants (Excludes DROP Participants) as of July 1, 2017 -- Fire (Plan 87)**

AVERAGE SALARY BY AGE/SERVICE

Age	Service								Total
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 & Up	
Under 25	\$ 52,446	\$ 55,656	\$ 54,323	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 55,154
25 to 29	52,446	58,928	72,058	60,746	0	0	0	0	59,084
30 to 34	52,446	63,445	77,084	77,649	76,118	0	0	0	68,127
35 to 39	52,446	63,585	78,760	79,088	78,891	76,118	0	0	73,172
40 to 44	52,446	64,792	77,444	80,618	83,504	85,893	76,118	0	78,874
45 to 49	0	59,531	73,874	78,404	82,867	86,122	87,013	0	81,850
50 to 54	0	63,498	83,168	77,535	82,357	85,353	89,444	100,626	84,353
55 to 59	0	61,612	0	76,828	82,741	85,165	90,801	77,429	86,656
60 to 64	0	0	0	86,774	83,371	81,611	89,642	0	86,309
65 & up	0	0	0	0	0	76,992	82,849	0	80,896
Total	\$ 52,446	\$ 61,679	\$ 76,467	\$ 78,753	\$ 82,535	\$ 85,500	\$ 89,421	\$ 85,161	\$ 75,006

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**Table A-21
Distribution of Active Participants (Excludes DROP Participants) as of July 1, 2017 -- Municipal (Plan 10)**

COUNTS BY AGE/SERVICE

Age	Service								Total
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 & Up	
Under 25	25	112	0	0	0	0	0	0	137
25 to 29	42	315	0	0	0	0	0	0	357
30 to 34	30	214	0	0	0	0	0	0	244
35 to 39	21	140	0	0	0	0	0	0	161
40 to 44	12	93	0	0	0	0	0	0	105
45 to 49	16	76	0	0	0	0	0	0	92
50 to 54	10	71	0	0	0	0	0	0	81
55 to 59	4	74	0	0	0	0	0	0	78
60 to 64	5	37	0	0	0	0	0	0	42
65 & up	2	13	0	0	0	0	0	0	15
Total	167	1,145	0	0	0	0	0	0	1,312

**Table A-22
Distribution of Active Participants (Excludes DROP Participants) as of July 1, 2017 -- Municipal (Plan 10)**

AVERAGE SALARY BY AGE/SERVICE

Age	Service								Total
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 & Up	
Under 25	\$ 35,432	\$ 35,831	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 35,758
25 to 29	42,934	41,043	0	0	0	0	0	0	41,266
30 to 34	49,665	42,747	0	0	0	0	0	0	43,598
35 to 39	49,901	47,120	0	0	0	0	0	0	47,483
40 to 44	63,145	44,794	0	0	0	0	0	0	46,891
45 to 49	52,055	48,568	0	0	0	0	0	0	49,174
50 to 54	52,797	43,496	0	0	0	0	0	0	44,645
55 to 59	41,828	48,602	0	0	0	0	0	0	48,254
60 to 64	80,417	60,370	0	0	0	0	0	0	62,756
65 & up	45,195	49,475	0	0	0	0	0	0	48,904
Total	\$ 47,936	\$ 43,760	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 44,291

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**Table A-23
Distribution of Active Participants (Excludes DROP Participants) as of July 1, 2017 -- Municipal (Plan 16)**

COUNTS BY AGE/SERVICE

Age	Service								Total
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 & Up	
Under 25	68	0	0	0	0	0	0	0	68
25 to 29	131	0	0	0	0	0	0	0	131
30 to 34	84	0	0	0	0	0	0	0	84
35 to 39	57	0	0	0	0	0	0	0	57
40 to 44	75	0	0	0	0	0	0	0	75
45 to 49	87	0	0	0	0	0	0	0	87
50 to 54	32	0	0	0	0	0	0	0	32
55 to 59	34	0	0	0	0	0	0	0	34
60 to 64	20	0	0	0	0	0	0	0	20
65 & up	15	0	0	0	0	0	0	0	15
Total	603	0	0	0	0	0	0	0	603

**Table A-24
Distribution of Active Participants (Excludes DROP Participants) as of July 1, 2017 -- Municipal (Plan 16)**

AVERAGE SALARY BY AGE/SERVICE

Age	Service								Total
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 & Up	
Under 25	\$ 28,269	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 28,269
25 to 29	30,910	0	0	0	0	0	0	0	30,910
30 to 34	28,658	0	0	0	0	0	0	0	28,658
35 to 39	30,789	0	0	0	0	0	0	0	30,789
40 to 44	29,268	0	0	0	0	0	0	0	29,268
45 to 49	30,005	0	0	0	0	0	0	0	30,005
50 to 54	29,473	0	0	0	0	0	0	0	29,473
55 to 59	29,937	0	0	0	0	0	0	0	29,937
60 to 64	29,800	0	0	0	0	0	0	0	29,800
65 & up	30,066	0	0	0	0	0	0	0	30,066
Total	\$ 29,763	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 29,762

**CITY OF PHILADELPHIA MUNICIPAL RETIREMENT SYSTEM
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Table A-25 Reconciliation of Plan Membership									
	1967 Plan			Plan 87				Plan '10	Plan '16
	Municipal	Police	Fire	Municipal	Elected	Police	Fire	Municipal	Municipal
Active									
Active July 1, 2016	1,787	350	106	17,358	26	5,565	2,184	932	0
New Entrants and Rehires	7	0	0	1,262	0	327	65	518	603
Refunded Contributions	-1	0	0	-345	0	-26	-9	-44	0
Non-Vested Terminations	0	0	0	-190	0	-16	-16	-52	0
Terminated Vested	-1	0	0	-5	0	-1	0	0	0
Became Disabled	-2	0	0	-25	0	-13	-1	0	0
Retired	-48	-4	-2	-117	0	-20	-9	0	0
Entered DROP	-227	-49	-11	-214	-1	-69	-18	0	0
Net Other Terminations	-18	-3	0	-811	0	-49	-16	-42	0
Active July 1, 2017	1,497	294	93	16,913	25	5,698	2,180	1,312	603
Retired									
Retired July 1, 2016	12,604	5,288	1,964	2,067	20	339	130	0	0
New Retirees	268	78	17	282	0	64	20	0	0
Died with Beneficiary Payable	-106	-93	-37	-11	0	-2	-1	0	0
Died without Beneficiary Payable	-392	-121	-32	-39	0	-2	0	0	0
Net Other Terminations	-7	-2	0	-6	-1	-1	0	0	0
Retired July 1, 2017	12,367	5,150	1,912	2,293	19	398	149	0	0
Beneficiary									
Beneficiary July 1, 2016	4,957	2,244	781	384	4	143	54	0	0
New Beneficiaries	185	141	58	39	0	9	8	0	0
Deaths	-291	-94	-47	-3	0	-1	-1	0	0
Net Other Terminations	-14	-1	-3	-1	0	1	0	0	0
Beneficiary July 1, 2017	4,837	2,290	789	419	4	152	61	0	0

**CITY OF PHILADELPHIA MUNICIPAL RETIREMENT SYSTEM
JULY 1, 2017 ACTUARIAL VALUATION**

APPENDIX A – MEMBERSHIP INFORMATION

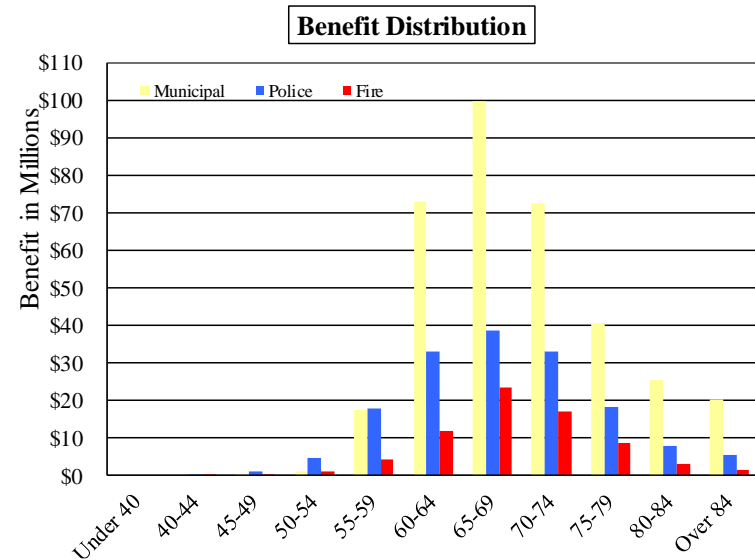
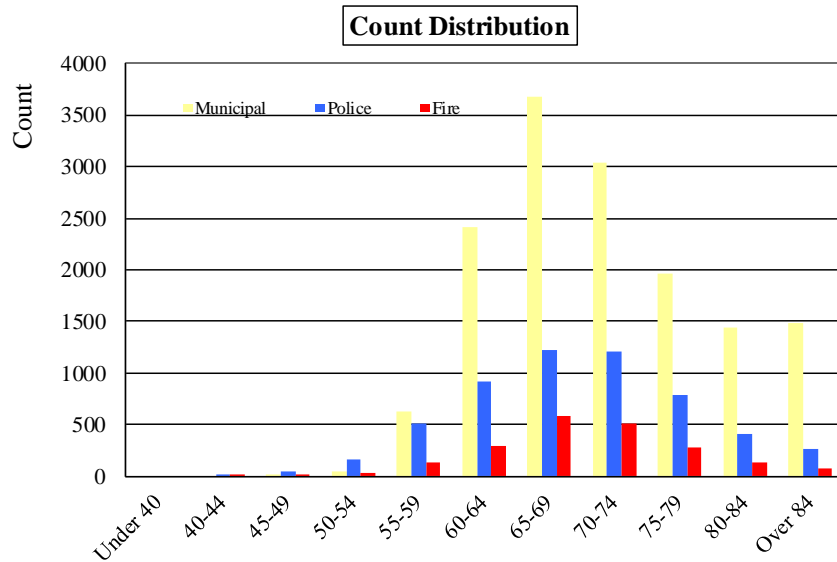
Table A-25 Reconciliation of Plan Membership (continued)									
	1967 Plan			Plan 87				Plan '10	Plan '16
	Municipal	Police	Fire	Municipal	Elected	Police	Fire	Municipal	Municipal
Disabled									
Disabled July 1, 2016	1,463	1,310	304	452	0	402	74	0	0
New Disabilities	11	1	0	49	0	31	2	0	0
Died with Beneficiary Payable	-12	-10	-6	-2	0	0	0	0	0
Died without Beneficiary Payable	-61	-43	-10	-11	0	-2	0	0	0
Net Other Terminations	0	0	0	0	0	0	0	0	0
Disabled July 1, 2017	1,401	1,258	288	488	0	431	76	0	0
Terminated Vested									
Terminated Vested July 1, 2016	305	1	0	819	0	107	16	0	0
New Vested Terminations	1	0	0	5	0	1	0	0	0
Retired	-27	0	0	-23	0	-7	-2	0	0
Net Other Terminations	-14	0	0	-20	0	-5	0	0	0
Terminated Vested July 1, 2017	265	1	0	781	0	96	14	0	0
DROP									
DROP July 1, 2016	719	210	64	440	0	143	38	0	0
New DROP Participants	228	49	11	214	1	69	18	0	0
Retired	-182	-72	-15	-121	0	-32	-8	0	0
Net Other Terminations	-4	-2	0	-1	0	0	0	0	0
DROP July 1, 2017	761	185	60	532	1	180	48	0	0

**CITY OF PHILADELPHIA MUNICIPAL RETIREMENT SYSTEM
JULY 1, 2017 ACTUARIAL VALUATION**

APPENDIX A – MEMBERSHIP INFORMATION

**Table A-26
Age Distribution of Retired Members as of July 1, 2017**

Age	Municipal		Police		Fire	
	Count	Annual Pensions	Count	Annual Pensions	Count	Annual Pensions
Under 40	0	\$ 0	0	\$ 0	0	\$ 0
40-44	0	0	2	54,007	2	19,123
45-49	1	9,206	46	1,312,609	1	10,728
50-54	45	1,120,705	159	4,696,108	40	1,068,490
55-59	633	17,720,056	511	18,028,436	131	4,517,541
60-64	2,409	72,883,237	925	33,143,541	295	12,039,804
65-69	3,671	99,806,481	1,230	38,517,100	585	23,630,664
70-74	3,030	72,770,878	1,209	33,306,532	515	17,188,280
75-79	1,964	40,721,372	790	18,444,334	287	8,737,586
80-84	1,435	25,442,585	406	8,127,460	133	3,164,853
Over 84	1,491	20,464,671	270	5,385,464	72	1,478,915
Total	14,679	350,939,191	5,548	161,015,591	2,061	71,855,984

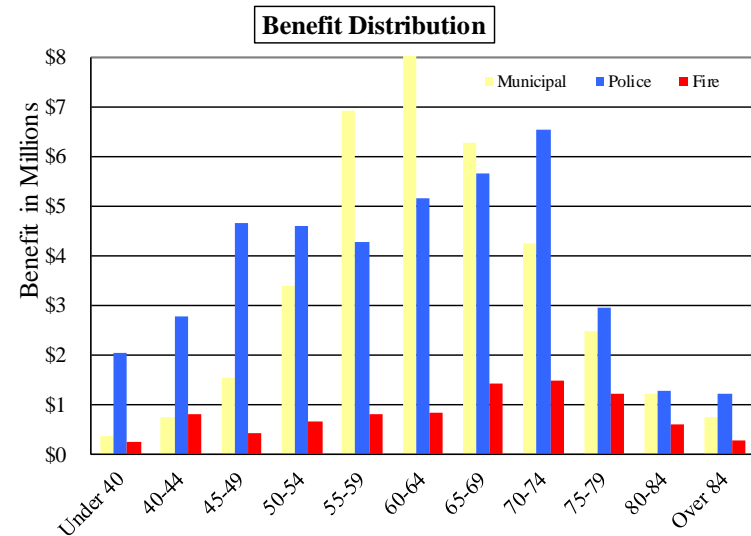
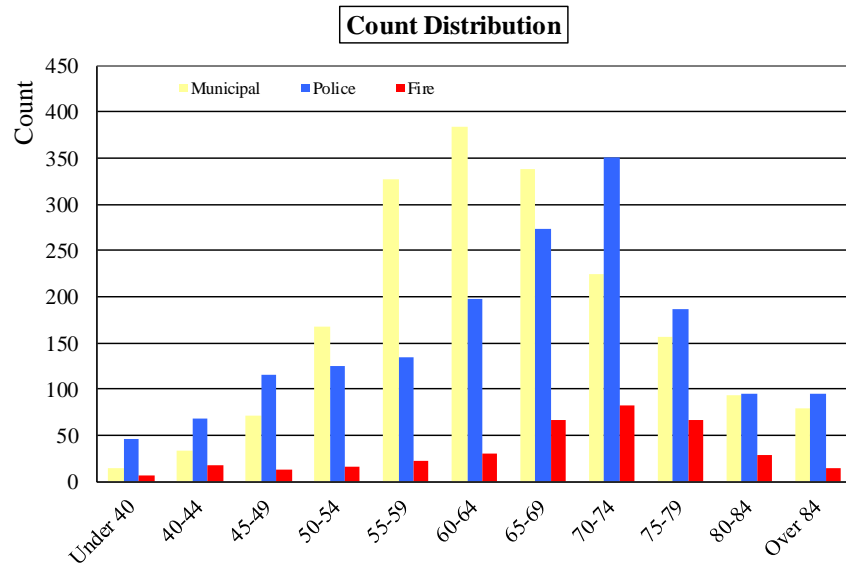


**CITY OF PHILADELPHIA MUNICIPAL RETIREMENT SYSTEM
JULY 1, 2017 ACTUARIAL VALUATION**

APPENDIX A – MEMBERSHIP INFORMATION

**Table A-27
Age Distribution of Disabled Members as of July 1, 2017**

Age	Municipal		Police		Fire	
	Count	Annual Pensions	Count	Annual Pensions	Count	Annual Pensions
Under 40	15	\$ 351,205	46	\$ 2,042,251	7	\$ 244,342
40-44	33	735,715	68	2,774,703	18	799,535
45-49	71	1,522,002	116	4,653,253	13	413,622
50-54	168	3,384,941	125	4,584,502	16	644,043
55-59	328	6,919,197	135	4,266,750	22	789,428
60-64	384	8,099,605	198	5,157,829	31	820,404
65-69	338	6,272,099	273	5,662,776	66	1,430,944
70-74	224	4,242,741	351	6,519,286	82	1,486,693
75-79	156	2,461,858	187	2,952,484	66	1,217,532
80-84	93	1,214,349	95	1,262,328	29	597,203
Over 84	79	739,518	95	1,205,555	14	277,080
Total	1,889	35,943,230	1,689	41,081,717	364	8,720,826

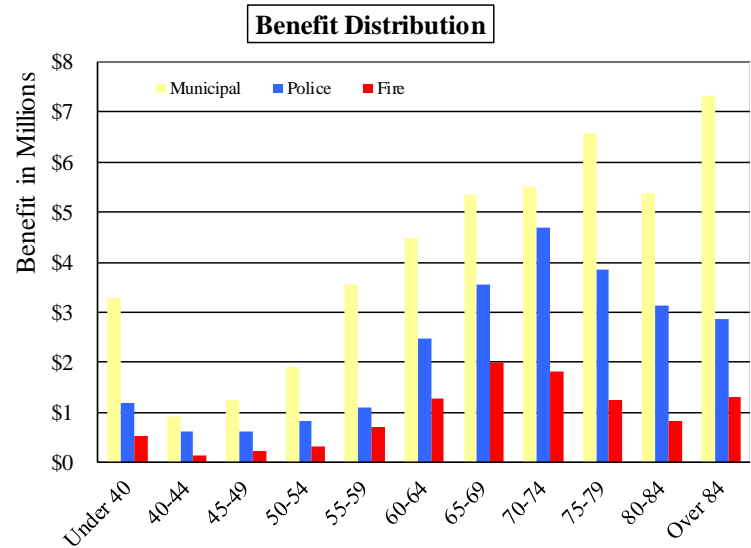
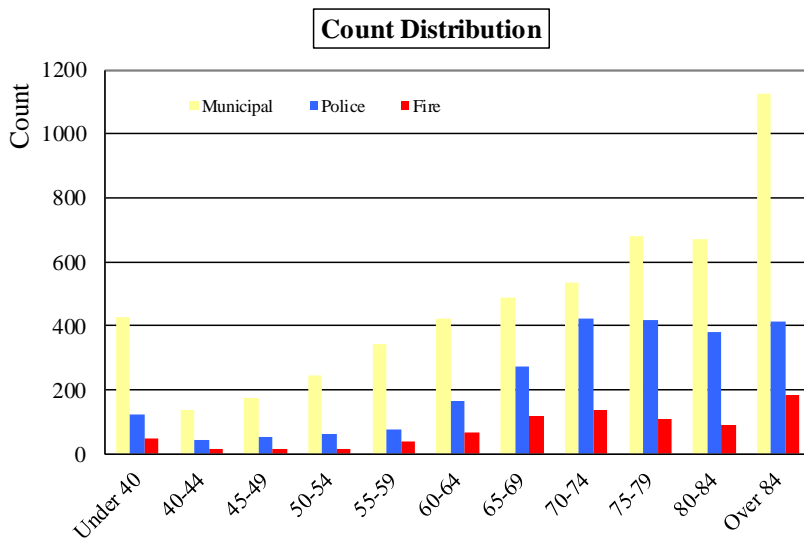


**CITY OF PHILADELPHIA MUNICIPAL RETIREMENT SYSTEM
JULY 1, 2017 ACTUARIAL VALUATION**

APPENDIX A – MEMBERSHIP INFORMATION

**Table A-28
Age Distribution of Beneficiaries as of July 1, 2017**

Age	Municipal		Police		Fire	
	Count	Annual Pensions	Count	Annual Pensions	Count	Annual Pensions
Under 40	430	\$ 3,266,464	125	\$ 1,182,335	50	\$ 516,200
40-44	138	922,388	46	602,942	18	146,923
45-49	177	1,237,111	53	617,240	17	218,768
50-54	245	1,902,615	63	818,346	16	302,780
55-59	346	3,558,391	75	1,089,076	41	692,026
60-64	424	4,476,108	168	2,473,145	67	1,267,358
65-69	488	5,348,774	273	3,536,501	117	1,985,645
70-74	534	5,512,658	425	4,679,751	140	1,811,805
75-79	679	6,567,609	420	3,860,582	111	1,240,244
80-84	672	5,366,287	380	3,133,969	89	830,830
Over 84	1,127	7,313,482	414	2,871,313	184	1,298,324
Total	5,260	45,471,887	2,442	24,865,200	850	10,310,903



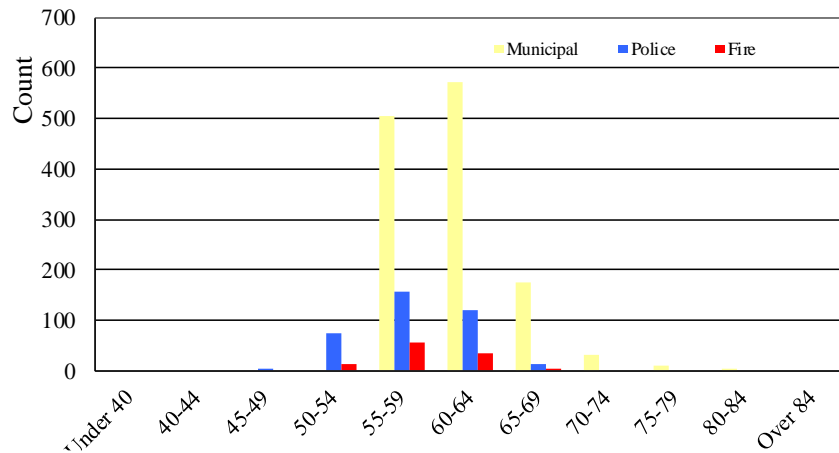
**CITY OF PHILADELPHIA MUNICIPAL RETIREMENT SYSTEM
JULY 1, 2017 ACTUARIAL VALUATION**

APPENDIX A – MEMBERSHIP INFORMATION

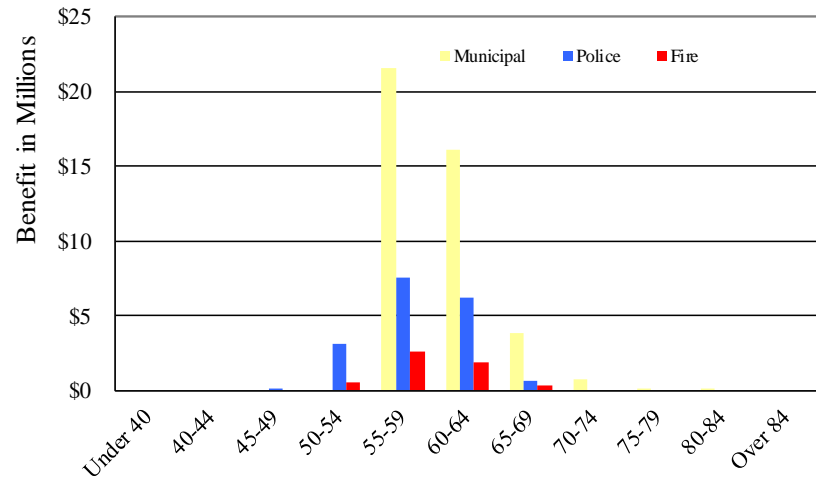
**Table A-29
Age Distribution of DROP Participants as of July 1, 2017**

Age	Municipal		Police		Fire	
	Count	Annual Pensions	Count	Annual Pensions	Count	Annual Pensions
Under 40	0	\$ 0	0	\$ 0	0	\$ 0
40-44	0	0	0	0	0	0
45-49	0	0	1	53,664	0	0
50-54	0	0	74	3,146,215	12	501,708
55-59	505	21,557,082	156	7,507,838	57	2,557,117
60-64	573	16,138,207	119	6,177,653	34	1,882,996
65-69	175	3,781,470	15	669,408	5	326,568
70-74	31	711,144	0	0	0	0
75-79	9	116,928	0	0	0	0
80-84	1	6,552	0	0	0	0
Over 84	0	0	0	0	0	0
Total	1,294	42,311,383	365	17,554,778	108	5,268,389

Count Distribution



Benefit Distribution

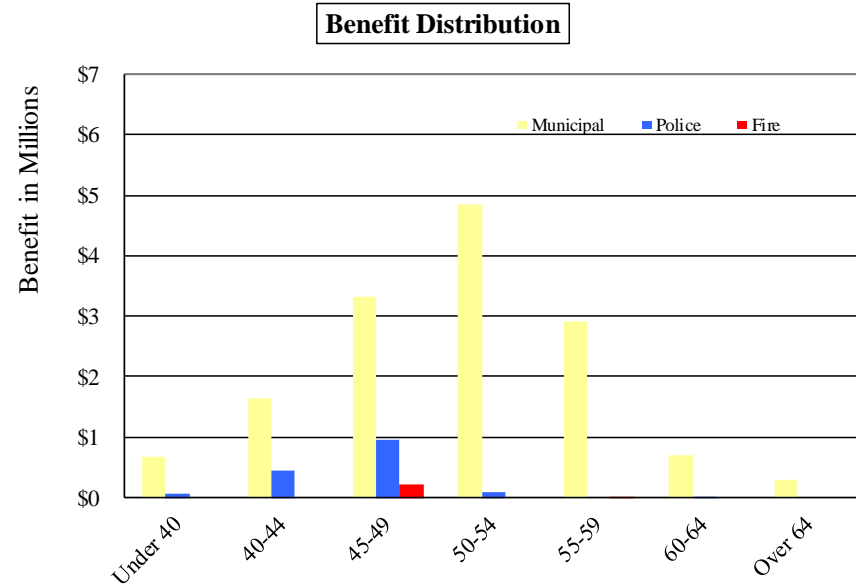
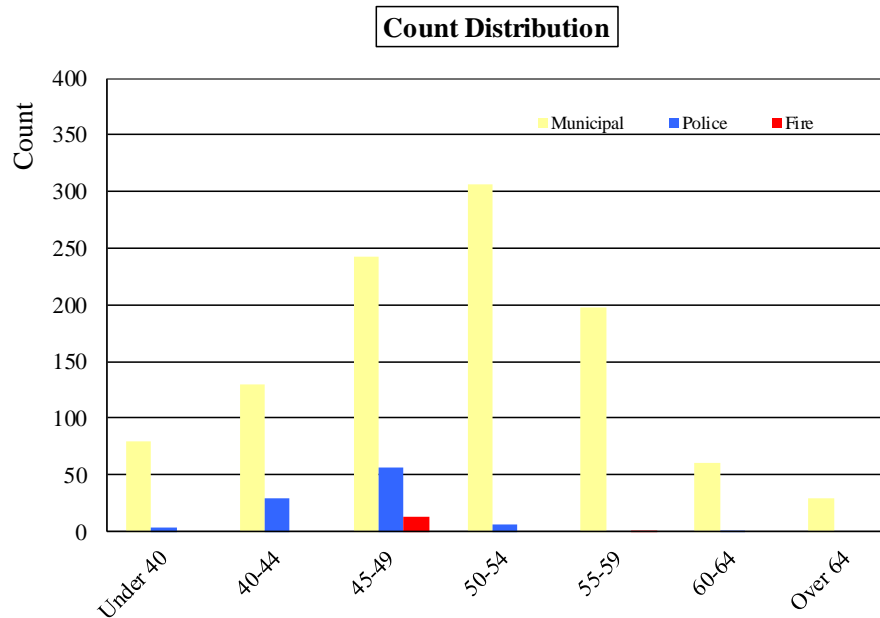


**CITY OF PHILADELPHIA MUNICIPAL RETIREMENT SYSTEM
JULY 1, 2017 ACTUARIAL VALUATION**

APPENDIX A – MEMBERSHIP INFORMATION

**Table A-30
Age Distribution of Terminated Vested Members as of July 1, 2017**

Age	Municipal		Police		Fire	
	Count	Annual Pensions	Count	Annual Pensions	Count	Annual Pensions
Under 40	79	\$ 671,728	4	\$ 60,689	0	\$ 0
40-44	130	1,651,399	30	450,625	0	0
45-49	243	3,334,244	56	946,490	13	225,908
50-54	306	4,841,529	6	101,993	0	0
55-59	198	2,903,417	0	0	1	10,687
60-64	61	694,048	1	13,436	0	0
Over 64	29	286,211	0	0	0	0
Total	1,046	14,382,576	97	1,573,233	14	236,595



**CITY OF PHILADELPHIA MUNICIPAL RETIREMENT SYSTEM
JULY 1, 2017 ACTUARIAL VALUATION**

APPENDIX B – SUPPORTING TABLES FOR CITY’S FUNDING POLICY

Appendix B provides supporting information on the amortization payments under the City’s Funding Policy by each plan.

Table B-1a					
Development of the Fiscal Year 2019 Amortization Payment under the City's Funding Policy					
1967 Plan - Municipal					
(\$ thousands)					
	7/1/2017	7/1/2018	Remaining	FY 2019 Payment	FY 2019 Payment
	Outstanding Balance	Expected Balance	Years	Beginning-of-Year	End-of-Year
1. Expected Unfunded Actuarial Liability (UAL) as of July 1, 2017 Based on July 1, 2016 Valuation					
a. Remaining	\$ 2,696,533	\$ 2,386,460		\$ 457,272	\$ 492,253
2. Changes in UAL due to					
a. Actuarial Experience	\$ 202,493	\$ 217,983	20	\$ 20,090	\$ 21,627
b. Assumption Changes	15,806	17,015	15	1,807	1,946
c. Active Plan Changes	0	0	10	0	0
d. Inactive Plan Changes	0	0	1	0	0
e. Subtotal	\$ 218,298	\$ 234,998		\$ 21,897	\$ 23,573
3. Total [1c. + 2e.]	\$ 2,914,831	\$ 2,621,458		\$ 479,169	\$ 515,826

**CITY OF PHILADELPHIA MUNICIPAL RETIREMENT SYSTEM
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APPENDIX B – SUPPORTING TABLES FOR CITY’S FUNDING POLICY

Table B-1b					
Development of the Fiscal Year 2019 Amortization Payment under the City's Funding Policy					
1967 Plan - Police					
(\$ thousands)					
	7/1/2017	7/1/2018	Remaining	FY 2019 Payment	FY 2019 Payment
	Outstanding Balance	Expected Balance	Years	Beginning-of-Year	End-of-Year
1. Expected Unfunded Actuarial Liability (UAL) as of July 1, 2017 Based on July 1, 2016 Valuation					
a. Remaining	\$ 1,385,263	\$ 1,219,335		\$ 238,385	\$ 256,622
2. Changes in UAL due to					
a. Actuarial Experience	\$ 115,878	\$ 124,742	20	\$ 11,497	\$ 12,376
b. Assumption Changes	7,164	7,713	15	819	882
c. Active Plan Changes	0	0	10	0	0
d. Inactive Plan Changes	0	0	1	0	0
e. Subtotal	\$ 123,042	\$ 132,455		\$ 12,316	\$ 13,258
3. Total [1c. + 2e.]	\$ 1,508,306	\$ 1,351,790		\$ 250,701	\$ 269,880

**CITY OF PHILADELPHIA MUNICIPAL RETIREMENT SYSTEM
JULY 1, 2017 ACTUARIAL VALUATION**

APPENDIX B – SUPPORTING TABLES FOR CITY’S FUNDING POLICY

Table B-1c					
Development of the Fiscal Year 2019 Amortization Payment under the City's Funding Policy					
1967 Plan - Fire					
(\$ thousands)					
	7/1/2017	7/1/2018	Remaining	FY 2019 Payment	FY 2019 Payment
	Outstanding Balance	Expected Balance	Years	Beginning-of-Year	End-of-Year
1. Expected Unfunded Actuarial Liability (UAL) as of July 1, 2017 Based on July 1, 2016 Valuation					
a. Remaining	\$ 591,331	\$ 522,910		\$ 101,854	\$ 109,645
2. Changes in UAL due to					
a. Actuarial Experience	\$ 47,634	\$ 51,278	20	\$ 4,726	\$ 5,087
b. Assumption Changes	2,814	3,029	15	322	346
c. Active Plan Changes	0	0	10	0	0
d. Inactive Plan Changes	0	0	1	0	0
e. Subtotal	\$ 50,447	\$ 54,306		\$ 5,048	\$ 5,434
3. Total [1c. + 2e.]	\$ 641,778	\$ 577,217		\$ 106,901	\$ 115,079

**CITY OF PHILADELPHIA MUNICIPAL RETIREMENT SYSTEM
JULY 1, 2017 ACTUARIAL VALUATION**

APPENDIX B – SUPPORTING TABLES FOR CITY’S FUNDING POLICY

Table B-1d Development of the Fiscal Year 2019 Amortization Payment under the City's Funding Policy Plan 87 - Municipal (\$ thousands)					
	7/1/2017	7/1/2018	Remaining	FY 2019 Payment	FY 2019 Payment
	Outstanding Balance	Expected Balance	Years	Beginning-of-Year	End-of-Year
1. Expected Unfunded Actuarial Liability (UAL) as of July 1, 2017 Based on July 1, 2016 Valuation					
a. Remaining	\$ 556,667	\$ 525,185		\$ 66,298	\$ 71,369
2. Changes in UAL due to					
a. Actuarial Experience	\$ 80,133	\$ 86,264	20	\$ 7,950	\$ 8,559
b. Assumption Changes	13,131	14,135	15	1,501	1,616
c. Active Plan Changes	0	0	10	0	0
d. Inactive Plan Changes	0	0	1	0	0
e. Subtotal	<u>\$ 93,264</u>	<u>\$ 100,399</u>		<u>\$ 9,452</u>	<u>\$ 10,175</u>
3. Total [1c. + 2e.]	\$ 649,932	\$ 625,584		\$ 75,749	\$ 81,544

**CITY OF PHILADELPHIA MUNICIPAL RETIREMENT SYSTEM
JULY 1, 2017 ACTUARIAL VALUATION**

APPENDIX B – SUPPORTING TABLES FOR CITY’S FUNDING POLICY

Table B-1e					
Development of the Fiscal Year 2019 Amortization Payment under the City's Funding Policy					
Plan 87 - Elected					
(\$ thousands)					
	7/1/2017	7/1/2018	Remaining	FY 2019 Payment	FY 2019 Payment
	Outstanding Balance	Expected Balance	Years	Beginning-of-Year	End-of-Year
1. Expected Unfunded Actuarial Liability (UAL) as of July 1, 2017 Based on July 1, 2016 Valuation					
a. Remaining	\$ 14,851	\$ 13,805		\$ 1,975	\$ 2,126
2. Changes in UAL due to					
a. Actuarial Experience	\$ 327	\$ 352	20	\$ 32	\$ 35
b. Assumption Changes	117	126	15	13	14
c. Active Plan Changes	0	0	10	0	0
d. Inactive Plan Changes	0	0	1	0	0
e. Subtotal	\$ 444	\$ 478		\$ 46	\$ 49
3. Total [1c. + 2e.]	\$ 15,295	\$ 14,283		\$ 2,020	\$ 2,175

**CITY OF PHILADELPHIA MUNICIPAL RETIREMENT SYSTEM
JULY 1, 2017 ACTUARIAL VALUATION**

APPENDIX B – SUPPORTING TABLES FOR CITY’S FUNDING POLICY

Table B-1f Development of the Fiscal Year 2019 Amortization Payment under the City's Funding Policy Plan 87 - Police (\$ thousands)					
	7/1/2017	7/1/2018	Remaining	FY 2019 Payment	FY 2019 Payment
	Outstanding Balance	Expected Balance	Years	Beginning-of-Year	End-of-Year
1. Expected Unfunded Actuarial Liability (UAL) as of July 1, 2017 Based on July 1, 2016 Valuation					
a. Remaining	\$ 277,365	\$ 259,877		\$ 32,945	\$ 35,465
2. Changes in UAL due to					
a. Actuarial Experience	\$ 51,993	\$ 55,970	20	\$ 5,158	\$ 5,553
b. Assumption Changes	10,367	11,160	15	1,185	1,276
c. Active Plan Changes	0	0	10	0	0
d. Inactive Plan Changes	<u>0</u>	<u>0</u>	1	<u>0</u>	<u>0</u>
e. Subtotal	\$ 62,360	\$ 67,130		\$ 6,344	\$ 6,829
3. Total [1c. + 2e.]	\$ 339,725	\$ 327,008		\$ 39,289	\$ 42,294

**CITY OF PHILADELPHIA MUNICIPAL RETIREMENT SYSTEM
JULY 1, 2017 ACTUARIAL VALUATION**

APPENDIX B – SUPPORTING TABLES FOR CITY’S FUNDING POLICY

Table B-1g					
Development of the Fiscal Year 2019 Amortization Payment under the City's Funding Policy					
Plan 87 - Fire					
(\$ thousands)					
	7/1/2017	7/1/2018	Remaining	FY 2019 Payment	FY 2019 Payment
	Outstanding Balance	Expected Balance	Years	Beginning-of-Year	End-of-Year
1. Expected Unfunded Actuarial Liability (UAL) as of July 1, 2017 Based on July 1, 2016 Valuation					
a. Remaining	\$ 80,070	\$ 75,139		\$ 9,906	\$ 10,664
2. Changes in UAL due to					
a. Actuarial Experience	\$ 13,933	\$ 14,998	20	\$ 1,382	\$ 1,488
b. Assumption Changes	2,996	3,225	15	343	369
c. Active Plan Changes	0	0	10	0	0
d. Inactive Plan Changes	0	0	1	0	0
e. Subtotal	<u>\$ 16,928</u>	<u>\$ 18,223</u>		<u>\$ 1,725</u>	<u>\$ 1,857</u>
3. Total [1c. + 2e.]	\$ 96,998	\$ 93,363		\$ 11,631	\$ 12,521

**CITY OF PHILADELPHIA MUNICIPAL RETIREMENT SYSTEM
JULY 1, 2017 ACTUARIAL VALUATION**

APPENDIX B – SUPPORTING TABLES FOR CITY’S FUNDING POLICY

Table B-1h						
Development of the Fiscal Year 2019 Amortization Payment under the City's Funding Policy						
Plan 10 - Municipal						
(\$ thousands)						
	7/1/2017	7/1/2018	Remaining	FY 2019 Payment	FY 2019 Payment	
	Outstanding Balance	Expected Balance	Years	Beginning-of-Year	End-of-Year	
1. Expected Unfunded Actuarial Liability (UAL) as of July 1, 2017 Based on July 1, 2016 Valuation						
a. Remaining	\$ 195	\$ 191		\$ 18	\$ 20	
2. Changes in UAL due to						
a. Actuarial Experience	\$ 158	\$ 170	20	\$ 16	\$ 17	
b. Assumption Changes	34	36	15	4	4	
c. Active Plan Changes	0	0	10	0	0	
d. Inactive Plan Changes	0	0	1	0	0	
e. Subtotal	\$ 191	\$ 206		\$ 20	\$ 21	
3. Total [1c. + 2e.]	\$ 387	\$ 397		\$ 38	\$ 41	

**CITY OF PHILADELPHIA MUNICIPAL RETIREMENT SYSTEM
JULY 1, 2017 ACTUARIAL VALUATION**

APPENDIX B – SUPPORTING TABLES FOR CITY’S FUNDING POLICY

Table B-1i					
Development of the Fiscal Year 2019 Amortization Payment under the City's Funding Policy					
Plan 16 - Municipal					
(\$ thousands)					
	7/1/2017	7/1/2018	Remaining	FY 2019 Payment	FY 2019 Payment
	Outstanding Balance	Expected Balance	Years	Beginning-of-Year	End-of-Year
1. Expected Unfunded Actuarial Liability (UAL) as of July 1, 2017 Based on July 1, 2016 Valuation					
a. Remaining	\$ 0	\$ 0		\$ 0	\$ 0
2. Changes in UAL due to					
a. Actuarial Experience	\$ (198)	\$ (213)	20	\$ (20)	\$ (21)
b. Assumption Changes	5	5	15	1	1
c. Active Plan Changes	0	0	10	0	0
d. Inactive Plan Changes	0	0	1	0	0
e. Subtotal	<u>\$ (193)</u>	<u>\$ (207)</u>		<u>\$ (19)</u>	<u>\$ (20)</u>
3. Total [1c. + 2e.]	\$ (193)	\$ (207)		\$ (19)	\$ (20)

**CITY OF PHILADELPHIA MUNICIPAL RETIREMENT SYSTEM
JULY 1, 2017 ACTUARIAL VALUATION**

APPENDIX B – SUPPORTING TABLES FOR CITY’S FUNDING POLICY

Table B-1j					
Development of the Fiscal Year 2019 Amortization Payment under the City's Funding Policy					
Total - All Divisions					
(\$ thousands)					
	7/1/2017	7/1/2018	Remaining	FY 2019 Payment	FY 2019 Payment
	Outstanding Balance	Expected Balance	Years	Beginning-of-Year	End-of-Year
1. Expected Unfunded Actuarial Liability (UAL) as of July 1, 2017 Based on July 1, 2016 Valuation					
a. Remaining	\$ 5,602,275	\$ 5,002,903		\$ 908,653	\$ 978,165
2. Changes in UAL due to					
a. Actuarial Experience	\$ 512,350	\$ 551,544	20	\$ 50,832	\$ 54,721
b. Assumption Changes	52,433	56,444	15	5,995	6,454
c. Active Plan Changes	0	0	10	0	0
d. Inactive Plan Changes	0	0	1	0	0
e. Subtotal	\$ 564,783	\$ 607,988		\$ 56,828	\$ 61,175
3. Total [1c. + 2e.]	\$ 6,167,058	\$ 5,610,891		\$ 965,480	\$ 1,039,340

**CITY OF PHILADELPHIA MUNICIPAL RETIREMENT SYSTEM
JULY 1, 2017 ACTUARIAL VALUATION**

APPENDIX C – SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS

Data Assumptions and Practices

In preparing our data, we relied on information supplied by the City of Philadelphia Municipal Retirement System staff. The data was reviewed to ensure that it complies with generally accepted actuarial standards. This information includes, but is not limited to, plan provisions, employee data, and financial information. Our methodology for obtaining the data used for the valuation is based upon the following assumptions and practices:

- We exclude raw active records with dates of hire after the valuation date.
- We include terminated vested records in the valuation data, regardless of whether they have enough service for vesting.
- We exclude terminated vested and retired records with values of zero in the benefit field.
- If a participant is found in multiple data files (e.g., both the active and retired data files), based on a match of both employee number and Social Security Number, we first attempt to identify the record with the most recent status change, and keep only that record. If it is not apparent which record is the most recent, we keep the record that generates the highest liability in our valuation system.
- If a participant is found multiple times in the same data file, based on a match of both employee number and Social Security Number, we keep the record that generates the highest liability in our valuation system, except where one of the records is in the recorded death file in which case we check for a survivor record or delete the record.
- Valuation pay reflects a load of 6% of pay for Police (stress pay) and Firefighters (premium pay).
- The date of retirement for a terminated vested participant was set to the valuation date, if the given date was earlier.
- If the payment form field for pensioners is missing, we assume that 1967 Plan members receive a 50% J&S annuity with a return of contributions in excess of payments received upon death of the member, and we assume that Plan 87 members receive a life annuity, also with a return of contributions. However, if the pensioner is a beneficiary or survivor, we assume that they receive a life annuity only.
- For pensioners under the form of payment 50% J&S annuity with return of contributions, 60% are assumed to be married based upon data provided by the City. All other forms of payment are explicitly valued.
- Records with missing dates of birth have their data filled in based on the average for their plan.

**CITY OF PHILADELPHIA MUNICIPAL RETIREMENT SYSTEM
JULY 1, 2017 ACTUARIAL VALUATION**

APPENDIX C – SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS

- We assumed that all changes in participant data from last year to this year were valid unless indicated otherwise by System staff.
- We use the dates of hire and service credit provided in the data to calculate actuarial liability. We understand from the System staff that the service credit data provided does not include adjustments for breaks in service so to the extent that some members may have had breaks in service the actuarial liability is overstated.
- DROP participants are assumed to begin payments immediately.
- For Municipal Plan 1967 participants, pay was assumed to be below the Social Security Taxable Wage Base for purposes of determining the aggregate member contribution amount.
- We assumed that any participant who was active last year, missing this year is now a terminated non-vested participant.
- We assumed that any participant who was inactive last year and missing from this year without a clear reason is now deceased.

**CITY OF PHILADELPHIA MUNICIPAL RETIREMENT SYSTEM
JULY 1, 2017 ACTUARIAL VALUATION**

APPENDIX C – SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS

A. Actuarial Assumptions

1. Investment Return Assumption

7.65% compounded annually, net of expenses.

2. Salary Increase Rate

Age	All Divisions
<20	20.00%
20-24	11.00%
25-29	7.00%
30-34	5.00%
35-39	4.25%
40-44	4.00%
45-49	3.50%
50-54	3.30%
55-60	3.00%
61+	2.75%

3. Total Annual Payroll Growth

3.30% per year.

4. Administrative Expenses

Annual expected expenses included in this report are \$9,166,488, and assumed to increase by 3.30% per year.

5. Funding of the Pension Adjustment Fund

To recognize the expense of the benefits payable under the Pension Adjustment Fund, the actuarial liabilities have been increased by 0.54%. This estimate is based on the statistical average expected value of the benefits.

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6. Rates of Termination

Age	1967 Plan			1987 Plan	
	Municipal		Uniformed	Municipal and Elected Officials	Uniformed
	Male	Female	Unisex	Unisex	Unisex
20	0.100000	0.105319	0.022050	0.260000	0.030000
25	0.086000	0.096000	0.021148	0.150000	0.037800
30	0.072000	0.071562	0.019148	0.105000	0.029900
35	0.045000	0.056170	0.016148	0.090000	0.025200
40	0.035000	0.039379	0.012148	0.090000	0.015400
45	0.030000	0.035597	0.000000	0.075000	0.010000
50	0.020000	0.022400	0.000000	0.065000	0.001600
55	0.000000	0.000000	0.000000	0.050000	0.001600

We assume that a vested employee who terminates will elect a pension deferred to service retirement age as long as their age plus years of service at termination are greater than or equal to 55 (45 for police and fire employees in the 1967 Plan). Otherwise, we assume they elect a refund of member contributions.

7. Rates of Disability

Age	Municipal and Elected Officials		Uniformed
	Male	Female	Unisex
20	0.000025	0.000043	0.000795
25	0.000070	0.000061	0.000870
30	0.000557	0.000263	0.002668
35	0.001014	0.000870	0.005418
40	0.001800	0.001564	0.004684
45	0.002340	0.003109	0.003834
50	0.006600	0.004535	0.003154
55	0.007680	0.007338	0.000000
60	0.000000	0.000000	0.000000

For municipal and elected members, we assume that 70% of all disabilities are ordinary and 30% are service-connected. For police and fire members, we assume that 50% are ordinary and 50% are service-connected.

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8. Rates of Pre-Retirement Mortality (RP 2000 with Blue Collar adjustment, projected 17 years using Scale AA with a five year set back for Municipal males and females and a 2 year set back for Police and Fire males and females)

Experience studies are performed every four years as required by State law which require regular and detailed experience and analysis of the mortality trends such that improvements are addressed incrementally with assumption changes as a result of these studies. This mandatory process allows for periodic recognition of mortality improvements which are sufficient in addressing the potential trend. The most recent experience study was conducted for the period between July 1, 2008 and June 30, 2013.

Age	Municipal and Elected Officials		Uniformed	
	Male	Female	Male	Female
20	0.000194	0.000129	0.000228	0.000143
25	0.000291	0.00015	0.000314	0.000155
30	0.000345	0.000174	0.000361	0.000198
35	0.000667	0.000243	0.000871	0.000342
40	0.000948	0.000401	0.001101	0.000553
45	0.001098	0.000667	0.001274	0.000894
50	0.001317	0.001036	0.001563	0.001279
55	0.001741	0.001712	0.002379	0.002101
60	0.003190	0.002567	0.004864	0.003488
65	0.006507	0.004545	0.009686	0.007327

* For municipal and elected members, we assume that 98.5% of all deaths are ordinary, with 1.5% service-connected. For police and fire members, 92% are assumed to be ordinary and 8% service-connected.

9. Rates of Post-Retirement Mortality

For all groups we assume that mortality for healthy inactive lives will follow RP 2000 with Blue Collar adjustment, projected 17 years using Scale AA with a one year set forward for males and females.

Age	Male	Female
50	0.002015	0.001568
55	0.003585	0.002669
60	0.007167	0.005321
65	0.013813	0.010871
70	0.022690	0.019040
75	0.037529	0.029472
80	0.065888	0.048128
85	0.112135	0.083357
90	0.183439	0.141251
95	0.274405	0.198507

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APPENDIX C – SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS

10. Rates of Post-Disability Mortality

For Police and Fire, we assume that mortality for disabled retirees follows RP 2000 Healthy mortality with Blue Collar adjustment, projected 17 years using Scale AA, with a 5 year set back for males and females and a 1% upward adjustment. For Municipal and Elected officials, we assume the same mortality table with projections as Police and Fire, but with a 1 year set back for males and females and a 1% upward adjustment.

Age	Municipal and Elected Officials		Uniformed	
	Male	Female	Male	Female
35	0.02073	0.00617	0.02073	0.00617
40	0.01969	0.00576	0.01969	0.00576
45	0.01807	0.00566	0.01807	0.00566
50	0.02033	0.00795	0.01657	0.00557
55	0.02465	0.01352	0.02091	0.01006
60	0.03092	0.01907	0.02694	0.01519
65	0.03801	0.02443	0.03308	0.02006
70	0.04611	0.03245	0.03881	0.02574
75	0.06099	0.04265	0.04925	0.03283
80	0.08715	0.06016	0.06918	0.04635

11. Rates of Retirement

Age	Rates of Service Retirement - 1967 Plan	
	Municipal	Uniformed
45-51	0.00	0.09
52	0.05	0.09
53	0.05	0.15
54	0.05	0.15
55	0.45	0.20
56	0.32	0.25
57	0.30	0.25
58	0.32	0.30
59	0.32	0.35
60	0.32	0.40
61	0.35	0.40
62	0.40	0.42
63	0.25	0.42
64	0.25	0.42
65	0.30	0.42
66	0.25	0.42
67	0.30	0.42
68	0.25	0.42
69	0.15	0.42
70 and up	1.00	1.00

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APPENDIX C – SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS

Rates of Service Retirement - 1987 Plan and Plan '10				
Age	Municipal and Elected Officials		Uniformed	
	First Year Eligible	Subsequent Years	First Year Eligible	Subsequent Years
40-49	0.000	0.000	0.030	0.015
50	0.000	0.000	0.100	0.080
51	0.000	0.000	0.100	0.055
52	0.050	0.020	0.100	0.070
53	0.100	0.020	0.100	0.080
54	0.100	0.020	0.100	0.100
55	0.250	0.020	0.100	0.120
56	0.250	0.020	0.100	0.140
57	0.250	0.020	0.100	0.120
58	0.250	0.020	0.100	0.165
59	0.300	0.080	0.100	0.140
60	0.500	0.300	0.100	0.170
61	0.400	0.200	0.100	0.170
62	0.400	0.250	0.100	0.215
63	0.500	0.200	0.100	0.205
64	0.300	0.200	0.100	0.200
65	0.600	0.200	0.100	1.000
66	0.600	0.200	0.100	1.000
67	0.600	0.200	0.100	1.000
68	0.600	0.200	0.100	1.000
69	0.600	0.200	0.100	1.000
70	0.100	1.000	0.100	1.000

Retirements under DROP are included in the rates above.

12. Family Composition Assumptions

70% of active members and 60% of non-active members are assumed to be married for retirees with the 50% J&S with return on contribution form of payment only. Male spouses are assumed to be four-years older than female spouses.

13. Service-connected disability benefit

Service-connected disability benefits are increased by 2.9% to account for the periodic adjustment.

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14. Rationale for Assumptions

The assumptions used in this report reflect the results of an Experience Study performed by Cheiron covering the five year period from July 1, 2008 through June 30, 2013 and adopted by the Board. More details on the rationale for the demographic and economic assumptions can be found in the Experience Study Report dated March 14, 2014.

15. Changes Since Last Valuation

The interest rate assumption was decreased from 7.70% to 7.65%. The administrative expenses assumption was changed from \$8,836,114 to \$9,166,488 to better reflect actual experience.

APPENDIX C – SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS

B. Actuarial Methods

1. Actuarial Funding Method

The Entry Age Normal actuarial funding method was used for active employees, whereby the normal cost is computed as the level annual percentage of pay required to fund the retirement benefits between each member's date of hire and assumed retirement. The actuarial liability is the difference between the present value of future benefits and the present value of future normal cost. The unfunded actuarial liability is the difference between the actuarial liability and the actuarial value of assets.

2. Funding Methods

City's Funding Policy:

The initial July 1, 1985 UAL is amortized over 34 years ending June 30, 2019, with payments increasing at 3.3% per year, the assumed payroll growth. Other changes in the actuarial liability are amortized in level-dollar payments as follows:

- Actuarial gains and losses – 20 years beginning July 1, 2009. Prior to July 1, 2009, gains and losses were amortized over 15 years
- Assumption changes – 15 years beginning July 1, 2010. Prior to July 1, 2010, assumption changes were amortized over 20 years
- Plan changes for active members – 10 years
- Plan changes for inactive members – 1 year
- Plan changes mandated by the State – 20 years

Tiered and additional Police Officer member contributions offset the City's portion of the normal cost.

MMO:

For the purposes of the MMO under Act 205 reflecting the fresh start amortization schedule, the July 1, 2009 UAL was "fresh started" to be amortized over 30 years ending June 30, 2039. This is a level dollar amortization of the UAL. All future amortization periods will follow the City's Funding Policy as outlined above.

Tiered and additional Police Officer member contributions offset the City's portion of the normal cost in accordance with Act 205. Sales tax revenue is contributed in addition to the MMO resulting in gains under the funding method.

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APPENDIX C – SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS

Revenue Recognition Policy:

This calculation is similar to the MMO except that the assets used to determine the unfunded liability do not include the accumulated value of sales tax revenue and tier and additional Police member contributions received by the System. These sources of income are contributed over and above the City's contribution of the MMO and will be in addition to the MMO. Therefore under this funding method the additional revenue amounts are separately tracked and accumulated in a notional account which is then subtracted from the assets before calculating the contribution amounts due under the Minimum Municipal Obligation (MMO) methodology. We accumulate these amounts in a notional account and deduct them from the Actuarial Asset Value before the MMO is determined. These amounts are accumulated at the Actuarial Asset Value return rates to preserve the new funding methodology objective.

Tiered and additional Police Officer member contributions do not offset the City's portion of the normal cost.

3. Asset Valuation Method

The actuarial value of assets (AVA) is determined using an adjusted market value. Under this method, a preliminary AVA is determined as the market value of assets on the valuation date, minus the existing balance of the Pension Adjustment Fund (PAF) rolled forward at the current year's market rate of return, minus a decreasing fraction (9/10, 8/10, 7/10, etc.) of the investment gains or losses in each of the preceding nine years. Gains and losses prior to FYE June 30, 2008 were smoothed over a five year period and have now all been fully recognized. The gain or loss for a given year is the difference between the actual investment return (on a market-to-market basis) and the assumed investment return based on the market value of assets at the beginning of the year and actual cash flow. The AVA is adjusted, if necessary, to remain between 80% and 120% of the market value net of the PAF. The final AVA is determined by subtracting the additional transfer amount (if any) to the PAF. The additional transfer amount to the PAF remains to be calculated based on the five-year smoothing method.

4. Changes Since Last Valuation

None

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APPENDIX D – SUMMARY OF PLAN PROVISIONS – 1967 PLAN

This summary of plan provisions provides an overview of the major provisions of the pension plans used in the actuarial valuation. It is not intended to replace the more precise language of the retirement code, and if there is any difference between the description of the plans herein and the actual text of the retirement code, the retirement code will govern.

1. Participation

Municipal (Plan J):

Full-time employees participate on their date of employment. Temporary employees participate after completing six months employment. Participation is limited to employees hired before January 8, 1987. District Council 47 (Local 2186 or 2187) and 33 members hired between January 8, 1987 and October 1, 1992 were switched from Plan 87 to 1967 Plan effective on their hire dates, provided such employees contributed the difference between what they paid to the Plan and the amount they would have paid under Plan J.

Uniformed (Plans D and X):

Same as municipal.

2. Credited Service

Municipal (Plan J):

Credited service means the period of employment with the City during which the employee makes contributions to the Retirement System. Certain leaves of absence may also be credited.

Uniformed (Plans D and X):

Same as municipal.

3. Total Compensation

Municipal (Plan J):

Total compensation means the base rate of pay, longevity payments, and overtime received during a 12-month period.

Uniformed (Plans D and X):

Total compensation means the base rate of pay, longevity payments, and stress or premium pay (up to 6% of base pay) received during a 12-month period.

4. Final Compensation

Municipal (Plan J):

Final compensation means whichever is greater: annual base rate of pay at the time of termination or the total compensation received during the 12 months immediately preceding termination, including supplementary compensation received under Civil Service Regulation No. 32.

Uniformed (Plans D and X):

Same as municipal.

APPENDIX D – SUMMARY OF PLAN PROVISIONS – 1967 PLAN

5. Average Final Compensation

Municipal (Plan J):

Average final compensation means the arithmetic average of the total compensation received during the three calendar or anniversary years that produce the highest average.

Uniformed (Plans D and X):

Average final compensation means the highest of:

- The total compensation received during the 12-month period; or
- The annual base rate of pay, excluding longevity payments, calculated from the final pay period; or
- The arithmetic average of the total compensation received during five calendar years of employment.

6. Employee Contributions

Municipal (Plan J):

Employees who participate in the Social Security System contribute 3¾% of total compensation up to the taxable wage base (\$118,500 in 2016, and \$127,200 in 2017) and 6% of total compensation above the taxable wage base to the Retirement System.

Each employee who does not participate in the Social Security System contributes 6% of his total compensation to the Retirement System.

Effective 11/14/2014 guards represented by DC 33 contribute the higher of 3¾% of pay (or 6% of pay if they do not participate in Social Security System) and 50% of aggregate normal cost of all members in Plan J.

All other employees will pay an additional 0.5% of compensation for the period between January 1, 2015 through December 31, 2015 and 1.0% of compensation January 1, 2016 onwards.

Uniformed (Plans D and X):

6% of total compensation to the Retirement System.

7. Service Retirement

Eligibility

Municipal (Plan J):

Each municipal employee is eligible to retire and receive a service pension at age 55 with one year of service.

Uniformed (Plans D and X):

Each uniformed employee is eligible to retire and receive a service pension at age 45.

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APPENDIX D – SUMMARY OF PLAN PROVISIONS – 1967 PLAN

Benefit Amount

Municipal (Plan J):

The service pension equals 2 1/2% of the employee's average final compensation multiplied by credited service to a maximum of 20 years plus 2% of the employee's average final compensation multiplied by credited service above 20, to a maximum of 80% of the employee's average final compensation.

Uniformed (Plans D and X):

The service pension equals 2 1/2% of the employee's average final compensation multiplied by credited service, subject to a maximum of 100% of average final compensation. A minimum of \$1,000 per month is provided for those who retired with 20 or more years of service.

8. Early Retirement

Eligibility

Municipal (Plan J):

Each municipal employee is eligible to retire and receive a reduced service pension at age 52 if he has 10 or more years of credited service.

Uniformed (Plans D and X):

Each uniformed employee is eligible to retire and receive a reduced service pension at age 40 if he or she has 10 or more years of credited service.

Benefit Amount

Municipal (Plan J):

The annual amount is calculated the same as service retirement, reduced by 1/2 of 1% for each month the employee is younger than minimum retirement age.

Uniformed (Plans D and X):

Same as municipal.

9. Deferred Vested Retirement

Eligibility

Municipal (Plan J):

A terminating employee who has completed 10 or more years of credited service is eligible for a deferred vested retirement benefit.

Uniformed (Plans D and X):

Same as municipal.

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APPENDIX D – SUMMARY OF PLAN PROVISIONS – 1967 PLAN

Benefit Amount

Municipal (Plan J):

The annual deferred vested benefit is determined the same as service pensions, using average final compensation and credited service at termination. This benefit begins at service retirement date. If the member dies before the deferred vested benefit begins, an ordinary death benefit is payable (see Ordinary Death below). As an alternative before benefits begin, a plan member who is terminating employment may ask to have employee contributions returned (without interest) instead of receiving the deferred vested benefit.

Uniformed (Plans D and X):

Same as municipal.

10. Withdrawal Benefit

Municipal (Plan J):

Each employee terminating who has completed less than 10 years of credited service will receive a withdrawal benefit equal to his or her employee contributions (without interest).

Uniformed (Plans D and X):

Same as municipal.

11. Service-Connected Death

Eligibility

Municipal (Plan J):

The beneficiary of each active employee who dies solely from the performance of duties of the employee's position with the City is eligible for an immediate death benefit.

Uniformed (Plans D and X):

Same as municipal.

Benefit Amount

Municipal (Plan J):

The death benefit equals total employee contributions paid to the Retirement System, plus a yearly payment of 60% of the employee's final compensation reduced by any death benefits payable under the Worker's Compensation Act.

This benefit is payable to the spouse until his or her death. Dependent children are entitled to an additional yearly payment of 10% of final compensation for each dependent child (up to two children) until the child reaches age 18. If there is no spouse, or if the spouse dies or remarries, each dependent child (up to three children) is entitled to receive a yearly payment of 25% of final compensation until the child reaches age 18.

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APPENDIX D – SUMMARY OF PLAN PROVISIONS – 1967 PLAN

If there are no spouse or dependent children, each dependent parent is entitled to receive a yearly payment of 15% of final compensation for life.

Uniformed (Plans D and X):
Same as municipal.

12. Ordinary Death

Eligibility

Municipal (Plan J):

The beneficiary of an active employee (or a terminated vested employee who did not withdraw employee contributions) who dies after completing 10 years of credited service or reaches age 55 is eligible for an immediate death benefit equal to a yearly pension or a lump sum payment. The beneficiary of an active employee who dies before completing 10 years of credited service and reaches age 55 is eligible for a lump sum payment.

The beneficiary may be any relative by blood or marriage.

Uniformed (Plans D and X):

The beneficiary of any employee who dies while actively employed (or a terminated vested employee who did not withdraw employee contributions) is eligible for a death benefit equal to a yearly pension or a lump sum payment.

The beneficiary may be any relative by blood or marriage.

Annual Pension

Municipal (Plan J):

The annual ordinary death pension, payable for life, is equal to the regular service pension the employee would have received if eligible to retire on the day before he died and had elected Option 2, joint and 100% contingent annuitant (see Survivor Benefits below).

Uniformed (Plans D and X):

The annual ordinary death pension, payable for life, is equal to the regular service pension the employee would have received (based on a minimum of 10 years of service) had the person been eligible to retire on the day before dying and had elected Option 2, joint and 100% contingent annuitant (see Survivor Benefits below).

Lump Sum Payment

Municipal (Plan J):

The lump sum payment is equal to 10% of the deceased employee's average final compensation multiplied by years of credited service to a maximum of 10, plus the deceased employee's contributions to the Retirement System, minus the total amount of the deceased employee's City paid life insurance.

Uniformed (Plans D and X):
Same as municipal.

APPENDIX D – SUMMARY OF PLAN PROVISIONS – 1967 PLAN

13. Service-Connected Disability

Eligibility

Municipal (Plan J):

An active employee found by the Board of Pensions and Retirement to be mentally or physically permanently incapacitated (unable to perform duties) solely as the result of accident or injury during the performance of duties is eligible for an immediate service-connected disability pension.

Uniformed (Plans D and X):

Same as municipal. A minimum of \$1,000 per month is provided for Uniformed members.

Benefit Amount

Municipal (Plan J):

The service-connected disability benefit is equal to the employee's Retirement System contributions, plus a yearly benefit of 70% of the employee's final compensation, reduced by any disability benefits payable under the Worker's Compensation Act. If he or she withdraws contributions, the benefit is payable for his or her lifetime only.

If the employee leaves employee contributions with the Retirement System, he or she may choose a survivor benefit option (see Survivor Benefit below) and the beneficiary will continue receiving benefit payments after his or her death.

Uniformed (Plans D and X):

Same as municipal.

14. Service-Connected Disability Periodic Adjustment

Eligibility

Municipal (Plan J):

An employee who is receiving a service-connected disability benefit who is totally disabled and does not collect Social Security disability insurance benefits is eligible for a periodic adjustment.

Uniformed (Plans D and X):

Same as municipal, but only applies to police employees.

Benefit Amount

Municipal (Plan J):

The disabled employee's pension will be increased in the eighth year after separation by the percentage raise given in the previous year to active employees in his or her job class. The adjustment will continue each year thereafter until the employee's 65th birthday.

Uniformed (Plans D and X):

Same as municipal.

APPENDIX D – SUMMARY OF PLAN PROVISIONS – 1967 PLAN

15. Ordinary Disability

Eligibility

Municipal (Plan J):

An active employee found by the Board to be mentally or physically permanently incapacitated from the further performance of duties due to an accident or illness not caused by the performance of duties is eligible for an immediate ordinary disability benefit after completing 10 years of credited service.

Uniformed (Plans D and X):

Same as municipal, except that fire employees only need five years of credited service and police employees have no service requirement if the disability is permanent and total. Police employees with permanent and partial disability need 10 years of credited service.

Benefit Amount

Municipal (Plan J):

The annual ordinary disability benefit is equal to the benefit determined under the service pension formula using average final compensation and credited service as of the date of disablement. If the employee is eligible for, or receiving workers' compensation, no benefit is payable. Such employee may apply for benefits at retirement age.

Uniformed (Plans D and X):

Same as municipal, except police employees that have no service requirement are credited with a minimum of 10 years of credited service. Same as municipal.

16. Survivor Benefit

Municipal (Plan J):

Service pensions, deferred vested benefits, service-connected disability benefits (if employee contributions are left on deposit), and ordinary disability benefits are payable under five optional forms. Options 1, 2, 3, and 5 provide benefits actuarially equivalent to a lifetime only pension while Option 4 has no reduction.

Option 1 – A benefit is payable to the employee with the provision that upon death, the beneficiary will receive a lump sum equal to the excess, if any, of the employee's contributions over the sum of the payments received.

Option 2 – A reduced benefit payable to the employee with the provision that 100% of the reduced benefit will be paid to the designated beneficiary for life after the death of the employee.

Option 3 – Same as Option 2 except only 50% of the reduced benefit is continued to the designated beneficiary.

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Option 4 – Upon the employee’s death, 50% of the benefit will continue to be paid to the surviving spouse for life, provided the employee and spouse were married for two years before retirement and at death. If there is no eligible spouse at the time the employee dies, or the spouse dies before the full amount of the contributions have been returned, 50% of the benefit is continued to dependent children until age 18, or if no dependent children, payments are given to dependent parents for the remainder of their lives. In addition, Option 4 provides for a guaranteed return of employee contributions as described in Option 1 above.

Option 5 – Provides for a partial lump sum of between 6 and 36 monthly payments payable under Options 1, 2, 3 or 4. The remaining monthly benefit is reduced so that the partial lump sum plus the reduced benefit is actuarially equivalent to the original benefit.

Uniformed (Plans D and X):
Same as municipal.

17. Minimum Pension

Municipal (Plan J):

The monthly minimum pension to a pensioner is equal to \$25 multiplied by the pensioner’s completed years of credited service, to a 10 year maximum.

Uniformed (Plans D and X):

The monthly minimum pension to pensioners is \$500. The monthly minimum pension to all other pensioners is \$440 providing such pension will increase to \$500 at the time the pensioner reaches age 60.

18. Waiver of Benefit

Municipal (Plan J):

Any employee at service retirement age with less than three but more than one year of credited service, may waive the right to receive a monthly benefit and in lieu thereof, receive a lump sum payment of twice his or her employee contributions without interest.

Uniformed (Plans D and X):
Same as municipal.

19. Service-Connected Health Care Benefit

Municipal (Plan J):
Not applicable.

Uniformed (Plans D and X):

If a uniformed employee dies during the performance of duties, a service-connected health care benefit may be payable to the surviving spouse and dependent children. Regular payments will be made of the appropriate cost of maintaining medical, dental, optical, and prescription drug benefits that were in force at the time of the employee’s death. Payments to the spouse cease upon remarriage and to dependent children at age 18 (age 22 if full-time student) or, if dependent due to physical or mental infirmity, the duration of the infirmity. The health care benefits are not paid from the pension trust assets.

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20. Deferred Retirement Option Plan (DROP)

Municipal (Plan J):

Employees that have ten years of service and have reached two years past the minimum retirement age may elect to participate in the DROP. During this time, their accrued benefit will go into a DROP account and will earn interest at a specified rate. The rate is calculated each year on January 1 and is equal to the lesser of the yield on 1-year treasury bonds and half of the valuation interest rate as of that date. The benefit is calculated as of the date they entered the DROP. At the end of the DROP, the employees' accrued monthly benefit will commence, plus they will receive the accumulated amount of the accrued benefit paid to the DROP, as well as the interest earned on such benefit.

Uniformed (Plans D and X):

Same as municipal except that employees are eligible as soon as they have ten years service and have reached minimum retirement age.

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APPENDIX D – SUMMARY OF PLAN PROVISIONS – 1987 PLAN

1. Participation

Municipal (Plan Y):

Full-time employees participate on their date of employment. Temporary employees participate after completing six months of employment. Participation is limited to employees hired on or after January 8, 1987. Any member of the 1967 Plan may irrevocably elect to participate in Plan 87. All employees hired after their Plan '10 effective date become members of Plan '10 with some groups having the option to elect into Plan 87.

Uniformed (Plans A and B):

Same as municipal except Police employees hired after January 1, 2010 and Fire employees hired on or after October 15, 2010 must make an election to participate in Plan 87.

Elected (Plan L):

Any City employee on or after January 8, 1987, in any general, municipal, or special election, participates in this Plan. Effective November 11, 2014, elected officials become members of Plan '10 upon employment or taking office unless they elect to participate in Plan 87.

2. Credited Service

Municipal (Plan Y):

Credited service means the period of employment with the City during which the employee makes contributions to the Retirement System. Certain leaves of absence may also be credited.

Uniformed (Plans A and B):

Same as municipal.

Elected (Plan L):

Same as municipal.

3. Total Compensation

Municipal (Plan Y):

Total compensation means the base rate of pay, overtime, and longevity payments received during a 12-month period.

Uniformed (Plans A and B):

Total compensation means the base rate of pay, longevity payments, and stress or premium pay (up to 6% of base pay) received during a 12-month period.

Elected (Plan L):

Total compensation means the base rate of pay and longevity payments received during a 12-month period.

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4. Final Compensation

Municipal (Plan Y):

Final compensation means whichever is greater: annual base rate of pay at the time of termination or the total compensation received during the 12 months immediately preceding termination, including supplementary compensation received under Civil Service Regulation No. 32.

Uniformed (Plans A and B):

Same as municipal.

Elected (Plan L):

Same as municipal.

5. Average Final Compensation

Municipal (Plan Y):

Average final compensation means the arithmetic average of the total compensation received during the three calendar or anniversary years producing the highest average.

Uniformed (Plans A and B):

Average final compensation means the arithmetic average of the total compensation received during the two calendar or anniversary years producing the highest average.

Elected (Plan L):

Same as municipal.

6. Employee Contributions

Municipal (Plan Y):

Total employee contributions equal 30% of the gross normal cost for all members in the municipal division. For employees of the Sheriff's Office represented by Lodge 5 of the F.O.P hired after January 1, 2012 who elect to participate in Plan Y employee contributions equal 50% of gross normal cost. Exempt and non-represented employees hired after January 13, 1999 (and current employees as of January 13, 1999 that elect to do so) will contribute an additional amount to become vested in five years. Employees hired after their Plan '10 date who elect the option to participate in Plan 87 prime will pay an additional 1.0% of compensation.

Effective 11/14/2014 all guards represented by DC 33 contribute at 50% of aggregate normal cost. Other employees will pay an additional 0.5% of compensation for the period between January 1, 2015 through December 31, 2015 and 1.0% of compensation January 1, 2016 onwards.

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Uniformed (Plans A and B):

Total employee contributions equal 5% of total compensation, but not less than 30% or greater than 50% of gross normal cost for members in the uniformed division. Police employees hired after January 1, 2010 and Fire Fighters hired after October 15, 2010 who elect to participate in the 1987 Plan will contribute 6% of total compensation. Exempt and non-represented employees hired after January 13, 1999 (and current employees as of January 13, 1999 that elect to do so) will contribute an additional amount to become vested in five years.

Member contributions for current Police Officers are increased by 0.92% effective July 1, 2017 and an additional 0.92% effective July 1, 2018. For new Police Officers hired or rehired on or after July 1, 2017 member contribution rate shall be increased by 2.5% over the current rate of 6%.

Elected (Plan L):

Total employee contributions equal 30% of the gross normal cost for all members in the elected division calculated under the municipal plan plus 100% of the gross normal cost that exceeds the cost for the municipal plan. Employees hired after January 13, 1999 (and current employees as of January 13, 1999 that elect to do so) will contribute an additional amount to become vested in the lesser of two-full terms or eight years. Elected officials that are elected into Office after November 14, 2014 pay an additional 1% of compensation to participate in Plan L instead of Plan '10. All employees will also pay an additional 0.5% of compensation for the period between January 1, 2015 through December 31, 2015 and 1.0% of compensation January 1, 2016 onwards.

7. Service Retirement

Eligibility

Municipal (Plan Y):

Each municipal employee is eligible to retire and receive a service pension at age 60 if he or she has 10 or more years of credited service or, if the employee made additional contributions to become vested in five years, five years of credited service.

Uniformed (Plans A and B):

Each uniformed employee is eligible to retire and receive a service pension upon reaching age 50 and 10 or more years of credited service, or, if the employee made additional contributions to become vested in five years, five years of credited service.

Elected (Plan L):

Each elected official is eligible to retire and receive a service pension at age 55 if he or she has 10 or more years of credited service, or, if the employee made additional contributions to become vested in the lesser or two full terms or eight years, the lesser of two full terms or eight years of credited service.

APPENDIX D – SUMMARY OF PLAN PROVISIONS – 1987 PLAN

Benefit Amount

Municipal (Plan Y):

The service pension equals 2.2% of the employee's average final compensation multiplied by years of credited service to a maximum of 10 years, plus 2% of the employee's average final compensation multiplied by years of service over 10, subject to a maximum of 100% of average final compensation.

Uniformed (Plans A and B):

The service pension equals 2.2% of the employee's average final compensation multiplied by years of credited service to a maximum of 20 years, plus 2% of the employee's average final compensation multiplied by years of credited service over 20, subject to a maximum of 100% of average final compensation.

Elected (Plan L):

The service pension equals 3.5% of the employee's average final compensation multiplied by years of credited service, subject to a maximum of 100% of average final compensation.

8. Early Retirement

Eligibility

Municipal (Plan Y):

Each municipal employee is eligible to retire and receive a reduced service pension at age 52 if he has 10 or more years of credited service. As an alternative, a member is eligible if he or she has at least 33 years of credited service, regardless of age.

Uniformed (Plans A and B):

Each uniformed employee is eligible to retire and receive a reduced service pension at age 40 if he or she has 10 or more years of credited service. Alternatively, a member is eligible if he has at least 25 years of credited service, regardless of age.

Benefit Amount

Municipal (Plan Y):

The annual amount is calculated the same as service retirement, reduced by 1/2 of 1% for each month the employee is younger than minimum retirement age. Benefits are not reduced if the employee has 33 or more years of credited service.

Uniformed (Plans A and B):

The annual amount is calculated the same as service retirement, reduced by 1/2 of 1% for each month the employee is younger than minimum retirement age. Benefits are not reduced if the employee has 25 or more years of credited service.

Elected (Plan L):

The annual amount is calculated the same as service retirement, reduced by 1/2 of 1% for each month the employee is younger than minimum retirement age.

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9. Deferred Vested Retirement

Eligibility

Municipal (Plan Y):

An employee who terminates employment after completing 10 or more years of credited service or, if the employee made additional contributions to become vested in five years, five years of credited service, is eligible for a deferred vested retirement if his or her contributions have not been withdrawn.

Uniformed (Plans A and B):

Same as municipal.

Elected (Plan L):

A person terminating employment and who has completed 10 or more years of credited service, or, if the employee made additional contributions to become vested in the lesser of two full terms or eight years, two full terms or eight years of credited service is eligible for a deferred vested retirement benefit provided he or she has not withdrawn contributions.

Benefit

Municipal (Plan Y):

The annual deferred vested benefit is determined the same as service pensions, based on average final compensation and credited service at termination. This benefit begins at the service retirement date. If a member dies before the deferred vested benefit begins, an ordinary death benefit is payable (see Ordinary Death below). As an alternative, the person terminating employment may request at any time before benefits begin a return of employee contributions (without interest) instead of the deferred vested benefit.

Uniformed (Plans A and B):

Same as municipal.

Elected (Plan L):

Same as municipal.

10. Withdrawal Benefit

Eligibility

Municipal (Plan Y):

Each terminating employee who has completed fewer than 10 years of credited service (or, if the employee made additional contributions to become vested in five years, fewer than five years of credited service) will receive a withdrawal benefit equal to employee contributions (without interest).

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Uniformed (Plans A and B):
Same as municipal.

Elected (Plan L):
Each terminating employee who completed fewer than 10 years of credited service will receive a withdrawal benefit equal to employee contributions (without interest).

11. Service Connected Death

Eligibility

Municipal (Plan Y):
The beneficiary of each active employee who dies solely from the performance of duties of the employee's position with the City is eligible for an immediate death benefit.

Uniformed (Plans A and B):
Same as municipal.

Elected (Plan L):
Same as municipal.

Benefit Amount

Municipal (Plan Y):
The death benefit equals the sum of the total employee contributions paid to the Retirement System (without interest), plus a yearly payment of 60% of the employee's final compensation reduced by any death benefits payable under the Workers' Compensation Act. This benefit is payable to the spouse until his or her death or remarriage, whichever occurs first. Dependent children are entitled to an additional 10% of final compensation yearly payment for each dependent child (up to two children) until the child reaches 18. This total benefit shall not exceed 80% of final compensation.

If there is no spouse, or if the spouse dies or remarries, each dependent child (up to three children) is eligible for a yearly payment of 25% of final compensation until the child reaches age 18. If there is no spouse or dependent children, each dependent parent is entitled to a 15% of final compensation yearly payment for life.

Uniformed (Plans A and B):
Same as municipal.

Elected (Plan L):
Same as municipal.

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12. Ordinary Death

Eligibility

Municipal (Plan Y):

The beneficiary of an active employee (or a terminated vested employee who did not withdraw his employee contributions) who dies after completing 10 years of credited service (or five years of credited service if additional contributions were made) or who has reached age 60 is eligible for an immediate death benefit equal to an annual pension or a lump sum payment, whichever the beneficiary chooses.

The beneficiary of an active employee who dies before completing 10 years of credited service (or five years of credited service if additional contributions were made) or reaching age 60 is eligible for a lump sum payment.

The beneficiary may be any relative by blood or marriage.

Uniformed (Plans A and B):

The beneficiary of any employee who dies while actively employed (or a terminated vested employee who did not withdraw employee contributions) is eligible for a death benefit equal to an annual pension or a lump sum payment, whichever the beneficiary chooses.

The beneficiary may be any relative by blood or marriage.

Elected (Plan L):

The beneficiary of an active employee (or a terminated vested employee who did not withdraw contributions) who dies after completing 10 years of credited service or reaching age 55 is eligible for an immediate death benefit equal to an annual pension or a lump sum payment, whichever the beneficiary chooses.

The beneficiary of an active employee who dies before completing 10 years of credited service or reaching age 55 is eligible for a lump sum payment.

The beneficiary may be any relative by blood or marriage.

Annual Pension

Municipal (Plan Y):

The annual ordinary death pension, payable for life, is equal to the regular service pension the employee would have received had he or she been eligible to retire on the day before death and had elected Option 2, joint and 100% contingent annuitant (see Survivor Benefits below).

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Uniformed (Plans A and B):

The annual ordinary death pension, payable for life, is equal to the regular service pension the employee would have received (based on a minimum of 10 years of service) had he been eligible to retire on the day before death and had elected Option 2, joint and 100% contingent annuitant (see Survivor Benefits below).

Elected (Plan L):

Same as municipal.

Lump Sum Payment

Municipal (Plan Y):

The lump sum payment is equal to the deceased employee's average final compensation multiplied by years of credited service (not to exceed the service in the denominator) and divided by the number of years of credited service needed to become vested, plus the deceased employee's contribution to the Retirement System (without interest) minus the total amount of the deceased employee's life insurance which was paid by the City.

Uniformed (Plans A and B):

Same as municipal.

Elected (Plan L):

Same as municipal.

13. Service-Connected Disability

Eligibility

Municipal (Plan Y):

An active employee found by the Board of Pensions and Retirement to be mentally or physically permanently incapacitated from any further performance of duties due solely to the result of the performance of duties is eligible for an immediate service-connected disability pension. The application for benefit must be made within one year after termination of employment.

Uniformed (Plans A and B):

Same as municipal.

Elected (Plan L):

An active employee found by the Board of Pensions and Retirement to be mentally or physically permanently incapacitated from any further performance of duties due solely to the result of the performance of duties is eligible for an immediate service-connected disability pension.

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Benefit Amount

Municipal (Plan Y):

The service-connected disability benefit is equal to the employee's contributions to the Retirement System, plus a yearly benefit of 70% of the employee's final compensation, reduced by any disability benefits payable under the Worker's Compensation Act.

If he or she withdraws contributions, the benefit is payable for his or her lifetime only. If the employee leaves employee contributions with the Retirement System, he or she may choose a survivor benefit option (see Survivor benefit below) and the beneficiary will continue receiving benefit payments after his or her death.

Uniformed (Plans A and B)

Same as municipal.

Elected (Plan L):

Same as municipal.

14. Service-Connected Disability Periodic Adjustment

Eligibility

Municipal (Plan Y):

An employee who is receiving a service-connected disability benefit who is totally disabled and does not collect Social Security disability insurance benefits is eligible for a periodic adjustment.

Uniformed (Plans A and B):

Same as municipal, but only applies to police employees.

Elected (Plan L):

Same as municipal.

Benefit Amount

Municipal (Plan Y):

The disabled employee's pension will be increased in the eighth year after separation by the percentage raise given in the previous year to active employees in his or her job class. The adjustment will continue each year until the employee's 65th birthday.

Uniformed (Plans A and B):

Same as municipal.

Elected (Plan L):

Same as municipal.

APPENDIX D – SUMMARY OF PLAN PROVISIONS – 1987 PLAN

15. Ordinary Disability

Eligibility

Municipal (Plan Y):

An active employee found by the Board to be mentally or physically permanently incapacitated from the further performance of duties due to an accident or illness not caused by the performance of duties is eligible for an immediate ordinary disability benefit provided he or she has at least 10 years of credited service (or five years of credited service, if additional contributions were made). The application for benefits must be made within one year after termination.

Uniformed (Plans A and B):

Same as municipal, except that fire employees only need five years of credited service and police employees have no service requirement if the disability is permanent and total. Police employees with permanent and partial disability need 10 years of credited service (or five years of credited service, if additional contributions were made).

Elected (Plan L):

An active employee found by the Board to be mentally or physically permanently incapacitated from the further performance of duties due to an accident or illness not caused by the performance of duties is eligible for an immediate ordinary disability benefit provided he or she has completed at least 10 years of credited service, or eight years if additional contributions were made.

Benefit Amount

Municipal (Plan Y):

The annual ordinary disability benefit is equal to the benefit determined under the service pension formula using average final compensation and credited service as of the date of disablement.

If the employee is eligible for or receiving workers compensation, no benefit is payable. Such employee may apply for benefits at retirement age.

Uniformed (Plans A and B):

Same as municipal, except each eligible employee is automatically credited with a minimum of 10 years of service to calculate the annual benefit.

Elected (Plan L):

The annual ordinary disability benefit is equal to the benefit determined under the service pension formula using average final compensation and credited service as of the date of disablement.

APPENDIX D – SUMMARY OF PLAN PROVISIONS – 1987 PLAN

16. Survivor Benefits

Municipal (Plan Y):

Service pensions, deferred vested benefits, service-connected disability benefits, and ordinary disability benefits are payable under five optional forms. Options 2 and 3 provide benefits actuarially equivalent to a lifetime only pension while Option 1 has no reduction.

Option 1 - A benefit is payable to the employee providing on his death, the beneficiary will receive a lump sum equal to the excess, if any, of the employee's contributions over the sum of the payments received.

Option 2 - A reduced benefit payable to the employee with the provision that 100% of the reduced benefit will continue to be paid to the designated beneficiary for life after the death of the employee.

Option 3 - The same as Option 2 except only 50% of the reduced benefit is continued to the designated beneficiary.

Option 5 – Provides for a partial lump sum of between 6 and 36 monthly payments payable under Options 1, 2, 3 or 4. The remaining monthly benefit is reduced so that the partial lump sum plus the reduced benefit is actuarially equivalent to the original benefit.

Uniformed (Plans A and B):

Same as municipal, except that police and fire employees may also elect Option 4:

Option 4 - Upon the employee's death, 50% of the benefit will continue to be paid to the surviving spouse for life, provided the employee and spouse were married for two years before retirement and at death. If there is no eligible spouse at the time the employee dies, or the spouse dies before the full amount of the contributions have been returned, 50% of the benefit is continued to dependent children until age 18, or if no dependent children, payments are given to dependent parents for the remainder of their lives. In addition, Option 4 provides for a guaranteed return of employee contributions as described in Option 1 above.

Elected (Plan L):

Same as municipal.

17. Service-Connected Health Care Benefit

Eligibility

Municipal (Plan Y):

Not applicable.

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Uniformed (Plans A and B):

In the event of the death of a uniformed employee during the performance of his or her duties, a service-connected health care benefit may be payable to the surviving spouse and dependent children. Regular payments will be made of the appropriate cost of maintaining medical, dental, optical and pharmaceutical prescription benefits in force at the time of the employee's death. Payments to the spouse cease upon remarriage and to dependent children at age 18 (age 22 if a full-time student) or, if dependent due to physical or mental infirmity, the duration of the infirmity. The health care benefits are not paid from the pension trust assets.

Elected (Plan L):

Not applicable.

18. Deferred Retirement Option Plan (DROP)

Eligibility

Municipal (Plan Y):

Employees that have 10 years of service and have reached two years after the minimum retirement age may elect to participate in the DROP. During this time, their accrued benefit will go into a DROP account and will earn interest at a specified rate. The rate is calculated each year on January 1 and is equal to the lesser of the yield on 1-year treasury bonds and half of the valuation interest rate as of that date. The benefit is calculated as of the date they entered the DROP. At the end of the DROP, the employees' accrued monthly benefit will commence, plus they will receive the accumulated amount of the accrued benefit paid to the DROP, as well as the interest earned on such benefit.

Uniformed (Plans A and B):

Same as municipal except that employees are eligible as soon as they have ten-years of service and have reached minimum retirement age.

Elected (Plan L):

Officials elected to Office after September 18, 2009 are not eligible to participate in the DROP.

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APPENDIX D – SUMMARY OF PLAN PROVISIONS – PLAN ‘10

1. Participation

Municipal:

Municipal employees hired or rehired after the Plan ‘10 effective date (as shown below) become members in Plan ‘10 immediately upon employment.

Employees of the Sheriffs’ Office or Register of Wills: January 1, 2012

Employees represented by AFSCME, District Council 47: March 5, 2014

Municipal employees in the civil service not represented by a union: May 14, 2014

Employees represented by AFSCME, District Council 33, other than guards: September, 2014

Guards represented by DC 33: November 11, 2014

Municipal employees not in the civil service and not represented by a union: November 11, 2014

Elected Officials: November 11, 2014

All employees except Register of wills and guards represented by DC 33 have the option within 30 days to elect to participate in Plan 87 Municipal.

Uniformed:

Police employees hired or rehired on or after January 1, 2010 and Fire employees hired or rehired on or after October 15, 2010 are members in Plan ‘10 immediately upon employment. Employees have the option within 30 days to elect to participate in Plans A or B.

Existing Plan A, Plan B and Plan Y participants had the option, for a period of ninety (90) days, to make an irrevocable election to enter the Plan ‘10. Employees who elected do so would have their benefits in the existing pension plan frozen, and their future earnings and service will count only toward benefits under Plan ‘10.

2. Credited Service

Municipal:

Credited service means the period of employment with the City during which the employee makes contributions to the Retirement System. Certain leaves of absence may also be credited.

Uniformed:

Same as municipal.

3. Total Compensation

Municipal:

Total compensation means the base rate of pay, overtime, and longevity payments received during a 12-month period.

Uniformed:

Total compensation means the base rate of pay, longevity payments, and stress or premium pay (up to 6% of base pay) received during a 12-month period.

APPENDIX D – SUMMARY OF PLAN PROVISIONS – PLAN ‘10

4. Final Compensation

Municipal:

Final compensation means whichever is greater: annual base rate of pay at the time of termination or the total compensation received during the 12 months immediately preceding termination, including supplementary compensation received under Civil Service Regulation No. 32.

Uniformed:

Same as municipal.

5. Average Final Compensation

Municipal:

Average final compensation means the arithmetic average of the total compensation received during the five calendar or anniversary years producing the highest average.

Uniformed:

Same as municipal.

6. Employee Contributions

Municipal:

Total employee contributions equal 50% of the gross normal cost for members in the municipal division.

Uniformed:

Total employee contributions equal 5.5% of total compensation up to twenty years of credited service.

Member contributions for current Police Officers are increased by 0.92% effective July 1, 2017 and an additional 0.92% effective July 1, 2018. For new Police Officers hired or rehired on or after July 1, 2017 employee contributions rate shall be increased by 2.5% over the current rate of 5.5%.

7. Service Retirement

Eligibility

Municipal:

Each municipal employee is eligible to retire and receive a service pension at age 60 if he or she has 10 or more years of credited service.

Uniformed:

Each uniformed employee is eligible to retire and receive a service pension upon reaching age 50 and 10 or more years of credited service.

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Benefit Amount

Municipal:

The service pension equals 1.25% of the employee’s average final compensation multiplied by years of credited service up to maximum of 20 years.

Uniformed:

The service pension equals 1.75% of the employee’s average final compensation multiplied by years of credited service up a maximum of 20 years.

8. Early Retirement

Eligibility

Municipal:

Each municipal employee is eligible to retire and receive a reduced service pension at age 52 if he has 10 or more years of credited service.

Uniformed:

Each uniformed employee is eligible to retire and receive a reduced service pension at age 40 if he or she has 10 or more years of credited service.

Benefit Amount

Municipal:

The annual amount is calculated the same as service retirement, reduced by 1/2 of 1% for each month the employee is younger than minimum retirement age.

Uniformed:

Same as municipal.

9. Deferred Vested Retirement

Eligibility

Municipal:

An employee who terminates employment after completing 10 or more years of credited service is eligible for a deferred vested retirement if his or her contributions have not been withdrawn.

Uniformed:

Same as municipal.

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Benefit Amount

Municipal:

The annual deferred vested benefit is determined the same as service pensions, based on average final compensation and credited service at termination. This benefit begins at the service retirement date. If a member dies before the deferred vested benefit begins, an ordinary death benefit is payable (see Ordinary Death below). As an alternative, the person terminating employment may request at any time before benefits begin a return of employee contributions (without interest) instead of the deferred vested benefit.

Uniformed:

Same as municipal.

10. Withdrawal Benefit

Eligibility

Municipal:

Each terminating employee who has completed fewer than 10 years of credited service will receive a withdrawal benefit equal to employee contributions (without interest).

Uniformed:

Same as municipal.

11. Service Connected Death

Eligibility

Municipal:

The beneficiary of each active employee who dies solely from the performance of duties of the employee’s position with the City is eligible for an immediate death benefit.

Uniformed:

Same as municipal.

Benefit Amount

Municipal:

The death benefit equals the sum of the total employee contributions paid to the Retirement System (without interest), plus a yearly payment of 60% of the employee’s final compensation reduced by any death benefits payable under the Workers’ Compensation Act. This benefit is payable to the spouse until his or her death or remarriage, whichever occurs first. Dependent children are entitled to an additional 10% of final compensation yearly payment for each dependent child (up to two children) until the child reaches 18. This total benefit shall not exceed 80% of final compensation.

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If there is no spouse, or if the spouse dies or remarries, each dependent child (up to three children) is eligible for a yearly payment of 25% of final compensation until the child reaches age 18. If there is no spouse or dependent children, each dependent parent is entitled to a 15% of final compensation yearly payment for life.

Uniformed:

Same as municipal.

12. Ordinary Death

Eligibility

Municipal:

The beneficiary of an active employee (or a terminated vested employee who did not withdraw his employee contributions) who dies after completing 10 years of credited service or who has reached age 60 is eligible for an immediate death benefit equal to an annual pension or a lump sum payment, whichever the beneficiary chooses.

The beneficiary of an active employee who dies before completing 10 years of credited service or reaching age 60 is eligible for a lump sum payment.

The beneficiary may be any relative by blood or marriage.

Uniformed:

The beneficiary of any employee who dies while actively employed (or a terminated vested employee who did not withdraw employee contributions) is eligible for a death benefit equal to an annual pension or a lump sum payment, whichever the beneficiary chooses.

The beneficiary may be any relative by blood or marriage.

Annual Pension

Municipal:

The annual ordinary death pension, payable for life, is equal to the regular service pension the employee would have received had he or she been eligible to retire on the day before death and had elected Option 2, joint and 100% contingent annuitant (see Survivor Benefits below).

Uniformed:

The annual ordinary death pension, payable for life, is equal to the regular service pension the employee would have received (based on a minimum of 10 years of service) had he been eligible to retire on the day before death and had elected Option 2, joint and 100% contingent annuitant (see Survivor Benefits below).

APPENDIX D – SUMMARY OF PLAN PROVISIONS – PLAN ‘10

Lump Sum Payment

Municipal:

The lump sum payment is equal to the deceased employee’s average final compensation multiplied by years of credited service (not to exceed the service in the denominator) and divided by the number of years of credited service needed to become vested, plus the deceased employee’s contribution to the Retirement System (without interest) minus the total amount of the deceased employee’s life insurance which was paid by the City.

Uniformed:

Same as municipal.

13. Service-Connected Disability

Eligibility

Municipal:

An active employee found by the Board of Pensions and Retirement to be mentally or physically permanently incapacitated from any further performance of duties due solely to the result of the performance of duties is eligible for an immediate service-connected disability pension. The application for benefit must be made within one year after termination of employment.

Uniformed:

Same as municipal.

Benefit Amount

Municipal:

The service-connected disability benefit is equal to the employee’s contributions to the Retirement System, plus a yearly benefit of 70% of the employee’s final compensation, reduced by any disability benefits payable under the Worker’s Compensation Act.

If he or she withdraws contributions, the benefit is payable for his or her lifetime only.

If the employee leaves employee contributions with the Retirement System, he or she may choose a survivor benefit option (see Survivor benefit below) and the beneficiary will continue receiving benefit payments after his or her death.

Uniformed:

Same as municipal.

APPENDIX D – SUMMARY OF PLAN PROVISIONS – PLAN ‘10

14. Service-Connected Disability Periodic Adjustment

Eligibility

Municipal:

An employee who is receiving a service-connected disability benefit who is totally disabled and does not collect Social Security disability insurance benefits is eligible for a periodic adjustment.

Uniformed:

Same as municipal, but only applies to police employees.

Benefit Amount

Municipal:

The disabled employee’s pension will be increased in the eighth year after separation by the percentage raise given in the previous year to active employees in his or her job class. The adjustment will continue each year until the employee’s 65th birthday.

Uniformed:

Same as municipal.

15. Ordinary Disability

Eligibility

Municipal:

An active employee found by the Board to be mentally or physically permanently incapacitated from the further performance of duties due to an accident or illness not caused by the performance of duties is eligible for an immediate ordinary disability benefit provided he or she has at least 10 years of credited service. The application for benefits must be made within one year after termination.

Uniformed:

Same as municipal, except that fire employees only need five years of credited service and police employees have no service requirement if the disability is permanent and total. Police employees with permanent and partial disability need 10 years of credited service.

Benefit Amount

Municipal:

The annual ordinary disability benefit is equal to the benefit determined under the service pension formula using average final compensation and credited service as of the date of disablement.

APPENDIX D – SUMMARY OF PLAN PROVISIONS – PLAN ‘10

If the employee is eligible for or receiving workers compensation, no benefit is payable. Such employee may apply for benefits at retirement age.

Uniformed (Plans A and B):

Same as municipal, except each eligible employee is automatically credited with a minimum of 10 years of service to calculate the annual benefit.

16. Survivor Benefits

Eligibility

Municipal:

Service pensions, deferred vested benefits, service-connected disability benefits, and ordinary disability benefits are payable under five optional forms. Options 2 and 3 provide benefits actuarially equivalent to a lifetime only pension while Option 1 has no reduction.

Option 1 - A benefit is payable to the employee providing on his death, the beneficiary will receive a lump sum equal to the excess, if any, of the employee's contributions over the sum of the payments received.

Option 2 - A reduced benefit payable to the employee with the provision that 100% of the reduced benefit will continue to be paid to the designated beneficiary for life after the death of the employee.

Option 3 - The same as Option 2 except only 50% of the reduced benefit is continued to the designated beneficiary.

Option 5 – Provides for a partial lump sum of between 6 and 36 monthly payments payable under Options 1, 2, 3 or 4. The remaining monthly benefit is reduced so that the partial lump sum plus the reduced benefit is actuarially equivalent to the original benefit.

Uniformed:

Same as municipal, except that police and fire employees may also elect Option 4:

Option 4 - Upon the employee's death, 50% of the benefit will continue to be paid to the surviving spouse for life, provided the employee and spouse were married for two years before retirement and at death. If there is no eligible spouse at the time the employee dies, or the spouse dies before the full amount of the contributions have been returned, 50% of the benefit is continued to dependent children until age 18, or if no dependent children, payments are given to dependent parents for the remainder of their lives. In addition, Option 4 provides for a guaranteed return of employee contributions as described in Option 1 above.

APPENDIX D – SUMMARY OF PLAN PROVISIONS – PLAN ‘10

17. Service-Connected Health Care Benefit

Eligibility

Municipal:

Not applicable.

Uniformed:

In the event of the death of a uniformed employee during the performance of his or her duties, a service-connected health care benefit may be payable to the surviving spouse and dependent children. Regular payments will be made of the appropriate cost of maintaining medical, dental, optical and pharmaceutical prescription benefits in force at the time of the employee's death. Payments to the spouse cease upon remarriage and to dependent children at age 18 (age 22 if a full-time student) or, if dependent due to physical or mental infirmity, the duration of the infirmity. The health care benefits are not paid from the pension trust assets.

18. Deferred Retirement Option Plan (DROP)

Eligibility

Municipal:

Employees that have 10 years of service and have reached two years after the minimum retirement age may elect to participate in the DROP. During this time, their accrued benefit will go into a DROP account and will earn interest at a specified rate. The rate is calculated each year on January 1 and is equal to the lesser of the yield on 1-year treasury bonds and half of the valuation interest rate as of that date. The benefit is calculated as of the date they entered the DROP. At the end of the DROP, the employees' accrued monthly benefit will commence, plus they will receive the accumulated amount of the accrued benefit paid to the DROP, as well as the interest earned on such benefit.

Uniformed:

Same as municipal except that employees are eligible as soon as they have ten years of service and have reached minimum retirement age.

**CITY OF PHILADELPHIA MUNICIPAL RETIREMENT SYSTEM
JULY 1, 2017 ACTUARIAL VALUATION**

APPENDIX D – SUMMARY OF PLAN PROVISIONS – PLAN ‘16

All employees represented by AFSCME District Council 33 hired or rehired on or after August 20, 2016 are required to participate in the new Stacked Hybrid Plan – Plan 16. Plan 16 benefits are similar to Plan 87 except that compensation used in calculating benefits is capped at \$50,000, annually on a calendar year basis. Member contributions for new hires will also be based on the capped pay.

Member contributions for current and future DC #33 members will increase based on the level of pay (limited to the capped pay for new entrants) and will be paid in addition to base member contributions rates as shown on the next page. The table below shows the tiers used in determining the additional member tier contributions.

Annual Salary	Base member rates plus
\$45,000 or less	0.00%
\$45,000 - \$55,000	0.50%
\$55,000 - \$75,000	1.50%
\$75,000 - \$100,000	2.75%
More than \$100,000	3.00%

Plan 16 members will have the option to participate in the Deferred Compensation Plan (DC Plan). For members whose benefits are capped under the retirement plan, the City will match 50% of the members’ contribution up to a maximum of 1.5% of the member’s compensation.

SUMMARY OF LEGISLATIVE CHANGES

The following table summarizes member contribution rates by Plan and by bargaining group where applicable. This information has been provided by the Staff and has been applied where effective as of the valuation date.

**CITY OF PHILADELPHIA MUNICIPAL RETIREMENT SYSTEM
JULY 1, 2017 ACTUARIAL VALUATION**

APPENDIX D – SUMMARY OF PLAN PROVISIONS – MEMBER CONTRIBUTIONS

Member Contribution Rates by Membership Class			Effective 7/1/2018			
Plan 67	No SSA Coverage	Plan D (Police)		6.00%		
		Plan X (Fire)		6.00%		
		Plan J-(OHCD)		6.00%		
		Plan J1 (Non Repts; Exempts)		7.00%		
		Plan J2 (DC 47)		7.00%		
		Plan J2 (DC33: excl Guards and OHCD)		7.00%	Add on for Tier	
		Plan J5 (DC33-Guards) Eff 11/14/2014		7.00%	Add on for Tier	
SSA	Plan J3 (Non Repts-Exempts: excluding Auditing (<i>Controller</i>) Department who are not in Civil Service)		4.75%			
	Plan J4 (DC 47-DC33:excl Guards)		4.75%	Add on for Tier (DC 33 only)		
	Plan J6 (Non Civil Service-Auditing Dept EE)		4.75%			
	Plan J7 (DC33-Guard)		4.75%	Add on for Tier		
Plan 87	Plan A (Fire)		5.00%			
	Plan B (Police)		6.84%			
	Plan L (Elected)		9.62%			
	Plan Y		3.08%			
	Plan Y5		3.60%			
	Plan L8		11.72%			
	Plan Y2 (Non Repts-Exempts:excl Auditing EEs)		3.08%			
	Plan Y3 (DC 47)		3.08%			
	Plan Y3 (DC33:excl Guards and OHCD)		3.08%	Add on for Tier		
	Plan Y4 (Exempts-Auditing/ <i>Controller</i> Dept Ees)		3.08%			
Plan 87 Prime Opted out of Plan 10	Plan Y12 (DC33: Guards) DOH < 9/9/2014		3.08%	Add on for Tier		
	Plan Y12 (DC33: Guards) DOH>= 9/9/2014 and < 11/14/2014		4.08%	Add on for Tier		
	Plan Y1 (Deputy Sheriff) DOH>=1/1/12	50% of Agregate Normal Cost of all members in Plan Y		3.47%		
	Plan Y4 (Non Repts) DOH>=5/14/14	+1%		4.08%		
	Plan Y6 (DC 47) DOH>=3/5/2014	+1%		4.08%		
	Plan Y9 (DC33-excluding Guards and OHCD) DOH>=9/9/2014	+1%		4.08%	Add on for Tier	
	Plan Y11 (Exempts) DOH>=11/14/2014	+1%		4.08%		
	Plan Y5.1(5 yr vesting-Exempts) DOH>=11/14/2014	+1%		4.60%		
	Plan L1 (elected) DOH>=11/14/2014	+1%		10.62%		
	Plan L8.1 (Elected) DOH>=11/14/2014	+1%		12.72%		
	Plan B6 (Police) DOH>=1/1/2010 and < 7/1/2017	+1.84%		7.84%		
	Plan B6 (Police) DOH>=7/1/2017	+2.50%		8.50%		
	Plan A6 (Fire) DOH>=10/15/2010			6.00%		
Plan 10	B10-Fire	FIXED		5.50%		
	A10-Police	FIXED		5.50%		
	Y10	Deputy Sheriff	50% of Normal Cost for members of Plan 10		2.21%	
		Register of Wills-MANDATORY DOH >1/1/12			2.21%	
		Non-Reps			2.21%	
		DC33-Guards-MANDATORY DOH>=Eff 11/14/2014 and < 8/19/2016			2.21%	Add on for Tier
		DC33			2.21%	Add on for Tier
		DC 47			2.21%	
Elected		2.21%				
Exempts		2.51%				
Plan 16	DC 33 DOH>=8/20/2016	Pensionable Earnings up to \$50,000		3.87%	Add on for Tier	

APPENDIX E – GLOSSARY OF TERMS

1. Actuarial Liability

The Actuarial Liability is the difference between the present value of all future system benefits and the present value of total future normal costs. This is also referred to by some actuaries as the “accrued liability” or “actuarial accrued liability.”

2. Actuarial Assumptions

Estimates of future experience with respect to rates of mortality, disability, turnover, retirement rate or rates of investment income and salary increases. Actuarial 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.

3. Accrued Service

Service credited under the System which was rendered before the date of the actuarial valuation.

4. Actuarial Equivalent

A single amount or series of amounts of equal actuarial value to another single amount or series of amounts, computed on the basis of appropriate actuarial assumptions.

5. Actuarial Funding Method

A mathematical budgeting procedure for allocating the dollar amount of the actuarial present value of a retirement system benefit between future normal cost and actuarial accrued liability. Sometimes this is referred to as the “actuarial cost method.”

6. Actuarial Gain (Loss)

The difference between actual experience and actuarial assumption anticipated experience during the period between two actuarial valuation dates.

7. Actuarial Present Value

The amount of funds currently required to provide a payment or series of payments in the future. It is determined by discounting future payments at predetermined rates of interest, and by probabilities of payment.

APPENDIX E – GLOSSARY OF TERMS

8. Adjusted Market Value of Assets

An asset value reflecting a five-year smoothing of asset gains and losses, as described in the Philadelphia Municipal Code Title 22-311.

9. Amortization

This term represents the paying off an interest-discounted amount with periodic payments of interest and principal—as opposed to paying off with a lump sum payment.

10. Normal Cost

The actuarial present value of retirement system benefits allocated to the current year by the actuarial funding method.

11. Unfunded Actuarial Liability (UAL)

The difference between actuarial liability and valuation assets. This is sometimes referred to as “unfunded actuarial accrued liability.”

Most retirement systems have unfunded actuarial liabilities. They typically arise each time new benefits are added and each time experience gains/losses are realized.

The existence of unfunded actuarial accrued liability is not in itself an indicator of poor funding. Also, unfunded actuarial liabilities do not represent a debt that is payable today. What is important is the ability of the plan sponsor to contribute the annual amortized cost to fund down the unfunded actuarial liability and the trend in unfunded actuarial liability amount.