Comprehensive Annual Financial Report

for the years ended December 31, 2018 and 2017

PENNSYLVANIA MUNICIPAL RETIREMENT SYSTEM

pmrs pennsylvania
MUNICIPAL RETIREMENT SYSTEM

The Pennsylvania Municipal Retirement System

Comprehensive Annual Financial Report
for the Years Ended December 31, 2018 and 2017

Barry L. Sherman, Chairman
Pennsylvania Municipal Retirement Board

Cory S. Adams, Vice Chairman
Pennsylvania Municipal Retirement Board

Stephen W. Vaughn, Secretary
Pennsylvania Municipal Retirement System

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Report prepared by the Investment and Financial Management Division
of the Pennsylvania Municipal Retirement System

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Introduction

Vision and Mission Statement

Vision Statement

To be Pennsylvania local governments' pension administrator ***of choice.***

Mission Statement

The Pennsylvania Municipal Retirement System seeks to help Pennsylvania's local governments, regardless of size or resources, secure the future retirement of their employees by providing comprehensive, cost-efficient and professional pension administration services through a pension plan tailored to the participants' and sponsors' requirements.

Letter of Transmittal

August 15, 2019
Pennsylvania Municipal Retirement Board
Pennsylvania Municipal Retirement System
P.O. Box 1165
Harrisburg, Pennsylvania 17108-1165

We are pleased to present the Pennsylvania Municipal Retirement System's (PMRS, the System, the Fund) Comprehensive Annual Financial Report (CAFR) for the years ended December 31, 2018 and 2017. This report is intended to provide financial, investment, actuarial, and statistical information in a single publication. The management of the System is solely responsible for the accuracy and completion of this report. As required by the Pennsylvania Municipal Retirement Law, Act of 1974, P.L. 34, No. 15 (the Act) as amended, the System makes available the CAFR to our governing board, the members of the General Assembly of Pennsylvania, each participating municipal employer, and all other interested parties upon request. The CAFR is also published on the System's website (www.pmrs.state.pa.us).

OVERVIEW OF THE SYSTEM

The Pennsylvania Municipal Retirement System, which is an agent multiple-employer system, is headquartered in Harrisburg, Pennsylvania. The System is a state retirement agency created by act of the Pennsylvania General Assembly in 1974. Responsibility for the organization and administration of the System is vested in the 11-member Pennsylvania Municipal Retirement Board (the Board).

The System administers sound, cost-effective pension plans on a contracted basis for local government employees throughout the Commonwealth. Our services include accounting services, actuarial valuations, employee consultation, record keeping, and asset management. Any Pennsylvania county, city, town, township, borough, municipal authority, or institution supported and maintained by a municipality may participate. The Statistical Section of this report lists all participating plans as of January 1, 2018.

The System offers two types of retirement plans: defined benefit (traditional pension) and cash balance; either plan can be used alone or in combination with each other. Plan sponsors determine key plan provisions allowable within Federal guidelines and Commonwealth law. These plan sponsor elections, combined with PMRS' standard plan provisions, determine each plan's unique design tailored to the plan sponsor's specific needs.

The plan design determines the type of plan and benefit options, the general level of plan funding requirements, the cost sharing between the employee and employer along with the employer's administrative complexity. For example, a standard comparative measure of a plan's retirement benefit level is "Income Replacement": the percentage of an employee's final average salary that will be replaced by a plan's annual retirement benefits. Income Replacement in PMRS plans ranges from 15% to 80% for employees with 30 years of service. Another comparative measure is total plan costs as a percentage of the total salary of a plan's active employees. PMRS plan costs range from 2% to 30% of total salary. Finally, plan design determines the "Plan Cost Sharing": the percentage of total plan costs paid by employers vs. employees. Plan Cost Sharing for employees ranges from 0% to 60% of the plan's total cost while employer costs range from 40% to 100% of the plan's total cost.

ECONOMIC ENVIRONMENT

Global expansion continued unabated into the first quarter of 2018. Volatility rattled the U.S. markets; however, investors relaxed again viewing the tariff issue as nothing more than the opening round in trade negotiations by the end of the quarter. It was quite a ride and one seldom seen in the previous nine years of the bull market. The first quarter Gross Domestic Product (GDP) expanded at a rate of 2.2 percent, a slight deceleration from the fourth quarter's 2.3 percent growth. Job growth supported the GDP gain, averaging more than 200,000 during the quarter. Unemployment decreased to 4.0 percent from 4.1 in December. The Consumer Price Index (CPI) expanded 2.4 percent year over year. The U.S. dollar weakened slightly relative to the euro. Growth stocks continued to outperform value stocks with small cap stocks outperforming large and mid-cap stocks. The Federal Reserve Board raised the Fed funds rate to a range of 1.5 percent to 1.75 percent. As a result, the yield curve rose along all maturities and bond prices fell accordingly. In the first quarter, the quarterly gross rate of return for the System's total portfolio was 0.8 percent.

Global expansion slowed in Europe and Asia during the second quarter, while the U.S. economy remained strong. The second quarter GDP increased at a rate of 4.2 percent. Job growth supported the GDP gain, with 213,000 hires in June and 2.4 million for the last 12 months. Unemployment remained at 4.0 percent from the last quarter. The CPI expanded 2.9 percent year over year. The U.S. dollar was stronger against the euro than in the previous quarter. Growth stocks continued to outperform value stocks with small cap stocks outperforming large cap stocks. The economies of Europe, Canada, Mexico, Japan, and China were already losing steam during the quarter with uncertainty regarding the outcome of trade negotiations. The U.S. took an aggressive negotiating stance and the countries on the receiving end retaliated. In June, the Federal Reserve Board raised the Fed funds rate to a range of 1.75 percent to 2.0 percent while the yield curve flattened. In the second quarter, the quarterly gross rate of return for the System's total portfolio was 1.4 percent and the year-to-date gross rate of return was 2.2 percent.

In the third quarter, the GDP increased at a rate of 3.4 percent. Unemployment decreased to 3.7 percent from the last quarter. The CPI increased 2.3 percent year over year. The U.S. dollar continued to strengthen in the third quarter. Market volatility was relatively high, given the tariff uncertainty, the ongoing probe of Russian election interference, deteriorating relations with China, and rapid increases in energy prices. Yet all the major stock indices made striking gains as economic indicators and corporate profits were full speed ahead. Growth stocks were again ahead of value stocks with large cap stocks outperforming small and mid-cap stocks. In September, the Federal Reserve Board raised the Fed funds rate to a range of 2.0 percent to 2.25 percent. The front end of the Treasury yield curve rose accordingly, but rates rose along the rest of the yield curve as well. In the third quarter, the quarterly gross rate of return for the System's total portfolio was 3.3 percent and the year-to-date gross rate of return was 5.6 percent.

In the fourth quarter, the U.S. economy chugged along despite the trade war with China, entrenched beltway politics, higher short-term interest rates, and falling market prices. The fourth quarter GDP was 2.2 percent. Unemployment increased to 3.9 percent from the last quarter. The CPI was 1.9 percent year over year. The U.S. dollar continued to strengthen in the fourth quarter. Growth stocks, which had outpaced value for the first three quarters of the year, took a deeper dive as markets contracted in the fourth quarter, but were still ahead of their value counterparts for the full year. All of the major stock indices lost ground for the quarter. A tightening U.S. monetary policy and the trade impasse between the U.S. and China squeezed international developed stock markets. In December, the Federal Reserve Board raised the Fed funds rate for the fourth time in 2018 to a range of 2.25 percent to 2.50 percent. In anticipation of the increase, rates all along the yield curve rose through November then dropped significantly. In the fourth quarter, the quarterly gross rate of return for the System's total portfolio was -9.2 percent and the year-to-date gross rate of return was -4.1 percent.

FINANCIAL INFORMATION

The System's financial statements were prepared in accordance with generally accepted accounting principles of the United States of America. The financial statements and the required supplementary information in the report have been prepared in accordance with governmental accounting standards. The independent auditors' report is located in the Financial Section on page 18 and the Management's Discussion and Analysis commences on page 20.

The accrual basis of accounting is used to record all financial transactions including assets, liabilities, revenues, and expenses. Gains and losses on sales and exchanges of investments are recognized on the transaction date. Significant accounting policies are detailed in the Financial Section under "Notes to Financial Statements."

The System's net position was $2.349 billion at December 31, 2018. The System's net position decreased by $142.2 million or 5.7 percent from $2.492 billion at December 31, 2017 to $2.349 billion at December 31, 2018. Net investment loss decreased the net position by $113.2 million. Contributions increased the net position by $84.5 million. Benefit payments, plan withdrawals, and administrative expenses reduced the net position by $113.5 million. Additional information is detailed in the Financial Section ("Statement of Fiduciary Net Position" and "Statement of Changes in Fiduciary Net Position") located on pages 24 and 25.

The System has established internal control policies and procedures for the review and verification of all receipts and payments made to and from the fund. In addition, the System's staff prepares a yearly budget which must be adopted by the Board. The budget is also presented to and reviewed by the Local Government Committees of the Pennsylvania House and Senate at least two months prior to the beginning of the year. The committees can approve the budget, reject it, or take no action by the end of the year in which case the proposed budget becomes final. Budgetary controls include monthly review and presentation by management with bimonthly Board reviews. The 2018 administrative budget was adopted in September 2017 and set at $8.8 million exclusive of investment fees. Expenditures (exclusive of investment fees) in 2018 amounted to $5.8 million. More information on the System's expenses is included in the Financial Section of this report ("Supplementary Schedule 1 – Administrative Expenses" located on page 41).

ADDITIONS TO FIDUCIARY NET POSITION

The System was established by law to pay pension benefits when due. It accumulates sufficient funds to pay benefits through employer contributions, employee contributions, and investment income. The following schedule presents a summary of additions to fiduciary net position for the year ended December 31, 2018, and also shows the amount and percentage of increases and decreases in relation to the prior year ended December 31, 2017.

Municipal contributions are based upon an actuarial valuation, using the Entry Age Normal Actuarial Cost Method, computed as a percentage of the total employee compensation of all active members during the period for which the amount is determined. Member contributions vary according to the type of pension plan.

Municipal and member contributions also include transfers from other plan administrators for new plans.

Contributions increased by $9.1 million or 12.1 percent from $75.4 million in 2017 to $84.5 million in 2018 primarily due to three plans contributing additional funds of $8.6 million towards their unfunded liability.

Net investment income (loss) is a combination of earnings (losses) from equities, real estate, fixed income, and a short-term cash management fund less investment expenses. The fair value of the System's

SUMMARY OF ADDITIONS TO FIDUCIARY NET POSITION

As of December 31, 2018 and 2017

(amounts in thousands)

ADDITIONS TO FIDUCIARY NET POSITION	2018	PERCENTAGE OF TOTAL	2017	DOLLAR INCREASE (DECREASE)	PERCENTAGE INCREASE (DECREASE)
Contributions[1]	$ 84,555	(295.0%)	$ 75,412	$ 9,143	12.1%
Net investment income (loss)	(113,221)	395.0%	379,934	(493,155)	(129.8%)
Total	**$ (28,666)**	**100.0%**	**$ 455,346**	**$ (484,012)**	**(106.3%)**

[1] Contributions include additional municipal employer contributions towards unfunded liability of $8.6 million in 2018 and transfers from other plan administrators of $612,199 in 2017

SUMMARY OF DEDUCTIONS FROM FIDUCIARY NET POSITION

As of December 31, 2018 and 2017

(amounts in thousands)

DEDUCTIONS FROM FIDUCIARY NET POSITION	2018	PERCENTAGE OF TOTAL	2017	DOLLAR INCREASE (DECREASE)	PERCENTAGE INCREASE (DECREASE)
Annuity benefits and terminations	$ 107,644	94.8%	$ 102,318	$ 5,326	5.2%
Transfers to other plan administrators	159	0.1%	760	(601)	(79.1%)
Administrative expenses	5,771	5.1%	5,499	272	4.9%
Total	**$ 113,574**	**100.0%**	**$ 108,577**	**$ 4,997**	**4.6%**

investment portfolio decreased from $2.505 billion at December 31, 2017 to $2.362 billion at December 31, 2018. Net investment loss was $113.2 million in 2018 compared to net investment income of $379.9 million in 2017. Investment income (loss) is primarily attributable to appreciation (depreciation) in fair values in the equity markets.

Each municipality is charged a $20 assessment per member to help cover administrative expenses incurred by the System. Any fluctuation in assessments is caused by the number of members per municipality and can be affected by employee turnover or new plans being added or plans withdrawing from the System.

A breakdown of the System's additions to fiduciary net position including 10 year historical trend information is presented in Part I of the Statistical Section of this report.

DEDUCTIONS FROM FIDUCIARY NET POSITION

The System's primary deductions from fiduciary net position represent the purpose for which it was created: payment of plan benefits. The schedule on page 5 presents a summary of the System's deductions from fiduciary net position for the year ended December 31, 2018, and shows the amount and percentage of increases and decreases in relation to the prior year ended December 31, 2017. The major deduction for 2018 was annuity benefits and terminations. Transfers to other plan administrators decreased from $759,844 in 2017 to $159,701 in 2018 due to decreased plan withdrawals.

A breakdown of the System's deductions from fiduciary net position including 10 year historical trend information is presented in Part I of the Statistical Section of this report.

INVESTMENT HIGHLIGHTS

For the year ended December 31, 2018, the gross rate of return for the System's total portfolio was -4.1 percent, ranking in the 44th percentile of the Investment Metrics (IM) Public Fund Universe. For the five years ended December 31, 2018, the gross rate of return for the System's total portfolio was 5.5 percent, ranking in the 18th percentile. Since inception in December 1985, the gross rate of return for the System's total portfolio was 8.5%.

The gross rate of return by asset class for the year ended December 31, 2018 and the allocation of assets in the portfolio as of December 31, 2018 are as follows: large cap equity returned -1.2 percent (26.2 percent of portfolio); small cap equity returned -12.7 percent (13.4 percent); developed international equity returned -14.5 percent (13.4 percent); emerging markets equity returned -14.6 percent (8.8 percent); real estate returned 8.3 percent (20.7 percent); and fixed income returned 0.0 percent (14.7 percent). At December 31, 2018, the allocation of assets in the portfolio for cash equivalents was 2.8 percent.

FUNDING

The System's level of funding is based on the actuarial reserve method. Funds are derived from the excess of revenues over expenses and are accumulated by the System in order to meet current and future benefit obligations to retirees and beneficiaries. As the funding level increases, the assets accumulate and strengthen the investment income potential. The System's net position decreased by $142.2 million or 5.7 percent from $2.492 billion at December 31, 2017 to $2.349 billion at December 31, 2018. The "Funded Status of Actuarial Liabilities" was calculated based on the most recent actuarial valuation dated January 1, 2018. The actuarial value of assets funded ratio increased from 97.8 percent at January 1, 2017 to 100.2 percent as of the last valuation date of January 1, 2018. As a result, the Fund went from a $50.5 million deficit as of January 1, 2017 to a surplus of $3.6 million as of January 1, 2018. The surplus is primarily due to the Board's decision to reduce the deficit in the Retired Members' Reserve Account as of December 31, 2017 by transferring $45.5 million from the Undistributed Earnings Reserve Account to the Retired Members' Reserve Account. This transfer increased the balance in the Retired Members' Reserve Account, thereby directly increasing the actuarial value of assets by $45.5 million as of December 31, 2017. The deficit is primarily due to the reduction in the credited interest rate from 5.50 percent to 5.25 percent effective January 1, 2017, which resulted in a net increase in the System's actuarial liability of $58.4 million. Additional information on the System's actuarial value, liabilities, and funding progress can be found in the Actuarial and Financial Sections of this report. As an agent multiple-employer Public Employee Retirement System (PERS), the System reports to each of the plans it administers, providing the governing authority of plans with complete actuarial, accounting, and funding data. Detailed information on the System's aggregate plan funding can be found in the Actuarial Section of this report beginning on page 56.

MAJOR INITIATIVES

For 2018, PMRS continued implementation of initiatives that began in 2016.

CONTINUED EXISTING INITIATIVES

CPAS Plan Administration Software Project

When this software enhancement project began in early 2016, it was estimated to be an 18 to 24 month project. It has now become a 36 to 45 month project. PMRS now expects that the first use of the enhanced software will begin in late third quarter of 2019. This first phase will be the use of the software enhancements by PMRS staff for the daily administration of the PMRS retirement plan program. The second phase will begin in the first quarter of 2020 with the rollout of the plan sponsor employer portal and the final phase will begin in the second quarter of 2020 with the rollout of the plan member employee portal.

One of the most significant features of the software enhancement will be online access for our plan sponsor employers and their plan member employees. For our plan sponsors, among the many features will be their ability to upload most data now submitted on paper including employee salary and contributions, new employee enrollment information and changing data for existing employees. Once data is submitted online, employers will have review capability to monitor the accuracy of PMRS recorded data. For plan member employees, they will be able to create retirement benefit estimates and retain them for historical review. In addition, many benefit transactions will be able to be initiated on-line and employee initiated data modifications such as new beneficiaries will be able to be handled directly online. In addition to these external facing enhancements will be internal processing improvements which are intended to reduce the time between ending employment and receiving retirement benefits while improving internal processing tracking.

Both the plan sponsor employer and plan member employee portals will begin with the features most desired by our clients and be expanded to include other features as the portals begin to see widespread use by our clients.

PMRS will be planning a series of information sessions to acquaint our plan sponsors with the new employer and employee features associated with the software enhancement.

Accounting Software Project

The selection of the implementation services provider occurred in January 2018 and the project kickoff began in February 2018. During 2018, it was determined that the project would be implemented in two phases. Phase 1, which contains virtually all of the core accounting modules (accounts receivable, accounts payable, general ledger, cash and bank management, and financial reporting), will be implemented in coordination with the CPAS plan administration software enhancements. Phase 2, which contains additional accounting modules (budget, procurement, and fixed assets), will be implemented in 2019.

Among the many advantages of the new accounting system will be its ability to automate the data transfers between the new system, the Commonwealth's two financial software systems (Oracle PeopleSoft and SAP), and the CPAS plan administration software. Moving from a manual entry of financial transactions to an automated system will improve both the speed and the accuracy of System financial reporting both internally and externally.

Due to the delays in the implementation of the CPAS plan administration system and development of system interfaces, full use of the Microsoft Dynamics 365 accounting system will be not be available until the enhanced CPAS plan administration system is fully implemented and system interfaces are developed.

Electronic Content Management (ECM) System Project

This project is the newest of the major software initiatives. Selection of the implementation services provider, Keymark Inc., and the recommended software, Highland OnBase and AnyDoc, was completed in the second quarter of 2018 with the contract finalized in the fourth quarter of 2018.

The ECM system will provide: (1) enhanced document search and retrieval for converted electronic files, (2) online access to new and existing stored information by plan sponsors and plan members within the enhanced CPAS plan administration system, and (3) secure integration of System financial records with the Microsoft Dynamics 365 accounting system.

During the first half of 2019, the implementation services provider's review of PMRS' needs was completed and the project scope was finalized. During the third quarter of 2019, the vendor will install the software in a cloud hosted environment with the final stage before testing being the configuration of the software for use by the enhanced CPAS plan administration system and the Microsoft Dynamics 365 accounting system.

Staffing Realignment for Enhanced Program Delivery and System Operations

At the beginning of the major software initiatives, PMRS management developed a comprehensive restructuring plan of the PMRS staff in order to align personnel capacity with the Agency needs once the software initiatives are fully implemented. In general, the PMRS will shift from highly manual and labor-intensive data input to focus on data analysis and electronic reviews. PMRS will also be adding additional program staff during 2019 and 2020 to improve customer service by providing more timely and direct client interaction and to begin an outreach program. PMRS is in a position to add ten additional staff during 2019 and anticipates additional staff to be added in 2020.

By the end of 2019, PMRS anticipates having all of its critical technology systems hosted in off-site, highly secure cloud facilities providing PMRS with expert data base management and 24/7 web access from PMRS offices as well as any other sites needed in the event of an emergency or other critical need.

The final information technology initiative will be to move and restructure disaster recovery activity from a centralized physical location to a distributed laptop environment to allow PMRS to operate in any internet available location for an unlimited period of time.

IRS Compliant Plan Documents

After PMRS received the IRS Favorable Determination Letter in 2018, efforts began to develop and implement a comprehensive overhaul of the plan documents currently being used by PMRS plan sponsors. PMRS created a template plan document consisting of two plan components. The first, a "Base Plan Document," contains numerous required standard provisions that will be implemented in all PMRS plans. The second, an "Adoption Agreement," contains all elective provisions to be determined by each plan sponsor. The Base Plan Document/Adoption Agreement model is in line with industry standards and provides the most flexible document for plan sponsors to customize their plans to their needs. Further, this new document eliminated some of the ambiguous provisions of prior documents.

PMRS has an ambitious goal of converting every existing PMRS plan document to the IRS approved document by the second quarter of 2020. This will be a significant undertaking because the new documents have extensive new elective provisions for plan sponsors that will require decision making by each plan sponsor's governing authority. PMRS anticipates having webinars regarding the conversion process including a timeline for submission and completion along with identifying key elective provisions.

PROFESSIONAL SERVICES

Professional consultants are appointed by the Board to perform services essential to the efficient operation of the System. An annual audit by an independent certified public accounting firm and an annual valuation by an actuarial consultant attest to the financial and actuarial soundness of PMRS. The investment performance of the System is reviewed by the investment consultant on a quarterly basis. The consultants providing services to the System are listed in the Financial Section and Investment Section of this report.

INTERNAL CONTROLS

PMRS' management is responsible for and has implemented internal controls designed to provide reasonable assurance for the safeguarding of assets and the reliability of financial records. This report has been prepared in accordance with accounting principles generally accepted in the United States of America. The System's financial statements are prepared on the accrual basis of accounting. More specific accounting information is detailed in the Summary of Significant Accounting Policies (Note 2) in the notes to the financial statements found in the Financial Section of this report.

SYSTEM AWARDS

The Government Finance Officers Association of the United States and Canada (GFOA) awarded a Certificate of Achievement for Excellence in Financial Reporting to PMRS for its Comprehensive Annual Financial Report for the year ended December 31, 2017. The Certificate of Achievement is a prestigious national award recognizing conformance with the highest standards for preparation of state and local government financial reports. To be awarded a Certificate of Achievement, a government unit must publish an easily readable and efficiently organized comprehensive annual financial report whose contents conform to program standards. Such a comprehensive annual financial report must satisfy both generally accepted accounting principles and applicable legal requirements.

Its attainment represents a significant accomplishment by the System, whose Investment and Financial Management Division holds general responsibility for the compilation and validity of the financial data presented in the Comprehensive Annual Financial Report.

The System believes the current report continues to conform to the Certificate of Achievement program requirements and will be submitting this report to the GFOA to determine eligibility for the 2018 certificate.

ACKNOWLEDGMENTS

The preparation of this report reflects the combined efforts of PMRS' staff under the direction of the PMRS Board. It is intended to provide complete and reliable information in conformance with accepted standards and to document responsible stewardship of the System's assets.

Respectfully submitted,

Stephen W. Vaughn
Secretary

Charity D. Rosenberry
Chief Financial Officer

Certificate of Achievement

Government Finance Officers Association

Certificate of Achievement for Excellence in Financial Reporting

Presented to

Pennsylvania Municipal Retirement System

For its Comprehensive Annual Financial Report for the Fiscal Year Ended

December 31, 2017

Christopher P. Morrill

Executive Director/CEO

Administrative Organization

Pennsylvania Municipal Retirement Board

As of December 31, 2018

Barry L. Sherman, Chair
Represents retired members enrolled in PMRS

Cory S. Adams, Vice Chair
Represents Pennsylvania State Association of Township Commissioners

Joe Torsella
State Treasurer (ex-officio)

Robert Torres
Acting Secretary of the Commonwealth (ex-officio)[1]

Robert McCarron
Represents active police officers enrolled in PMRS

Mike Stender Jr.
Represents active firefighters enrolled in PMRS

Salvatore J. Panto Jr.
Represents Pennsylvania Municipal League

Tom Deitzler
Represents Pennsylvania Municipal Authorities Association

Jeff Pisarcik
Represents Pennsylvania State Association of County Commissioners

Mona Johnson
Represents Pennsylvania State Association of Township Commissioners[2]

John Cappawana
Represents Pennsylvania State Association of Boroughs

(1) Kathryn Boockvar appointed in January 2019.

(2) Jody Rebarchak, Susquehanna Township Commissioner, appointed in July 2019.

Staff, Consultants, and Managers

As of December 31, 2018

ADMINISTRATIVE STAFF

Secretary
Stephen W. Vaughn

Chief Financial Officer
Charity D. Rosenberry

Assistant Secretary of Programs
Vacant

Assistant Secretary of Operations
Doug E. Baker

PROFESSIONAL CONSULTANTS

Actuary
Cheiron | McLean, VA
Kenneth Kent, FSA, FCA, MAAA, EA

Auditor
CliftonLarsonAllen LLP | Timonium, MD
Jason Ostroski, CPA, Principal

Comptroller
Commonwealth of Pennsylvania | Harrisburg, PA
Brian Lyman, Chief Accounting Officer

Legal Counsel
Commonwealth of Pennsylvania | Harrisburg, PA
Brian Zweiacher, Chief Counsel

Investment Consultant
Dahab Associates, Inc. | Bay Shore, NY
Richard E. Dahab, CFA, Chairman

Custodian
State Treasurer | Harrisburg, PA
Joe Torsella, State Treasurer

Sub-Custodian
BNY Mellon | Pittsburgh, PA
Matthew J. Coburn, Relationship Manager

INVESTMENT MANAGERS

AMI Asset Management
Los Angeles, CA
Chris Sessing, CFA, Chief Investment Officer

Copeland Asset Management
Conshohocken, PA
Mark Giovanniello, CFA, Chief Investment Officer

Eagle Capital Management, LLC
New York, NY
John Johnson, Managing Director

Emerald Advisors, Inc.
Leola, PA
Kenneth Mertz II, CFA, President/Chief Investment Officer

Federated Investors, Inc.
Pittsburgh, PA
Amy Michaliszyn, Senior Vice President

Forest Investment Associates
Atlanta, GA
Michael L. Clutter, Vice President

Hardman Johnston Global Advisors
Stamford, CT
James Pontone, Director and Portfolio Manager

HGK Asset Management, Inc.
Jersey City, NJ
Matthew Kosara, CFA, Client Portfolio Manager

Jarislowsky, Fraser Limited
Montreal, QC
Dario Mazzarello, Managing Director

LSV Asset Management
Chicago, IL
Keith W. Bruch, CFA, Director of Client Portfolio Services

Nuveen Real Estate
New York, NY
Adriana DeAlcantara, Managing Director

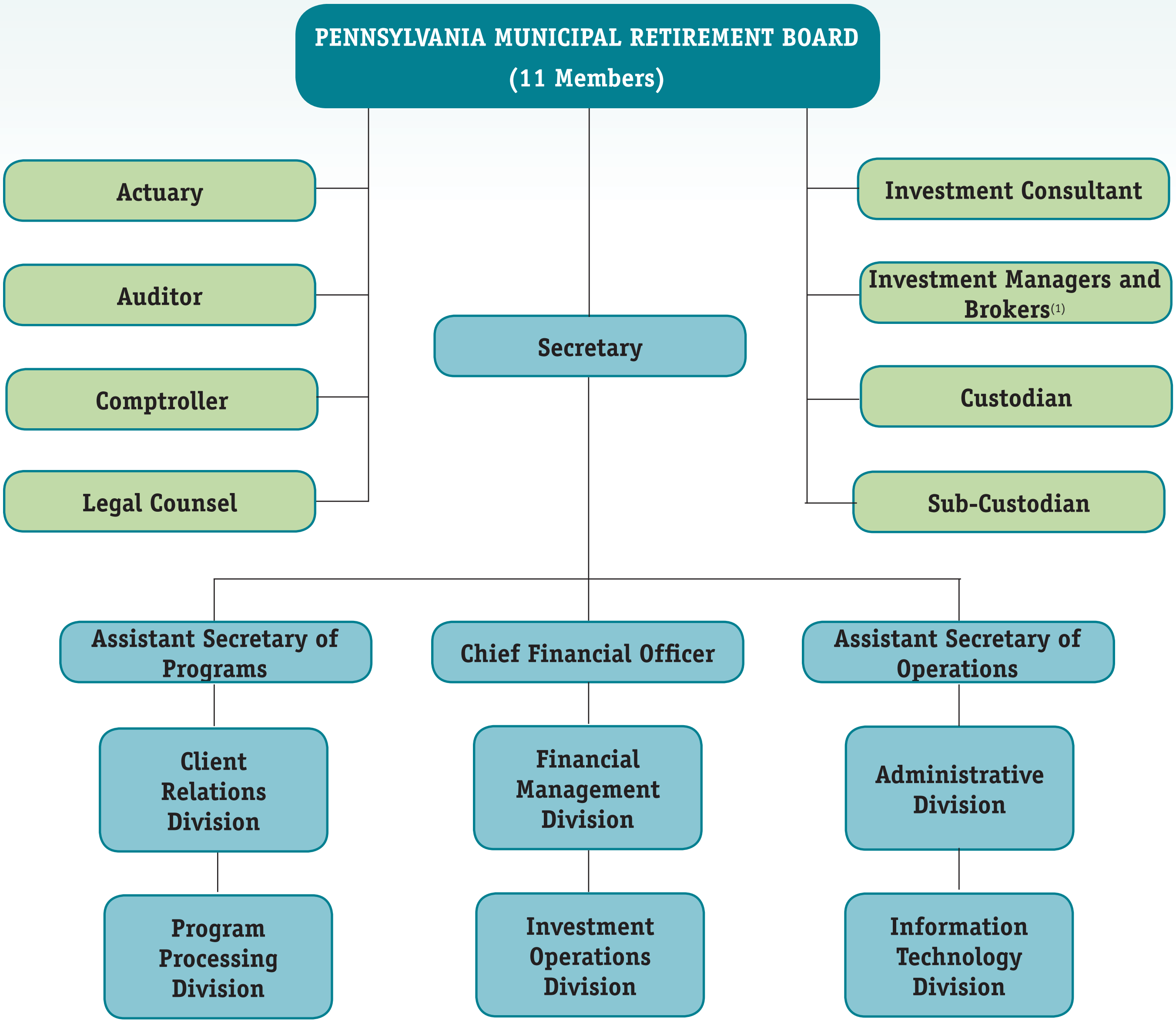
Polen Capital Management
Boca Raton, FL
Jim Haymes, CFA, Director of Institutional Relations

Prudential Financial, Inc.
Madison, NJ
Larry Teitelbaum, Executive Director–Business Development

Smith, Graham & Co.
New York, NY
Lynda Leslie, Senior Vice President

State Street Global Advisors
Boston, MA
Emiliano Rabinovich, Vice President

Organizational Chart



(1) Investment managers are listed on page 12 and the Summary of Investment Expenses on page 51 and brokers are listed in the Summary of Commissions Paid to Brokers on pages 53-54 in the Investment Summary of this CAFR.

Chairman's Report

August 15, 2019

Dear Members:

As the Chairman of the Pennsylvania Municipal Retirement System, I am pleased to share with you the System's Comprehensive Annual Financial Report for the years ended December 31, 2018 and 2017. The report identifies the System's strong financial position as of December 31, 2018 along with the numerous activities conducted by the System throughout the year on your behalf.

For the year ended December 31, 2018, the gross rate of return for the System's total portfolio was -4.1%. This investment loss was only the sixth calendar year loss over the past 35 years. While an annual investment loss is always a setback, PMRS continued an enviable track record of being ranked in the top half of annual returns compared to all public pension plans greater than $1 billion in assets. The System's net position, however, decreased $142.2 million or a 5.7% decline from $2.492 billion at December 31, 2017 to $2.349 billion at December 31, 2018. Despite the investment loss, the System continues to be one of the best funded local government retirement systems in the United States.

The actuarial value of assets funded ratio increased from 97.8 percent at January 1, 2017 to 100.2 percent as of the last valuation date of January 1, 2018. As a result, the Fund went from a $50.5 million deficit as of January 1, 2017 to a surplus of $3.6 million as of January 1, 2018. The surplus is primarily due to the Board's decision to reduce the deficit in the Retired Members' Reserve Account as of December 31, 2017 by transferring $45.5 million from the Undistributed Earnings Reserve Account to the Retired Members' Reserve Account. This transfer increased the balance in the Retired Members' Reserve Account, thereby directly increasing the actuarial value of assets by $45.5 million as of December 31, 2017. Along with our increase in the actuarial funding ratio, the market value funding level increased substantially from 92.7% to 103.8%. Because investment returns always lag the actuarial valuation by one year, we anticipate our funding levels of over 100% will dip below the 100% level due to the 2018 investment loss.

The real story of 2018, however, was the first Board approval of excess interest since 2007. In September of 2018, the Board approved the distribution of $25.9 million or 1.08% of the December 31, 2017 reserves to all retirement plans in the System as of December 31, 2017. These funds were distributed in 2018 in accordance with each respective plan's election.

In 2018, the PMRS staff continued to work diligently to finalize implementation of the three major software systems begun in 2016 and 2018. By the end of 2018, the new Dynamics accounting system was ready for testing. The CPAS enhanced software project had run into additional delays. The electronic content management system project began in 2018 and will be implemented in 2019. One new and substantial project got underway in late 2018; the conversion of over 1,000 plan documents of the existing PMRS plans. The goal is to convert every existing PMRS plan document to the IRS approved plan document by the second quarter of 2020.

I am always grateful for the support and dedication of my fellow Board Members. In 2018, we welcomed three new Board members. Robert McCarron, an active police officer with West Pikeland Township, replaced Steven Heinly, a detective with the West Lampeter Police Department. Mona Johnson, a Commissioner from Susquehanna Township, was appointed to represent the PA State Association of Township Commissioners and fill this vacant seat. John Cappawanna, Mayor of Duncannon Borough, was appointed to represent the Pennsylvania State Association of Boroughs and fill this vacant seat. I was grateful for the Governor making these appointments in a timely manner and now having a full contingent of Board Members. I want to thank Steve Heinly for his dedication to the Board during his term and will miss working with him. As always, I appreciate the commitment of the three new board members to serve and their future contributions to the Board.

I encourage you to read this report in full. I know its transparency will allow you to learn more about the System's strengths. I believe you will, above all else, be pleased by the openness and candor with which the agency's operations are revealed. We believe that the more you know about the agency, the more you will appreciate it. I encourage you to contact us with your inquiries, comments, and suggestions. We welcome your involvement and appreciate your support. I thank you for allowing us to serve you.

Sincerely,

Chairman

INTRODUCTION

The System offers a variety of alternative pension plans. Municipalities may design their own pension benefit structures. Most municipalities select this option and work with the System to create a combination of benefits that meet the individual needs of the municipality and its employees. Additionally, the System has two basic benefit plans designed by the State General Assembly: one for municipal employees and one for police and firefighters.

SUPERANNUATION AND EARLY ANNUITY ELIGIBILITY BENEFITS

Under the basic plans, the minimum normal retirement age is 65 for municipal employees and 55 for police and firefighters. A member may retire early at any age after 24 years of service. Under an optional plan design, a municipality may choose any age or service requirement permitted under its particular municipal code. Early retirement under the optional plan may also be designed to meet the needs of the municipality.

There are two approaches to accumulating retirement benefits. Under the cash balance approach, the benefit accrues based on the level of contributions and the investment earnings credited to the fund. The defined benefit approach depends upon the individual's age, years of credited service, and an actual benefit formula which usually includes a salary factor.

DISABILITY ANNUITY ELIGIBILITY BENEFITS

The majority of plans have a disability benefit that allows a member who is unable to work because of serious injury or illness to apply for a disability annuity. The application and required medical documentation will be reviewed by the Board and the System's medical examiners to determine whether the member is eligible for the disability benefit.

A disability that results directly from doing one's job is classified as a service-connected disability. A disability that is not caused by one's work is termed a non-service disability.

Conditions for disability benefits are defined in the municipality's contract. The System's basic plans provide for (1) a service-connected disability annuity of 50 percent of the disabled individual's final average salary offset by worker's compensation, and (2) a non-service disability with a minimum of 10 years' service and a 30 percent final average salary annuity.

VESTING ANNUITY ELIGIBILITY BENEFITS

Conditions for vesting are defined in the municipality's contract. The basic plans have a 12-year service requirement for vesting.

A member who terminates service before retirement and is eligible to vest may elect to leave the member's accumulated contributions in the System and defer receipt of benefits until normal retirement age. Then when the member receives the vested benefits, the payment will include the member contributions and the municipal contributions.

BENEFIT PAYMENT OPTIONS

Depending on the municipality's contractual agreement, employees may elect to receive their monthly retirement allowance from a list of options. Typical options are as follows:

- **Single Life Annuity:** Provides a continual income throughout the annuitant's lifetime with no beneficiary benefit
- **Option 1:** Reduced lifetime benefit with remaining lump sum value of account to beneficiary
- **Option 2:** Joint and 100 percent survivorship annuity
- **Option 3:** Joint and 50 percent survivorship annuity

DEATH BENEFIT ELIGIBILITY

A death benefit provides some continuation of payment or presentation of benefits to a beneficiary given certain eligibility requirements of the covered individual. If an active member or vestee with minimum years of service dies, the death benefit goes into effect provided the municipality has included this feature in its plan.

TERMINATION OF SERVICE

A member always receives the accumulated deductions and interest earned at the regular interest rate which is currently at 5.25 percent[(1)]. Depending upon the municipality's contract structure, the member might also receive excess investment monies upon withdrawal.

If a member terminates employment and goes to work for another municipality which is a member of the System, the employee may transfer the service credits unimpaired to the new municipal employer.

(1) The interest rate of return assumption was reduced from 5.5 percent to 5.25 percent effective January 1, 2017.

Financial

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INDEPENDENT AUDITORS' REPORT

Pennsylvania Municipal Retirement Board
Pennsylvania Municipal Retirement System
Harrisburg, Pennsylvania

Report on the Financial Statements

We have audited the accompanying financial statements of the Pennsylvania Municipal Retirement System (the System), which comprise the statements of fiduciary net position as of December 31, 2018 and 2017, and the related statements of changes in fiduciary net position for the years then ended, and the related notes to the financial statements, as listed in the table of contents.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with accounting principles generally accepted in the United States of America; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditors' Responsibility

Our responsibility is to express an opinion on these financial statements based on our audits. We conducted our audits in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditors' judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of the System as of December 31, 2018 and 2017, and the respective changes in its financial position for the years then ended in accordance with accounting principles generally accepted in the United States of America.

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Emphasis of a Matter

During the year ended December 31, 2017, the System adopted GASB Statement No. 75, *Accounting and Financial Reporting for Postemployment Benefits Other than Pensions*. As a result of the implementation of this standard, the System reported a restatement for the change in accounting principle (see Note 2). Our auditors' opinion was not modified with respect to the restatement.

Other Matters

Required Supplementary Information

Accounting principles generally accepted in the United States of America require that the management's discussion and analysis and schedules of investment returns, allocated share of net pension liability and allocated share of net OPEB liability, as listed in the table of contents, be presented to supplement the financial statements. Such information, although not a part of the financial statements, is required by the Governmental Accounting Standards Board who considers it to be an essential part of financial reporting for placing the financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the financial statements, and other knowledge we obtained during our audits of the financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Supplementary and Other Information

Our audits were conducted for the purpose of forming an opinion on the System's financial statements. The supplementary schedules and the introduction, investments, actuarial and statistical sections, as listed in the table of contents, are presented for purposes of additional analysis and are not a required part of the financial statements.

The supplementary schedules, as listed in the table of contents, are the responsibility of management and were derived from and relate directly to the underlying accounting and other records used to prepare the financial statements. Such information has been subjected to the auditing procedures applied in the audits of the financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the financial statements or to the financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the supplementary schedules, as listed in the table of contents, are fairly stated, in all material respects, in relation to the financial statements as a whole.

The introduction, investments, actuarial and statistical sections, as listed in the table of contents, have not been subjected to the auditing procedures applied in the audits of the financial statements, and accordingly, we do not express an opinion or provide any assurance on them.

CliftonLarsonAllen LLP

CliftonLarsonAllen LLP

Harrisburg, Pennsylvania
August 13, 2019

Management's Discussion and Analysis

This section presents management's discussion and analysis of the Pennsylvania Municipal Retirement System's (PMRS, the System, the Fund) financial performance for the years ended December 31, 2018, 2017, and 2016. It is presented as required supplementary information to the financial statements.

OVERVIEW OF FINANCIAL STATEMENTS

The System administers sound, cost-effective pension plans on a contracted basis for local government employers throughout the Commonwealth. Our services include accounting services, actuarial valuations, employee consultation and record keeping, and asset management. Any Pennsylvania county, city, town, township, borough, municipal authority, or institution supported and maintained by a municipality may participate. The Statistical Section of this report lists all participating plans as of January 1, 2018.

The ***Statement of Fiduciary Net Position*** provides a snapshot of the financial position of PMRS at December 31, 2018, including comparative amounts for the prior year. The ***Statement of Changes in Fiduciary Net Position*** summarizes the System's financial activities that occurred for the year ended December 31, 2018, including comparative amounts for the prior year.

The ***Notes to Financial Statements*** provide additional information that is essential to a full understanding of the financial statements. The notes are an integral part of the financial statements and include detailed information not readily evident in the financial statements.

The ***Required Supplementary Information*** following the Notes to Financial Statements provides a schedule of investment returns and a schedule of net other postemployment benefit (OPEB) liability.

The remaining supplementary schedules provide additional detailed information concerning the administrative expenses, investment expenses, and payments to consultants. All of this supplementary information is considered useful in understanding and evaluating the financial activities of PMRS.

FINANCIAL HIGHLIGHTS

- The System's net position decreased by $142.2 million or 5.7 percent from $2.492 billion at December 31, 2017 to $2.349 billion at December 31, 2018. The System's net position increased by $340.2 million or 15.8 percent from $2.151 billion[(1)] at December 31, 2016 to $2.492 billion at December 31, 2017. The changes in fair value are recognized as part of the net appreciation/depreciation in the fair value of investments.
- The actuarial value of assets funded ratio increased from 97.8 percent at January 1, 2017 to 100.2 percent as of the last valuation date of January 1, 2018. As a result, the Fund went from a $50.5 million deficit as of January 1, 2017 to a surplus of $3.6 million as of January 1, 2018. The surplus is primarily due to the Board's decision to reduce the deficit in the Retired Members' Reserve Account by transferring $45.5 million from the December 31, 2017 Undistributed Earnings Reserve Account to the Retired Members' Reserve Account. This transfer increased the balance in the Retired Members' Reserve Account, thereby directly increasing the actuarial value of assets as of December 31, 2017 by $45.5 million. The deficit is primarily due to the reduction in the credited interest rate from 5.50 percent to 5.25 percent effective January 1, 2017, which resulted in a net increase in the System's actuarial liability of $58.4 million.
- The market value of assets funded ratio increased from 92.7 percent at January 1, 2017 to 103.8 percent as of the last valuation date of January 1, 2018. As a result, the deficit decreased from $169.4 million as of January 1, 2017 to a surplus of $90.7 million as of January 1, 2018. This change was primarily due to strong market gains during 2017.
- For the first time since 2008, the System's market value of assets exceeded the reserves. This created a surplus as defined in the Board Policy Statement 05-2. As a result of this surplus, the Board decided to reduce the deficit in the Retired Members' Reserve as of December 31, 2017 by transferring $45.5 million from the Undistributed Earnings Reserve to the Retired Members' Reserve. After this transfer, the

[(1)] PMRS implemented GASB Statement No. 75 effective January 1, 2017 and the 2017 beginning net position was restated from $2.151 billion to $2.145 billion.

System approved the distribution of excess interest at a rate of 1.08% of the December 31, 2017 reserves during 2018. The calculation of excess interest was prepared in accordance with the Board approved formula and was based on the actuarial value (fair value) of the System's assets as of December 31, 2017 and the cash flows of the System for 2018. In 2018, the System distributed excess interest in the amount of $25.9 million from the Undistributed Earnings Reserve Account of which $18.2 million was distributed to the Municipal Reserve Accounts, $4.1 million was distributed to the Members' Reserve Accounts, and $3.6 million was distributed to the Retired Members' Reserve Accounts as directed by the municipalities. The System did not distribute excess interest in 2017 and 2016.

- The portfolio gross rate of return for the year ended December 31, 2018 was -4.1 percent compared to 18.4 percent and 8.7 percent for the years ended December 31, 2017 and 2016, respectively.
- Contributions increased by $9.1 million or 12.1 percent from $75.4 million in 2017 to $84.5 million in 2018 primarily due to three plans contributing additional funds of $8.6 million towards their unfunded liability. Contributions decreased by $18.6 million or 19.8 percent from $94.0 million in 2016 to $75.4 million in 2017 primarily due to a decrease in transfers from other plan administrators of $20.8 million for new plans.
- Annuity benefits and terminations increased by $5.3 million or 5.2 percent from $102.3 million in 2017 to $107.6 million in 2018. Annuity benefits and terminations increased by $8.0 million or 8.5 percent from $94.3 million in 2016 to $102.3 million in 2017. The fluctuation in annuity benefits and terminations from 2016 to 2018 is primarily due to an increased number of retirees and annuity benefits as well as annuity increases (COLA adjustments) that may be applied each year.
- Transfers to other plan administrators decreased from $759,844 in 2017 to $159,701 in 2018 due to decreased plan withdrawals. Transfers to other plan administrators increased from $678,605 in 2016 to $759,844 in 2017 due to increased plan withdrawals.
- Administrative expenses increased by $272,026 or 4.9 percent from $5.5 million in 2017 to $5.8 million in 2018 primarily due to increases in IT consulting expenses. Administrative expenses decreased by $335,873 or 5.8 percent from $5.8 million in 2016 to $5.5 million in 2017 primarily due to decreases in personnel expenses. Administrative expenses were within PMRS' budgeted amounts for all three years.

GASB STANDARDS

During the year ended December 31, 2017, the System adopted GASB Statement No 75, "Accounting and Financial Reporting for Postemployment Benefits Other Than Pensions" which replaces the requirements of Statement No. 45, Accounting and Financial Reporting by Employers for Postemployment Benefits Other Than Pensions, as amended, and improves accounting and financial reporting for postemployment benefits other than pensions.

Under GASB Statement No. 75, an emphasis is put on accounting for OPEB plans, whereas GASB Statement No. 45 dealt more with funding OPEB plans. A key change from GASB Statement No. 45 to GASB Statement No. 75 is the measurement of liability. GASB Statement No. 45 subtracted the actuarial value of assets from the actuarial accrued liability to achieve the unfunded actuarial accrued liability or net OPEB obligation. GASB Statement No. 75 subtracts the fiduciary net position from the total OPEB liability to attain the net OPEB liability. The major difference in the measurements is that GASB Statement No. 45 allowed for asset smoothing, whereas GASB Statement No. 75 uses the fair value of assets as of the measurement date without smoothing.

PMRS implemented GASB Statement No. 75 effective January 1, 2017. Due to the implementation of GASB Statement No. 75, the beginning net position restricted for pension benefits has been restated by ($6,527,979). The purpose of the restatement was to record the change in the net OPEB obligation from the previously reported amount of ($799,021) as reported under GASB Statement No. 45 to the net OPEB liability of ($7,327,000) as reported under GASB Statement No. 75.

FUNDED STATUS

PMRS uses an actuarial reserve method of funding that is financed by member contributions, employer contributions, and earnings from invested assets. The System has historically chosen to have actuarial valuations performed biennially. The January 1, 2018 actuarial valuation was derived from actual values for the four defined benefit plans that are required to redetermine contribution levels biennially on even years and actuarial adjustments to the January 1, 2017 liabilities for 726 municipalities required to redetermine contribution levels biennially on odd years. The January 1, 2017 liabilities were adjusted to reflect expected accruals, material plan changes, and actual benefit payments in 2017 to estimate the January 1, 2018 liabilities, providing an overall measure of the funded status of the System.

As part of a valuation, the progress toward funding pension obligations of the retirement system is measured by comparing the actuarial value of assets to the actuarial accrued liability. This measurement is referred to as the funded ratio or funded status. The most recent actuarial valuation reports that PMRS is 100.2 percent funded as of January 1, 2018.

INVESTMENTS

PMRS is a long-term investor and the Board manages the Fund with long-term objectives in mind. A primary element of PMRS' investment philosophy is that diversification among various asset classes is the best way to achieve its goals. PMRS makes estimates of future long-term market returns and establishes an asset allocation plan considering the risk associated with each asset class as well as the financial objectives of the Fund.

For the year ended December 31, 2018, the System's gross rate of return on investments was -4.1 percent. The gross rate of return over the past three and five years ended December 31, 2018 was 7.3 percent and 5.5 percent, respectively.

SHORT-TERM

Short-term investments increased by $7.8 million or 12.8 percent from $61.1 million at December 31, 2017 to $68.9 million at December 31, 2018. Short-term investments increased by $5.5 million or 9.9 percent from $55.6 million at December 31, 2016 to $61.1 million at December 31, 2017. The annual fluctuations represent the normal cash flow necessary to meet operating expenses.

FIXED INCOME

Fixed income increased by $149,827 from $347.1 million at December 31, 2017 to $347.2 million at December 31, 2018. Fixed income increased by $66.1 million or 23.5 percent from $281.0 million at December 31, 2016 to $347.1 million at December 31, 2017, primarily due to portfolio rebalancing.

COMMON AND PREFERRED STOCK

Common and preferred stock including international stock decreased by $198.9 million or 12.0 percent from $1.659 billion at December 31, 2017 to $1.460 billion at December 31, 2018 primarily due to changes in fair value. Common and preferred stock including international stock increased by $262.9 million or 18.8 percent from $1.396 billion at December 31, 2016 to $1.659 billion at December 31, 2017 primarily due to changes in fair value.

REAL ESTATE

Real estate increased by $47.7 million or 10.9 percent from $438.6 million at December 31, 2017 to $486.3 million at December 31, 2018 primarily due to gains in fair value. Real estate increased by $14.2 million or 3.4 percent from $424.3 million at December 31, 2016 to $438.6 million at December 31, 2017 primarily due to gains in fair value.

CONTRIBUTIONS AND INVESTMENT INCOME

Contributions increased by $9.1 million or 12.1 percent from $75.4 million in 2017 to $84.5 million in 2018 primarily due to three plans contributing additional funds of $8.6 million towards their unfunded liability. Contributions decreased by $18.6 million or 19.8 percent from $94.0 million in 2016 to $75.4 million in 2017 primarily due to a decrease in transfers from other plan administrators of $20.8 million for new plans.

Net investment loss was $113.2 million in 2018 compared to net investment income of $379.9 million in 2017 and $163.7 million in 2016. Investment income (loss) is primarily attributable to appreciation (depreciation) in fair values in the equity markets.

Investment expenses increased by $1.3 million or 11.4 percent from $11.0 million in 2017 to $12.3 million in 2018 primarily due to changes in the fair value of investments. Investment expenses were $11.0 million in 2017 and $9.3 million in 2016. The investment expenses are based on the fair value of the quarterly average balance of investments under management.

PENSION PLAN BENEFITS AND EXPENSES

Annuity benefits and terminations were $107.6 million in 2018, compared to $102.3 million in 2017 and $94.3 million in 2016. Annuity benefits and terminations increased in all three years primarily due to an increased number of retirees and annuity benefits as well as annuity increases (COLA adjustments) that may be applied each year. Annuity benefits excluding death payments were $97.1 million in 2018, compared to $91.0 million in 2017 and $84.1 million in 2016.

Transfers to other plan administrators decreased from $759,844 in 2017 to $159,701 in 2018 due to decreased plan withdrawals. Transfers to other plan administrators increased from $678,605 in 2016 to $759,844 in 2017 due to increased plan withdrawals.

Administrative expenses were $5.8 million in 2018, compared to $5.5 million in 2017 and $5.8 million in 2016.

FINANCIAL CONTACT

The System's financial statements are designed to present users with a general overview of the System's finances and to demonstrate the trustee's accountability. If there are questions about the report or additional information is required, contact the Chief Financial Officer, Investment and Financial Management Division, Pennsylvania Municipal Retirement System at P.O. Box 1165, Harrisburg, PA 17108-1165.

SUMMARY OF FIDUCIARY NET POSITION

As of December 31, 2018, 2017, and 2016
(amounts in thousands)

ANALYSIS OF FIDUCIARY NET POSITION	2018	2017	2016
Assets			
Receivables	$ 4,244	$ 5,599	$ 5,660
Investments	2,362,136	2,505,464	2,156,745
Capital assets	383	442	93
Total assets	**$ 2,366,763**	**$ 2,511,505**	**$ 2,162,498**
Deferred outflows of resources	1,245	1,375	944
Liabilities	15,805	20,213	12,061
Deferred inflows of resources	2,823	1,047	3
Fiduciary net position	**$ 2,349,380**	**$ 2,491,620**	**$ 2,151,378**(1)

SUMMARY OF CHANGES IN FIDUCIARY NET POSITION

Years Ended December 31, 2018, 2017, and 2016
(amounts in thousands)

ANALYSIS OF CHANGES IN FIDUCIARY NET POSITION	2018	2017	2016
Additions			
Contributions(2)	$ 84,555	$ 75,412	$ 93,999
Net investment income (loss)	(113,221)	379,934	163,736
Miscellaneous income	–	–	–
Total additions	**$ (28,666)**	**$ 455,346**	**$ 257,735**
Deductions			
Annuity benefits and terminations(3)	107,644	102,318	94,335
Transfers to other plan administrators(4)	159	760	678
Administrative expenses	5,771	5,499	5,835
Total deductions	**$ 113,574**	**$ 108,577**	**$ 100,848**
Changes in fiduciary net position	**$ (142,240)**	**$ 346,769**	**$ 156,887**

INVESTMENT BALANCES BY ASSET CLASS

As of December 31, 2018, 2017, and 2016
(amounts in thousands)

	2018	PERCENTAGE OF PORTFOLIO	2017	PERCENTAGE OF PORTFOLIO	2016	PERCENTAGE OF PORTFOLIO
Asset class						
Short term and other investments(5)	$ 68,881	2.9%	$ 61,150	2.4%	$ 55,609	2.6%
Fixed income	347,219	14.7%	347,068	13.9%	281,015	13.0%
Common and preferred stock	936,426	39.6%	1,033,458	41.2%	912,142	42.3%
International stock	523,297	22.2%	625,205	25.0%	483,637	22.4%
Real estate	486,313	20.6%	438,583	17.5%	424,342	19.7%
Total investments	**$ 2,362,136**	**100.0%**	**$ 2,505,464**	**100.0%**	**$ 2,156,745**	**100.0%**

(1) PMRS implemented GASB Statement No. 75 effective January 1, 2017 and the 2017 beginning fiduciary net position was restated from $2.151 billion to $2.145 billion.
(2) Contributions include additional municipal employer contributions towards unfunded liability of $8.6 million in 2018 and transfers from other plan administrators of $612,199 in 2017 and $21.4 million in 2016.
(3) Annuity payments increased by $6.1 million, $6.9 million, and $5.8 million in 2018, 2017, and 2016, respectively. Average number of annuitants receiving benefits increased by 235 in 2018 (4.1 percent increase), 269 in 2017 (4.9 percent increase), and 262 in 2016 (5.0 percent increase).
(4) Three plans withdrew with total assets of $159,701 in 2018. Two plans withdrew with total assets of $759,844 in 2017. Four plans withdrew with total assets of $678,605 in 2016.
(5) Short-term and other investments includes cash and cash equivalents held by investment managers and the Pennsylvania Treasury Department.

Financial Statements

STATEMENT OF FIDUCIARY NET POSITION

As of December 31, 2018 and 2017

	2018	2017
Assets		
Receivables		
Plan members	$ 1,721,603	$ 1,909,625
Municipal employers	237,602	680,346
Accrued investment income	1,889,657	1,413,490
Investment sales receivable	394,456	1,595,210
Total receivables	**4,243,318**	**5,598,671**
Investments, at fair value		
Short-term and other investments	68,881,421	61,149,949
U.S. government fixed income pooled funds	240,483,537	237,811,458
Corporate bond pooled funds	106,734,968	109,257,220
Equity index funds, common and preferred stocks	936,426,340	1,033,457,721
Real estate	486,313,268	438,583,422
International equities	523,296,628	625,204,742
Total investments	**2,362,136,162**	**2,505,464,512**
Capital assets (net of accumulated depreciation of $119,887 and $55,055 at 2018 and 2017, respectively)	383,015	441,762
Total assets	**2,366,762,495**	**2,511,504,945**
Deferred outflows of resources	1,245,082	1,374,979
Liabilities		
Accounts payable and accrued expenses	4,809,630	4,814,560
Net pension liability	3,937,967	4,475,356
Net other postemployment benefit obligation liability(1)	5,197,000	6,768,000
Investment purchases payable	1,860,444	4,155,443
Total liabilities	**15,805,041**	**20,213,359**
Deferred inflows of resources	2,822,761	1,046,837
Net position restricted for pensions	**$ 2,349,379,775**	**$ 2,491,619,728**

The accompanying notes are an integral part of the financial statements.

(1) PMRS implemented GASB Statement No. 75 effective January 1, 2017. Due to the implementation of GASB Statement No. 75, the beginning net position restricted for pension benefits has been restated by ($6,527,979). The purpose of the restatement was to record the change in the net OPEB obligation from the previously reported amount of ($799,021) as reported under GASB Statement No. 45 to the net OPEB liability of ($7,327,000) as reported under GASB Statement No. 75.

STATEMENT OF CHANGES IN FIDUCIARY NET POSITION

Years Ended December 31, 2018 and 2017

	2018	2017
Additions		
Contributions		
Municipal employers	$ 61,288,746	$ 52,834,116
Plan members	23,008,066	21,717,564
Transfers from other plan administrators	-	612,199
Assessments	257,908	248,281
Total contributions	**84,554,720**	**75,412,160**
Investment income		
From investing activities:		
Net appreciation (depreciation) in fair value of investments	(142,496,038)	358,061,556
Short-term and other investments	1,038,239	532,055
Common and preferred stocks	13,642,126	10,880,450
Real estate	19,926,594	16,153,112
International equities	6,974,223	5,354,415
Total investment income (loss)	**(100,914,856)**	**390,981,588**
Investment expenses	(12,305,637)	(11,047,829)
Total net investment income (loss)	**(113,220,493)**	**379,933,759**
Miscellaneous income	8	-
Total additions	**(28,665,765)**	**455,345,919**
Deductions		
Annuity benefits and terminations	107,643,886	102,318,094
Transfers to other plan administrators	159,701	759,844
Administrative expenses	5,770,601	5,498,575
Total deductions	**113,574,188**	**108,576,513**
Net increase (decrease)	**(142,239,953)**	**346,769,406**
Net position restricted for pensions		
Balance, beginning of year	**2,491,619,728**	**2,151,378,301**
Effect of change in accounting principle[1]		**(6,527,979)**
Balance, beginning, as restated	**2,491,619,728**	**2,144,850,322**
Balance, end of year	**$ 2,349,379,775**	**$ 2,491,619,728**

The accompanying notes are an integral part of the financial statements.

[1] PMRS implemented GASB Statement No. 75 effective January 1, 2017. Due to the implementation of GASB Statement No. 75, the beginning net position restricted for pension benefits has been restated by ($6,527,979). The purpose of the restatement was to record the change in the net OPEB obligation from the previously reported amount of ($799,021) as reported under GASB Statement No. 45 to the net OPEB liability of ($7,327,000) as reported under GASB Statement No. 75.

Notes to Financial Statements

(1) ORGANIZATION AND DESCRIPTION OF THE SYSTEM

Organization

The Pennsylvania Municipal Retirement System (PMRS, the System, the Fund) was created by the Pennsylvania General Assembly in 1974 with the passage of the Pennsylvania Municipal Retirement Law, Act of 1974, P.L. 34, No. 15 (the Act). The System is an agent multiple-employer system, and its designated purpose is to administer sound, cost-effective pensions for local government employees. Responsibility for the organization and administration of the System is vested in the 11-member Pennsylvania Municipal Retirement Board (the Board). Under the Act, each individual municipality has authority to establish or amend its respective benefits and employee contribution rates subject to Board approval. Employer contributions are actuarially determined by the System's actuary.

Membership in the System is optional for Pennsylvania's local governments. When a municipality joins the System, its full-time employees contractually become members. Part-time, seasonal, and temporary employees as well as elected officials may also become members through contractual agreement. The following tables reflect municipal membership and individual membership as of January 1, 2018 and 2017.

INDIVIDUAL MEMBERSHIP

	2018	2017
ACTIVE MEMBERS		
Defined benefit plans		
Municipal	6,946	6,842
Police	797	768
Firefighters	125	118
Total	**7,868**	**7,728**
Cash balance plans		
Municipal	1,365	1,285
Police	22	18
Firefighters	0	0
Total	**1,387**	**1,303**
Total active members	**9,255**	**9,031**
RETIREES AND BENEFICIARIES		
Retirees	5,307	5,099
Beneficiaries	599	600
Total retirees and beneficiaries	**5,906**	**5,699**
INACTIVE PARTICIPANTS WITH RIGHTS TO DEFERRED PENSION (VESTED)		
Defined benefit	797	834
Cash balance	293	316
Total vested	**1,090**	**1,150**
Defined benefit	35	28
Cash balance	0	0
Total non-vested	**35**	**28**
Total individual memberships	**16,286**	**15,908**

PARTICIPATING LOCAL GOVERNMENT EMPLOYERS

	2018		2017	
	DEFINED BENEFITS	CASH BALANCE	DEFINED BENEFITS	CASH BALANCE
Counties	4	0	4	0
Cities	18	0	18	0
Boroughs	148	58	146	58
Townships of the first class	19	3	19	3
Townships of the second class	166	154	166	152
Authorities and other units	174	80	171	80
Police	192	18	189	17
Firefighters	9	1	9	1
Total*	**730**	**314**	**722**	**311**

* Total includes plans with no active members.

Pension Benefits

The System has the broad authority of enabling a municipality to design its own retirement benefit structure. As an alternative, the System has two basic benefit structures: one for municipal employees (Article II of the Act) and one for uniformed employees (police and firefighters) (Article III of the Act). Certain elected officials are not permitted to become System members, as outlined in individual municipal ordinances. Members are eligible for monthly retirement benefits upon reaching the age of 65 and 55, under Articles II and III, respectively, or upon accumulating 24 years of service. Under Articles II and III of the Act, vesting occurs after 12 years of service. Such benefits under Articles II and III are generally equal to (a) the actuarial value of the members' contributions and (b) a municipal annuity that is based upon a percentage of a member's salary or compensation. The benefit structures also provide death, disability, and early retirement benefits. These benefit provisions and all other requirements are established under Articles II and III of the Act. Under Article IV of the Act, municipalities may provide for benefits different from those available under Articles II and III. Vesting provisions, if any, under Article IV may vary.

Automatic postretirement benefit increases are optional in plan contracts. Some member municipalities include the automatic increase; others occasionally grant an ad hoc cost-of-living (COLA) increase. A postretirement benefit increase may also be granted through the System's excess interest award *(See Note 3 for an explanation of excess interest)*.

Member municipalities interested in amending benefits contact the System's staff to discuss desired amendments and to obtain a cost study. Amendments are drafted by the System's staff, reviewed by the Chief Counsel's Office, adopted by the municipality, and submitted to the Board for formal approval.

(2) SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Basis of Accounting

The System's financial statements are prepared on the accrual basis of accounting. Employee and employer contributions are recognized in the period in which the contributions are due. Benefits and refunds are recognized when due and payable in accordance with the terms of each plan. Expenses are recorded when the corresponding liabilities are incurred.

Use of Estimates in Preparing Financial Statements

The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities, disclosure of contingent assets and liabilities at the date of the financial statements, and the reported amounts of additions and deductions during the reported period. Actual results could differ from those estimates.

Reclassifications

Certain 2017 and 2016 amounts have been reclassified in conformity with the 2018 presentation. These reclassifications had no effect on net position restricted for pensions or the change in fiduciary net position.

Investments

Investments are reported at fair value. Fair value is the amount that a plan can reasonably expect to receive for an investment in a current sale between a willing buyer and a willing seller, that is, other than in a forced or liquidation sale. Short-term investments are reported at amortized cost, which approximates fair value. Securities traded on a national or international exchange are valued at the last reported sales price at current exchange rates. Equity index funds are valued at the net asset value of units held based upon the value of the underlying investments as determined by quoted market prices. Fixed income index funds are valued at the net asset value of units held based on yields currently available on comparable securities of issuers with similar credit ratings of the underlying investments. Real estate investments are valued at the net asset value. Purchases and sales of investments are recorded on a trade-date basis. Interest income is recorded on the accrual basis and dividends are recorded on the ex-dividend date.

Capital Assets

Capital assets consist of office furniture and equipment, software, and leasehold improvements. Capital assets are recorded at cost and depreciated using the straight-line method over the following useful lives:

Office Furniture	7 years
Office Equipment	4 years
Software	3 years
Leasehold Improvements	10 years

Pensions for Employees of the System

Employees of PMRS are members of the Pennsylvania State Employees' Retirement System (SERS).

For purposes of measuring the net pension liability, deferred outflows of resources, deferred inflows of resources, and pension expense information about the fiduciary net position of SERS and additions to/deductions from SERS' fiduciary net position have been determined on the same basis as they are reported by SERS *(Please refer to Note 6 for additional* *information regarding SERS)*. PMRS' net pension liability, deferred outflows of resources, and deferred inflows of resources are reported on the Statement of Fiduciary Net Position. The pension expense is reported in administrative expenses on the Statement of Changes in Fiduciary Net Position and is detailed on the Schedule of Administrative Expenses Supplementary Schedule.

Postemployment Benefits Other Than Pensions

The System participates in the Commonwealth's Retired Employees Health Program. For purposes of measuring the net OPEB liability, deferred outflows of resources, deferred inflows of resources, and OPEB expense, information about the fiduciary net position of the Commonwealth and additions to/deductions from the Commonwealth's fiduciary net position have been determined on the same basis as they are reported by the Commonwealth *(Please refer to Note 7 for additional information)*. PMRS' net OPEB liability, deferred outflows of resources, and deferred inflows of resources are reported on the Statement of Fiduciary Net Position. The OPEB expense is reported in administrative expenses on the Statement of Changes in Fiduciary Net Position and is detailed on the Schedule of Administrative Expenses Supplementary Schedule.

Compensated Absences

The System uses the accrual basis of accounting for measuring vacation leave, sick leave, and other compensated absences liabilities. Employees of the System are paid for accumulated vacation leave upon termination or retirement. Retiring employees of the System that meet service, age, or disability requirements are paid between 30 percent and 100 percent of sick days available at retirement, up to 161 maximum days paid. As of December 31, 2018 and 2017, $236,812 and $206,695, respectively, were accrued for unused vacation and sick leave for the System's employees and included in accounts payable and accrued expenses on the Statement of Fiduciary Net Position.

Federal Income Taxes

The System is a qualified trust fund under Section 401(a) of the Internal Revenue Code (IRC). As a result of the qualified status, the trust fund is entitled to an exemption, under Section 501(a) of the IRC, from federal income taxation on its investment earnings. Additionally, the trust fund and any benefits accruing to the members of PMRS are exempt from Pennsylvania state and municipal taxes.

It should be noted that the Internal Revenue Service (IRS) announced and initiated a renewed focus on the tax qualification of public pension funds in 2008. PMRS continues to work proactively to address this IRS initiative.

New Accounting Pronouncements Adopted

During the year ended December 31, 2018, the System adopted GASB issued Statement No. 85, "Omnibus 2017." The objective of this Statement is to address practice issues that have been identified during implementation and application of certain GASB Statements. This Statement addresses a variety of topics including issues related to blending component units, goodwill, fair value measurement and application, and postemployment benefits (pensions and other postemployment benefits). Upon examination, it was determined that the System is currently presenting information in accordance with the requirements.

During the year ended December 31, 2017, the System adopted GASB Statement No. 75, "Accounting and Financial Reporting for Postemployment Benefits Other Than Pensions" which replaced the requirements of Statement No. 45, Accounting and Financial Reporting by Employers for Postemployment Benefits Other Than Pensions, as amended, and improves accounting and financial reporting for postemployment benefits other than pensions.

During the year ended December 31, 2017, the System adopted GASB Statement No. 82 "Pension Issues—an Amendment of GASB Statements No. 67, No. 68, and No. 73." Upon examination, it was determined that the System is currently presenting information in accordance with the requirements.

New Accounting Pronouncements—to Be Adopted

The GASB issued Statement No. 84 "Fiduciary Activities" in January 2017. The objective of this Statement is to improve guidance regarding the identification of fiduciary activities for accounting and financial reporting purposes and how those activities should be reported. The requirements of this Statement are effective for financial statements for fiscal years beginning after December 15, 2018.

The GASB issued Statement No. 87, "Leases" in June 2017. This Statement establishes a single model for lease accounting based on the foundational principle that leases are financings of the right to use an underlying asset. Under this Statement, a lessee is required to recognize a lease liability and an intangible right-to-use lease asset, and a lessor is required to recognize a lease receivable and a deferred inflow of resources. The requirements of this Statement are effective for financial statements for fiscal years beginning after December 15, 2019.

The System is evaluating these pronouncements and their potential impact to the financial statements, if any, and plans to adopt them as applicable by their effective date.

Change in Accounting Principle

PMRS implemented GASB Statement No. 75 effective January 1, 2017. Due to the implementation of GASB Statement No. 75, the beginning net position restricted for pension benefits has been restated by ($6,527,979). The purpose of the restatement was to record the change in the net OPEB obligation from the previously reported amount of ($799,021) as reported under GASB Statement No. 45 to the net OPEB liability of ($7,327,000) as reported under GASB Statement No. 75.

(3) CONTRIBUTIONS AND RESERVES

Contributions

Contributions to the System are made by members and municipalities. Under Articles II and III of the Act, members are required to contribute 3 percent to 8 percent of their salaries. The amount a member contributes under Article IV of the Act is based upon contracted plan provisions and is principally expressed as a percent of compensation or salary. The contributions required of municipalities are based upon an actuarial valuation, using the Entry Age Normal Actuarial Cost Method, computed as a percentage of the total compensation of all active members during the period for which the amount is determined. The required contributions from municipalities for the years ended December 31, 2018 and 2017 consisted of the following:

	2018	2017
Municipality normal cost[(1)]	$ 61,288,746	$ 52,834,116
Amortization of unfunded actuarial accrued liability	(13,760,621)	(5,800,659)
Total[(2)]	**$ 47,528,125**	**$ 47,033,457**

The actual contributions were 129.0 percent of the required contributions in 2018 and 112.3 percent of the required contributions in 2017.

Total contributions to the System in 2018 were $84.6 million of which $61.3 million and $23.0 million were made by municipal employers and plan members, respectively, and $257,908 was from assessments.

Total contributions to the System in 2017 were $75.4 million of which $52.8 million and $21.7 million were made by municipal employers and plan members, respectively, $612,199 was transferred from other plan administrators, and $248,281 was from assessments.

The difference between the municipalities' required and actual contributions is generally due to various factors including additional contributions towards unfunded liability, plan takeovers, and the municipalities transferring state aid money to the System as required under the Municipal Pension Plan Funding Standard and Recovery Act of 1984 (Act 205).

Each municipality is also charged a $20 assessment fee per member to help cover administrative expenses incurred by the System. The remaining costs of administering the plan are financed by investment income.

Contributions Required and Contributions Made

The System's funding policy requires actuarially determined annual required contributions of plan member municipalities at rates that accumulate sufficient assets to pay benefits when due. The System's actuary used the Entry Age Normal Cost Actuarial Method to determine plan liabilities and normal cost. Under this method, a normal cost is calculated that would fund each employee's benefits during the employee's career as a level percent of pay.

At each valuation date, the unfunded actuarial accrued liability is calculated as the present value of all plan benefits, less the present value of future normal cost accruals, less current assets (actuarial value).

The normal cost rate is applied to the projected payroll, and projected employee contributions are deducted. Actuarial gains (or losses) are reflected by decreases (or increases) in the unfunded actuarial accrued liability. Under Act 205, and amended under Act 44[(3)], the unfunded accrued liability is amortized as a level dollar amount over the lesser of:

1. a. 30 years with respect to the initial liability as of 1/1/1985 (or first valuation);
   b. 20 years with respect to actuarial gains and losses;
   c. 15 years with respect to changes due to actuarial assumptions,
   d. 20 years with respect to changes due to plan provisions (if state mandated),
   e. 10 years with respect to changes in benefits for currently active members and one year of retired members (if local benefit changes), or,

(1) Municipality normal cost includes additional municipal employer contributions towards unfunded liability of $8.6 million in 2018.
(2) Total does not include $20 per member assessment fee to municipalities.
(3) Act 44 of 2009 made amendments to Act 205 which changes certain amortization periods. These changes affect the cost calculations for the System's plans as of January 1, 2011.

2. the average assumed working lifetime of active employees as of the date the liability was established. If there are no active employees, the unfunded liability is amortized one year after the liability was established.

Significant actuarial assumptions used to compute the actuarially determined contribution requirement include (a) an investment rate of return of 5.25 percent[1] per year (net of investment expenses and certain administrative expenses) compounded annually, (b) projected salary increases ranging from 2.8 percent to 7.05 percent with an average increase of 4.3 percent, including a 2.8 percent per year compounded annually for inflation, with an additional age-based component to reflect merit/seniority, (c) postretirement cost-of-living increases of 2.8 percent per year until the maximum is reached (optional in contracts), (d) pre-retirement mortality based on the RP2000 Non-Annuitant Mortality Table projected 15 years with Scale AA for males and females and an additional setback of 5 years for females, (e) healthy post-retirement mortality based on RP2000 Annuitant Mortality Table projected 5 years with Scale AA for males and projected 10 years with Scale AA for females, and (f) disabled post-retirement mortality based on the RP2000 Combined Mortality Table with a set forward of 10 years. These actuarial assumptions were first adopted for the January 1, 2016 actuarial valuation based on the most recent experience study for the period covering January 1, 2009 through December 31, 2013 and, as such, will be reflected in the Actuarially Determined Contributions for calendar year 2019. The January 1, 2017 and 2018 valuation results are based on the actuarial assumptions used for the January 1, 2016 valuation and the updated investment rate of return assumption. The January 1, 2016 valuation results reflect a 5.5 percent interest rate of return assumption while the January 1, 2017 and 2018 valuation results reflect a 5.25 percent interest rate of return assumption adopted by the PMRS Board in November 2016.

The amortization method uses level dollar for plan bases and average for Aggregate Gain/Loss, 10 percent of surplus is credited against aggregate cost where applicable, based on an open amortization period. The remaining amortization period at December 31, 2018 and 2017 was 10–30 years.

Reserve Accounts

As of December 31, 2018 and 2017, the reserve account balances were as follows:

	2018	2017[2]
Members' Reserve Account	$ 474,930,885	$ 460,805,568
Municipal Reserve Account	911,884,310	871,062,254
Retired Members' Reserve Account	1,134,708,899	1,064,325,573
DROP Participant Reserve Account	1,544,143	1,548,634
Disability Reserve Account	358,812	1,298,910
Undistributed Earnings Reserve Account	(174,047,274)	92,578,789
Total	**$ 2,349,379,775**	**$ 2,491,619,728**

The Act defines the following funds to be maintained by the System:

Members' Reserve Account

The Members' Reserve Account is credited with all contributions made by active members of the System. Interest is credited to each member's individual account at an annual rate determined by the Board. The System's regular interest rate for the years ended December 31, 2018 and 2017 was 5.25 percent. In addition to regular interest, the System may also award excess interest. The System distributed excess interest of $4.1 million to the Members' Reserve Account in 2018 as directed by the municipalities. The System did not distribute excess interest in 2017.

Upon retirement or disability of an active member, the member's accumulated contributions plus interest are transferred to the Retired Members' Reserve Account for subsequent benefit payments. Withdrawals of the contributions of members not eligible for benefits are paid from this reserve. The account is fully funded as of December 31, 2018.

Municipal Reserve Accounts

Separate municipal accounts are maintained for each municipality. The Municipal Reserve Account is credited with each municipality's contributions toward the superannuation retirement and death benefits of its members. Interest is credited to each separate municipal account at an annual rate determined by the Board. The System's regular interest rate for the years ended December 31, 2018 and 2017 was 5.25 percent. In addition to regular interest, the System may also award excess interest. The System distributed excess interest of $18.2 million to the Municipal Reserve Account in 2018 as directed by the municipalities. The System did not distribute excess interest in 2017. The account is fully funded as of December 31, 2018.

(1) The interest rate of return assumption was reduced from 5.5 percent to 5.25 percent effective January 1, 2017.

(2) As restated. The Board decided to reduce the deficit in the Retired Members' Reserve Account as of December 31, 2017 by transferring $45.5 million from the Undistributed Earnings Reserve Account to the Retired Members' Reserve Account.

Retired Members' Reserve Account

The Retired Members' Reserve Account represents the amounts transferred from the Members' Reserve Account, the Municipal Accounts, and the Disability Reserve Account. All retirement benefits and retirees' death benefits are paid from this reserve. Interest is credited to the Retired Members' Account at an annual rate determined by the Board. The System's regular interest rate for the years ended December 31, 2018 and 2017 was 5.25 percent. In addition to regular interest, the System may also award excess interest. The System distributed excess interest of $3.6 million to the Retired Members' Reserve Account in 2018 as directed by the municipalities. The System did not distribute excess interest in 2017. The Board decided to reduce the deficit in the Retired Members' Reserve Account as of December 31, 2017 by transferring $45.5 million from the Undistributed Earnings Reserve Account to the Retired Members' Reserve Account. The account is fully funded as of December 31, 2018.

DROP Participant Reserve Account

Deferred Retirement Option Program ("DROP") is an optional form of payment upon a member's retirement. The DROP Participant Reserve Account is credited with all monthly annuity payments payable to a DROP Participant. The monthly DROP interest is dependent on the monthly rate of return credited to the Liquid Asset Pool as determined by the Treasurer. The DROP interest credited each month shall not be less than zero percent nor more than 0.367 percent per month, and shall not exceed the statutory limit of 4.5 percent annually. The average monthly yield for 2018 ranged from 1.02 percent to 2.38 percent with 1.95 percent as the average for the 12-month period. The average monthly yield for 2017 ranged from 0.78 percent to 1.42 percent with 1.04 percent as the average for the 12-month period. The first DROP participant enrolled on July 31, 2012. The account is fully funded as of December 31, 2018.

Disability Reserve Account

The Disability Reserve Account is credited with the contributions made by municipalities toward the disability retirement of member employees. The disability reserves are limited to 150 percent of the largest value of transfers to the Retired Members' Reserve Account over the most recent three years. Interest is credited to the disability account at an annual rate determined by the Board. The System's regular interest rate for the years ended December 31, 2018 and 2017 was 5.25 percent. The account is fully funded as of December 31, 2018.

Undistributed Earnings Reserve Account

In addition to regular interest, the System may also award excess interest. Excess interest is investment earnings on the System's assets in excess of that required for allocation to regular interest and administrative expenses. Rates for excess interest are determined annually by the Board with advice from the System's actuary. The excess interest is distributed to the Members' Reserve Accounts, the Municipal Reserve Accounts, and the Retired Members' Reserve Account as directed by the municipalities.

The Board decided to reduce the deficit in the Retired Members' Reserve Account as of December 31, 2017 by transferring $45.5 million from the Undistributed Earnings Reserve Account to the Retired Members' Reserve Account. After this transfer, the System approved the distribution of excess interest at a rate of 1.08% of the December 31, 2017 reserves during 2018. The calculation of excess interest was prepared in accordance with the Board approved formula and was based on the actuarial value of the System's assets as of December 31, 2017 and the cash flows of the System for 2018. In 2018, the System distributed excess interest in the amount of $25.9 million from the Undistributed Earnings Reserve Account of which $18.2 million was distributed to the Municipal Reserve Accounts, $4.1 million was distributed to the Members' Reserve Accounts, and $3.6 million was distributed to the Retired Members' Reserve Accounts as directed by the municipalities. The System did not distribute excess interest in 2017.

(4) INVESTMENTS

Members of the Board are trustees of the System's assets. They have exclusive responsibility for the management of such assets and have full power to invest the System's assets, subject to the terms, conditions, limitations, and restrictions imposed by Commonwealth law upon fiduciaries. The Board is governed by the "prudent investor" rule in establishing investment policy. The "prudent investor" rule requires the exercise of that degree of judgment, skill, and care under the circumstances then prevailing which investors of prudence, discretion, and intelligence, who are familiar with such matters, exercise in the management of their own affairs not in regard to speculation, but in regard to permanent disposition of the funds, considering the probable income to be derived there from, as well as the probable safety of their capital.

The Board has adopted its Statement of Investment Policy to formally document investment objectives and responsibilities. This policy, as well as applicable state law, establishes guidelines for permissible investments of PMRS. The pension plan's policy regarding the allocation of invested plan assets is established and may be amended by the Board. The Board established its allocation goals as follows:

Domestic equities (large capitalized firms)	25 percent
Domestic equities (small capitalized firms)	15 percent
International equities (developed markets)	15 percent
International equities (emerging markets)	10 percent
Fixed income	15 percent
Real estate	12.5 percent
Timberland	7.5 percent

The Board prohibits: (1) purchasing of commodities, mineral rights except those mineral rights that come with the purchase of timberlands, and warrants except those previously authorized, (2) short selling and the purchasing of securities on margin, and (3) selling or buying options or futures contracts on either fixed income or equity instruments. Unleveraged derivatives used to dampen risk, execute an unleveraged strategy, or reallocate assets within a portfolio quickly may be used by a manager provided the exposure to derivatives does not exceed five percent (5%) of the manager's portfolio at market value. Leveraged derivatives of any nature or the use of derivatives to create leverage are strictly prohibited. Notwithstanding the above, warrants received in corporate restructuring may be retained at the manager's discretion.

The Board achieves day-to-day management of the investment portfolio through the use of investment managers. Restrictions concerning diversification within each manager and among managers are provided by the adopted Investment Policy.

Money-Weighted Rate of Return

For the years ended December 31, 2018 and 2017, the annual money-weighted rate of return on pension plan investments, net of pension plan investment expense, was -4.57 percent and 17.84 percent, respectively. The money-weighted rate of return expresses investment performance, net of investment expense, adjusted for the changing amounts actually invested.

Fair Value of Investments

PMRS measures and records its investments using fair value measurement guidelines established by generally accepted accounting principles. These guidelines recognize a three-tiered fair value hierarchy as follows:

- Level 1 inputs: Level 1 inputs are quoted prices (unadjusted) for identical assets or liabilities in active markets. A quoted price for an identical asset or liability in an active market (e.g., an equity security traded on a major exchange) provides the most reliable fair value measurement and, if available, should be used to measure the fair value in that particular market.
- Level 2 inputs: The categorization of an asset/liability as Level 1 requires that it is traded in an active market. If an instrument is not traded in an active market, it may fall to Level 2. Level 2 inputs are inputs that are observable, either directly or indirectly, but do not qualify as Level 1.
- Level 3 inputs: Reporting entities may use unobservable inputs to measure fair value if relevant observable inputs are not available, thereby allowing for situations in which there is little, if any market activity for the asset or liability at the measurement date. These unobservable inputs are considered Level 3.

Equity securities classified in Level 1 of the fair value hierarchy are valued using prices quoted in active markets for those securities.

Investments valued at the net asset value (NAV) per share (or its equivalent) include investments considered to be Alternative Investments defined by the AICPA. The definition includes investments for which a readily determinable fair value does not exist (that is, investments not listed on national exchanges or over-the-counter markets, or for which quoted market prices are not available from sources such as financial publications, exchanges, or NASDAQ). These types of investments include real estate and commingled index funds and can be held within any of the asset classes used by PMRS based on underlying portfolio holdings and analysis of risk and return relationships. The commingled index funds are open-ended funds and may be utilized in equity or fixed income asset classes. They are funds made up of underlying securities that have readily available fair values (publicly traded stocks and bonds). PMRS owns units of these funds rather than the individual securities. Contributions or withdrawals from these funds can be made as needed, generally with daily or monthly liquidity, with a notice period of one to fifteen days.

The System has short-term and other investments that are not measured at fair value or NAV. PMRS invests in the Commonwealth's Treasury Department's Pool 99 and Pool 124 short term investment pools. These pools consist exclusively of fixed-income securities, primarily of short duration, which are held either directly or through the Consolidated Cash Pool, an investment instrument used to invest short-term monies. PMRS' portion is valued at cost plus accrued interest, which approximates fair value.

At December 31, 2018, the System had the following investments.

INVESTMENTS

As of December 31, 2018

		FAIR VALUE MEASUREMENTS USING		
INVESTMENTS BY FAIR VALUE LEVEL	**2018**	**LEVEL 1**	**LEVEL 2**	**LEVEL 3**
Common and preferred stock	$ 1,152,315,812	$ 1,152,315,812	–	–
Total investments by fair value level	**1,152,315,812**	**1,152,315,812**	**–**	**–**
INVESTMENTS MEASURED AT NET ASSET VALUE (NAV)		**UNFUNDED COMMITMENTS**	**REDEMPTION FREQUENCY**	**REDEMPTION NOTICE PERIOD**
Commingled funds - debt	347,218,505	–	Daily, monthly	1-15 days
Commingled funds - equity	307,407,156	–	Daily, monthly	1-15 days
Real estate	486,313,268	40,000,000	Not eligible	Not eligible
Total investments measured at NAV	**1,140,938,929**	**40,000,000**		
INVESTMENTS AT OTHER THAN FAIR VALUE				
Short-term and other investments	68,881,421			
Total investments at other than fair value	**68,881,421**			
Total investments	**$2,362,136,162**			

At December 31, 2017, the System had the following investments.

INVESTMENTS

As of December 31, 2017

		FAIR VALUE MEASUREMENTS USING		
INVESTMENTS BY FAIR VALUE LEVEL	**2017**	**LEVEL 1**	**LEVEL 2**	**LEVEL 3**
Common and preferred stock	$ 1,267,101,725	$ 1,267,101,725	–	–
Total investments by fair value level	**1,267,101,725**	**1,267,101,725**	**–**	**–**
INVESTMENTS MEASURED AT NET ASSET VALUE (NAV)		**UNFUNDED COMMITMENTS**	**REDEMPTION FREQUENCY**	**REDEMPTION NOTICE PERIOD**
Commingled funds - debt	347,068,678	–	Daily, monthly	1-15 days
Commingled funds - equity	391,560,738	–	Daily, monthly	1-15 days
Real estate	438,583,422	–	Not eligible	Not eligible
Total investments measured at NAV	**1,177,212,838**	–		
INVESTMENTS AT OTHER THAN FAIR VALUE				
Short-term and other investments	61,149,949			
Total investments at other than fair value	**61,149,949**			
Total investments	**$2,505,464,512**			

Deposit and Investment Risks

The System's deposits and investments may be subject to various risks. Among these risks are concentration of credit risk, custodial credit risk, credit risk, interest rate risk, and foreign currency risk. Due to the level of risk associated with certain investments, it is possible that changes in the values of investments may occur in the near term and that such changes could materially affect the amounts reported in the Statement of Fiduciary Net Position.

Concentration of Credit Risk

Concentration of credit risk is the risk of loss attributed to the magnitude of the System's investments in a single issuer. As of December 31, 2018 and 2017, the System had no single issuer that exceeded 5 percent of total investments. Investments issued or explicitly guaranteed by the U.S. government and investments in mutual funds, external investment pools, and other pooled investments were excluded.

Custodial Credit Risk - Deposits

Custodial credit risk for deposits is the risk that, in the event of a financial institution failure, the System would not be able to recover the value of the deposits. The Commonwealth's Treasury Department is the custodian of the System's funds. The Commonwealth's Treasury Department deposits must be held in insured depositories approved by the Commonwealth's Board of Finance and Revenue and must be fully collateralized.

Custodial Credit Risk - Investments

Custodial credit risk for investments is the risk that, in the event of the failure of the counterparty to a transaction, the System would not be able to recover the value of investments or collateral securities that are in the possession of an outside party. In accordance with a contractual relationship between the Commonwealth's Treasury Department and its custodial agent, substantially all investments, where securities are used as evidence of the investment, are held by the custodian in book-entry form in the System's name. Those investments are defined as insured or registered investments for which the securities are held by the System or its agent and, therefore, have a very minimal level of custodial credit risk. The remaining investments, which do not have securities that are used as evidence of the investment, are primarily in commingled funds, which include real estate.

Credit Risk

Credit risk is the risk that an issuer or other counterparty to an investment will not fulfill its obligations. The credit risk of a debt instrument is measured by nationally recognized statistical rating organizations (NRSRO) such as Moody's Investors Service (Moody's), Standard and Poor's (S&P), and Fitch Ratings (Fitch).

Only those bonds issued by the federal government and its agencies or foreign government bonds denominated in U.S. dollars rated "AA" or higher, and only those corporate bonds which are rated and which ratings are no lower than "A" or better by at least two of the 3 NRSRO listed above shall be purchased in accordance with the System's investment guidelines. Should any bond drop below investment quality (BA or lower), the manager shall divest the holding or report in writing to the System within thirty (30) days from the day the security's rating has fallen below the acceptable rating as to why the security remains a safe investment for the portfolio. When an index fund is utilized to meet the System's commitment to the fixed income allocation, the underlying securities of the index shall not have to comply with the specific requirements of this paragraph.

For securities exposed to credit risk in the fixed income portfolio, the following table discloses aggregate fair value by credit quality rating category at December 31, 2018 and 2017.

CREDIT RISK

QUALITY RATING	2018 FAIR VALUE	2017 FAIR VALUE
AAA[1]	$ 253,157,011	$ 247,425,261
AA[1]	12,326,257	13,049,782
A[1]	34,721,851	39,322,881
Baa[1]	46,978,664	47,236,047
Below Baa[1]	34,722	34,707
NR[2]	68,881,421	61,149,949
Total	**$ 416,099,926**	**$ 408,218,627**

Interest Rate Risk

Interest rate risk is the risk that changes in interest rates will adversely affect the fair value of a fixed income investment. The System measures interest rate risk using duration. Duration is a measure of the sensitivity of the price (the value of principal) of a fixed income investment to a change in interest rates, and is expressed as a number of years. The higher the duration, the greater the changes in fair value when interest rates change.

At December 31, 2018 and 2017, the System's fixed income portfolio had the following effective duration:

2018 INTEREST RATE RISK

	FAIR VALUE	EFFECTIVE DURATION
Commingled funds - debt	$ 347,218,505	5.88
Short-term and other investments	68,881,421	0.08
Total	**$ 416,099,926**	

2017 INTEREST RATE RISK

	FAIR VALUE	EFFECTIVE DURATION
Commingled funds - debt	$ 347,068,678	5.98
Short-term and other investments	61,149,949	0.08
Total	**$ 408,218,627**	

Foreign Currency Risk

Foreign currency risk is the risk that fluctuations in exchange rates will adversely affect the fair value of an investment. As part of the System's program to manage risk and enhance returns, the System invests in non-U.S. markets.

At December 31, 2018 and 2017, the System had the following non-U.S. currency exposure:

[1] The fair value distributed among the credit ratings is calculated based on percentages reported by the index fund provider.
[2] Not Rated securities include short-term and other investments.

2018 FOREIGN CURRENCY RISK

CURRENCY	EQUITY	SHORT-TERM	TOTAL
European Euro	$ 73,792,326	$ –	$ 73,792,326
Japanese Yen	48,143,760	–	48,143,760
British Pound Sterling	30,429,698	–	30,429,698
Hong Kong Dollar	22,283,232	–	22,283,232
Swiss Franc	14,905,526	–	14,905,526
Norwegian Krone	7,082,928	–	7,082,928
Swedish Krona	5,371,574	–	5,371,574
Canadian Dollar	3,530,410	–	3,530,410
South Korean Won	3,199,865	–	3,199,865
Australian Dollar	2,791,625	–	2,791,625
Singapore Dollar	1,360,915	–	1,360,915
Danish Krone	1,125,196	–	1,125,196

2017 FOREIGN CURRENCY RISK

CURRENCY	EQUITY	SHORT-TERM	TOTAL
European Euro	$ 92,096,044	$ 1	$ 92,096,045
Japanese Yen	55,614,242	415,525	56,029,767
British Pound Sterling	41,779,718	–	41,779,718
Hong Kong Dollar	20,434,062	–	20,434,062
Swiss Franc	12,726,937	–	12,726,937
Norwegian Krone	7,368,795	–	7,368,795
Danish Krone	5,816,096	–	5,816,096
Swedish Krona	4,377,521	–	4,377,521
Australian Dollar	2,989,885	–	2,989,885
Canadian Dollar	1,997,984	–	1,997,984
Singapore Dollar	797,714	–	797,714

(5) SECURITIES LENDING

In accordance with a contract between the Commonwealth's Treasury Department and its custodian, the System may participate in a securities lending program. Under this program, the custodian, acting as the lending agent, lends securities (equities, fixed income, and money market instruments) to independent brokers, dealers, and banks, acting as borrowers in exchange for collateral. Collateral is required at 102% of the fair value of the securities lent except for the equity securities of non-U.S. corporations, for which collateral of 105% is required. Collateral is marked-to-market daily. If the fair value of the collateral held falls below the minimum guidelines for securities loaned, additional collateral is obtained. The lending agent invests the cash collateral in accordance with reinvestment guidelines approved by the Commonwealth's Treasury Department. The lending agent cannot pledge or sell collateral securities received unless the borrower defaults.

As of December 31, 2018 and 2017, the System had no credit risk exposure to borrowers because participation in the securities lending program was halted in 2008.

(6) PENSION PLAN FOR EMPLOYEES OF THE SYSTEM

SERS' Plan Description

The System contributes to the State Employees' Retirement System (SERS), a cost-sharing multiple-employer defined benefit pension plan established by the Commonwealth to provide pension benefits for employees of state government and certain independent agencies. SERS is a component unit of the Commonwealth and is included in the Commonwealth's financial report as a pension trust fund.

Membership in SERS is mandatory for most state employees. Article II of the Commonwealth's constitution assigns the authority to establish and amend the benefit provision of the plan to the General Assembly.

SERS' Benefits Provided to Employees of the System

SERS provides pension benefits, including retirement, death, and disability benefits, for employees of state government and certain independent agencies. SERS member retirement benefits are determined by taking years of credited service multiplied by final average salary multiplied by 2 percent multiplied by class of service multiplier.

According to the State Employees' Retirement Code (SERC), all obligations of SERS will be assumed by the Commonwealth should SERS terminate.

Contributions to SERS

Section 5507 of the SERC (71 Pa. C.S. §5507) requires the Commonwealth and other employers whose employees are SERS members to make contributions to the fund on behalf of all active members and annuitants necessary to fund the liabilities and provide the annuity reserves required to pay benefits. SERS funding policy, as set by the board, provides for periodic active member contributions at statutory rates. The SERS funding policy also provides for periodic employer contributions at actuarially determined rates based on SERS funding valuation, expressed as a percentage of annual retirement covered payroll, such that they, along with employee contributions and an actuarially determined rate of investment return, are adequate to accumulate assets to pay benefits when due. However, Act 2010-

120 imposes rate increase collars (limits on annual rate increases) on employer contributions. The collar for Commonwealth fiscal year 15/16 was 4.5% and no longer applied effective July 1, 2017.

SERS' Pension Plan Investments

The long-term expected real rate of return on pension plan investments is determined using a building-block method in which best-estimate ranges of expected future real rates of return (expected returns, net of manager fees and inflation) are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation. Best estimates of arithmetic real rates of return for each major asset class included in SERS current and target asset allocation as of December 31, 2017 and 2016 are summarized in the following tables:

2017 LONG-TERM EXPECTED REAL RATE OF RETURN

ASSET CLASS	TARGET ALLOCATION	LONG-TERM EXPECTED REAL RATE OF RETURN
Private equity	16%	8.00%
Global public equity	43%	5.30%
Real estate	12%	5.44%
Multi-Strategy	12%	5.10%
Fixed income	14%	1.63%
Cash	3%	(0.25%)
Total	**100%**	

2016 LONG-TERM EXPECTED REAL RATE OF RETURN

ASSET CLASS	TARGET ALLOCATION	LONG-TERM EXPECTED REAL RATE OF RETURN
Private equity	16%	8.00%
Global public equity	43%	5.30%
Real estate	12%	5.44%
Hedge funds	12%	4.75%
Fixed income	14%	1.63%
Cash	3%	(0.25%)
Total	**100%**	

Proportionate Share of SERS' Net Pension Liability, Pension Expense, Deferred Outflows of Resources, and Deferred Inflows of Resources

PMRS' proportion of the net pension liability was calculated utilizing a projected-contribution method. PMRS' proportionate share of the SERS' net pension liability was measured as of December 31, 2017 and 2016, and the total pension liability used to calculate the net pension liability was determined by an actuarial valuation at December 31, 2017 and 2016.

The following methods and assumptions were used in the actuarial valuation at December 31, 2017 and 2016:

ACTUARIAL ASSUMPTIONS	
Investment rate of return/discount rate	7.25% net of manager fees including inflation
Projected salary increases	Average of 5.60% with range of 3.70%–8.90% including inflation
Inflation	2.6%
Mortality rate	Projected RP-2000 Mortality Tables adjusted for actual plan experience and future improvement
Cost of living adjustments	None (ad hoc)

At December 31, 2018, PMRS reported a net pension liability of $3.9 million and $4.5 million at December 31, 2017 for its proportionate share of the net pension liability for the SERS plan on the Statement of Fiduciary Net Position. The net pension liability was measured as of December 31, 2017 and 2016, and the total pension liability used to calculate the net pension liability was determined by an actuarial valuation as of that measurement date. At December 31, 2017, PMRS' proportion was 0.02277373 percent and 0.02323614 percent at December 31, 2016.

For the years ended December 31, 2018 and 2017, PMRS recognized pension expenses of $484,129 and $390,827, respectively, in administrative expenses on the Statement of Changes in Fiduciary Net Position. At December 31, 2018 and 2017, PMRS reported deferred outflows of resources and deferred inflows of resources from the following sources:

2018 SCHEDULE OF DEFERRED OUTFLOWS AND INFLOWS

	DEFERRED OUTFLOWS OF RESOURCES	DEFERRED INFLOWS OF RESOURCES
Differences between expected and actual experience	$ 66,581	$ 74,771
Changes of assumptions	197,158	-
Differences between projected and actual investment earnings on pension plan investments	-	156,571
Differences between employer contributions and proportionate share of contributions	11,291	2,198
Changes in proportion	28,805	306,221
Contributions subsequent to measurement date	476,919	-
Total	**$ 780,754**	**$ 539,761**

2017 SCHEDULE OF DEFERRED OUTFLOWS AND INFLOWS

	DEFERRED OUTFLOWS OF RESOURCES	DEFERRED INFLOWS OF RESOURCES
Differences between expected and actual experience	$ 64,601	$ 100,132
Differences between projected and actual investment earnings on pension plan investments	376,109	-
Changes of assumptions	273,365	-
Differences between employer contributions and proportionate share of contributions	-	3,251
Changes in proportion	42,817	320,454
Contributions subsequent to measurement date	452,537	-
Total	**$ 1,209,429**	**$ 423,837**

The amount reported as deferred outflows of resources at December 31, 2018 and 2017 includes contributions subsequent to the measurement date of $476,919 and $452,537, respectively, which are recognized as a reduction of the net pension liability in the years ended December 31, 2019 and 2018. The amounts reported as deferred outflows of resources and deferred inflows of resources at December 31, 2018 will be recognized in pension expense as follows:

YEAR ENDING DECEMBER 31	
2019	$ 501,475
2020	(2,647)
2021	(138,699)
2022	(117,854)
2023	(1,282)

Sensitivity of PMRS' Proportionate Share of SERS' Net Pension Liability to Changes in the Discount Rate

The following presents PMRS' proportionate share of the SERS' net pension liability as well as what PMRS' proportionate share of the SERS' net pension liability would be if it were calculated using a discount rate that is 1-percentage-point lower (6.25 percent) or 1-percentage-point higher (8.25 percent) than the current discount rate:

2018 SENSITIVITY OF THE NET PENSION LIABILITY TO CHANGE IN THE DISCOUNT RATE

	1% DECREASE (6.25%)	DISCOUNT RATE (7.25%)	1% INCREASE (8.25%)
Net pension liability	$ 4,998,508	$ 3,937,967	$ 3,029,491

2017 SENSITIVITY OF THE NET PENSION LIABILITY TO CHANGE IN THE DISCOUNT RATE

	1% DECREASE (6.25%)	DISCOUNT RATE (7.25%)	1% INCREASE (8.25%)
Net pension liability	$ 5,538,461	$ 4,475,356	$ 3,564,960

SERS' Pension Plan Fiduciary Net Position

Detailed information about SERS' fiduciary net position is available in SERS' Comprehensive Annual Financial Report which can be found on SERS' website at www.SERS.pa.gov.

(7) POSTEMPLOYMENT HEALTHCARE PLAN FOR EMPLOYEES OF THE SYSTEM

Commonwealth's Plan Description and Administration

The System participates in the Commonwealth's Retired Employees Health Program (REHP). The REHP is a single-employer defined benefit Other Postemployment Benefit (OPEB) plan that includes Commonwealth agencies and some component units. The REHP is established as a trust equivalent arrangement. The REHP is administered by the Pennsylvania Employees Benefit Trust Fund (PEBTF), which acts as a third-party administrator under an administrative agreement with the Commonwealth of Pennsylvania (Commonwealth). The REHP is provided as part of collective bargaining agreements with most Commonwealth labor unions. All policy decisions and types and levels of benefits for the REHP fall under the purview of the Commonwealth's Executive Board, and the Secretary of Administration. The REHP does not have a governing board.

Benefits Provided

The Commonwealth sponsors the REHP for eligible retirees and their dependents to receive subsidized health coverage for the retiree's lifetime.

Contributions to Commonwealth

REHP employer contribution requirements are established by the Commonwealth's Office of Administration and the Office of the Budget. All employing agencies and certain plan members contributed $362 per bi-weekly pay period for each current REHP eligible active employee during the fiscal year ended June 30, 2017 and $300 during the first half of the fiscal year and $188 during the second half of the fiscal year per bi-weekly pay period for each current REHP eligible active employee during the fiscal year ended June 30,

2018. Plan members who retired after June 30, 2005 contribute to the plan based on a percentage of their final annual gross base salary at the time of retirement. Plan member contribution rates vary based on their REHP enrollment date.

Commonwealth's REHP Investments

The assets of the REHP are managed by the Commonwealth's Treasury Department in an investment pool. The REHP investments are made based upon an interagency agreement, dated June 17, 2008, and the prudent investor standard set forth in the Commonwealth of Pennsylvania's fiscal code 72P.S.§30.1, amendment to the fiscal code, the principles of Prudent Investors Standards.

The long-term expected rate of return on REHP plan investments is determined using a risk premium review. This review compares the current relationship between fixed income and equity and their relationship over long periods of time to come up with an expected rate of return. Other variables considered in the expected rates of return are a reversion to the mean for each asset class. Best estimates of arithmetic real rates of return for each major asset class included in the target asset allocation as of June 30, 2018 and 2017 are summarized in the following table:

2018 LONG-TERM EXPECTED REAL RATE OF RETURN

ASSET CLASS	TARGET ALLOCATION	LONG-TERM EXPECTED REAL RATE OF RETURN
US equity	47%	6.6%
International equity	20%	8.6%
Fixed income	25%	3.0%
Real Estate	8%	6.9%
Cash	0%	1.0%
Total	**100%**	

2017 LONG-TERM EXPECTED REAL RATE OF RETURN

ASSET CLASS	TARGET ALLOCATION	LONG-TERM EXPECTED REAL RATE OF RETURN
US equity	47%	7.5%
International equity	20%	8.5%
Fixed income	25%	3.0%
Real Estate	8%	3.0%
Cash	0%	1.0%
Total	**100%**	

Proportionate Share of Commonwealth's Net OPEB Liability, OPEB Expense, and Deferred Outflows of Resources and Deferred Inflows of Resources

PMRS' proportionate share of the Commonwealth's net OPEB liability was measured as of June 30, 2018 and 2017, and the total OPEB liability used to calculate the net OPEB liability was determined by an actuarial valuation dated October 2018.

The total OPEB liability in the June 30, 2018 and 2017 actuarial valuation was determined using the following actuarial assumptions, applied to all periods included in the measurement:

	JUNE 30, 2018	JUNE 30, 2017
Discount rate	3.87%	3.58%
Investment rate of return	5.00%	5.00%
Inflation	2.60%	2.60%
Initial medical trend rate	6.2%/5.9%	6.0%
Ultimate medical trend rate	4.1%	3.9%
Year ultimate trend rate reached	2075	2075

At December 31, 2018, PMRS reported a net OPEB liability of $5.2 million and $6.8 million at December 31, 2017 for its proportionate share of the net OPEB liability on the Statement of Fiduciary Net Position. The net OPEB liability was measured as of June 30, 2018 and 2017, and the total OPEB liability used to calculate the net OPEB liability was determined by an actuarial valuation as of that measurement date. At June 30, 2018, PMRS' proportion of the net OPEB liability was 0.035 percent and 0.034 percent at June 30, 2017.

For the years ended December 31, 2018 and 2017, PMRS recognized OPEB expenses of $108,342 and $225,096, respectively, in administrative expenses on the Statement of Changes in Fiduciary Net Position. At December 31, 2018 and 2017, PMRS reported deferred outflows of resources and deferred inflows of resources from the following sources:

2018 SCHEDULE OF DEFERRED OUTFLOWS AND INFLOWS

	DEFERRED OUTFLOWS OF RESOURCES	DEFERRED INFLOWS OF RESOURCES
Differences between expected and actual experience	$ -	$ 1,592,000
Changes of assumptions	-	683,000
Differences between projected and actual earnings on plan investments	-	8,000
Change in proportionate share and differences between actual and proportionate share of employer contributions	304,000	-
Contributions subsequent to measurement date	160,328	-
Total	**$ 464,328**	**$ 2,283,000**

2017 SCHEDULE OF DEFERRED OUTFLOWS AND INFLOWS

	DEFERRED OUTFLOWS OF RESOURCES	DEFERRED INFLOWS OF RESOURCES
Differences between expected and actual experience	$ -	$ -
Changes of assumptions	-	617,000
Differences between projected and actual earnings on plan investments	-	6,000
Contributions subsequent to measurement date	165,550	-
Total	**$ 165,550**	**$ 623,000**

The amount reported as deferred outflows of resources at December 31, 2018 and 2017 includes contributions subsequent to the measurement date of $165,328 and $160,550, respectively, which are recognized as a reduction of the net OPEB liability in the years ended December 31, 2019 and 2018. The amounts reported as deferred outflows of resources and deferred inflows of resources at December 31, 2018 will be recognized in OPEB expense as follows:

YEAR ENDING DECEMBER 31	
2019	$ (286,672)
2020	(447,000)
2021	(447,000)
2022	(406,000)
2023	(229,000)
Thereafter	(3,000)

Sensitivity of PMRS' Proportionate Share of the Commonwealth's Net OPEB Liability to Changes in the Discount Rate and Healthcare Cost Trend Rates

The following presents PMRS' proportionate share of the Commonwealth's net OPEB liability as well as what PMRS' proportionate share of the Commonwealth's net OPEB liability would be if it were calculated using a discount rate that is 1-percentage-point lower or 1-percentage-point higher than the current discount rate:

2018 SENSITIVITY OF THE NET OPEB LIABILITY TO CHANGE IN THE DISCOUNT RATE

	1% DECREASE (2.87%)	DISCOUNT RATE (3.87%)	1% INCREASE (4.87%)
Net OPEB liability	$ 5,954,000	$ 5,197,000	$ 4,573,000

2017 SENSITIVITY OF THE NET OPEB LIABILITY TO CHANGE IN THE DISCOUNT RATE

	1% DECREASE (2.58%)	DISCOUNT RATE (3.58%)	1% INCREASE (4.58%)
Net OPEB liability	$ 7,930,000	$ 6,768,000	$ 5,998,000

The following presents PMRS' proportionate share of the Commonwealth's net OPEB liability as well as what PMRS' proportionate share of the Commonwealth's net OPEB liability would be if it were calculated using a healthcare cost trend rate that is 1-percentage-point lower or 1-percentage-point higher than the current healthcare cost trend rate:

2018 SENSITIVITY OF THE NET OPEB LIABILITY TO CHANGE IN THE HEALTHCARE COST TREND RATE

	1% DECREASE (5.2%/4.9% DECREASING TO 3.1%)	HEALTHCARE COST TREND RATES (6.2%/5.9% DECREASING TO 4.1%)	1% INCREASE (7.2%/6.9% DECREASING TO 5.1%)
Net OPEB liability	$ 4,461,000	$ 5,197,000	$ 6,112,000

2017 SENSITIVITY OF THE NET OPEB LIABILITY TO CHANGE IN THE HEALTHCARE COST TREND RATE

	1% DECREASE (5.0% DECREASING TO 2.9%)	HEALTHCARE COST TREND RATES (6.0% DECREASING TO 3.9%)	1% INCREASE (7.0% DECREASING TO 4.9%)
Net OPEB liability	$ 5,874,000	$ 6,768,000	$ 8,107,000

Commonwealth' Comprehensive Annual Financial Report (CAFR)

The REHP is reported in the Commonwealth's Comprehensive Annual Financial Report (CAFR) as a Pension (and Other Employee Benefit) Trust. The REHP is reported using the economic resources measurement focus and the accrual basis of accounting. The CAFR is an audited financial statement and is available at www.budget.pa.us.

(8) RELATIONSHIPS WITH OTHER COMMONWEALTH AGENCIES

Responsibility for the organization and administration of the System is vested in the 11-member Pennsylvania Municipal Retirement Board. The State Treasurer and the Secretary of the Commonwealth serve on the Board by virtue of statute. Eight Board members are also appointed by the Governor after being nominated by their respective organizations.

One member each represents the Pennsylvania Municipal League, Pennsylvania Municipal Authorities Association, Pennsylvania State Association of Boroughs, Pennsylvania State Association of County Commissioners, Pennsylvania State Association of Township Commissioners, Pennsylvania State Association of Township Supervisors, the active police officers, and the active firefighters. In addition, one Board position is filled by a retired member of the System. Interested individuals submit an application, and then the Governor appoints someone from the list of applicants.

The System is not included as a component unit of the Commonwealth of Pennsylvania for financial reporting purposes because the System is not financially accountable to the Commonwealth as there is no imposition of will, no financial benefit/burden, nor fiscal dependency associated with the System toward the Commonwealth.

(9) PLAN TERMINATION

Member municipalities may withdraw from the System if the conditions for withdrawal under the Act have been met. Requirements include a minimum of five years of membership, approval of a minimum of 75 percent of the Plan's active, vested, and retired members, and approval of the Board. In the event of withdrawal, a municipality is entitled to receive a net refund of the amount then standing to the credit of the municipality in the municipal account, the member employees' account, and the retired members' reserve account. In no event shall the municipality refund exceed the pro-rata interest of the withdrawing municipality in the net position of the entire fund based on fair value of the fund investments as of the date of receipt of the application for permission to withdraw. Liability for any continuation of retirement or disability benefits being paid from the System shall attach to the withdrawing municipality.

(10) RISK MANAGEMENT

Exposure of the System through Board or staff activity is covered by various means. The System acts under the cover of sovereign immunity, participation in the Employee Liability Self-Insurance Program of the Commonwealth of Pennsylvania, the Commonwealth's fidelity bond, and the State Insurance Fund. The Board also adopted a self-insurance indemnification policy in 2004. There have been no significant reductions in insurance coverage from the prior year. Settlements did not exceed insurance coverage for the past three years.

The System's implementation policy is to allow contracted external managers to decide what action to take regarding this respective portfolio's foreign currency exposures. The System has no specific policies for interest rate risk and foreign currency risk.

(11) LITIGATION AND CONTINGENCIES

The System is subject to various threatened and pending lawsuits. These lawsuits include issues related to benefit calculations and eligibility. It is the opinion of management that the ultimate liability arising from such threatened and pending litigation will not have a material effect on the financial position of the System. The System is exposed to various other liabilities and risks related to fiduciary responsibilities of directors and officers.

(12) COMMITMENTS

At December 31, 2018, the System had commitments for the future purchase of investments in real estate of $40.0 million.

The System entered into an operating lease for a new office building effective July 1, 2017 and expiring June 30, 2027 with two five year renewal options. Annual rent for the first year (including parking) is $290,718 with annual increases up to a maximum of 5 percent. Office space rental expense for the years ended December 31, 2018 and 2017 was $294,660 and $226,572, respectively.

(13) RISK AND UNCERTAINTIES

Investments are exposed to various risks such as interest rate, market, and credit risks. Due to the level of risk associated with certain investments, it is possible that changes in the values of investment securities may occur in the near term and such changes could materially affect the amounts reported in the financial statements.

(14) SUBSEQUENT EVENTS

The System has performed an evaluation of subsequent events through August 15, 2019, the date the financial statements were available to be issued. No material events were identified by the System.

Required Supplementary Schedules

SCHEDULE 1

Schedule of Investment Returns
Annual money-weighted rate of return,
net of investment expense

YEAR ENDED DECEMBER 31	ANNUAL RATE
2018	-4.57%
2017	17.84%
2016	8.23%
2015	-0.27%
2014	5.20%

Note: Money-weighted results for the required 10-year timeframe will be added as available.

SCHEDULE 2
SCHEDULE OF ALLOCATED SHARE OF NET PENSION LIABILITY

MEASUREMENT YEAR ENDED	ALLOCATION PERCENTAGE	ALLOCATED SHARE OF NET PENSION LIABILITY	COVERED PAYROLL	NET PENSION LIABILITY AS A PERCENTAGE OF COVERED PAYROLL	PLAN FIDUCIARY NET POSITION AS A PERCENTAGE OF TOTAL PENSION LIABILITY
12/31/2017	0.02277373%	$ 3,937,967	$ 1,507,109	261.3%	63.0%
12/31/2016	0.02323614%	4,475,356	1,479,180	302.6%	57.8%
12/31/2015	0.02580846%	4,692,967	1,651,026	284.2%	58.9%
12/31/2014	0.02542261%	3,777,141	1,566,464	241.1%	64.8%
12/31/2013	0.02528467%	3,454,742	Not available	Not available	66.7%

Note: Allocated share of net pension liability results for the required 10-year timeframe will be added as available.

SCHEDULE 3
SCHEDULE OF ALLOCATED SHARE OF NET OPEB LIABILITY

MEASUREMENT YEAR ENDED	ALLOCATION PERCENTAGE	ALLOCATED SHARE OF NET OPEB LIABILITY	COVERED PAYROLL	NET OPEB LIABILITY AS A PERCENTAGE OF COVERED PAYROLL	PLAN FIDUCIARY NET POSITION AS A PERCENTAGE OF TOTAL OPEB LIABILITY
6/30/2018	0.035397%	$ 5,197,000	$ 1,438,000	361.4%	2.2%
6/30/2017	0.033748%	6,768,000	1,428,000	473.9%	1.4%
6/30/2016	0.034393%	7,327,000	Not available	Not available	Not available

Note: Allocated share of net OPEB liability results for the required 10-year timeframe will be added as available.

Supplementary Schedules

SCHEDULE 1 – ADMINISTRATIVE EXPENSES

Comparative Two-Year Schedule
Years Ended December 31, 2018 and 2017

	2018	2017[1]
PERSONNEL EXPENSES		
Salaries and wages	$ 1,674,683	$ 1,684,581
Social security contributions	118,424	121,402
Pension expense	484,129	390,827
OPEB expense	108,342	225,096
Insurance expenses	187,548	256,450
Other employee benefits	12,528	5,648
Total personnel expenses	**2,585,654**	**2,684,004**
PROFESSIONAL SERVICES		
IT consultants	1,097,312	482,284
Actuarial	826,380	1,101,212
Audit	136,410	134,030
Legal	104,238	144,478
Miscellaneous professional	93,320	104,514
Data processing	34,655	225,972
Total professional costs	**2,292,315**	**2,192,490**
COMMUNICATION		
Telephone	52,201	52,519
Travel and conferences	32,713	30,796
Postage	20,800	5,098
Printing	7,199	5,827
Advertising	3,276	4,845
Total communication	**116,189**	**99,085**
OTHER SERVICES AND CHARGES		
Contracted EDP services	339,529	130,519
Office space rental	294,660	226,572
Equipment leasing	39,821	30,053
Dues and subscriptions	15,436	7,997
Supplies	5,500	10,558
Maintenance	4,016	602
Bonding and insurance, net	468	531
Total other services and charges	**699,430**	**406,832**
DEPRECIATION	77,013	116,164
Total administrative expenses	**$ 5,770,601**	**$ 5,498,575**

[1] Certain 2017 amounts have been reclassified in conformity with the 2018 presentation.

SCHEDULE 2 – INVESTMENT EXPENSES

Comparative Two-Year Schedule
Years Ended December 31, 2018 and 2017

	2018	2017[1]
Investment management fees	$ 11,997,298	$ 10,748,081
Investment consultants	190,000	190,000
Custodial fees	101,163	92,577
Proxy voting services	17,176	17,171
Total investment expenses	**$ 12,305,637**	**$ 11,047,829**

SCHEDULE 3 – PAYMENTS TO CONSULTANTS

Comparative Two-Year Schedule
Years Ended December 31, 2018 and 2017

FIRM NAME	NATURE OF SERVICE	2018	2017[1]
Dell	IT consultants	$ 805,752	$ -
Cheiron	Actuary	826,380	1,101,212
OST, Inc.	IT consultants	215,172	191,791
Dahab Associates, Inc.	Investment consultant	190,000	190,000
CliftonLarsonAllen, LLP	Auditor	136,410	134,030
Keymark IMR	IT Consultants	48,333	-
CPAS Systems	IT Consultants	15,575	265,335
ISS	Proxy Voting Services	17,176	17,171
Appalachia Technologies	IT Consultants	12,480	-
IMR	Records Management Services	1,899	196,076
Windstream	IT Consultants	-	25,158
Total		**$ 2,269,177**	**$ 2,120,773**

(1) Certain 2017 amounts have been reclassified in conformity with the 2018 presentation.

Investments

Basis of Presentation

The data presented in the Investment Section by the System's independent investment consultant has been prepared by using a time-weighted rate of return methodology based upon fair values. The Investment Section includes only those investments under management of advisors which are under contract with the System. These investments are valued in a manner consistent with information present in the Financial Section with the exception of the recognition of accrued income and pending sales and purchases. The difference noted above represents the difference between the investment balance of $2,362,136,162 presented in the Financial Section and the balance of $2,362,559,831 reported in this section as of December 31, 2018. The difference noted above also results in a difference in the investment loss of $100,914,856 presented in the Financial Section and the investment loss of $102,721,375 reported in this section for the year ended December 31, 2018.

Investments are reported at fair value. Short-term investments are reported at cost, which approximates fair value. Securities traded on a national or international exchange are valued at the last reported sales price at current exchange rates. The fair value of real estate investments is based on independent appraisals every three years. In years for which an appraisal is not performed, real estate investments and investments that do not have an established market value are reported at estimated fair values. Purchases and sales of investments are recorded on a trade-date basis.

Returns for active and passive funds presented throughout the Investment Section are gross of external manager fees.

INVESTMENT RETURN

As of December 31, 2018, the Pennsylvania Municipal Retirement Board's investment portfolio was valued at $2,362,559,831, which was a decrease of $137,792,302 from the December 31, 2017 ending value of $2,500,352,133. For the year ended December 31, 2018, the fund had net withdrawals of $35,070,927 and an investment loss of $102,721,375.

For the five years ended December 31, 2018, the fund had net withdrawals of $152,085,712 and an investment return of $568,637,449. The System's investment portfolio increased from $1,946,008,094 as of December 31, 2013 to $2,362,559,831 as of December 31, 2018.

Since inception in December 1985, the fund had net withdrawals of $324,952,388 and an investment return of $2,525,116,788. The System's investment portfolio increased from $162,395,431 as of December 31, 1985 to $2,362,559,831 as of December 31, 2018. If the fund had earned an annualized compound rate of 5.25% since inception, it would have been worth $543,167,198 or $1,819,392,633 less than the actual value as of December 31, 2018.

Investment Guidelines

INTRODUCTION

The following represents highlights from the Board's investment guidelines. These guidelines, which set forth the Board's expectations, restrictions, and policy decisions, were developed to assist the System's staff and consultants in the daily management of the System's assets.

BACKGROUND

The System is currently experiencing a slight negative cash flow and does expect this trend to gradually increase in the future. The System currently meets routine benefit payments from incoming revenue as opposed to any depletion of invested assets.

PHILOSOPHY

The Board considers itself a conservative fiduciary, placing the greatest emphasis on quality of investments and consistency in return. Despite this conservative posture, the Board still believes that the five-year rate of return on investments should exceed the recognized market indices for the various asset vehicles. The Board established its allocation goals as follows:

Domestic equities (large capitalized firms)	25 percent
Domestic equities (small capitalized firms)	15 percent
International equities (developed markets)	15 percent
International equities (emerging markets)	10 percent
Fixed income	15 percent
Real estate	12.5 percent
Timberland	7.5 percent

OBJECTIVE

The Board's investment objective is to benefit PMRS member municipalities by adding value to their assets. Recognizing that inflation can erode value, the Board's goal is to have the fund earn at least 2% more annually than the average annual inflation rate over a long period of time. While this is the System-wide goal, individual investment managers' performance measures rely on other characteristics that are included in the individual contractual service agreement.

PORTFOLIO CONSTRUCTION

Short-Term Considerations

It is the Board's desire to remain as fully invested as possible. Therefore, any manager in a cash or cash equivalent position must invest in vehicles authorized by the System. The manager must utilize the System's depository relationship with the State Treasurer who, as custodian of the Fund, will invest all cash on a daily basis in a short-term fund. No management fee will be paid by the System for the portion of a manager's average assets in excess of 5 percent remaining in cash equivalents at Treasury after the end of any quarter.

Fixed Income Considerations

The Board seeks to bring income and stability to the overall portfolio through fixed income vehicles. The bond portfolio must be invested in quality vehicles, and it is expected to be diversified from a geographic and industrial standpoint. No single holding of an investment manager other than a U.S. Government bond is to account for more than 5 percent of the fair value of an investment manager's bond portfolio. The System shall not hold as assets more than 10 percent of any one bond issue nor more than 5 percent of the bonds of any one issuing agent. Corporate bonds of any given industry are not to account for more than 25 percent of the fair value of the bond portfolio. When an index fund is utilized to meet the System's commitment to the fixed income allocation, the underlying securities of the index shall not have to comply with the specific requirements of this paragraph.

EQUITY INVESTMENT POLICY

The System's equity portfolio reflects the Board's desire to include growth through market appreciation. The Board requires an equity portfolio with diversification, quality issuance, and underlying value. No single equity holding may account for more than 7.5 percent of the fair value of the System's equity portfolio. Generally, no single sector should account for more than 20 percent of the value of an individual manager's portfolio. No more than 1 percent of the capitalization of any company is to be held by the System. The cumulative holdings of a manager for all of that manager's clients shall account for no more than 7.5 percent of the outstanding voting common stock of a corporation.

REAL ESTATE POLICY

The Board believes that diversification in investment vehicles should enhance the potential return on investments without significantly altering the overall risk of the portfolio. Investment decisions regarding the real estate portfolio shall be guided by the objectives to preserve capital, maximize cash distributions and income, achieve a total return competitive with the other asset classes, and maintain a broad diversification of assets and managers. Real estate vehicles may be both direct equity participation and participation in commingled funds that involve equity participation with consideration given to types of properties and geographic location. The investment process and specific limitations shall be detailed in each real estate manager's contract.

PROHIBITED TRANSACTIONS

The Board prohibits (1) purchasing of commodities, mineral rights, and warrants except those previously authorized; (2) short selling and the purchasing of securities on margin; and (3) selling or buying options or future contracts on either fixed income or equity instruments. Leveraged derivatives of any nature or the use of derivatives to create leverage are strictly prohibited.

EXECUTION AND OPERATION

The System utilizes the State Treasurer as the custodian and the Bank of New York Mellon as the subcustodian.

Investment managers are directed to execute orders on the best net execution/price basis. Transactional costs and the rate of turnover are monitored. Active equity managers are expected to execute trades on the auction market at a rate close to the execution-only cost.

The investment managers may enter into agreements with certain brokerage houses to participate in a recapture program whereby a designated percentage of the System's trades handled by these brokerage firms will be returned as cash to the System and be treated as new income for the benefit of the membership. It is expected that under such an arrangement, the average execution cost of all trades will approximate the execution-only price.

The Board assumes full responsibility for exercising the voting privilege contained in proxy solicitations generated by companies domiciled in the U.S. and has adopted specific guidelines for staff guidance. These guidelines as adopted and hereafter amended are an integral part of the System's investment guidelines. Proxy solicitations by non-U.S. domiciled companies are handled by the investment manager that holds the security of that company in their portfolio.

COMMUNICATIONS

The Board expects an open and constant line of communication between the System's staff and investment managers. Reports required of investment managers to the Board and staff include a timely confirmation of all transactions, a monthly summary of transactions, a quarterly statement of asset values at cost and fair value, any explanation of contemplated major shifts in investment strategy or manager style before implementation, and an explanation of major changes in organization or the personnel associated with the System's account. Active equity managers are required to report on a quarterly basis the average commission price per share traded during the quarter. In addition to the written reports, the investment managers are obligated to make periodic personal appearances before the Board as specifically spelled out in the investment manager's contract.

Investment managers' fees are based on the fair value of the firm's quarterly average balance in the System's portfolio. For the years ended December 31, 2018 and 2017, total investment managers' fees based upon the average monthly net asset values of the System's total investment portfolio were 48 basis points and 45 basis points, respectively.

MONITORING

The System monitors the performance of its investment managers through direct involvement of the Board, the System's staff, and any consultant hired for this purpose by the Board.

Report on Investment Activity

RELATIVE PERFORMANCE

Total Fund

For the year ended December 31, 2018, the gross rate of return for the System's total portfolio was -4.1 percent, which was 0.8 percent more than the shadow index[(1)] return of -4.9 percent and ranked in the 44th percentile of the Investment Metrics (IM) Public Fund universe. For the five years ended December 31, 2018, the gross rate of return for the System's total portfolio was 5.5 percent, which was 0.2 percent more than the shadow index return of 5.3 percent and ranked in the 18th percentile. Since inception, the gross rate of return for the System's total portfolio was 8.5%, compared to the shadow index return of 8.4%.

Large Cap Equity

For the year ended December 31, 2018, the gross rate of return for the large cap equity portfolio was -1.2 percent, which was 3.2 percent more than the S&P 500 Index return of -4.4 percent and ranked in the 18th percentile. For the five years ended December 31, 2018, the gross rate of return for the large cap equity portfolio was 9.2 percent, which was 0.7 percent more than the S&P 500 Index return of 8.5 percent, and ranked in the 25th percentile.

Small Cap Equity

For the year ended December 31, 2018, the gross rate of return for the small cap equity portfolio was -12.7 percent, which was 1.7 percent less than the Russell 2000 Index return of -11.0 percent and ranked in the 64th percentile. For the five years ended December 31, 2018, the gross rate of return for the small cap equity portfolio was 4.2 percent, which was 0.2 percent less than the Russel 2000 Index return of 4.4 percent and ranked in the 70th percentile.

Developed International Equity

For the year ended December 31, 2018, the gross rate of return for the developed international equity portfolio was -14.5 percent, which was 1.1 percent less than the MSCI EAFE Index return of -13.4 percent and ranked in the 46th percentile. For the five years ended December 31, 2018, the gross rate of return for the developed international equity portfolio was 2.1 percent, which was 1.1 percent more than the MSCI EAFE Index return of 1.0 percent and ranked in the 50th percentile.

Emerging Markets Equity

For the year ended December 31, 2018, the gross rate of return for the emerging market equity

(1) The shadow index is a customized index created by the System's investment consultant. It is constructed at the asset class level with corresponding benchmark allocations matching the portfolio.

portfolio was -14.6 percent, which was 0.4 percent less than the MSCI Emerging Markets Index return of -14.2 percent and ranked in the 42nd percentile. For the five years ended December 31, 2018, the gross rate of return for the emerging market equity portfolio was 1.6 percent, which was 0.4 percent less than the MSCI Emerging Markets Index return of 2.0 percent and ranked in the 69th percentile.

Real Estate

For the year ended December 31, 2018, the gross rate of return for the real estate portfolio was 8.3 percent, which was 1.6 percent more than the NCREIF Property Index return of 6.7 percent. For the five years ended December 31, 2018, the gross rate of return for the real estate portfolio was 9.1 percent, which was 0.2 percent less than the NCREIF Property Index return of 9.3 percent.

Fixed Income

For the year ended December 31, 2018, the gross rate of return for the fixed income portfolio was 0.0 percent, compared to the Barclays Aggregate Index return of 0.0 percent and ranked in the 56th percentile. For the five years ended December 31, 2018, the gross rate of return for the fixed income portfolio was 2.5 percent, compared to the Barclays Aggregate Index return of 2.5 percent and ranked in the 81st percentile.

Asset Allocation

The following table shows the allocation of assets as of December 31, 2018.

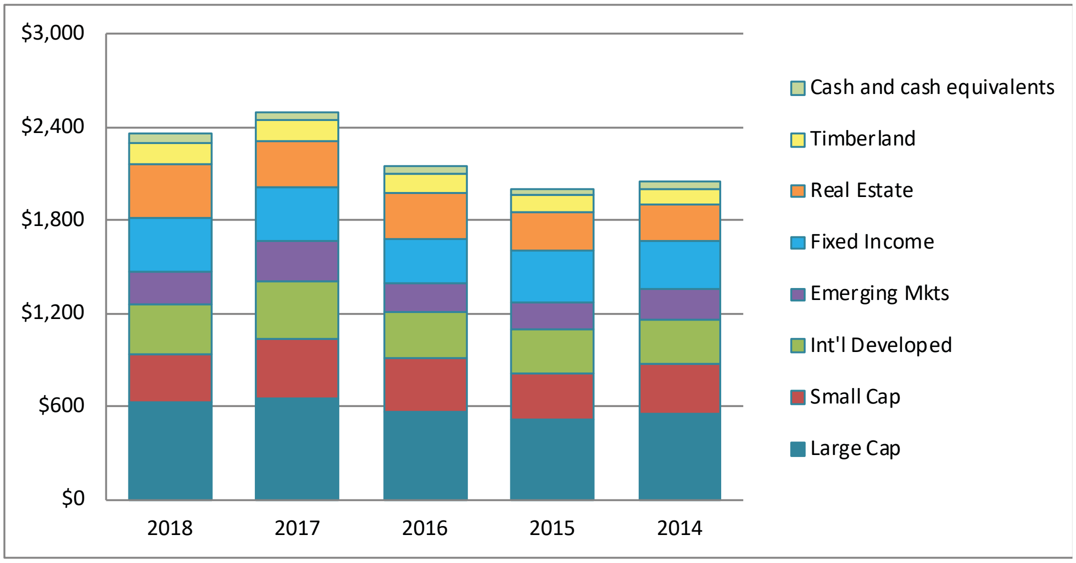
ASSET ALLOCATION
(As of December 31, 2018)

TYPE	PERCENTAGE OF PORTFOLIO	AMOUNT
Large cap equity	26.2%	$ 619,730,329
Small cap equity	13.4%	317,404,294
Total domestic equity	**39.6%**	**937,134,623**
International developed markets	13.4%	317,488,828
International emerging markets	8.8%	206,885,183
Total international equity	**22.2%**	**524,374,011**
Total equities	**61.8%**	**1,461,508,634**
Real estate	**20.7%**	**487,959,557**
Fixed income	**14.7%**	**347,218,505**
Cash and cash equivalents[1]	**2.8%**	**65,873,135**
Total portfolio	**100.0%**	**$ 2,362,559,831**

[1] Cash and cash equivalents include funds held by the Pennsylvania Treasury Department.

The following graph shows the System's five year trend of investments at fair value as of December 31, 2018.

PORTFOLIO DISTRIBUTION — FIVE YEAR TREND
(Fair Value – Amounts in Millions)



Portfolio Rates of Return[1]

(As of December 31, 2018)

The following table compares the gross rates of return for the System's total investment portfolio as of December 31, 2018 with standard indexes for one year, three year, five year, ten year, and since inception in December 1985. The calculations of yields were prepared using a time weighted rate of return methodology based upon fair values. The System's returns have been competitive with other professionally-managed funds.

PERFORMANCE SUMMARY

	1 YEAR	3 YEAR	5 YEAR	10 YEAR	SINCE INCEPTION DECEMBER 1985
Total Portfolio	-4.1%	7.3%	5.5%	8.9%	8.5%
Public Fund Rank[2]	(44)	(8)	(18)	(31)	-
Shadow Index[3]	-4.9%	6.7%	5.3%	8.9%	8.4%
Large Cap Equity	-1.2%	10.4%	9.2%	13.6%	10.5%
Large Cap Rank[4]	(18)	(19)	(25)	(36)	-
S&P 500	-4.4%	9.3%	8.5%	13.1%	10.3%
Small Cap Equities	-12.7%	7.2%	4.2%	12.5%	-
Small Cap Rank[4]	(64)	(59)	(70)	(75)	-
Russell 2000	-11.0%	7.3%	4.4%	12.0%	9.0%
International Equity	-14.5%	5.2%	2.1%	8.4%	-
International Equity Rank[5]	(46)	(47)	(50)	(54)	-
MSCI EAFE	-13.4%	3.4%	1.0%	6.8%	7.4%
Emerging Markets Equity	-14.6%	9.4%	1.6%	7.8%	-
Emerging Markets Rank[6]	(42)	(37)	(69)	(85)	-
MSCI Emerging Markets	-14.2%	9.7%	2.0%	8.4%	-
Real Estate	8.3%	7.9%	9.1%	5.4%	7.0%
NCREIF	6.7%	7.2%	9.3%	7.5%	7.8%
Fixed Income	0.0%	2.1%	2.5%	3.5%	6.4%
Core Fixed Income Rank[7]	(56)	(82)	(81)	(92)	-
Barclays Aggregate	0.0%	2.1%	2.5%	3.5%	6.3%

(1) Rate of return is a mathematical measure of the rate of change in the asset value of a fund. All rates of return are based on the fair value of the assets. Rates of return reflect both realized and unrealized capital gains and losses as well as total earnings from interest and dividends received. Rates of return are gross of fees.
(2) Ranked against balanced funds.
(3) The shadow index is a customized index created by the System's investment consultant. It is constructed at the asset class level with corresponding benchmark allocations matching the portfolio.
(4) Ranked against equity oriented funds.
(5) Ranked against international developed markets oriented funds.
(6) Ranked against international emerging markets oriented funds. PMRS entered emerging markets equities in late 2008.
(7) Ranked against fixed income oriented funds.

Asset Allocation

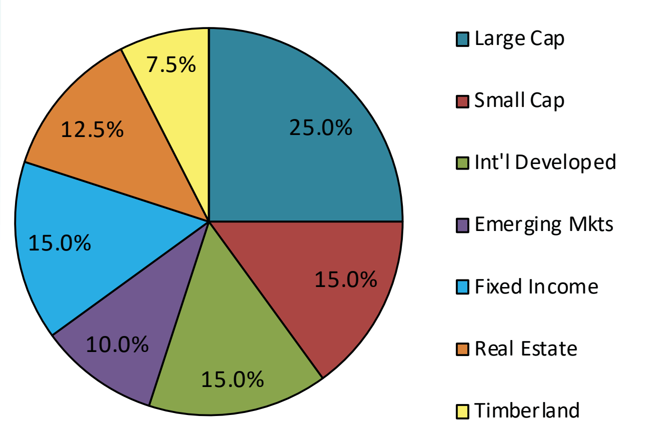
The Board established its allocation goals as follows:

Domestic equities (large capitalized firms)	25 percent
Domestic equities (small capitalized firms)	15 percent
International equities (developed markets)	15 percent
International equities (emerging markets)	10 percent
Fixed income	15 percent
Real estate	12.5 percent
Timberland	7.5 percent

The System's asset allocation as of December 31, 2018, was $937.1 million committed to domestic equities ($619.7 million to large cap and $317.4 small cap), $524.4 million to international equities ($317.5 million to international developed and $206.9 million to emerging markets), $347.2 million to bonds, $349.6 million to real estate, $138.3 million to timber, and $65.9 million to cash equivalents. The percentage distribution is illustrated below.

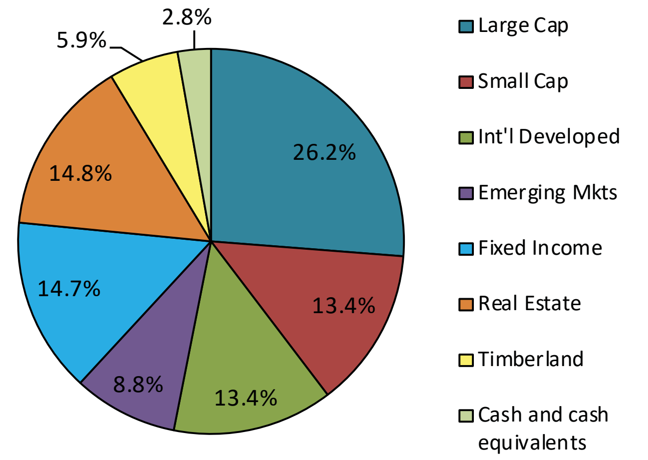
ASSET ALLOCATION TARGETS

As of December 31, 2018



ACTUAL ASSET ALLOCATION

As of December 31, 2018



ASSET ALLOCATION

As of December 31, 2018

SECTOR	TARGET PERCENTAGE ALLOCATION	TARGET DOLLAR ALLOCATION	CURRENT PERCENTAGE ALLOCATION	CURRENT DOLLAR ALLOCATION	DOLLAR VARIANCE	PERCENTAGE VARIANCE
Large cap	25%	$ 590,639,957	26.2%	$ 619,730,329	$ 29,090,372	1.2%
Small cap	15%	354,383,975	13.4%	317,404,294	(36,979,681)	-1.6%
Total domestic equity	**40%**	**945,023,932**	**39.6%**	**937,134,623**	**(7,889,309)**	**-0.4%**
International developed	15%	354,383,975	13.4%	317,488,828	(36,895,147)	-1.6%
Emerging markets	10%	236,255,983	8.8%	206,885,183	(29,370,800)	-1.2%
Total international equity	**25%**	**590,639,958**	**22.2%**	**524,374,011**	**(66,265,947)**	**-2.8%**
Total equity	**65%**	**1,535,663,890**	**61.8%**	**1,461,508,634**	**(74,155,256)**	**-3.2%**
Fixed income	**15%**	**354,383,975**	**14.7%**	**347,218,505**	**(7,165,470)**	**-0.3%**
Real estate	**12.5%**	**295,319,979**	**14.8%**	**349,613,073**	**54,293,094**	**2.3%**
Timber	**7.5%**	**177,191,987**	**5.9%**	**138,346,484**	**(38,845,503)**	**-1.6%**
Cash and cash equivalents	**0%**	**–**	**2.8%**	**65,873,135**	**65,873,135**	**2.8%**
TOTAL	**100%**	**$ 2,362,559,831**	**100%**	**$ 2,362,559,831**		

Investment Summary

SUMMARY OF INVESTMENT EXPENSES

Comparative Two-Year Schedule
Years ended December 31, 2018 and 2017

FIRM NAME	2018	2017
Large Cap Domestic Managers		
Eagle Capital Management, LLC	$ 1,136,752	$ 989,948
Polen Capital Management	988,411	827,905
Federated Investors, Inc.	756,878	631,490
LSV Asset Management	677,216	624,597
Total Large Cap Domestic Manager Fees	**3,559,257**	**3,073,940**
Small Cap Domestic Managers		
Emerald Advisers, Inc.	657,523	560,702
Smith Graham & Co.	508,822	501,060
LSV Asset Management	430,217	410,199
AMI Asset Management(1)	318,210	93,052
Copeland Asset Management(1)	201,355	60,398
Total Small Cap Domestic Manager Fees	**2,116,127**	**1,625,411**
Passive Manager		
State Street Global Advisors	257,418	273,621
Total Passive Manager Fees	**257,418**	**273,621**
International Managers		
HGK Asset Management, Inc.	813,805	754,154
Hardman Johnston Global Advisors	664,245	618,374
Jarislowsky, Fraser Limited	376,799	363,938
Total International Manager Fees	**1,854,849**	**1,736,466**
Real Estate Managers		
Nuveen Real Estate	1,806,440	1,759,860
Prudential Financial, Inc.	1,319,538	1,133,177
Forest Investment Associates	1,083,669	1,145,606
Total Real Estate Manager Fees	**4,209,647**	**4,038,643**
Total Investment Management Fees	**11,997,298**	**10,748,081**
Investment Consultant - Dahab Associates, Inc.	190,000	190,000
Custodial Fees – BNY Mellon	101,163	92,577
Proxy Voting services - ISS	17,176	17,171
Total Investment Expenses	**$ 12,305,637**	**$ 11,047,829**

(1) Investment manager hired 3rd quarter 2017.

TEN LARGEST COMMON STOCK HOLDINGS

As of December 31, 2018 (Fair Value)

STOCK	SHARES	FAIR VALUE	PERCENTAGE OF PORTFOLIO
Microsoft Corp.	339,625	$ 34,495,711	1.47%
Alphabet Inc., Class C	25,386	26,289,995	1.12%
VISA Inc.	140,930	18,594,304	0.79%
Facebook Inc.	139,974	18,349,192	0.78%
Oracle Corp.	363,873	16,428,866	0.70%
O'Reilly Automotive Inc.	39,923	13,746,687	0.59%
Automatic Data Processing Inc.	102,806	13,479,923	0.58%
Adobe Inc.	58,368	13,205,176	0.56%
Zoetis Inc.	145,217	12,421,862	0.53%
Nike Inc.	158,467	11,748,743	0.50%

A complete list of portfolio holdings can be obtained from the system.

PORTFOLIO SUMMARY

As of December 31, 2018

TYPE OF INVESTMENT	COST VALUE	FAIR VALUE	PERCENTAGE OF TOTAL FAIR VALUE
Corporate and government bonds			
U.S. Government bonds	$ 199,110,472	$ 240,483,537	10%
Corporate bonds	88,372,162	106,734,968	5%
Total	**287,482,634**	**347,218,505**	**15%**
Common stock			
Domestic	801,343,636	936,426,340	40%
International	437,938,804	523,296,628	22%
Total	**1,239,282,440**	**1,459,722,968**	**62%**
Other investments			
Real estate	381,579,748	486,313,268	20%
Short-term and other investments	68,881,421	68,881,421	3%
Total	**450,461,169**	**555,194,689**	**23%**
Grand total	**$ 1,977,226,243**	**$ 2,362,136,162**	**100%**

SUMMARY OF COMMISSIONS PAID TO BROKERS

Year Ended December 31, 2018

BROKER NAME	COMMISSIONS PAID
Baird, Robert W. & Co. Inc., Milwaukee	$ 7,608
Banque Paribas, Paris	716
Barclays Capital Inc./LE, New Jersey	1,944
Barclays Capital, London	481
Bernstein, Sanford C. & Co., New York	20,322
Bloomberg Tradebook LLC, New York	13,533
BMO Capital Markets Corp., New York	228
BNP Paribas Prime Brokerage, Inc., New York	337
BNP Paribas SEC Svcs. SA, Singapore	6,445
BNP Paribas SEC Svcs., London	1,730
BNY Convergex, New York	1,143
Boenning & Scattergood, W Conshohocken	511
Brockhouse and Cooper, Montreal	97
BTIG, LLC, New York	943
Buckingham Research, New York	2,458
Carnegie ASA, Oslo	5,710
Citigroup Gbl. Mkts. Inc., New York	7,388
Citigroup Gbl. Mkts./Salomon, New York	123
Citigroup Global Markets Ltd., London	5,226
Citigroup Gbobal Markets, Inc., New York	3,090
CLSA Americas, New York	7,441
Convergex Execution Solution, New York	3,384
Cowen and Co. LLC, New York	8,490
Cowen and Company, LLC, Jersey City	1,956
Craig Hallum, New York	4,510
Credit Lyonnais Secs (Asia), Hong Kong	3,639
Credit Lyonnais Secs., Singapore	6,605
Credit Suisse, New York	24,597
D Carnegie AB, Stockholm	760
Daiwa Sec. SMBC Europe Ltd., London	4,478
Daiwa Secs. Amer. Inc., New York	2,555
Davidson (D A) & Co. Inc., New York	153
Den Danske Bank, Copenhagen	633
Den Norske Creditbank, Oslo	142
Deutsche Bk. AG, London	812
Deutsche Bk. Intl. Eq., London	3,226
Deutsche Bk. Secs. Inc., NY	589
Direct Trading, United States	395
Dougherty & Company LLC, Minneapolis	370
Exane Inc., New York	85
Exane, Paris	6,866
Fidelity Capital Markets, New York	2,696
Fidelity Clearing Canada ULC, Toronto	111
Fidentis Equities Sv. Sa., Madrid	1,970
Fokus Bank, Trondheim	266
Fox River Execution Tech., LLC, Jersey City	693
Goldman Sachs & Co., NY	25,478
Goldman Sachs Intl., London	2,843
Goldman Sachs Intl., NY	49
Guggenheim Capital Markets LLC, New York	696
ICBC Fincl. Svcs., New York	814
Instinet Clearing Ser. Inc., New York	10,830
Instinet Corp., New York	2,552
Instinet Europe Limited, London	14,606
Instinet Pacific LTD, Hong Kong	2,009
Instinet, Singapore	61
Investment Tech. Group Inc., New York	3,148
Investment Technology Group LTD, Dublin	113
ISI Group Inc., New York	4,990
J.P. Morgan Secs. LTD, London	9,069
J.P. Morgan Securities Inc., New York	22,311
J.P. Morgan Clearing Corp., New York	5,792
Janney Montgomery Scott, Philadelphia	262
Jefferies & Co. Inc., New York	16,181
Jefferies Hong Kong Limited, Hong Kong	1,210
JMP Securities, San Francisco	1,001
Jonestrading Instl. Svcs. LLC, New York	3,604
JPMorgan Securities Inc., New York	1,831
Keefe Bruyette & Woods Inc., New York	282
Keybanc Capital Markets Inc., New York	6,077
King (CL) & Associates, Albany	58
Leerink Swann and Company, New York	3,822
Liberum Capital Limited, London	829
Liquidnet Inc., New York	10,563
Longbow Securities LLC, New York	2,293
Loop Capital Markets, Jersey City	1,567
Luminex Trading and Analytics, Boston	90
Macquarie Capital (USA) Inc., New York	252
Maxim Group, Jersey City	339
Merrill Lynch Intl. London Equities	18,845
Merrill Lynch Pierce Fenner Smith Inc., NY	24,719
Merrill Lynch Professional Clrg., Purchas.	213
Mirabaud Securities LLP, London	1,312
Mirae Asset Sec. USA, New York	1,068
Mizuho Securities USA Inc., New York	1,960
Morgan Stanley & Co. Inc., NY	16,352
National Finl. Svcs. Corp., New York	1,967
Needham and Co. LLC, New York	4,156
Nordea Bk. Plc., Helsinki	1,310
Northland Securities Inc., New York	1,864
Oppenheimer & Co. Inc., New York	2,101
Pareto Fonds As., Oslo	1,428
Pershing LLC, Jersey City	7,385
Piper Jaffray & Co., Jersey City	5,235
Piper Jaffray & Co., Minneapolis	697
Raymond James & Assoc. Inc., St. Petersburg	11,262

BROKER NAME	COMMISSIONS PAID
RBC Capital Markets LLC, New York	10,782
RBC Dominion Secs. Inc., Toronto	1,253
Redburn Partners LLP, London	4,819
Royal Bank of Canada Europe LTD, London	1,354
Sandler O'Neill and Partner LP, New York	2,003
Sanford C. Bernstein & Co. Inc., London	7,639
Seaport Group Securities, LLC, New York	3,276
Sidoti & Co. LLC, New York	604
Southwest Securities Inc., New York	1,052
Stephens Inc., Little Rock	1,280
Stifel Nicolaus	13,780
Sturdivant and Co. Inc., New York	5,406
Suntrust Capital Markets Inc., New York	2,666
Suntrust Robinson Humphrey Inc., Atlanta	16
Telsey Advisory Group LLC, Dallas	2,662
Thompson Davis & Co., Jersey City	135
Tullett Prebon Fin. Serv., LLC, New York	219
UBS Equities, London	596
UBS Securities Canada, Toronto	252
UBS Securities LLC, Stamford	11,110
UBS Warburg Asia LTD, Hong Kong	252
UBS Warburg, London	19,288
Union Bank Switzerland Secs., London	526
Wedbush Morgan Secs. Inc., Los Angeles	3,044
Weeden & Co., New York	2,995
Wells Fargo Securities LLC, Charlotte	240
Wells Fargo Securities LLC, New York	9,560
Westminster Res. Assc./Broadcort, New York	6,909
Wiley Bros-Aintree Capital, Jersey City	327
William Blair & Co., Chicago	1,204
Wolf Trahan Securities, New York	768
Total Brokerage Commissions Paid	**$ 540,968**

Actuarial

Actuary's Certification Letter

CHEIRON Classic Values, Innovative Advice

Via Electronic Mail

June 11, 2019

Pennsylvania Municipal Retirement Board of the
Pennsylvania Municipal Retirement System
c/o Stephen W. Vaughn, Secretary
P.O. Box 1165
Harrisburg, Pennsylvania 17108-1165

Dear Board Members:

At your request, we confirm that the following tables from the annual Actuarial Valuation Report of the Pennsylvania Municipal Retirement System (the System) as of January 1, 2018 will be published in the end-of-year Comprehensive Annual Financial Report (CAFR). These tables were determined based on the results of the valuation as outlined in our actuarial valuation report. The figures and data disclosed in these tables, as presented in the actuarial valuation report, were provided by Cheiron for 2013 – 2018.

1. Required Supplemental Information
2. Solvency Test which shows the portion of the Actuarial Liability covered by Assets
3. Funded Status of Actuarial Liabilities
4. Schedule of Retirees and Beneficiaries
5. Schedule of Total Membership by Status
6. Schedule of Total Membership and Salary
7. Schedule of Active Member Valuation Data
8. Actuarial Methods and Significant Assumptions

As provided in the Funded Status of Actuarial Liabilities table, the System, as of January 1, 2018, is 100.2% funded on an actuarial asset value basis, which does not include the excess interest distribution. The funded ratio on a market value basis is 103.8%.

In addition, while Cheiron did not explicitly provide the exhibit outlining the required employer contributions provided in the CAFR, it is our understanding that this schedule was determined based on information Cheiron provides in the annual valuation reports. This includes the Normal Cost percentage and the employers' anticipated payroll for each participating plan. It also includes the amortization payment calculated by the actuary or the over-funding credit required under Pennsylvania State Law, Act 205 of 1984. The composite figure is assembled by the agency's staff and has not been reviewed by Cheiron.

The Pennsylvania Municipal Retirement System is defined as an agent multiple-employer retirement system for participating municipalities and counties under Governmental Accounting Standards Board Statements No. 67 and 68. Assets and liabilities are separately accounted for and reported to the Department of the Auditor General of the Commonwealth of Pennsylvania.

The table excerpts provided for the CAFR reflect aggregate valuation results for the System and provide statistics on employer contribution levels for the defined benefit portion of the municipal plans participating in the system as of the valuation date. No new assumption or method changes were effective as of this date.

The assumptions used in preparing the individual municipal valuation have been determined and adjusted based on a formal Experience Study dated July 2015 with recommendations presented to the Board for consideration and adoption. The actuarial methods were adopted effective January 1, 1985 unless otherwise indicated. The funding method applied provides for an annual normal cost as a level percent of pay and amortization of unfunded and/or surplus over a fixed period in accordance with provisions of Act 205.

The January 1, 2018 actuarial valuation report contains required disclosures for the entire System and a description of the funding methods and assumptions as required by State law and covered under Act 205 which also falls within the methods as defined as acceptable under the Governmental Accounting Standards Board Statement No. 67. Additional details required under the Governmental Accounting Standards Board Statement No. 67 have also been provided to the System.

In preparing the 2018 results, we relied on information (some oral and some written) supplied by the System. This information includes, but is not limited to, the 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 actuarial valuation report provides comments on the sources and reliability of both the data and the actuarial assumptions on which our findings are based. Those comments are the basis for our certification of the results. Future valuation results may differ significantly from the current valuation results provided 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.

These tables were prepared in accordance with generally recognized and accepted actuarial principles and practices and our understanding of the Code of Professional Conduct and applicable Actuarial Standards of Practice set out by the Actuarial Standards Board as well as applicable laws and regulations. Furthermore, as credentialed actuaries, we meet the Qualification Standards of 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.

Should you have any questions, please do not hesitate to contact us.

Sincerely,
Cheiron

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

Karen Zangara

Karen Zangara, FSA, EA, MAAA
Principal Consulting Actuary

Anthony Bucci, FCA, EA, MAAA
Consulting Actuary

Note to Required Supplementary Information

The information presented in the supplementary schedules was determined as part of the actuarial valuation at the date indicated. Additional information as of the latest actuarial valuation follows:

Valuation date	January 1, 2018 - County and cash balance plans January 1, 2017 - Plans that are neither county nor cash balance plans
Measurement date	January 1, 2018
Actuarial cost method	Entry age normal
Amortization method	Level dollar for Plan Bases and an average for Aggregate Gain/Loss, 10% of surplus is credited against aggregate cost where applicable
Actuarial assumptions:	
Investment rate of return (*)	5.25%
Projected salary increases (*)	2.8% - 7.05%
(*) Includes inflation at	2.8%
Cost-of-living adjustments	ad hoc

The actuarial assumptions used have been reviewed by the actuary and adopted by the System's Board based on the most recent review of the System's experience study for the period January 1, 2009 through December 31, 2013 completed in 2015 and the updated investment rate of return assumption of 5.25% as of January 1, 2017 based on the Board's review of this assumption during 2016.

The rate of employer contributions to the System is composed of the normal cost, amortization of the unfunded actuarial liability and an allowance for administrative expenses. The normal cost is a level percent of payroll cost which, along with member contributions, will pay for projected benefits at retirement for the average plan participant. The actuarial liability is that portion of the present value of projected benefits that will not be paid by future employer normal costs or member contributions. The difference between this liability and the funds accumulated as of the same date is the unfunded actuarial liability (or surplus if funds exceed the liabilities). The allowance for administrative expenses is based upon the System's actual administrative expenses.

SOLVENCY TEST

Aggregate Accrued Liabilities for

VALUATION DATE JANUARY 1,	ACTIVE MEMBER CONTRIBUTIONS (1)[1]	RETIREES, BENEFICIARIES & VESTED TERMINATIONS (2)	ACTIVE MEMBER EMPLOYER FINANCED CONTRIBUTIONS (3)	ACTUARIAL VALUE OF ASSETS[2]	PORTION OF ACCRUED LIABILITIES COVERED BY REPORTED ASSETS (1)	(2)	(3)
2018	$ 460,805,568	$ 1,175,715,217	$ 764,391,135	$ 2,404,498,404	100%	100%	100%
2017	451,613,188	1,114,835,472	754,316,724	2,270,278,691	100%	100%	93%
2016	435,834,498	999,866,637	715,640,331	2,153,625,821	100%	100%	100%
2015	427,736,008	938,380,470	701,148,372	2,081,439,591	100%	100%	102%
2014	416,472,872	881,502,593	707,246,642	1,972,273,674	100%	100%	95%
2013	418,163,830	812,688,102	672,720,129	1,886,703,664	100%	100%	97%

(1) This includes the sum of the active member employee contribution balances, the member separate annuity account balances, the municipal for member separate annuity account balances, and the excess interest allocations.

(2) The Actuarial Value Assets (AVA) were determined based upon the methodology outlined in PMRS Policy Statement 05-2. The 1/1/2018 AVA was based upon the reserves published by PMRS in the CAFR for the years ended December 31, 2017 and 2016 and the adjustment for the $45.5 million transfer from the Undistributed Earnings Reserve Account to the Retired Members' Reserve Account as approved by the Board in July 2018. The 1/1/2018 AVA does not reflect the $25.85 million in excess interest awarded by the Board in 2018, which will be incorporated in the 1/1/2019 valuation once the type and amount of distribution to each plan has been determined.

FUNDED STATUS OF ACTUARIAL LIABILITIES

VALUATION DATE JANUARY 1,	ACTUARIAL VALUE OF ASSETS (A)[1]	ACTUARIAL LIABILITY (AL) ENTRY AGE (B)	UNFUNDED AL (SURPLUS) (B-A)	FUNDED RATIO (A/B)	DISCOUNT RATE
2018	$ 2,404,498,404	$ 2,400,911,920	$ (3,586,484)	100.2%	5.25%
2017	2,270,278,691	2,320,765,384	50,486,693	97.8%	5.25%
2016	2,153,625,821	2,151,341,466	(2,284,355)	100.1%	5.50%
2015	2,081,439,591	2,067,264,850	(14,174,741)	100.7%	5.50%
2014	1,972,273,674	2,005,222,107	32,948,433	98.4%	5.50%
2013	1,886,703,664	1,903,572,061	16,868,397	99.1%	5.50%

(1) The Actuarial Value Assets (AVA) were determined based upon the methodology outlined in PMRS Policy Statement 05-2. The 1/1/2018 AVA was based upon the reserves published by PMRS in the CAFR for the years ended December 31, 2017 and 2016 and the adjustment for the $45.5 million transfer from the Undistributed Earnings Reserve Account to the Retired Members' Reserve Account as approved by the Board in July 2018. The 1/1/2018 AVA does not reflect the $25.85 million in excess interest awarded by the Board in 2018, which will be incorporated in the 1/1/2019 valuation once the type and amount of distribution to each plan has been determined.

The actuarial assumptions as of January 1, 2018, are shown in the assumptions and methods section. The above information was derived from the following membership data and number of pension plans, as provided by the System, regarding:

VALUATION OF DEFINED BENEFIT LIABILITIES			
VALUATION DATE	COMPLETE VALUATION	ROLL-FORWARD	CASH BALANCE PLANS
January 1, 2018	4	726	314
January 1, 2017	718	4	311
January 1, 2016	4	718	294
January 1, 2015	717	4	286
January 1, 2014	4	712	268
January 1, 2013	710	4	251
January 1, 2012	4	705	240
January 1, 2011	702	5	229

SCHEDULE OF RETIREES AND BENEFICIARIES

Added to and Removed from Rolls in Last Six Years

VALUATION DATE JANUARY 1,	ADDED TO ROLL	AVERAGE ANNUAL ANNUITIES ADDED	DELETED FROM ROLL	AVERAGE ANNUAL ANNUITIES REMOVED	NUMBER ON ROLL	ANNUAL ANNUITIES	PERCENTAGE INCREASE IN ANNUITIES	AVERAGE ANNUAL ANNUITIES	PERCENTAGE INCREASE IN AVERAGE ANNUAL ANNUITIES
2018	383	$ 18,912	176	$ 9,325	5,906	$ 94,073,168	6.5%	$ 15,928	2.7%
2017	447	18,744	108	8,174	5,699	88,360,677	9.5%	15,505	2.9%
2016	339	18,888	87	18,915	5,360	80,729,221	6.3%	15,061	1.3%
2015	392	17,908	227	10,494	5,108	75,936,364	6.6%	14,866	3.1%
2014	431	20,472	168	16,043	4,943	71,257,797	9.5%	14,416	3.7%
2013	391	16,440	105	8,288	4,680	65,046,544	9.5%	13,899	2.8%

SCHEDULE OF TOTAL MEMBERSHIP BY STATUS

Six Year Trend

	ACTIVE MEMBERS						
VALUATION DATE JANUARY 1,	DEFINED BENEFIT PLANS	CASH BALANCE PLANS	RETIREES	BENEFICIARIES	DEFERRED PENSIONS	INACTIVE MEMBERS(1)	TOTAL
2018	7,868	1,387	5,307	599	1,090	35	16,286
2017	7,728	1,303	5,099	600	1,150	28	15,908
2016	7,698	1,274	4,784	576	1,173	7	15,512
2015	7,580	1,214	4,566	542	1,027	8	14,937
2014	7,676	1,185	4,423	520	1,044	14	14,862
2013	7,599	1,131	4,160	520	1,098	51	14,559

(1) Inactive members represent inactive non-vested participants with employee contribution account balances.

SCHEDULE OF TOTAL MEMBERSHIP AND SALARY

Last Six Years

	AS OF JANUARY 1(1)					
	2018	2017	2016	2015	2014	2013
a. Retirees currently receiving benefits	5,307	5,099	4,784	4,566	4,423	4,160
b. Beneficiaries currently receiving benefits	599	600	576	542	520	520
c. Terminated vested employees entitled to future benefits from defined benefit plans	797	834	872	779	753	800
d. Terminated non-vested employees entitled to contribution refunds from defined benefit plans	35	28	7	8	14	51
e. Active employees in defined benefit plans	7,868	7,728	7,698	7,580	7,676	7,599
i. Aggregate salary(2)	$434,554,380	$422,621,214	$394,133,120	$384,270,155	$389,410,214	$376,296,674
ii. Vested(3)	4,553	4,573	4,676	4,726	4,881	4,885
iii. Non-vested	3,315	3,156	3,022	2,854	2,795	2,715
f. Participants in cash balance plans	1,680	1,619	1,575	1,462	1,476	1,429
i. Aggregate salary	$60,013,152	$53,998,354	$51,642,049	$47,537,851	$45,193,710	$44,490,671
ii. Active	1,387	1,303	1,274	1,214	1,185	1,131
iii. Inactive	293	316	301	248	291	298

(1) Includes defined benefit non-county plans, defined benefit county plans, and cash balance plans.
(2) Annualized salary paid during the prior plan year for defined benefit plan participants and actual salary for active cash balance participants.
(3) Count of vested participants estimated based on service as of the valuation date.

SCHEDULE OF ACTIVE MEMBER VALUATION DATA

Last Six Years

DEFINED BENEFIT PLANS

VALUATION DATE 1/1	NUMBER OF ACTIVE MEMBERS	PERCENTAGE CHANGE IN MEMBERSHIP	NUMBER OF PARTICIPATING EMPLOYERS	PERCENTAGE INCREASE IN NUMBER OF PARTICIPATING EMPLOYERS	TOTAL ANNUAL PAYROLL	PERCENTAGE INCREASE (DECREASE) IN PAYROLL	AVERAGE ANNUAL SALARY	PERCENTAGE INCREASE (DECREASE) IN AVERAGE ANNUAL SALARY
2018	7,868	1.8%	730	1.1%	$ 434,554,380	2.8%	$ 55,231	1.0%
2017	7,728	0.4%	722	0.0%	422,621,214	7.2%	54,687	6.8%
2016	7,698	1.6%	722	0.1%	394,133,120	2.6%	51,199	1.0%
2015	7,580	(1.3%)	721	0.7%	384,270,155	(1.3%)	50,695	(0.1%)
2014	7,676	1.0%	716	0.3%	389,410,214	3.5%	50,731	2.5%
2013	7,599	(3.0%)	714	0.7%	376,296,674	2.6%	49,519	5.8%

CASH BALANCE PLANS

VALUATION DATE 1/1	NUMBER OF ACTIVE MEMBERS	PERCENTAGE CHANGE IN MEMBERSHIP	NUMBER OF PARTICIPATING EMPLOYERS	PERCENTAGE INCREASE IN NUMBER OF PARTICIPATING EMPLOYERS	TOTAL ANNUAL PAYROLL	PERCENTAGE INCREASE (DECREASE) IN PAYROLL	AVERAGE ANNUAL SALARY	PERCENTAGE INCREASE (DECREASE) IN AVERAGE ANNUAL SALARY
2018	1,387	6.4%	314	1.0%	$ 60,013,152	11.1%	$ 43,268	4.4%
2017	1,303	2.3%	311	5.8%	53,998,354	4.6%	41,442	2.2%
2016	1,274	4.9%	294	2.8%	51,642,049	8.6%	40,535	3.5%
2015	1,214	2.4%	286	6.7%	47,537,851	5.2%	39,158	2.7%
2014	1,185	4.8%	268	6.8%	45,193,710	1.6%	38,138	(3.1%)
2013	1,131	(2.3%)	251	4.6%	44,490,671	8.1%	39,337	10.7%

Actuarial Assumptions and Methods

The PMRS actuarial assumptions approved by the Board effective January 1, 2017 and used in this valuation are as follows.

A. Healthy Life Mortality Rates:

Based on the information provided by PMRS and review of the actual mortality experience over a five-year period, these mortality tables provide projected mortality improvements in the future.

Rates of Pre-Retirement Mortalility

Males: RP-2000 Non-Annuitant Male table projected 15 years with Scale AA.

Females: RP-2000 Non-Annuitant Female table projected 15 years with Scale AA, setback five years.

a) Killed in service mortality rates:

(i) 15 percent of mortality is assumed to be service-related for municipal plans, and

(ii) 50 percent of mortality is assumed to be service-related for uniform plans.

Rates of Post-Retirement Mortalility

Males: RP-2000 Annuitant Male table projected 5 years with Scale AA.

Females: RP-2000 Annuitant Female table projected 10 years with Scale AA.

B. Disabled Life Mortality Rates:

Males and females: RP-2000 Combined with 10 year set forward.

C. Termination Rates Before Retirement:

	CURRENT VALUATION RATE			
	NUMBER OF ACTIVE MEMBERS IN PLAN			
	MUNICIPAL PARTICIPANTS (NON-UNIFORM)		UNIFORMED PARTICIPANTS	
YEARS OF SERVICE	<25	25+	<25	25+
LESS THAN 1	15.0%	18.0%	12.0%	13.0%
1 BUT LESS THAN 2	15.0%	18.0%	12.0%	10.0%
2 BUT LESS THAN 3	11.0%	14.0%	12.0%	7.0%
3 BUT LESS THAN 4	8.0%	12.0%	9.0%	7.0%
4 BUT LESS THAN 5	7.0%	9.0%	7.0%	6.0%
5 BUT LESS THAN 6	6.0%	9.0%	5.0%	5.0%
6 BUT LESS THAN 7	5.5%	8.0%	5.0%	4.0%
7 BUT LESS THAN 8	5.5%	7.5%	5.0%	3.0%
8 BUT LESS THAN 9	5.5%	6.5%	4.5%	3.0%
9 BUT LESS THAN 10	4.0%	5.0%	4.0%	3.0%
10 OR MORE	2.5%	4.0%	3.0%	3.0%

D. Disability Incidence Rates:

Municipal—40 percent of 1964 OASDI (Social Security) Experience for Males with adjustments (sample rates shown at right).

Uniformed plans—60 percent of 1964 OASDI (Social Security) Experience for Males with adjustments (sample rates shown at right).

MUNICIPAL RATES

AGE	CURRENT VALUATION RATE
25	0.014%
35	0.029%
45	0.064%
55	0.134%
65	0.658%

UNIFORMED RATES

AGE	CURRENT VALUATION RATE
25	0.031%
35	0.058%
45	0.136%
55	0.335%
65	1.123%

a) Type of disability:

(i) 15 percent of disablements are assumed to be service-related for municipal plans, and

(ii) 50 percent of disablements are assumed to be service-related for uniform plans.

E. Workers Compensation:

Service-related disability benefits payable from municipal plans are offset by 25 percent of final average salary.

F. Salary Scale:

Three-year select and ultimate rates include 2.8 percent inflation and age-related scale for merit/seniority based on sample rates as shown at right.

SAMPLE SALARY RATES

AGE	TOTAL RATE[1] (INCLUDING INFLATION)
25	7.05%
30	5.44%
35	4.55%
40	4.26%
45	3.97%
50	3.72%
55	3.44%
60	3.28%
65	2.80%

G. Rates of Retirement:

The age at which unreduced benefits are available. No early retirement is assumed. Specific assumptions regarding retirement age are:

a) Municipal Members:

Members are assumed to retire over a range of ages as shown to the right.

b) Uniformed Members:

Retirement rates are reflected in the chart to the right.

Inactive vested members are assumed to retire when first eligible for unreduced benefits.

H. Marital Status and Spouse's Age [3]:

80 percent of members will be married at time of retirement and females are three years younger than their spouses.

I. Social Security Projections [3]:

a) The Social Security Taxable Wage Base will increase by 3.3 percent compounded annually;

b) The Consumer Price Index will increase by 2.8 percent compounded annually;

c) The Average Total Wages of All Workers will increase by 3.3 percent compounded annually.

J. Post-Retirement Cost of Living Increases: [3]

2.8 percent per year, subject to plan limitations.

RETIREMENT RATES FOR MUNICIPAL MEMBERS

AGE	CURRENT RATE OF NORMAL RETIREMENT[2]
under 45	2%
45	8%
46	10%
47–50	15%
51–54	17%
55	22%
56–59	14%
60–64	18%
65	25%
66–74	20%
75	100%

RETIREMENT RATES FOR UNIFORMED MEMBERS

AGE	RATE
under 49	0%
50	30%
51–54	10%
55	25%
56–58	20%
59–60	15%
61	20%
62	30%
63–64	20%
65	30%
66+	100%

K. Investment Return Assumption:

5.25 percent compounded annually (net of investment and certain administrative expenses) for funding purposes.

L. Administrative Expenses:

System-wide Actuarial Value of Assets: The expense assumption is based on the previous year's actual expenses increased by 5 percent.

Municipalities: The expense assumption is based on the expected expenses for the current year, as reported on the Act 205 forms.

Rationale for Assumptions: An experience study is completed every four years for the System. The assumptions outlined above were reviewed and adopted by the Board based on the most recent experience study for the period covering January 1, 2009 through December 31, 2013 and the Board's review of the regular interest rate in 2017.

(1) Add 2 percent for each of the first three years of service and additional 6% increase in year prior to normal retirement age.
(2) Rates indicated are adjusted by adding 5 percent (and 10 percent for ages 60–62 under current rate assumptions) for the year in which the member is first eligible for normal retirement.
(3) If applicable.

ACTUARIAL METHODS

Contribution requirements are individually determined for each participating municipality, on an actuarial basis as described below, at least biennially. The frequency of actuarial valuation is determined by applicable Commonwealth statute (Act 205 of 1984 and Act 293 of 1972). The following actuarial methods were adopted effective January 1, 1985, unless indicated otherwise.

ACTUARIAL VALUE OF ASSETS[1]

Sum of all audited reserve accounts as of the valuation date, including Member, Municipal, Retired, Disability, and DROP Reserves, and a one-year administration expense reserve, plus any additional adjustments as made during the year by the Board of Trustees without reflecting any excess interest. The Board awarded $25.85 million in excess interest in 2018, which will be incorporated in the January 1, 2019 valuation once the type and amount of distribution to each plan has been determined.

The actuarial value can never be less than 90 percent of fair market value.

Each year, municipalities receive an excess interest allocation derived as a portion of new surplus created during the prior year based on the current financial standing of the System. "Surplus" refers to the excess of fair market value over the actuarial value of assets. Once the preliminary actuarial value of assets has been determined, a formula is used to allocate the new surplus. Generally, depending on the relative size of surplus to fair market value, between 10 percent and 90 percent of the new surplus will become excess interest.

The Actuarial Value of Assets are set equal to reserves under the System based on the unique legislative structure of PMRS, which are increased annually at a rate agreed on by the Board named "Regular Interest" as defined under the Pennsylvania Municipal Retirement Law. Therefore, these assets do not necessarily relate directly or indirectly with the current fair market value of assets as required under Actuarial Standard of Practice Statement No. 44 which states under section 3.3:

"… the actuary should select an asset valuation method that is designed to produce actuarial values of assets that bear a reasonable relationship to the corresponding market values. The qualities of such an asset valuation method include the following:

a. The asset valuation method is likely to produce actuarial values of assets that are sometimes greater than and sometimes less than the corresponding fair market values.

b. The asset valuation method is likely to produce actuarial values of assets that, in the actuary's professional judgment, satisfy both of the following:

1. The asset values fall within a reasonable range around the corresponding market values. For example, there might be a corridor centered at market value outside of which the actuarial value of assets may not fall, in order to assure that the difference from market value is not greater than the actuary deems reasonable.

2. Any differences between the actuarial value of assets and the market value are recognized within a reasonable period of time. For example, the actuary might use a method where the actuarial value of assets converges toward market value at a pace that the actuary deems reasonable, if the investment return assumption is realized in future periods.

In lieu of satisfying both (1) and (2) above, an asset valuation method could satisfy section 3.3(b) if, in the actuary's professional judgment, the asset valuation method either (i) produces values within a sufficiently narrow range around market value or (ii) recognizes differences from market value in a sufficiently short period."

The administrative rules adopted by the PMRS Board in conjunction with Pennsylvania Municipal Retirement Law, which are not subject to comply with Actuarial Standards of Practice (ASOP), when defining the Actuarial Value of Assets, does not necessarily meet the requirement of ASOP 44 Selection and Use of Asset Valuation Methods for Pension Valuations. The Actuarial Value of Assets provided within this report follow the Pennsylvania Municipal Retirement System Law and the PMRS Policy Statement.

ACTUARIAL COST METHOD

Entry Age Normal Actuarial Cost Method.

The Entry Age Normal Actuarial Cost 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. Entry age is defined as attained age less credited service. 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

[1] The Actuarial Value Assets (AVA) were determined based upon the methodology outlined in PMRS Policy Statement 05-2. The 1/1/2018 AVA was based upon the reserves published by PMRS in the CAFR for the years ended December 31, 2017 and 2016 and the adjustment for the $45.5 million transfer from the Undistributed Earnings Reserve Account to the Retired Members' Reserve Account as approved by the Board in July 2018.

by the value, also at entry age, of each member's expected future salary producing a normal cost rate as a percent of salary. The normal cost rate is multiplied by current salary to determine each member's normal cost. If a plan provides for a Separate Member Annuity through required member contributions, this contribution rate is then added to the total normal cost rate to determine the final total normal cost rate. Within the MMO calculation, the normal cost is reduced by the member contribution to produce the employer normal cost to be paid.

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.

FUNDING OF THE UNFUNDED ACTUARIAL LIABILITY

Actuarial gains (or losses), including the effect of contributions greater or lesser than the previously determined actuarial level, are reflected by decreases (or increases) in the unfunded actuarial liability. Under Act 205 of 1984, and updates by Act 44, the unfunded actuarial liability is amortized as a level dollar amount over the lesser of:

a) (i.) 30 years, with respect to the initial liability as of 1/1/85 (or first valuation);
   (ii.) 20 years, with respect to actuarial gains and losses;
   (iii.) 15 years, with respect to changes due to actuarial assumptions;
   (iv.) 20 years, with respect to changes due to plan provisions (if state mandated);
   (v.) 10 years, with respect to changes in benefits for currently active members and 1 year for retired members (if local benefit changes); or
b) the average assumed working lifetime of active employees as of the date the liability was established. If there are no active employees, the unfunded liability is amortized one year after the liability was established.

With the two exceptions which follow, the funding method is applied individually with respect to each municipality:

1) Retired and disabled members are paid monthly benefits from the System's Retired Reserve account, which at the time of retirement receives a transfer from the municipal and member accounts in an amount actuarially determined to be sufficient to pay all future benefits for the member (and, if applicable, a surviving beneficiary). Thus, post-retirement experience is pooled with the System.
2) A disabled member's pension is met in part from the amount that can be provided by the value of that portion of the member's accrued benefit attributable to municipal contributions, with the balance of the pension being provided by the appropriate transfer from the Disability Reserve Account. The amount of annual transfer from the accumulated municipal contributions to the Disability Reserve Account is determined on the one year term cost basis, i.e., the expected cost of disabilities in the coming year.

If a plan is in a surplus position, then 10% of the surplus is credited against the aggregate cost of the plan.

METHOD TO ESTIMATE ROLL FORWARD LIABILITIES

The defined benefit pension plans for county plans and cash balance plans are valued explicitly every even calendar (cash balance plans are valued every year). However, the liabilities for those plans that are neither county nor cash balance are explicitly valued every odd calendar year. For the even calendar years, the liabilities for those plans that are neither county nor cash balance are estimated by rolling forward the prior year's liabilities. With the implementation of GASB 68, which required an individual report to be issued for each pension plan, the liabilities for those plans that are neither county nor cash balance (i.e. municipal or authority defined benefit plans) were rolled forward based on the actual benefit payments. These liabilities reflect any material changes to the liabilities that may have occurred since the prior actuarial valuation. These rolled forward liabilities have been reflected in this report. The liabilities for all participants in pay status for these municipal pension plans are explicitly valued every year. The roll forward active and deferred vested liabilities were proportionately adjusted based on the prior year liabilities net of in pay status liabilities.

All other liabilities for the county and cash balance plans were explicitly valued as of January 1, 2018 based on the data, plan provisions, methods and assumptions.

CHANGES IN ACTUARIAL ASSUMPTIONS AND METHODS

There were no changes in actuarial assumptions and methods.

Statistical

Introduction

The objectives of the statistical section are to provide additional historical perspective, context, and relevant details to assist readers in using information in the financial statements, notes to the financial statements, and required supplementary information to understand and assess the System's overall financial condition. GASB Statement No. 44, "Economic Condition Reporting: The Statistical Section" establishes standardized reporting requirements relative to the supplementary information provided in this section.

The graphs and schedules beginning on page 67 provide information relative to financial trends. The graphs and schedules provide detailed information about the System's net position and how it has changed over time.

The graphs and schedules beginning on page 71 provide information relative to membership. The graphs and schedules reflect changes in active and retired members of the System. The information is intended to provide contextual information about the System's membership and framework for the ratio of funding versus obligations. The schedules beginning on page 73 provide information relative to pension payments and pensions awarded. The information is intended to provide contextual information about payment trends of the System.

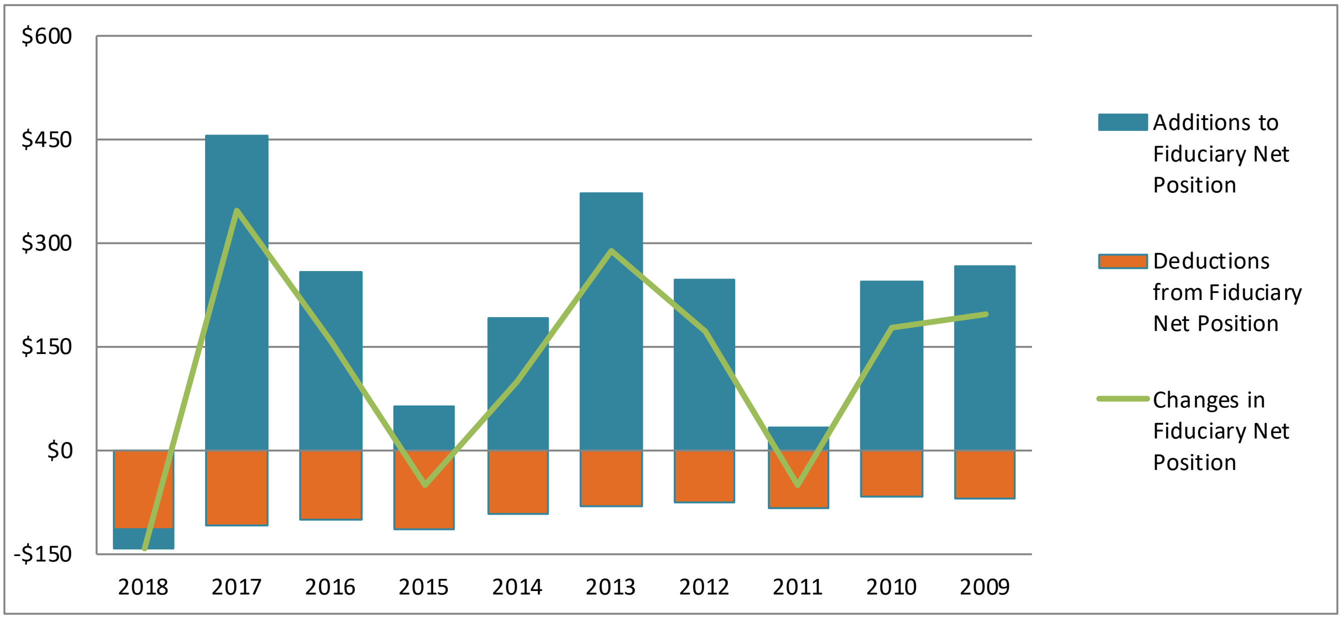
NUMBER OF MEMBERS PER PLAN

(Plans with 100 or more members)

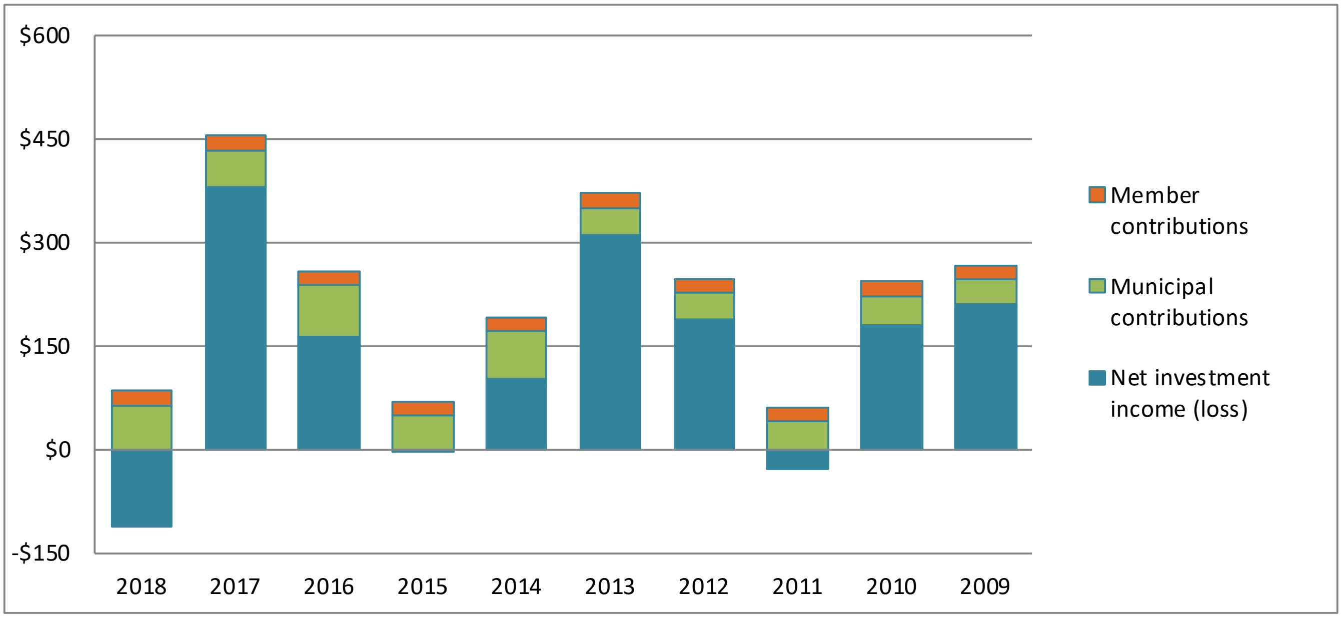
As of December 31, 2018

PLAN	PLAN MEMBERS	PERCENTAGE OF TOTAL MEMBERSHIP
Allentown City	908	5.33%
Adams County	902	5.30%
Bethlehem City	672	3.95%
Harrisburg City	467	2.74%
Jefferson County	299	1.76%
Harrisburg City Fire	216	1.27%
Easton City	207	1.22%
Lehigh County Authority	200	1.17%
Monroeville Municipality	197	1.16%
Wyoming Valley Sanitary Authority	184	1.08%
Bucks County Water & Sewer Authority	174	1.02%
Capital Region Water	140	0.82%
Tredyffrin Township	134	0.79%
Upper Moreland Township	118	0.69%
Hermitage City	116	0.68%
Derry Township	100	0.59%

RESULTS OF OPERATIONS - 10 YEAR TREND
(Amounts in Millions)

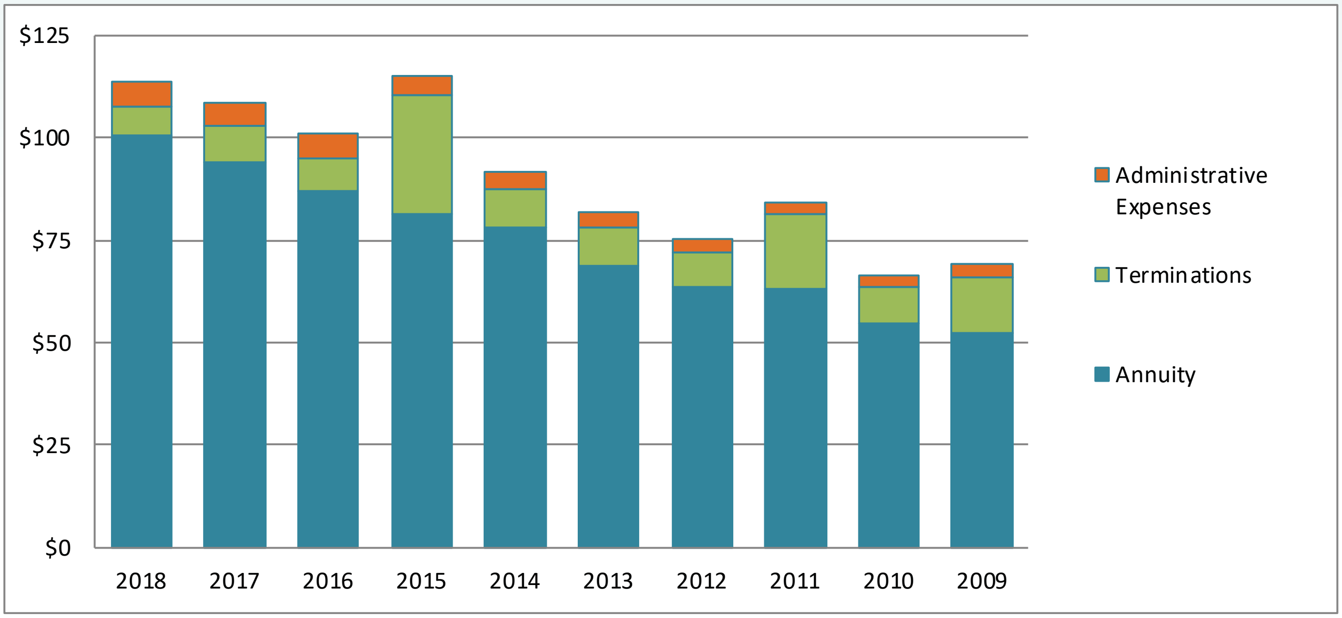


ADDITIONS TO FIDUCIARY NET POSITION - 10 YEAR TREND
(Amounts in Millions)



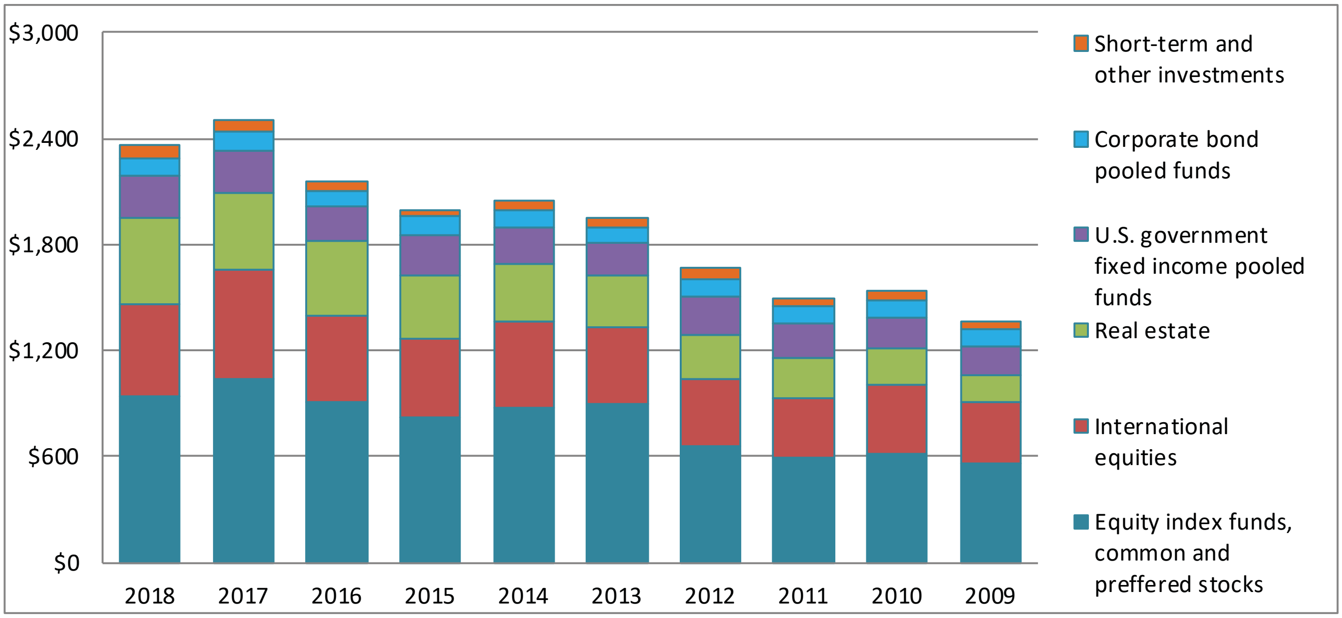
DEDUCTIONS FROM FIDUCIARY NET POSITION - 10 YEAR TREND

(Amounts in Millions)



INVESTMENTS - 10 YEAR TREND

(Fair Value - Amounts in Millions)



CHANGES IN FIDUCIARY NET POSITION

10 Year Trend

YEAR	CONTRIBUTIONS	NET INVESTMENT INCOME (LOSS) AND MISCELLANEOUS INCOME	ANNUITY BENEFITS AND TERMINATIONS AND TRANSFERS TO OTHER PLAN ADMINISTRATORS	ADMINISTRATIVE EXPENSES	CHANGE IN FIDUCIARY NET POSITION
2018	$ 84,554,720	$ (113,220,485)	$ 107,803,587	$ 5,770,601	$ (142,239,953)
2017	75,412,160	379,933,759	103,077,938	5,498,575	346,769,406
2016	93,999,086	163,735,825	95,013,418	5,834,448	156,887,045
2015	68,740,888	(4,943,521)	110,303,677	4,983,399	(51,489,709)
2014	89,762,417	100,453,558	87,436,751	4,411,462	98,367,762
2013	61,092,399	310,197,575	78,245,253	3,723,590	289,321,131
2012	59,253,955	187,755,253	71,827,710	3,424,363	171,757,135
2011	61,265,501	(29,086,613)	81,155,883	3,142,004	(52,118,999)
2010	61,930,391	180,338,425	63,383,838	3,183,253	175,701,725
2009	54,933,975	210,272,809	66,048,632	3,203,478	195,954,674

ADDITIONS TO FIDUCIARY NET POSITION

10 Year Trend

YEAR	MEMBER CONTRIBUTIONS	MUNICIPAL CONTRIBUTIONS AND TRANSFERS FROM OTHER PLAN ADMINISTRATORS(1)	MUNICIPAL ASSESSMENTS(2)	NET INVESTMENT INCOME (LOSS) AND MISCELLANEOUS INCOME	ADDITIONS TO FIDUCIARY NET POSITION, NET OF INVESMENT LOSSES
2018	$ 23,008,066	$ 61,288,746(3)	$ 257,908	$ (113,220,485)	$ (28,665,765)
2017	21,717,564	53,446,315	248,281	379,933,759	455,345,919
2016	20,776,539	72,995,245(4)	227,302	163,735,825	257,734,911
2015	19,472,225	49,062,549	206,114	(4,943,521)	63,797,367
2014	18,441,437	71,157,740(5)	163,240	100,453,558	190,215,975
2013	22,416,432	38,493,407	182,560	310,197,575	371,289,974
2012	20,981,612	37,974,023	298,320	187,755,253	247,009,208
2011	20,732,344	40,231,586	301,571	(29,086,613)	32,178,888
2010	20,684,591	40,949,360	296,440	180,338,425	242,268,816
2009	19,331,869	35,309,446	292,660	210,272,809	265,206,784

(1) Contributions were made in accordance with actuarially determined contribution requirements.
(2) Municipal assessments are receipts but not assets of the plans.
(3) Municipal contributions for 2018 include additional contributions towards unfunded liability of $8.6 million.
(4) Municipal contributions for 2016 include transfers from other plan administrators of $21.4 million.
(5) Municipal contributions for 2014 include a one-time payment of $27.4 million for one municipality towards its unfunded liability.

DEDUCTIONS FROM FIDUCIARY NET POSITION

10 Year Trend

YEAR	BENEFITS AND REFUNDS ANNUITY	REFUNDS	ADMINISTRATIVE EXPENSES	DEDUCTIONS FROM FIDUCIARY NET POSITION
2018	$ 100,465,963	$ 7,337,624	$ 5,770,601	$ 113,574,188
2017	94,172,167	8,905,771	5,498,575	108,576,513
2016	87,046,730	7,966,688	5,834,448	100,847,866
2015	81,299,398	29,004,279	4,983,399	115,287,076
2014	78,046,330	9,390,421	4,411,462	91,848,213
2013	68,901,058	9,344,195	3,723,590	81,968,843
2012	63,390,100	8,437,610	3,424,363	75,252,073
2011	63,105,165	18,050,718	3,142,004	84,297,887
2010	54,771,528	8,612,310	3,183,253	66,567,091
2009	52,267,003	13,781,629	3,203,478	69,252,110

SCHEDULE OF BENEFIT DEDUCTIONS FROM FIDUCIARY NET POSITION BY TYPE

10 Year Trend

ANNUITY BENEFITS BY TYPE								
YEAR	NORMAL	EARLY	DISABILITY	SURVIVOR	DEATH	DROP[1]	TRANSFER AND OTHER	TOTAL ANNUITY
2018	$ 82,214,203	$ 7,545,194	$ 1,498,518	$ 5,728,724	$ 2,456,344	$ 1,022,980	$ -	$ 100,465,963
2017	76,325,433	7,925,396	1,534,891	5,014,321	2,733,583	638,543	-	94,172,167
2016	70,441,634	7,998,536	983,325	4,477,493	2,742,076	403,666	-	87,046,730
2015	64,508,631	8,698,618	1,036,807	3,900,315	2,614,938	460,751	79,338	81,299,398
2014	58,291,738	8,769,947	1,362,544	5,569,629	3,234,667	146,215	671,590	78,046,330
2013	52,063,381	8,156,170	1,722,313	5,243,882	1,637,485	68,795	9,032	68,901,058
2012	47,951,194	7,545,724	1,347,255	4,848,070	1,678,836	-	19,021	63,390,100
2011	44,166,997	6,161,604	1,257,354	4,497,860	2,241,312	-	4,780,038	63,105,165
2010	38,721,068	4,263,362	1,392,815	4,376,019	2,653,312	-	3,364,952	54,771,528
2009	36,648,826	3,780,903	2,462,766	4,284,030	3,523,786	-	1,566,692	52,267,003

[1] First DROP participant to terminate was on January 1, 2013.

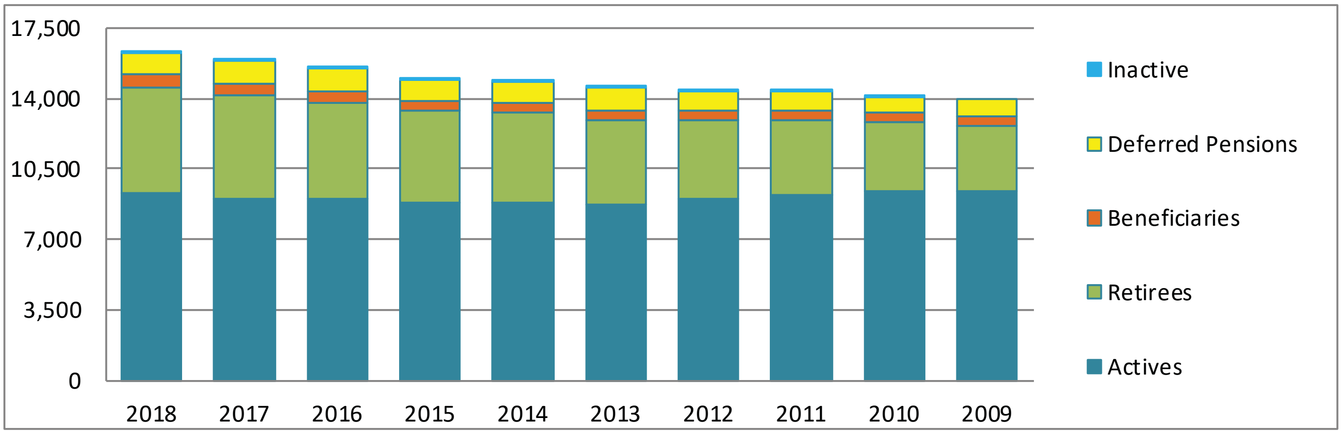
SCHEDULE OF REFUND DEDUCTIONS FROM FIDUCIARY NET POSITION BY TYPE

10 Year Trend

REFUNDS BY TYPE			
YEAR	TERMINATIONS	LUMP SUM	TOTAL REFUNDS
2018	$ 2,869,673	$ 4,467,951	$ 7,337,624
2017	2,424,733	6,481,038	8,905,771
2016	2,757,092	5,209,596	7,966,688
2015	2,838,347	26,165,932	29,004,279
2014	4,788,017	4,602,404	9,390,421
2013	2,449,964	6,894,231	9,344,195
2012	3,908,772	4,528,838	8,437,610
2011	12,421,382	5,629,336	18,050,718
2010	5,657,499	2,954,811	8,612,310
2009	11,189,048	2,592,581	13,781,629

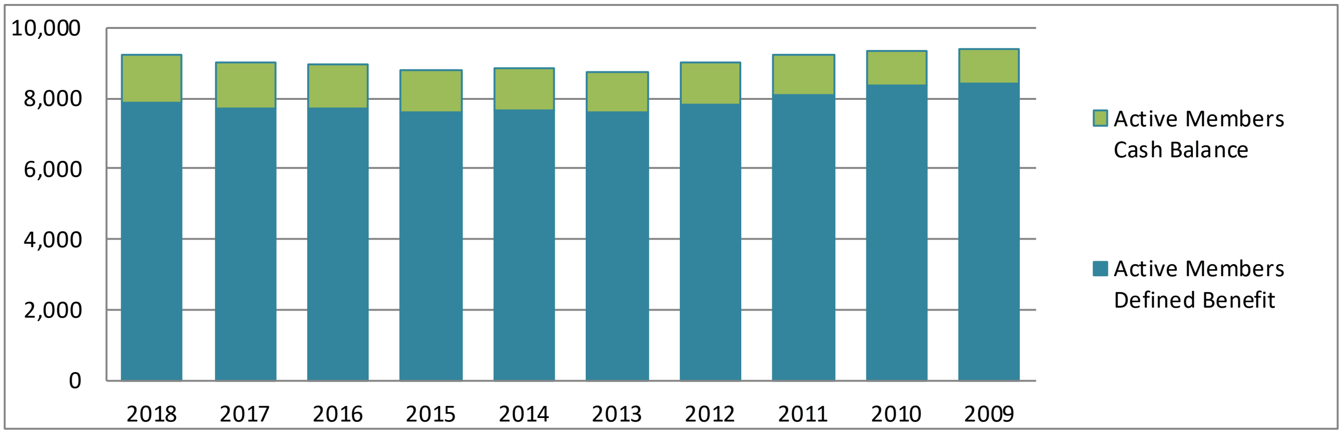
TOTAL MEMBERSHIP - 10 YEAR TREND

(Valuation Date 1/1)



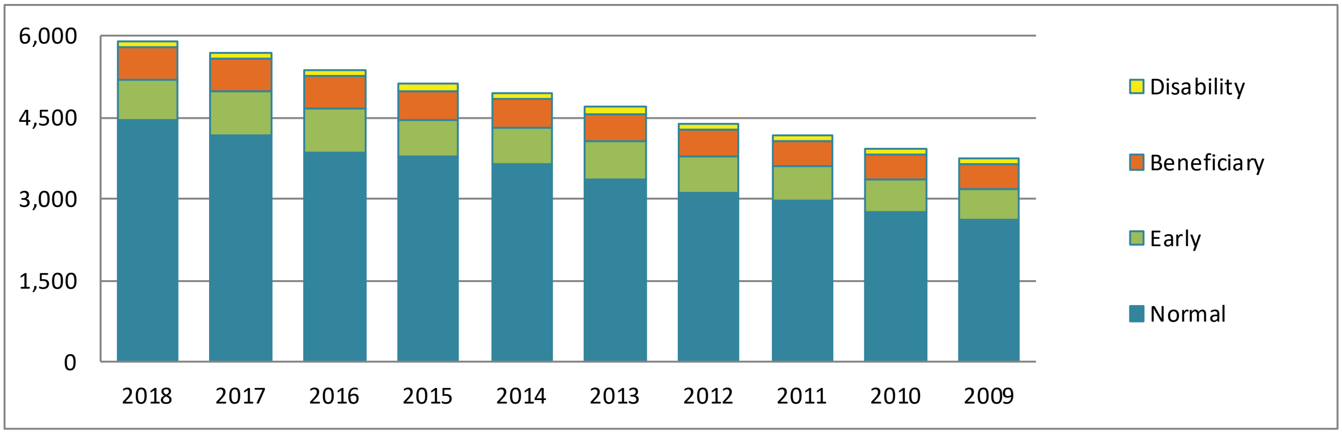
ACTIVE MEMBERS - 10 YEAR TREND

(Valuation Date 1/1)



RETIRED MEMBERS - 10 YEAR TREND

(Valuation Date 1/1)



DISTRIBUTION OF ACTIVE MEMBERS

Counts by Age/Service as of January 1, 2018

COUNTS BY AGE/SERVICE											
AGE	1 YEAR OR LESS	1 TO 2	2 TO 3	3 TO 5	5 TO 10	10 TO 15	15 TO 20	20 TO 25	25 TO 30	30 & UP	TOTAL
Under 20	9	0	0	2	0	0	0	0	0	0	11
20 – 24	122	71	38	27	3	1	0	0	0	0	262
25 – 29	142	141	111	125	80	5	0	0	0	0	604
30 – 34	116	105	94	128	202	89	5	0	0	0	739
35 – 39	102	80	81	119	195	191	83	1	0	0	852
40 – 44	75	60	81	96	184	188	167	49	1	0	901
45 – 49	87	88	75	107	210	207	233	150	78	5	1,240
50 – 54	81	83	70	132	204	240	235	176	174	77	1,472
55 – 59	61	69	60	114	188	238	226	168	169	237	1,530
60 – 64	35	40	30	79	150	181	181	143	123	215	1,177
65 & up	10	23	6	33	70	72	59	49	58	87	467
Total	840	760	646	962	1,486	1,412	1,189	736	603	621	9,255

DISTRIBUTION OF ACTIVE MEMBERS

Average Salary by Age/Service as of January 1, 2018

AVERAGE SALARY BY AGE/SERVICE											
AGE	1 YEAR OR LESS	1 TO 2	2 TO 3	3 TO 5	5 TO 10	10 TO 15	15 TO 20	20 TO 25	25 TO 30	30 & UP	TOTAL
Under 20	$ 28,560	$ -	$ -	$ 65,623	$ -	$ -	$ -	$ -	$ -	$ -	$ 35,298
20 – 24	35,728	38,955	39,434	47,282	61,354	54,561	-	-	-	-	38,696
25 – 29	34,295	40,739	46,199	52,881	51,341	51,537	-	-	-	-	44,234
30 – 34	42,912	44,527	50,246	51,839	55,870	59,306	66,293	-	-	-	51,295
35 – 39	36,841	46,203	44,122	53,210	55,628	62,963	63,885	78,613	-	-	53,538
40 – 44	37,560	48,522	45,269	49,716	53,483	62,957	66,565	64,757	63,456	-	55,713
45 – 49	36,404	45,005	46,482	48,799	53,161	57,926	62,064	67,179	70,343	67,203	55,928
50 – 54	43,036	45,144	47,613	51,333	51,132	54,327	56,970	63,018	69,072	67,328	56,041
55 – 59	38,169	49,420	48,347	50,210	48,915	53,674	55,595	59,368	62,394	64,192	55,314
60 – 64	34,681	49,466	51,515	54,786	48,962	48,493	54,735	54,977	58,398	60,943	53,732
65 & up	31,831	44,885	48,910	49,475	46,009	46,911	50,083	54,774	53,053	60,908	51,156
Total	$ 37,562	$ 44,633	$ 46,670	$ 51,393	$ 52,235	$ 56,240	$ 58,894	$ 61,059	$ 63,637	$ 63,020	$ 53,438

PENSIONS IN PAYMENT STATUS ON JANUARY 1, 2018

By Type and Monthly Amount

		TYPE OF PENSION				
MONTHLY AMOUNT	TOTAL	NORMAL	INVOLUNTARY EARLY	VOLUNTARY EARLY	SERVICE DISABILITY	NON-SERVICE DISABILITY
Total	5,906	5,045	256	499	34	72
Under $100	275	243	22	8	1	1
$100 - $199	338	283	40	14	1	0
200 - 299	319	253	39	27	0	0
300 - 399	319	261	28	28	1	1
400 - 499	318	268	21	25	2	2
500 - 599	325	270	15	31	1	8
600 - 699	266	217	15	30	2	2
700 - 799	259	205	15	35	0	4
800 - 899	257	209	11	25	1	11
900 - 999	237	187	8	27	5	10
1,000 - 1,199	484	396	16	56	4	12
1,200 - 1,399	369	302	4	53	4	6
1,400 - 1,599	321	274	5	30	6	6
1,600 - 1,799	247	218	6	22	0	1
1,800 - 1,999	231	200	5	23	1	2
2,000 - 2,199	202	181	2	16	1	2
2,200 - 2,399	184	170	2	11	1	0
2,400 - 2,599	152	140	0	10	1	1
2,600 - 2,799	122	112	1	6	1	2
2,800 - 2,999	105	103	0	1	0	1
3,000 - 3,499	235	222	1	11	1	0
3,500 - 3,999	147	141	0	6	0	0
4,000 and over	194	190	0	4	0	0

PENSIONS AWARDED BY TYPE AND AMOUNT

10 Year Trend

	TOTAL		NORMAL		VOLUNTARY EARLY		INVOLUNTARY EARLY		DISABILITY	
VALUATION DATE 1/1	COUNT	AVERAGE MONTHLY AMOUNT	COUNT	AVERAGE MONTHLY AMOUNT	COUNT	AVERAGE MONTHLY AMOUNT	COUNT	AVERAGE MONTHLY AMOUNT	COUNT[1]	AVERAGE MONTHLY AMOUNT
2018	383	1,576	342	1,616	29	1,350	8	822	4(1)	1,311
2017	447	1,562	397	1,600	28	1,428	11	627	11(3)	1,485
2016	339	1,574	309	1,593	22	1,569	4	562	4(2)	1,113
2015	392	1,492	341	1,524	29	1,575	14	825	8(2)	1,022
2014	431	1,706	364	1,800	34	1,280	17	905	16(2)	1,319
2013	390	1,370	341	1,421	22	1,614	20	520	7(2)	709
2012	438	1,367	352	1,496	40	1,180	37	459	9(3)	888
2011	396	1,552	341	1,632	37	1,250	13	364	5(0)	1,407
2010	296	1,336	249	1,412	26	1,300	17	339	4(0)	1,067
2009	271	1,157	223	1,150	36	1,259	7	843	5(3)	1,162

(1) Number of service-related disability pensions are shown in parentheses.

SCHEDULE OF TOTAL MEMBERSHIP

10 Year Trend

VALUATION DATE 1/1	ACTIVE MEMBERS DEFINED BENEFIT PLANS	ACTIVE MEMBERS CASH BALANCE PLANS	RETIREES	BENEFICIARIES	DEFERRED PENSIONS[1]	INACTIVE MEMBERS[2]	TOTAL
2018	7,868	1,387	5,307	599	1,090	35	16,286
2017	7,728	1,303	5,099	600	1,150	28	15,908
2016	7,698	1,274	4,784	576	1,173	7	15,512
2015	7,580	1,214	4,566	542	1,027	8	14,937
2014	7,676	1,185	4,423	520	1,044	14	14,862
2013	7,599	1,131	4,160	520	1,098	51	14,559
2012	7,836	1,158	3,899	495	952	21	14,361
2011	8,091	1,119	3,707	477	945	42	14,381
2010	8,357	994	3,449	460	834	23	14,117
2009	8,411	978	3,289	461	847	0	13,986

(1) Inactive participants with rights to deferred pension (vested)
(2) Inactive participants with rights to return of contributions (non-vested)

SCHEDULE OF ACTIVE MEMBER VALUATION DATA

10 Year Trend

DEFINED BENEFIT PLANS								
VALUATION DATE 1/1	NUMBER OF ACTIVE MEMBERS	PERCENTAGE CHANGE IN MEMBERSHIP	NUMBER OF PARTICIPATING EMPLOYERS	PERCENTAGE INCREASE IN NUMBER OF PARTICIPATING EMPLOYERS	TOTAL ANNUAL PAYROLL	PERCENTAGE INCREASE IN PAYROLL	AVERAGE ANNUAL SALARY	PERCENTAGE INCREASE IN AVERAGE ANNUAL SALARY
2018	7,868	1.8%	730	1.1%	$434,554,380	2.8%	$55,231	1.0%
2017	7,728	0.4%	722	0.0%	422,621,214	7.2%	54,687	6.8%
2016	7,698	1.6%	722	0.1%	394,133,120	2.6%	51,199	1.0%
2015	7,580	(1.3%)	721	0.7%	384,270,155	(1.3%)	50,695	(0.1%)
2014	7,676	1.0%	716	0.3%	389,410,214	3.5%	50,731	2.5%
2013	7,599	(3.0%)	714	0.7%	376,296,674	2.6%	49,519	5.8%
2012	7,836	(3.2%)	709	0.3%	366,882,467	(4.4%)	46,820	1.3%
2011	8,091	(3.2%)	707	1.4%	383,802,844	1.5%	47,436	4.9 %
2010	8,357	(0.6%)	697	0.1%	377,960,930	1.5%	45,227	2.2%
2009	8,411	0.3%	696	0.6%	372,370,037	2.0%	44,272	1.7%

CASH BALANCE PLANS								
VALUATION DATE 1/1	NUMBER OF ACTIVE MEMBERS	PERCENTAGE CHANGE IN MEMBERSHIP	NUMBER OF PARTICIPATING EMPLOYERS	PERCENTAGE INCREASE IN NUMBER OF PARTICIPATING EMPLOYERS	TOTAL ANNUAL PAYROLL	PERCENTAGE INCREASE IN PAYROLL	AVERAGE ANNUAL SALARY	PERCENTAGE INCREASE IN AVERAGE ANNUAL SALARY
2018	1,387	6.4%	314	1.0%	$60,013,152	11.1%	$43,268	4.4%
2017	1,303	2.3%	311	5.8%	53,998,354	4.6%	41,442	2.2%
2016	1,274	4.9%	294	2.8%	51,642,049	8.6%	40,535	3.5%
2015	1,214	2.4%	286	6.7%	47,537,851	5.2%	39,158	2.7%
2014	1,185	4.8%	268	6.8%	45,193,710	1.6%	38,138	(3.1%)
2013	1,131	(2.3%)	251	4.6%	44,490,671	8.1%	39,337	10.7%
2012	1,158	3.5%	240	4.8%	41,143,383	(1.3%)	35,530	(4.6%)
2011	1,119	12.6%	229	13.4%	41,683,065	18.7%	37,250	5.5%
2010	944	1.6%	203	(0.5%)	35,104,086	6.9%	35,316	5.3%
2009	978	3.0%	204	11.0%	32,811,919	5.5%	33,550	2.5%

SCHEDULE OF AVERAGE NEW MONTHLY BENEFIT PAYMENTS FROM DEFINED BENEFIT PLANS[1]

10 Year Trend

	YEARS CREDITED SERVICE						
RETIREMENT EFFECTIVE DATES	< 5	5-10	10-15	15-20	20-25	25-30	30+
2018							
Average monthly benefit	$310	$667	$933	$1,251	$1,860	$2,870	$3,674
Average final average salary	$59,831	$43,076	$49,018	$49,312	$52,479	$60,231	$64,982
Number of retired members	13	32	60	49	55	47	97
2017							
Average monthly benefit	$457	$578	$955	$1,512	$1,915	$2,744	$3,501
Average final average salary	$44,940	$37,684	$46,433	$50,159	$53,564	$61,510	$61,257
Number of retired members	14	28	53	44	52	52	82
2016							
Average monthly benefit	$374	$694	$895	$1,336	$2,003	$2,660	$3,460
Average final average salary	$31,616	$49,321	$41,023	$45,681	$53,708	$56,706	$58,295
Number of retired members	12	36	64	65	64	58	108
2015							
Average monthly benefit	$184	$601	$901	$1,328	$1,876	$2,542	$3,841
Average final average salary	$53,428	$47,415	$40,968	$43,550	$52,415	$55,956	$66,231
Number of retired members	18	35	46	58	42	65	57
2014							
Average monthly benefit	$172	$442	$793	$1,253	$2,106	$2,232	$3,375
Average final average salary	$46,376	$41,257	$38,647	$41,967	$49,967	$50,207	$59,175
Number of retired members	11	36	65	47	48	52	73
2013							
Average monthly benefit	$351	$484	$927	$1,288	$1,833	$2,294	$3,285
Average final average salary	$48,984	$42,915	$46,047	$43,468	$49,235	$52,714	$55,709
Number of retired members	11	49	62	51	53	69	116
2012							
Average monthly benefit	$513	$396	$729	$1,144	$1,546	$2,185	$3,287
Average final average salary	$48,078	$34,996	$37,640	$39,183	$43,646	$48,153	$57,516
Number of retired members	12	32	63	45	60	46	91
2011							
Average monthly benefit	$236	$405	$763	$1,099	$1,706	$2,310	$3,271
Average final average salary	$43,107	$39,033	$46,475	$41,193	$49,092	$52,198	$55,375
Number of retired members	14	38	56	56	76	39	85
2010							
Average monthly benefit	$180	$528	$825	$1,229	$1,511	$2,262	$2,770
Average final average salary	$36,978	$35,405	$35,955	$41,437	$40,035	$50.575	$45,307
Number of retired members	8	28	48	47	58	40	112
2009							
Average monthly benefit	$235	$430	$566	$1,166	$1,613	$2,319	$2,652
Average final average salary	$31,401	$31,302	$24,517	$33,126	$45,654	$49,517	$47,354
Number of retired members	14	36	44	43	50	36	71

[1] Includes normal retirement, early retirement and disability benefit payments from defined benefit plans for new retirees.

SCHEDULE OF AVERAGE NEW MONTHLY BENEFIT PAYMENTS FROM CASH BALANCE PLANS[1]

10 Year Trend

	YEARS CREDITED SERVICE						
RETIREMENT EFFECTIVE DATES	< 5	5-10	10-15	15-20	20-25	25-30	30+
2018							
Average monthly benefit	$81	$332	$628	$431	$1,390	$1,515	$1,974
Number of retired members	5	11	13	6	8	4	17
2017							
Average monthly benefit	$149	$222	$289	$732	$948	$495	$1,334
Number of retired members	6	6	7	6	6	4	11
2016							
Average monthly benefit	$47	$220	$499	$650	$1,124	$1,595	$1,385
Number of retired members	3	13	11	9	10	8	10
2015							
Average monthly benefit	$131	$189	$239	$823	$1,071	$713	$1,914
Number of retired members	3	10	5	8	9	4	6
2014							
Average monthly benefit	$94	$420	$649	$580	$1,285	$942	$717
Number of retired members	13	10	9	8	6	2	6
2013							
Average monthly benefit	$141	$203	$430	$388	$820	$945	$1,028
Number of retired members	7	10	5	4	7	3	5
2012							
Average monthly benefit	$189	$270	$557	$580	$857	$581	$804
Number of retired members	6	7	8	5	13	5	5
2011							
Average monthly benefit	$139	$219	$393	$217	$1,051	$649	$1,110
Number of retired members	3	11	5	7	10	4	5
2010							
Average monthly benefit	$62	$120	$467	$466	$798	$1,099	$1,049
Number of retired members	2	6	8	1	4	2	3
2009							
Average monthly benefit	$17	$205	$402	$464	$372	$428	$488
Number of retired members	3	7	4	9	5	3	4

[1] Includes normal retirement, early retirement and disability benefit payments from cash balance plans for new retirees.

SCHEDULE OF PARTICIPATING PLANS[(1)(2)]

As of January 1, 2018

COUNTIES

Adams County
Forest County
Jefferson County
Sullivan County

CITIES

Allentown City
Bethlehem City
Clairton City
Connellsville City
Easton City
Farrell City
Greensburg City
Harrisburg City
Hermitage City
Jeannette City
Latrobe City
Lebanon City
Lower Burrell City
Nanticoke City
New Kensington City
Sharon City
Sunbury City
Uniontown City

BOROUGHS

Adamstown Borough
Apollo Borough
Ashland Borough
Atglen Borough
Atglen Borough (CB)
Avondale Borough
Avonmore Borough
Bally Borough
Bangor Borough
Bangor Borough (CB)
Bedford Borough
Bedford Borough (CB)
Bellefonte Borough
Bellefonte Borough (CB)
Bellwood Borough
Bentleyville Borough
Berlin Borough
Berlin Borough (CB)
Big Beaver Borough
Biglerville Borough
Biglerville Borough (CB)
Bloomfield Borough
Bowmanstown Borough
Brackenridge Borough
Bridgeville Borough
Bridgewater Borough
Brockway Borough
Brookville Borough
California Borough
Cambridge Springs Borough
Camp Hill Borough
Camp Hill Borough (CB)
Carnegie Borough
Carroll Valley Borough
Carrolltown Borough
Centerville Borough
Central City Borough
Charleroi Borough
Claysville Borough
Cleona Borough
Clymer Borough
Coaldale Borough
Cochranton Borough
Cokeburg Borough
Collegeville Borough
Collingdale Borough
Conneautville Borough
Conshohocken Borough
Conway Borough
Cressona Borough
Dalton Borough
Deemston Borough
Delmont Borough
Derry Borough
Dravosburg Borough
Dublin Borough
Duboistown Borough
Duncannon Borough
Duncansville Borough
East Berlin Borough
East Greenville Borough
East Rochester Borough
East Stroudsburg Borough
East Stroudsburg Borough (CB)
East Washington Borough
Emlenton Borough
Emporium Borough
Etna Borough
Everett Borough
Factoryville Borough
Falls Creek Borough
Ferndale Borough
Forest City Borough
Fountain Hill Borough
Franklin Borough
Franklintown Borough
Freeburg Borough
Freedom Borough
Freeland Borough
Freeport Borough
Greenville Borough
Hollidaysburg Borough
Homer City Borough
Hughestown Borough
Hummelstown Borough
Huntingdon Borough
Hyndman Borough
Jessup Borough
Jim Thorpe Borough
Johnsonburg Borough
Jonestown Borough
Kenhorst Borough
Kennett Square Borough
Kittanning Borough
Knox Borough
Kulpmont Borough
Kutztown Borough
Larksville Borough
Lehighton Borough
Lewistown Borough
Liberty Borough
Linesville Borough
Lykens Borough
Marcus Hook Borough
Mars Borough
Martinsburg Borough
Marysville Borough
Matamoras Borough
Mayfield Borough
Mercer Borough
Meyersdale Borough
Middleburg Borough
Midway Borough
Millersburg Borough
Millerstown Borough
Millville Borough
Minersville Borough
Monaca Borough
Monroeville Municipality
Mont Alto Borough
Montrose Borough
Moosic Borough
Moosic Borough (CB)
Morrisville Borough
Moscow Borough
Mount Gretna Borough
Mount Jewett Borough
Mount Pleasant Borough
Mount Union Borough
Nanty Glo Borough
Narberth Borough
Nesquehoning Borough
New Eagle Borough
New Florence Borough
New Stanton Borough
Newport Borough
Newtown Borough
Norristown Borough
North East Borough
North Wales Borough
Northumberland Borough
Orwigsburg Borough
Palmerton Borough
Palmyra Borough
Pen Argyl Borough
Pennsburg Borough
Perkasie Borough
Pine Grove Borough
Portage Borough
Pringle Borough
Prospect Borough
Prospect Park Borough
Richland Borough
Ridley Park Borough
Roaring Spring Borough
Rochester Borough
Rouseville Borough
Rural Valley Borough
Salisbury Borough
Sandy Lake Borough
Saxton Borough
Schuylkill Haven Borough
Selinsgrove Borough
Sellersville Borough
Seven Fields Borough
Seven Fields Borough (CB)
Shamokin Dam Borough
Sharpsburg Borough
Sharpsville Borough
Shenandoah Borough
Shippingport Borough
Slippery Rock Borough
Smithton Borough

[(1)] County names are in parentheses.
[(2)] The abbreviation CB designates a Cash Balance plan. NU denotes a Non-Uniformed plan.

South Waverly Borough
Southmont Borough
Springdale Borough
Stewartstown Borough
Summit Hill Borough
Tarentum Borough
Tatamy Borough
Telford Borough
Thornburg Borough
Topton Borough
Trafford Borough
Trainer Borough
Turbotville Borough
Turtle Creek Borough
Verona Borough
Versailles Borough
Waterford Borough
Waynesburg Borough
West Grove Borough
West Middlesex Borough
West Newton Borough
West Reading Borough
Wheatland Borough
White Haven Borough
Williamsburg Borough
Williamstown Borough
Wilmerding Borough
Wilson Borough
Windsor Borough
Yardley Borough
Yoe Borough
York Springs Borough
Youngwood Borough

TOWNSHIPS OF THE FIRST CLASS

Bristol Township
Caln Township
Collier Township
Crescent Township
East Deer Township
Elizabeth Township (Allegheny County)
Harrison Township
Hopewell Township (Beaver County)
North Huntingdon Township
North Versailles Township
Ridley Township
Rochester Township
Salisbury Township
Springdale Township
Susquehanna Township
Swatara Township
Upper Moreland Township
Vanport Township
West Pottsgrove Township
Whitehall Township
Whitehall Township (CB)
Wilkins Township

TOWNSHIPS OF THE SECOND CLASS

Allegheny Township (Westmoreland County)
Antrim Township
Athens Township
Bald Eagle Township
Beaver Township
Bedminster Township
Bell Township
Bethel Township
Birmingham Township
Black Creek Township
Blair Township
Bloomfield Township
Blooming Grove Township
Boggs Township (Centre County)
Boggs Township (Clearfield County)
Brecknock Township
Brecknock Township (Berks County)
Briar Creek Township
Brighton Township
Broad Top Township
Brokenstraw Township
Brothersvalley Township
Brown Township
Buckingham Township
Buffalo Township
Burnside Township
Burrell Township
Caernarvon Township
Cambria Township
Cambridge Township
Canal Township
Canton Township
Cass Township
Center Township (Greene County)
Center Township (Indiana County)
Center Township (Snyder County)
Centre Township (Berks County)
Centre Township (Perry County)
Cherrytree Township
Chippewa Township
Clarion Township
Clay Township
Clearfield Township
Columbus Township
Concord Township
Conemaugh Township
Conewago Township
Cook Township
Coolspring Township
Cornplanter Township
Corydon Township
Covington Township
Cranberry Township
Cross Creek Township
Cussewago Township
Darlington Township
Delaware Township
Derry Township (Dauphin County)
Derry Township (Dauphin County) (CB)
Derry Township (Mifflin County)
Derry Township (Westmoreland County)
Dickinson Township
Dingman Township
Donegal Township (Butler County)
Donegal Township (Washington County)
Donegal Township (Westmoreland County)
Dorrance Township
Douglass Township (Montgomery County)
Drumore Township
East Allen Township
East Carroll Township
East Coventry Township
East Coventry Township (CB)
East Fallowfield Township
East Finley Township
East Hanover Township
East Huntingdon Township
East Manchester Township
East Marlborough Township
East Rockhill Township
East Rockhill Township (CB)
Eaton Township
Eldred Township (Jefferson County)
Eldred Township (Monroe County)
Eldred Township (Warren County)
Elizabeth Township (Lancaster County)
Elk Creek Township
Elk Township
Fairfield Township
Fairview Township
Falls Township
Farmington Township
Forks Township
Forks Township (CB)
Forward Township
Foster Township
Franklin Township (Beaver County)
Franklin Township (Butler County)
Franklin Township (Carbon County)
Franklin Township (Greene County)
Frazer Township
Freedom Township
Freehold Township
Frenchcreek Township
Girard Township
Glade Township
Greene Township
Greenfield Township (Blair County)
Greenfield Township (Erie County)
Greenfield Township (Lackawanna County)
Hamilton Township
Hamiltonban Township
Hamlin Township
Hanover Township (Beaver County)
Hanover Township (Lehigh County)
Haycock Township
Hemlock Township
Henderson Township
Hilltown Township
Hopewell Township (Cumberland County)
Hopewell Township (Washington County)
Hopewell Township (York County)
Horsham Township
Howe Township
Hunlock Township
Huntington Township
Huston Township

- Jackson Township (Greene County)
- Jackson Township (Lebanon County)
- Jackson Township (Luzerne County)
- Jackson Township (Snyder County)
- Jackson Township (Susquehanna County)
- Jackson Township (Venango County)
- Jefferson Township (Washington County)
- Jenks Township
- Jenner Township
- Jones Township
- Keating Township
- Kennett Township
- Lancaster Township (Butler County)
- Lancaster Township (Lancaster County)
- Latimore Township
- LeBoeuf Township
- Lehman Township
- Liberty Township
- Limestone Township (Clarion County)
- Limestone Township (Lycoming County)
- Limestone Township (Union County)
- Lincoln Township
- Liverpool Township
- London Britain Township
- London Grove Township
- London Grove Township (CB)
- Lower Mahanoy Township
- Lower Towamensing Township
- Lower Towamensing Township (CB)
- Lower Yoder Township
- Loyalhanna Township
- Loyalhanna Township (CB)
- Mahanoy Township
- Mahoning Township
- Manchester Township
- Manchester Township (CB)
- McKean Township
- Mead Township
- Middle Smithfield Township
- Middlesex Township
- Milford Township (Bucks County)
- Milford Township (Pike County)
- Millcreek Township
- Monongahela Township
- Monroe Township (Snyder County)
- Monroe Township (Wyoming County)
- Moore Township
- Morris Township (Greene County)
- Morris Township (Tioga County)
- Morris Township (Washington County)
- Mount Joy Township
- Mount Pleasant Township
- Muncy Creek Township
- New Garden Township
- New Sewickley Township
- Nockamixon Township
- North Buffalo Township
- North Coventry Township
- North Franklin Township
- North Sewickley Township
- North Strabane Township
- North Strabane Township (CB)
- Nottingham Township
- Oakland Township
- Oil Creek Township (Crawford County)
- Oil Creek Township (Venango County)
- Old Lycoming Township
- Oliver Township (Jefferson County)
- Oliver Township (Mifflin County)
- Orange Township
- Paint Township
- Paradise Township
- Penn Township
- Pennsbury Township
- Perry Township
- Peters Township
- Peters Township (CB)
- Pike Township
- Pine Creek Township
- Pine Grove Township (Schuylkill County)
- Pine Grove Township (Warren County)
- Pittsfield Township
- Pleasant Township
- Plumcreek Township
- Plumstead Township
- Plymouth Township
- Pocopson Township
- Point Township
- Portage Township
- Porter Township
- Preston Township
- Price Township
- Providence Township
- Pulaski Township
- Pymatuning Township
- Raccoon Township
- Rice Township
- Richhill Township
- Richland Township (Bucks County)
- Richland Township (Bucks County CB)
- Richland Township (Venango County)
- Ridgway Township
- Rome Township
- Rose Township
- Ross Township
- Rutland Township
- Rye Township
- Salford Township
- Scott Township
- Sewickley Township
- Shade Township
- Sheffield Township
- Shippensburg Township
- Shrewsbury Township
- Slippery Rock Township
- Smithfield Township
- Snake Spring Township
- Solebury Township
- Solebury Township (CB)
- South Abington Township
- South Abington Township (CB)
- South Beaver Township
- South Bend Township
- South Franklin Township
- South Hanover Township
- South Huntingdon Township
- South Manheim Township
- South Middleton Township
- South Pymatuning Township
- South Strabane Township
- Southampton Township
- Southwest Township
- Spring Creek Township
- Springfield Township
- Stonycreek Township
- Sugar Grove Township
- Sullivan Township
- Summit Township
- Tinicum Township
- Towamensing Township
- Tredyffrin Township
- Tunkhannock Township
- Union Township (Berks County)
- Union Township (Lebanon County)
- Union Township (Snyder County)
- Union Township (Washington County)
- Unity Township
- Upper Burrell Township
- Upper Frederick Township
- Upper Milford Township
- Upper Nazareth Township
- Valley Township
- Wallace Township
- Warrington Township
- Warsaw Township
- Warwick Township
- Washington Township (Berks County)
- Washington Township (Cambria County)
- Washington Township (Dauphin County)
- Washington Township (Erie County)
- Washington Township (Fayette County)
- Washington Township (Greene County)
- Washington Township (Jefferson County)
- Washington Township (Northampton County)
- Washington Township (Northampton County CB)
- Washington Township (Schuylkill County)
- Washington Township (Westmoreland County)
- Washington Township (Wyoming County)
- Waverly Township
- Wayne Township
- West Bradford Township
- West Brunswick Township
- West Caln Township
- West Carroll Township
- West Fallowfield Township
- West Lampeter Township
- West Pennsboro Township
- West Rockhill Township

West Sadsbury Township
West Salem Township
West Wheatfield Township
Westtown Township
Wetmore Township
White Township
Whiteley Township
Wiconisco Township
Williams Township
Wilmington Township
Windsor Township
Woodward Township
Wright Township
Wrightstown Township
Zerbe Township

POLICE

Apollo Borough Police
Ashley Borough Police
Bally Borough Police
Beaver Meadows Borough Police
Bedminster Township Police
Bellwood Borough Police
Bentleyville Borough Police
Bentleyville Borough Police (CB)
Big Beaver Borough Police
Biglerville Borough Police
Birmingham Township Police
Blair Township Police
Brecknock Township Police
Briar Creek Township Police
Bridgewater Borough Police
Buckingham Township Police
California Borough Police
Cambria Township Police
Cambridge Springs Borough Police
Camp Hill Borough Police
Carroll Township Police
Carroll Valley Borough Police
Carrolltown Borough Police
Central City Borough Police
Centre Township Police (Berks County)
Clairton Police
Clymer Borough Police
Cochranton Borough Police
Colebrookdale Township Police
Conneaut Lake Regional Police
Covington Township Police
Crescent Township Police
Danville Borough Police
Darlington Township Police
Decatur Township Police
Delmont Borough Police
Donegal Township Police (Washington County)
Douglass Township Police (Berks County)
Douglass Township Police (Montgomery County)
Dublin Borough Police
Duboistown Borough Police
Dunbar Borough Police
Duncannon Borough Police
Duncansville Borough Police
East Bangor Borough Police
East Berlin Borough Police
East Coventry Township Police
East Deer Township Police
East Fallowfield Township Police
East Franklin Township Police
East Marlborough Township Police
East Pennsboro Twp Police
East Washington Borough Police
Elizabeth Township Police (Allegheny County)
Emlenton Borough Police
Emporium Borough Police
Everett Borough Police
Factoryville Borough Police
Fairview Township Police
Falls Creek Borough Police
Farrell City Police
Forest City Borough Police
Forward Township Police
Franklin Borough Police
Franklin Township Police (Beaver County)
Frazer Township Police
Freedom Township Police
Freeland Borough Police
German Township Police
Gilpin Township Police
Greene County Regional Police (Greene County)
Greenfield Township Police (Blair County)
Greenville Borough Police
Hamiltonban Township Police
Harveys Lake Borough Police
Heidelberg Township Police
Hellam Township Police
Hemlock Township Police
Hilltown Township Police
Honey Brook Borough Police
Hummelstown Borough Police
Independence Township Police
Jackson Township Police (Luzerne County)
Johnsonburg Borough Police
Kennett Township Police
Knox Borough Police
Lancaster Township Police (Butler County)
Larksville Borough Police
Lewistown Borough Police
Liberty Borough Police
Linesville Borough Police
Locust Township Police
Lower Windsor Township Police
Lower Yoder Township Police
Lykens Borough Police
Mahoning Township Police (Lawrence County)
Mahoning Township Police (Montour County)
Manor Borough Police
Mars Borough Police
Martinsburg Borough Police
Marysville Borough Police
Maxatawny Township Police
Mayfield Borough Police
Mead Township Police
Mercer Borough Police
Middleburg Borough Police
Middlesex Township Police
Millcreek Township Police
Millersburg Borough Police
Millville Borough Police
Montour Township Police
Moore Township Police
Moosic Borough Police
Morris Township Police (Greene County)
Morrisville Borough Police
Moscow Borough Police
Mount Jewett Borough Police
Mount Pleasant Borough Police
Mount Pleasant Township Police (Washington County)
Mount Union Borough Police
New Castle Township Police
New Garden Township Police
New Wilmington Borough Police
Newport Borough Police
Newtown Borough Police
Nockamixon Township Police
North Coventry Township Police
North Hopewell Township Police
North Huntingdon Township Police
North Middleton Township Police
North Sewickley Township Police
Northeastern Regional Police Department
Northumberland Borough Police
Old Lycoming Township Police
Orangeville Area Police Board
Orwigsburg Borough Police
Palmyra Borough Police
Paxtang Borough Police
Penbrook Borough Police
Pennridge Regional Police Dept.
Pequea Township Police
Perkasie Borough Police
Pine Grove Borough Police
Point Township Police
Polk Borough Police
Pulaski Township Police
Pymatuning Township Police
Quarryville Borough Police
Red Lion Police
Redstone Township Police
Richland Borough Police
Richland Township Police
Roaring Brook Township Police
Roaring Spring Borough Police
Rochester Township Police
Rye Township Police
Sadsbury Township Police
Sandy Lake Borough Police
Saxton Borough Police
Schwenksville Borough Police
Scott Township Police
Scottdale Borough Police
Selinsgrove Borough Police
Shade Township Police
Shamokin Dam Borough Police
Sheffield Township Police
Shippingport Borough Police
Shiremanstown Borough Police

Sinking Spring Borough Police
South Beaver Township Police
South Centre Township Police
South Pymatuning Township Police
South Waverly Borough Police
South Williamsport Borough Police
Southern Chester County Regional Police Department
Southern Police Commission
Springdale Township Police
Summit Hill Borough Police
Tatamy Borough Police
Telford Borough Police
Tinicum Township Police
Tulpehocken Township Police
Tunkhannock Township Police
Upper Burrell Township Police
Upper Macungie Township Police
Vanport Township Police
Versailles Borough Police
Washington Township Police (Fayette County)
Washington Township Police (Westmoreland County)
Waverly Township Police
West Caln Township Police
West Fallowfield Township Police
West Grove Borough Police
West Lampeter Township Police
West Middlesex Borough Police
West Newton Borough Police
West Pikeland Township Police
West Pottsgrove Township Police
West Sadsbury Township Police
West Vincent Township Police
Westfield Borough Police
White Haven Borough Police
Wiconisco Township Police
Williamsburg Borough Police
Williamstown Borough Police
Windsor Township Police
Wrightstown Township Police
Yardley Borough Police
Youngwood Borough Police

FIREFIGHTERS

Clairton City Firefighters
Farrell City Firefighters
Greenville Borough Firefighters
Harrisburg City Firefighters
Larksville Borough Firefighters
Manchester Township Firefighters
Manchester Township (CB) Firefighters
South Strabane Township Firefighters
Upper Moreland Township Firefighters
Wilson Borough Firefighters

AUTHORITIES AND OTHER UNITS

Allegheny Valley Joint Sewer Authority
Ambridge Borough Municipal Authority
Armstrong Conservation District
Avonmore Borough Municipal Authority
B.A.R.T.A.
Bangor Borough Authority
Bath Borough Authority
Bedford Borough Water Authority
Bedford Borough Water Authority (CB)
Bedford Township Municipal Authority
Belle Vernon Municipal Authority
Bethlehem Authority
Bethlehem City Redevelopment Authority
Bethlehem Parking Authority
Blair Township Water and Sewer Authority
Bloomfield Township Sewer Authority
Bradford City Water Authority
Bradford Regional Airport Authority
Brighton Township Municipal Authority
Brighton Township Sewer Authority
Brockway Area Sewage Authority
Brockway Borough Municipal Authority
Brodhead Creek Regional Authority
Brookville Municipal Authority
Bucks County Redevelopment Authority
Bucks County Water & Sewer Authority
Burrell Township Sewage Authority
Butler Area Public Library
Cambria County Conservation & Recreation Authority
Cambria County Conservation District
Cambria Township Sewer Authority
Cambria Township Water Authority
Capital Region Water
Carbon County Conservation District
Carmichaels-Cumberland Joint Sewer
Carroll Township Authority
Catawissa Borough Municipal Water Authority
Centerville Borough Sanitary Authority
Central Carbon Municipal Authority
Central Indiana County Joint Sanitary Authority
Centre County Library & Historical Museum
Clarion County Housing Authority
Clarion County Housing Authority (CB)
Coaldale-Lansford-Summit Hill Sewer Authority
Collier Township Municipal Authority
Columbia County Conservation District
Connellsville Municipal Authority
Connellsville Redevelopment Authority
Conshohocken Borough Authority
Coolspring-Jackson-Lake Latonka Joint Authority
Coplay-Whitehall Sewer Authority
Cressona Borough Authority
Creswell Heights Joint Authority
Cumberland-Franklin Joint Municipal Authority
Curwensville Municipal Authority
Delaware Valley Municipal Management Association
Delaware Valley Municipal Management Association (CB)
Derry Township Municipal Authority
Derry Township Sanitary Sewer Authority
DuBois City Redevelopment Authority
East Berlin Area Joint Authority
East Norriton-Plymouth-Whitpain Joint Sewer Authority
Eastern Snyder County Regional Authority
Economy Borough Municipal Authority
Elizabeth Borough Municipal Authority
Elizabeth Township Sanitary Authority
Elizabethville Area Authority
Emlenton Area Municipal Authority
Erie County Housing Authority
Everett Area Municipal Authority
Fairfield Municipal Authority
Fawn Township Sewage Authority
Fawn-Frazer Joint Water Authority
Fayette County Conservation District
Frackville Area Municipal Authority
Franklin City Housing Authority
Franklin Township Municipal Sanitary Authority
Franklin Township Sewer Authority
Frazer Transportation Authority
Fredericksburg Sewer & Water Authority
Freeland Borough Municipal Authority
Glendale Valley Municipal Authority
Greater Lebanon Refuse Authority
Greenville Municipal Authority
Guilford Township Authority
Guilford Water Authority
Harrison Township Water Authority
Hawley Area Authority

Hazleton Transit Authority
Hellertown Borough Authority
Hilltown Township Water & Sewer Authority
Horsham Township Sewer Authority
Hughesville-Wolf Township Joint Municipal Authority
Hyndman Borough Municipal Authority
Indiana County Conservation District
Indiana County Solid Waste Authority
Jackson Township Water Authority
Jefferson Conservation District
Jefferson County Solid Waste Authority
Jenner Area Joint Sewer Authority
Johnsonburg Municipal Authority
Johnstown Redevelopment Authority
Juniata County Conservation District
Kiskiminetas Township Municipal Authority
Kittanning Suburban Joint Water Authority
Kulpmont-Marion Heights JMA
Lancaster City Parking Authority
Lansford–Coaldale Joint Water Authority
Lebanon City Authority
Lebanon City Authority (CB)
Lebanon Community Library
Leetsdale Borough Municipal Authority
Lehigh County Authority
Lehighton Water Authority
Linesville Pine Joint Municipal Authority
London Grove Township Municipal Authority
Lower Bucks County Joint Municipal Authority
Lower Bucks County Joint Municipal Authority Supervisors
Lower Indiana County Municipal Authority
Lower MahanoyTownship Municipal Authority
Lower Providence Township Sewer Authority
Luzerne Conservation District
Luzerne County Flood Protection Authority
Lycoming Sanitary Committee
Mahanoy Township Authority
Mahoning Township Authority
Maidencreek Township Authority
Manheim Borough Authority
Manor Township Joint Municipal Authority
Mary Meuser Memorial Library
McKean County Solid Waste Authority
Mercer County Regional Planning Commission
Mid Mon Valley Water Authority
Middlesex Township Municipal Authority
Middletown Township Sewer Authority
Mifflin County Regional Police NU
Mifflintown Municipal Authority
Milford Water Authority
Millcreek–Richland Joint Authority
Millersburg Area Authority
Mon Valley Sewage Authority
Monroe County Control Center
Monroe County Municipal Waste Management Authority
Monroe County Redevelopment Authority
Montgomery County Sewer Authority
Montour County Conservation District
Montrose Municipal Authority
Moon Township Municipal Authority
Mount Jewett Borough Authority
Mount Joy Township Authority
Mount Lebanon Parking Authority
Mount Pleasant Township Municipal Authority
Mount Pocono Municipal Authority
Municipal Authority of the Borough of Matamoras
Municipal Authority of the Borough of Morrisville
Municipal Authority of the Borough of Portage Water Department
Municipal Authority of Westmoreland County of COJMA
Myerstown Community Library Association
Myerstown Water Authority
Nanty Glo Sanitary Sewer Authority
Nanty Glo Water Authority
Nesquehoning Borough Authority
New Kensington Municipal Sanitary Authority
New Kensington Redevelopment Authority
Newport Borough Water Authority
Norristown Municipal Waste Authority
North & South Shenango Joint Municipal Authority
North Coventry Municipal Authority
North Huntingdon Township Municipal Authority
North Middleton Authority
North Strabane Township Municipal Authority
Northampton Borough Municipal Authority
Northampton Borough Municipal Authority (CB)
Northeastern Regional Police (NU)
Northern Lancaster County Authority
Northern York County Regional Police (NU)
Northwest Regional Lancaster County Police (NU)
Oil City Housing Authority
Parker Area Authority
Parker Area Authority (CB)
Parks Township Municipal Authority
Penn Township Sewage Authority
Pennridge Regional Police (NU)
Pennridge Waste Treatment Authority
Pennsylvania League of Cities & Municipalities
Perkasie Regional Authority
Peters Creek Sanitary Authority
Peters Township Municipal Authority
Pleasant Hills Authority
Portage Area Sewer Authority
Possum Valley Municipal Authority
Redevelopment Authority in the City of Corry
Reynoldsville Water Authority
Riverview Sanitary Authority
Robesonia-Wernersville Municipal Authority
Robinson Township Municipal Authority
Rochester Area Joint Sewer Authority
Rostraver Township Sewer Authority
Saxton Borough Municipal Authority
Seward/St. Clair Township Sanitary Authority
Shade-Central City Joint Authority
Shamokin City Redevelopment Authority
Shannock Valley General Services Authority
Sharon Sanitary Authority
Sheffield Township Municipal Authority
Slippery Rock Municipal Authority
Smithton Borough Municipal Authority
Snake Spring Township Authority
Snyder County Housing Authority
Somerset Conservation District
South Fayette Township Municipal Authority
South Middleton Township Municipal Authority
Southern Police Commission NU
Southwest Regional Dispatch Center
Southwestern PA Water Authority
Southwestern Regional Police NU
St. Marys Area Water Authority
Sunbury Municipal Authority
Swatara Township Authority

Tower City Borough Authority

Township of Falls Authority

Tri-County COG IBC

Tri-County Joint Municipal Authority

Twin Boroughs Sanitary Authority

Upper Allegheny Joint Sanitary Authority

Upper Montgomery Joint Authority

Upper Southampton Municipal Authority

Vanport Township Municipal Authority

Vernon Township Sanitary Authority

Vernon Township Water Authority

Warren County Housing Authority

Warren County Solid Waste Authority

Warwick Township Municipal Authority

Washington Area COG

Washington Township Municipal Authority (Berks County)

Washington Township Municipal Authority (Fayette County)

Waterford Borough Municipal Authority

Wayne County Redevelopment Authority

Wayne Library Authority

Wernersville Municipal Authority

West Carroll Township Water & Sewer Authority

Western Butler County Authority

Western Clinton County Municipal Authority

Western Westmoreland Municipal Authority

Western Westmoreland Municipal Authority (CB)

Westmoreland-Fayette Municipal San Authority

White Run Regional Municipal Authority

Whitehall Township Authority

Williamstown Borough Authority

Womelsdorf-Robesonia Joint Authority

Wyoming Valley Sanitary Authority

York County Planning Commission

pennsylvania
MUNICIPAL RETIREMENT SYSTEM

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