

# Comprehensive Annual Financial Report

*for the years ended December 31, 2017 and 2016*

**PENNSYLVANIA MUNICIPAL RETIREMENT SYSTEM**



# The Pennsylvania Municipal Retirement System

Comprehensive Annual Financial Report  
for the Years Ended December 31, 2017 and 2016

**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

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## **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

June 28, 2018

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, 2017 and 2016. 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.pmr.state.pa.us](http://www.pmr.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 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, 2017.

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 from a menu of options 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 breadth, amounts and receipt timing of employee benefits, 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 range 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 range 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

The first quarter of 2017 reflected optimism in the markets, as all major global regions made economic gains. First quarter Gross Domestic Product (GDP) expanded at a rate of 1.2 percent, following the fourth quarter's 1.8 percent expansion. The un-

employment rate of 4.5 percent was the lowest in almost a decade. The Consumer Price Index (CPI) increased 2.4 percent year over year. The U.S. dollar weakened relative to the euro. The Federal Reserve Board felt enough confidence in the economy, labor market and inflation to raise rates another one-quarter percent. Consumer confidence was optimistic, which translated into solid stock returns both domestically and internationally. Bond yields stayed steady except on the very short end and provided low positive returns. Growth stocks outperformed value stocks with larger market caps earning higher returns than smaller market caps. In the first quarter, the quarterly gross rate of return for the System's total portfolio was 5.1 percent.

The second quarter GDP increased at a rate of 3.1 percent. The unemployment rate remained low at 4.3 percent. The CPI increased 1.6 percent year over year. For another quarter, global economic growth continued. The Federal Reserve Board raised short-term rates again in the second quarter, citing job strength and steady economic growth, both domestically and internationally. Growth stocks outperformed value stocks across all market capitalizations with larger names outperforming smaller ones. In the second quarter, the quarterly gross rate of return for the System's total portfolio was 4.0 percent and the year-to-date gross rate of return was 9.3 percent.

In the third quarter, the GDP increased at a rate of 3.2 percent. Unemployment continued to decrease to 4.2 percent. CPI increased 2.2 percent year over year. The U.S. dollar weakened against the euro. Growth stocks were again ahead of value stocks. The spreads between growth and value stocks were widest among large cap stocks. Small caps had the strongest returns last quarter, with mid caps trailing behind. In the third quarter, the quarterly gross rate of return for the System's total portfolio was 4.2 percent and the year-to-date gross rate of return was 13.9 percent.

The fourth quarter brought a broad global economic expansion, most notably in China, Japan, and Europe and the GDP increased at a rate of 2.9 percent. The strengthening economic picture was also fueled by low inflation, slow and transparent Fed rate increases, and investors' optimism regarding the new tax bill. In the fourth quarter, unemployment was at a near record low of 4.1 percent. CPI increased 2.1 percent year over year. The U.S. dollar weakened

very slightly relative to the euro. Growth stocks continued to outperform value stocks with large cap stocks outperforming small cap stocks. In the fourth quarter, the quarterly gross rate of return for the System's total portfolio was 3.9 percent and the year-to-date gross rate of return was 18.4 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 \$2.492 billion at December 31, 2017. The System's net position increased by \$340.2 million or 15.8 percent from \$2.151 billion<sup>(1)</sup> at December 31, 2016. Net investment income increased the net position by \$380.1 million. Contributions increased the net position by \$75.4 million. Benefit payments, plan withdrawals, and administrative expenses reduced the net position by \$108.8 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 2017 administrative budget was

<sup>(1)</sup> 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.

adopted in September 2016 and set at \$8.4 million exclusive of investment fees. Expenditures (exclusive of investment fees) in 2017 amounted to \$5.7 million. More information on the System's expenses is included in the Financial Section of this report ("Supplementary Schedule 1 – Administrative Expenses").

## 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, 2017, and also shows the amount and percentage of increases and decreases in relation to the prior year ended December 31, 2016.

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 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 increase in transfers from other plan administrations of \$20.8 million for new plans.

Net investment income is a combination of earnings from equities, real estate, fixed income, and a short-term cash management fund less investment expenses. The fair value of the System's investment portfolio increased from \$2.157 billion at December 31, 2016 to \$2.505 billion at December 31, 2017.

Net investment income was \$380.1 million in 2017 compared to \$163.9 million in 2016. The increase in net investment income is primarily due to appreciation 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.

Ten-year historical trend information listing the System's additions to fiduciary net position 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 represents the purpose for which it was created: payment of plan benefits. The following schedule presents a summary of the System's deductions from fiduciary net position for the year

### SUMMARY OF ADDITIONS TO FIDUCIARY NET POSITION

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

ADDITIONS TO FIDUCIARY NET POSITION	2017	PERCENTAGE OF TOTAL	2016	DOLLAR INCREASE (DECREASE)	PERCENTAGE INCREASE (DECREASE)
Contributions <sup>(1)</sup>	\$ 75,412	16.6%	\$ 93,999	(\$ 18,587)	(19.8%)
Net investment income	380,141	83.4%	163,943	216,198	131.9%
<b>Total</b>	<b>\$ 455,553</b>	<b>100.0%</b>	<b>\$ 257,942</b>	<b>\$ 197,611</b>	<b>76.6%</b>

<sup>(1)</sup> Contributions include transfers from other plan administrators of \$612,199 in 2017 and \$21.4 million in 2016.

### SUMMARY OF DEDUCTIONS FROM FIDUCIARY NET POSITION

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

DEDUCTIONS FROM FIDUCIARY NET POSITION	2017	PERCENTAGE OF TOTAL	2016	DOLLAR INCREASE (DECREASE)	PERCENTAGE INCREASE (DECREASE)
Annuity benefits and terminations	\$ 102,318	94.1%	\$ 94,335	\$ 7,983	8.5%
Transfers to other plan administrators	760	0.7%	678	82	12.0%
Administrative expenses	5,706	5.2%	6,042	(336)	(5.6%)
<b>Total</b>	<b>\$ 108,784</b>	<b>100.0%</b>	<b>\$ 101,055</b>	<b>\$ 7,729</b>	<b>7.6%</b>



ended December 31, 2017, and shows the amount and percentage of increases and decreases in relation to the prior year ended December 31, 2016. The major deduction for 2017 was annuity benefits and terminations. Transfers to other plan administrators increased from \$678,605 in 2016 to \$759,844 in 2017 due to increased 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, 2017, the gross rate of return for the System's total portfolio was 18.4 percent, ranking in the 6th percentile of the Investment Metrics (IM) Public Fund Universe. For the five years ended December 31, 2017, the gross rate of return for the System's total portfolio was 10.2 percent, ranking in the 13th percentile. Since inception in December 1985, the gross rate of return for the System's total portfolio was 8.9%.

The gross rate of return by asset class for the year ended December 31, 2017 and the allocation of assets in the portfolio as of December 31, 2017 are as follows: large cap equity returned 24.6 percent (26.3 percent of portfolio); small cap equity returned 15.8 percent (15.1 percent); developed international equity returned 33.6 percent (14.8 percent); emerging markets equity returned 37.5 percent (10.2 percent); real estate returned 6.7 percent (17.6 percent); and fixed income returned 3.6 percent (13.9 percent). At December 31, 2017, the allocation of assets in the portfolio for cash equivalents was 2.1 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 increased by \$340.2 million or 15.8 percent from \$2.151 billion<sup>(1)</sup> at December 31, 2016 to \$2.492 billion at December 31, 2017.

The "Schedule of Funding Progress" was calculated based on the most recent actuarial valuation dated January 1, 2017. The funded ratio decreased from 100.1 percent at January 1, 2016 to 97.8 percent as

of the last valuation date of January 1, 2017. As a result, the surplus decreased from \$2.3 million as of January 1, 2016 to a deficit of \$50.5 million as of January 1, 2017. This 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 53.

## MAJOR INITIATIVES

In 2017, the System completed its relocation into the new PMRS headquarters building in July as expected. In addition, PMRS continued implementation of 2016 existing initiatives and also began efforts to bring on one new initiative.

### CONTINUED EXISTING INITIATIVES

#### Plan Administration Software Project

For the plan administration software enhancements, PMRS and its selected software partner, CPAS Systems, began the implementation project in early 2016, with a "go live" target of fourth quarter 2017.

For much of 2016, the project remained on schedule with intermittent delays of project segments. In 2017, PMRS and CPAS Systems agreed to alter the delivery schedule of the remaining project segments and in turn, these alterations required the "go live" target to be delayed by approximately six months to early second quarter 2018. In 2018, the project was again delayed until fourth quarter 2018.

During the second half of 2018, PMRS will be planning a series of information sessions to acquaint our plan sponsors of the new employer and employee features associated with the software enhancement.

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

<sup>(1)</sup> 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.

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 on-line. 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.

#### Accounting Software Project

The project began with the selection of the accounting software, Microsoft Dynamics 365, in the fall of 2016. In 2017, PMRS secured consulting services for pre-implementation assistance to document the business requirements and prepare the fitgap analysis for the procurement of implementation services. 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 plan administration software enhancements scheduled for the fourth quarter of 2018 and Phase 2 which contains additional accounting modules (budget, procurement, and fixed assets) will be implemented in the first half of 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 plan member retirement financial activity from the CPAS 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.

#### Staffing Realignment for Enhanced Program Delivery and System Operations

After entering into inter-agency agreements with Commonwealth agencies specializing in providing human resource and procurement services in 2016,

PMRS staff began the process to negotiate offsite or cloud relocations of our key program hardware and software along with continuing to structure information technology agreements for maintenance of remaining onsite hardware and systems. By mid-2019, PMRS anticipates that two of our three major operational and finance systems will be located in cloud locations and one will be in a secure local off-site location. By the end of 2019, PMRS anticipates that our remaining in-house operational information systems will also be located offsite. 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

Internal Revenue Service (IRS) announced and initiated a renewed focus on the tax qualification of governmental retirement plans in 2008. PMRS continues to work proactively to address this IRS initiative. In January 2011, PMRS filed an application with the IRS to obtain a tax qualification determination. A Favorable Determination Letter was issued by the IRS in 2014, and PMRS could rely on the letter until the expiration of the next following cycle (January 31, 2016).

Because of the January 31, 2016 expiration date and based on the advice of PMRS' IRS counsel in consultation with IRS personnel, on October 31, 2015, PMRS modified its plan compliance methodology and filed under the IRS pre-approved "Volume Submitter" plan document program. Under this format, 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.

During the IRS review process, the IRS allowed PMRS to make a few amendments to the original proposed template document. In February 2017, PMRS submitted a revised template to the IRS. The IRS subsequently conducted a second level of review on our submission. In July 2017, PMRS submitted its

second revised version of the template documents based on IRS comments. After the third submission, PMRS received no more comments from the IRS. On March 14, 2018, PMRS received preliminary approval from the IRS of PMRS' documents. Subsequently, PMRS received final approval in the second quarter of 2018.

Between now and the end of 2019, PMRS will be making an intensive effort to convert all PMRS plans to the new document structure. 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 sponsors' governing authority. PMRS anticipates having webinars regarding the conversion process including a timeline for submission and completion along with identifying key elective provisions.

### **NEW INITIATIVES**

#### New Electronic Content Management Software Project

PMRS decided to augment the plan administration and accounting software projects with the purchase and implementation of an Electronic Content Management (ECM) system. As part of the 2017 PMRS headquarters relocation and the first phase of the ECM implementation, PMRS converted over 20,000 paper-based plan sponsor and plan member records to electronic storage.

The search for a solution began in late 2016 and concluded in the second quarter of 2018. PMRS reviewed industry evaluated products, met with other Commonwealth agencies using an ECM solution, hosted meetings with multiple ECM providers and viewed demonstrations from numerous vendors. The procurement of the required software and hardware and the design of the ECM system will begin in the third quarter of 2018.

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

### **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 an investment evaluation firm 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, 2016. 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 2017 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, 2016**

*Christopher P. Morill*

Executive Director/CEO

# Administrative Organization

## Pennsylvania Municipal Retirement Board

As of December 31, 2017



**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)*



**Steven T. Heinly**  
*Represents active police officers enrolled in PMRS*



**Mike Stender Jr.**  
*Represents active firefighters enrolled in PMRS*



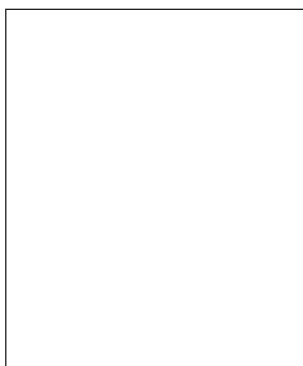
**Salvatore J. Panto Jr.**  
*Represents Pennsylvania Municipal League*



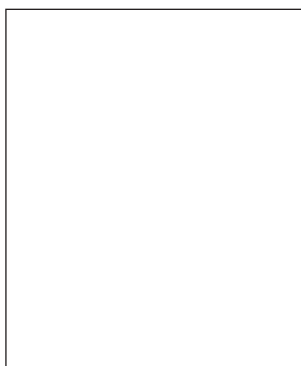
**Tom Deitzler**  
*Represents Pennsylvania Municipal Authorities Association*



**Jeff Pisarcik**  
*Represents Pennsylvania State Association of County Commissioners*



**Vacant**  
*Represents Pennsylvania State Association of Township Commissioners*



**Vacant<sup>(1)</sup>**  
*Represents Pennsylvania State Association of Boroughs*

<sup>(1)</sup> John Cappawana, Duncannon Mayor, appointed in April 2018.

## Staff, Consultants, and Managers

As of December 31, 2017

### ADMINISTRATIVE STAFF

#### Secretary

Stephen W. Vaughn

#### Assistant Secretary for Administration Designee

Doug E. Baker

#### Chief Financial Officer

Charity D. Rosenberry

### PROFESSIONAL CONSULTANTS

#### Actuary

Cheiron | McLean, VA

*Kenneth Kent, FSA, FCA, MAAA, EA*

#### Auditor

CliftonLarsonAllen LLP | Timonium, MD

*Owen Ward, CPA, Principal*

#### Comptroller

Commonwealth of Pennsylvania | Harrisburg, PA

*Anna Maria Kiehl, 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, President*

#### Custodian

State Treasurer | Harrisburg, PA

#### Sub-Custodian

BNY Mellon | Pittsburgh, PA

*Matthew J. Coburn, Relationship Manager*

### INVESTMENT MANAGERS

#### AMI Asset Management

Los Angeles, CA

*Rob Knowles, Senior Vice President*

#### Copeland Asset Management

Conshohocken, PA

*Chuck Barrett, Principal*

#### Eagle Capital Management, LLC

New York, NY

*John Johnson, Managing Director*

#### Emerald Advisors, Inc.

Leola, PA

*Stacey L. Sears, Senior Vice President*

#### Federated Investors, Inc.

Pittsburgh, PA

*Amy Michaliszyn, Senior Vice President*

#### Forest Investment Associates

Atlanta, GA

*Michael L. Clutter, Vice President*

#### HGK Asset Management, Inc.

Jersey City, NJ

*Matthew Kosara, Client Portfolio Manager*

#### Jarislowsky, Fraser Limited

Montreal, QC

*Dario Mazzarello, Partner*

#### Hardman Johnston Global Advisors

Stamford, CT

*James Pontone, Director and Portfolio Manager*

#### LSV Asset Management

Chicago, IL

*Keith W. Bruch, Director of Client Portfolio Services*

#### TIAA Global Asset Management

New York, NY

*Adriana DeAlcantara, Managing Director*

#### Polen Capital Management

Boca Raton, FL

*Jim Haymes, Director of Institutional Relations*

#### Prudential Financial, Inc.

Madison, NJ

*Larry Teitelbaum, Executive Director–Business Development*

#### Smith, Graham & Co.

New York, NY

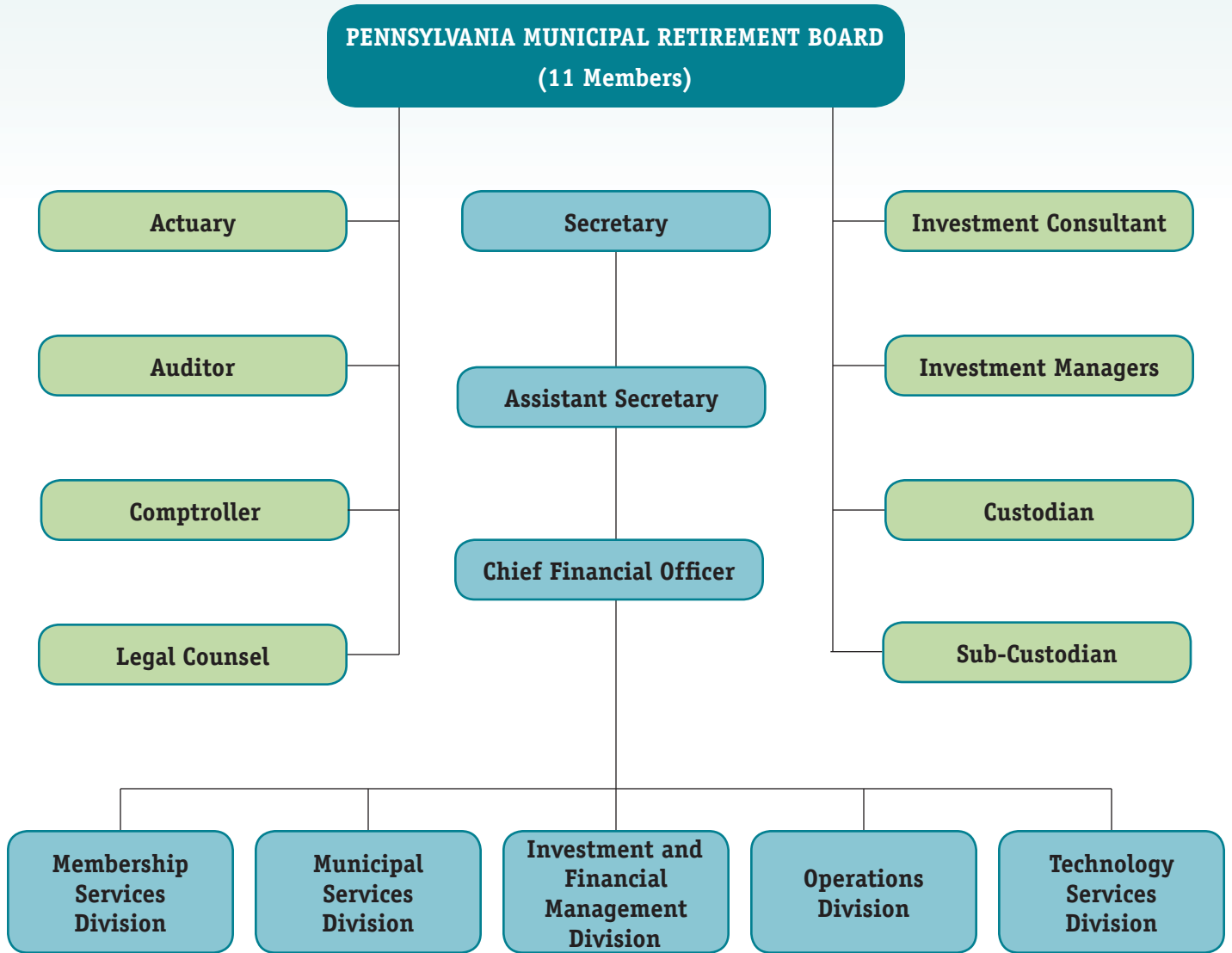
*Lynda Leslie, Senior Vice President*

#### State Street Global Advisors

Boston, MA

*Gregory Balewicz, Vice President*

# Organizational Chart





# Chairman's Report

June 28, 2018

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, 2017 and 2016. The report identifies the System's strong financial position as of December 31, 2017 along with the numerous activities conducted by the System throughout the year on your behalf.

For the year ended December 31, 2017, the gross rate of return for the System's total portfolio was 18.4%. This was the System's best investment performance since 2013 and ranked in the 6th percentile among large U.S. public pension plans. The System's net position increased \$340.2 million or 15.8% from \$2.151 billion at December 31, 2016 to \$2.492 billion at December 31, 2017.

PMRS' January 1, 2017 Actuarial Valuation also indicates that the System continues to be one of the best funded local government retirement systems in the United States. PMRS' January 1, 2017 Actuarial Valuation showed a slight reduction of its actuarial funding ratio from 100.1% at January 1, 2016 to 97.8% at January 1, 2017. This decrease is due to the reduction in the credited interest rate from 5.50% to 5.25% effective January 1, 2017, which resulted in a net increase in the System's actuarial liability of \$58.4 million. If the rate had not changed, our actuarial funding ratio would have remained at 100%. Although our actuarial funding ratio went down, our fair market value funding ratio remained stable at 92.7% as of January 1, 2017. Because investment returns always lag the actuarial valuation by one year, we anticipate a resumption of positive trends when the 2017 investment performance is incorporated into the January 1, 2018 Actuarial Valuation.

In 2017, we completed our first major initiative by relocating to the new PMRS headquarters. In addition, we began a new initiative to transform our operations from paper-based to electronic storage. The first phase was completed in early 2017 when we converted over 20,000 paper-based plan sponsor and plan member records to electronic storage and retrieval prior to our headquarters relocation. In 2018, we began the second phase to procure and implement an electronic content management system and anticipate completion of this project by early 2019.

We continued in 2017 to implement the two major plan administration and accounting software enhancements with a target completion of fourth quarter 2018. We are excited about rolling out the new member and plan sponsor portals as part of the plan administration enhancements. During the second half of 2018, PMRS will be planning a series of information sessions to acquaint our plan sponsors of the new features associated with the portals.

One of the least glamorous but largest projects also worked on in 2017 was the second evolution of the IRS compliant plan documents. The first one began in 2011 and received approval from the IRS in 2014. The second set began in October 2015, continued through 2016 and 2017, and received final IRS approval in April 2018. The final approved version has incorporated several plan provisions that were not in the first evolution and it is structured to make it clearer and easier for municipalities to understand. We believe our plan sponsors will greatly benefit from this newly designed document.

One of PMRS' longest serving employees, Assistant Secretary, Kris Cline, retired in September 2017 from the agency after 34 years of service with PMRS. She was invaluable to the agency, serving in several positions throughout her tenure and loved by all. We will miss her. In preparation for her retirement, Secretary Vaughn had presented to the Board a tentative System reorganization plan to better realign personnel resources with the new technical and operational enhancements. It began with the appointment of Doug Baker as the new Assistant Secretary replacing Kris Cline. It continued in 2018 with the start of the human resources requirements realigning position titles, position descriptions, performance measurements, and other required human resources activities.

It was a transition year for the Board with five members leaving and five new appointments, leaving two remaining vacancies at the end of 2017. I want to thank all of the previous board members for their service. In particular, I wanted to recognize my Board Vice-Chair, George Milakovic from Swatara Township. I will miss his support along with his commitment and insightful contributions. I want to welcome my new Vice-Chair, Cory Adams from South Middleton Township, who came onto the Board in early 2014 and was reappointed in 2018 for a second term. The 2017 new board members are Joe Torsella, State Treasurer; Robert Torres, Acting Secretary of State; Jeff Pisarcik, Jefferson County Commissioner; Tom Deitzler, Administration and Finance Director, City of Lebanon Authority; and Mike Stender, City of Harrisburg Firefighter. One vacancy was filled in 2018 by John Cappawana, Mayor of Duncannon. I appreciate the commitment of all the 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

## Summary of Plan Provisions

### 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, checks 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<sup>(1)</sup>. 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.

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



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# Financial

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# Independent Auditors' Report



CliftonLarsonAllen LLP  
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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, 2017 and 2016, 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, 2017 and 2016, 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.

***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, 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**

Harrisburg, Pennsylvania  
June 28, 2018

# 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, 2017, 2016, and 2015. 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, 2017.

The **Statement of Fiduciary Net Position** provides a snapshot of the financial position of PMRS at December 31, 2017, 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, 2017, 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 increased by \$340.2 million or 15.8 percent from \$2.151 billion<sup>(1)</sup> at December 31, 2016 to \$2.492 billion at December 31, 2017. The System's net position increased by \$156.9 million or 7.9 percent from \$1.994 billion at December 31, 2015 to \$2.151 billion at December 31, 2016. The changes in fair value are recognized as part of the net appreciation/depreciation in the fair value of investments.
- The funded ratio decreased from 100.1 percent at January 1, 2016 to 97.8 percent as of the last valuation date of January 1, 2017. As a result, the surplus decreased from \$2.3 million as of January 1, 2016 to a deficit of \$50.5 million as of January 1, 2017. This 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 portfolio gross rate of return for the year ended December 31, 2017 was 18.4 percent compared to 8.7 percent and 0.1 percent for the years ended December 31, 2016 and 2015, respectively.
- 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. Contributions increased by \$25.3 million or 36.7 percent from \$68.7 million in 2015 to \$94.0 million in 2016 primarily due to an increase in transfers from other plan administrators of \$19.9 million for new plans.
- 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. Annuity benefits and terminations increased by \$4.5 million or 5.0 percent from \$89.9 million in 2015 to \$94.3 million in 2016. The fluctuation in annuity benefits and terminations is primarily due to increased annuity benefits from 2015 to 2017.

<sup>(1)</sup> 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.

- Transfers to other plan administrators increased from \$678,605 in 2016 to \$759,844 in 2017 due to increased plan withdrawals. Transfers to other plan administrators decreased from \$20.4 million in 2015 to \$678,605 in 2016 due to decreased plan withdrawals.
- Administrative expenses decreased by \$335,892 or 5.6 percent from \$6.0 million in 2016 to \$5.7 million in 2017 primarily due to decreases in personnel expenses. Administrative expenses increased by \$1.0 million or 21.2 percent from \$5.0 million in 2015 to \$6.0 million in 2016 primarily due to increases in pension expenses and actuarial fees with implementation of GASB Statement No. 68, and information technology expenses for the pension administration system upgrade. 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 bi-annually. The January 1, 2017 actuarial valuation was derived from actual values for the 722 defined benefit plans that are required to redetermine contribution levels bi-annually on odd years and actuarial adjustments to the January 1, 2016 liabilities for the four municipalities required to redetermine contribution levels bi-annually on even years. The January 1, 2016 liabilities were adjusted to reflect January 1, 2017 actual active counts to estimate the liabilities for these plans to provide 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 97.8 percent funded as of January 1, 2017.

### **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 taking into account the risk associated with each asset class as well as the financial objectives of the Fund.

For the year ended December 31, 2017, the System's gross rate of return on investments was 18.4 percent. The gross rate of return over the past three and five years ended December 31, 2017 was 8.8 percent and 10.2 percent, respectively.

### **SHORT-TERM**

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. Short-term investments increased by \$18.2 million or 48.7 percent from \$37.4 million at December 31, 2015 to \$55.6 million at December 31, 2016. The annual fluctuations represent the normal cash flow necessary to meet operating expenses.

### **FIXED INCOME**

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 changes in fair value. Fixed income decreased by \$49.3



million or 14.9 percent from \$330.3 million at December 31, 2015 to \$281.0 million at December 31, 2016, primarily due to changes in fair value.

### **COMMON AND PREFERRED STOCK**

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. Common and preferred stock including international stock increased by \$124.2 million or 9.8 percent from \$1.272 billion at December 31, 2015 to \$1.396 billion at December 31, 2016 primarily due to changes in fair value.

### **REAL ESTATE**

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. Real estate increased by \$66.5 million or 18.6 percent from \$357.9 million at December 31, 2015 to \$424.3 million at December 31, 2016 primarily due to gains in fair value and net purchases of additional real estate.

### **CONTRIBUTIONS AND INVESTMENT INCOME**

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. Contributions increased by \$25.3 million or 36.7 percent from \$68.7 million in 2015 to \$94.0 million in 2016 primarily due to an increase in transfers from other plan administrators of \$19.9 million for new plans.

Net investment income was \$380.1 million in 2017 compared to net investment income of \$163.9 million in 2016 and net investment loss of \$5.2 million in 2015. Investment income (loss) is primarily attributable to appreciation (depreciation) in fair values in the equity markets.

Investment expenses increased by \$1.7 million or 18.7 percent from \$9.1 million in 2016 to \$10.8 million in 2017 primarily due to increases in the fair value of investments. Investment expenses were \$9.1 million in 2016 and 2015. 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 \$102.3 million in 2017, compared to \$94.3 million in 2016 and \$89.9 million in 2015. 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 \$91.0 million in 2017, compared to

\$84.1 million in 2016 and \$78.2 million in 2015.

Transfers to other plan administrators increased from \$678,605 in 2016 to \$759,844 in 2017 due to increased plan withdrawals. Transfers to other plan administrators decreased from \$20.4 million in 2015 to \$678,605 in 2016 due to decreased plan withdrawals.

Administrative expenses were \$5.7 million in 2017, compared to \$6.0 million in 2016 and \$5.0 million in 2015.

### **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, 2017, 2016, and 2015  
(amounts in thousands)

ANALYSIS OF FIDUCIARY NET POSITION	2017	2016	2015
<b>Assets</b>			
Receivables	\$ 5,599	\$ 5,660	\$ 16,845
Investments	2,505,464	2,156,745	1,997,183
Capital assets	442	93	121
<b>Total assets</b>	<b>\$ 2,511,505</b>	<b>\$ 2,162,498</b>	<b>\$ 2,014,149</b>
Deferred outflows of resources	1,375	944	453
<b>Liabilities</b>			
Deferred inflows of resources	1,047	3	2
<b>Fiduciary net position</b>	<b>\$ 2,491,620</b>	<b>\$ 2,151,378<sup>(1)</sup></b>	<b>\$ 1,994,491</b>

## SUMMARY OF CHANGES IN FIDUCIARY NET POSITION

Years Ended December 31, 2017, 2016, and 2015  
(amounts in thousands)

ANALYSIS OF CHANGES IN FIDUCIARY NET POSITION	2017	2016	2015
<b>Additions</b>			
Contributions	\$ 75,412	\$ 93,999 <sup>(2)</sup>	\$ 68,741
Net investment income (loss)	380,141	163,943	(5,197)
Miscellaneous income	-	-	253
<b>Total additions</b>	<b>\$ 455,553</b>	<b>\$ 257,942</b>	<b>\$ 63,797</b>
<b>Deductions</b>			
Annuity benefits and terminations <sup>(3)</sup>	102,318	94,335	89,856
Transfers to other plan administrators <sup>(4)</sup>	760	678	20,448
Administrative expenses	5,706	6,042	4,983
<b>Total deductions</b>	<b>\$ 108,784</b>	<b>\$ 101,055</b>	<b>\$ 115,287</b>
<b>Changes in fiduciary net position</b>	<b>\$ 346,769</b>	<b>\$ 156,887</b>	<b>(\$ 51,490)</b>

## INVESTMENT BALANCES BY ASSET CLASS

As of December 31, 2017, 2016, and 2015  
(amounts in thousands)

Asset class	2017	PERCENTAGE OF PORTFOLIO	2016	PERCENTAGE OF PORTFOLIO	2015	PERCENTAGE OF PORTFOLIO
Short term and other investments <sup>(5)</sup>	\$ 61,150	2.4%	\$ 55,609	2.6%	\$ 37,390	1.9%
Fixed income	347,068	13.9%	281,015	13.0%	330,327	16.5%
Common and preferred stock	1,033,458	41.2%	912,142	42.3%	816,383	40.9%
International stock	625,205	25.0%	483,637	22.4%	455,212	22.8%
Real estate	438,583	17.5%	424,342	19.7%	357,871	17.9%
<b>Total investments</b>	<b>\$ 2,505,464</b>	<b>100.0%</b>	<b>\$ 2,156,745</b>	<b>100.0%</b>	<b>\$ 1,997,183</b>	<b>100.0%</b>

<sup>(1)</sup> 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.

<sup>(2)</sup> Contributions include transfers from other plan administrators of \$21.4 million in 2016.

<sup>(3)</sup> Annuity payments increased by \$6.9 million, \$5.8 million, and \$4.2 million in 2017, 2016, and 2015, respectively. Average number of annuitants receiving benefits increased by 269 in 2017 (4.9 percent increase), 262 in 2016 (5.0 percent increase), and 181 in 2015 (3.6 percent increase).

<sup>(4)</sup> Two plans withdrew with total assets of \$759,844 in 2017. Four plans withdrew with total assets of \$678,605 in 2016. Three plans withdrew with total assets of \$20.4 million in 2015.

<sup>(5)</sup> 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, 2017 and 2016

	2017	2016
<b>Assets</b>		
Receivables		
Plan members	\$ 1,909,625	\$ 1,576,398
Municipal employers	680,346	722,342
Accrued investment income	1,413,490	1,094,751
Investment sales receivable	1,595,210	2,266,187
<b>Total receivables</b>	<b>5,598,671</b>	<b>5,659,678</b>
Investments, at fair value		
Short-term and other investments	61,149,949	55,609,101
U.S. government fixed income pooled funds	237,811,458	192,551,231
Corporate bond pooled funds	109,257,220	88,463,409
Equity index funds, common and preferred stocks	1,033,457,721	912,143,139
Real estate	438,583,422	424,341,951
International equities	625,204,742	483,636,675
<b>Total investments</b>	<b>2,505,464,512</b>	<b>2,156,745,506</b>
Capital assets (net of accumulated depreciation of \$55,055 and \$136,359 at 2017 and 2016, respectively)	441,762	92,922
<b>Total assets</b>	<b>2,511,504,945</b>	<b>2,162,498,106</b>
Deferred outflows of resources	1,374,979	944,083
<b>Liabilities</b>		
Accounts payable and accrued expenses	4,814,560	3,238,594
Net pension liability	4,475,356	4,692,967
Net other postemployment benefit obligation liability <sup>(1)</sup>	6,768,000	799,021
Investment purchases payable	4,155,443	3,330,716
<b>Total liabilities</b>	<b>20,213,359</b>	<b>12,061,298</b>
Deferred inflows of resources	1,046,837	2,590
<b>Net position restricted for pensions</b>	<b>\$ 2,491,619,728</b>	<b>\$ 2,151,378,301</b>

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

<sup>(1)</sup> 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, 2017 and 2016

	2017	2016
<b>Additions</b>		
Contributions		
Municipal employers	\$ 52,834,116	\$ 51,622,258
Plan members	21,717,564	20,776,539
Transfers from other plan administrators	612,199	21,372,987
Assessments	248,281	227,302
<b>Total contributions</b>	<b>75,412,160</b>	<b>93,999,086</b>
Investment income		
From investing activities:		
Net appreciation in fair value of investments	358,061,556	141,919,772
Short-term and other investments	532,055	355,835
Common and preferred stocks	10,880,450	10,535,203
Real estate	16,153,112	15,057,720
International equities	5,354,415	5,201,817
<b>Total investment income</b>	<b>390,981,588</b>	<b>173,070,347</b>
Investment expenses	(10,840,658)	(9,127,332)
<b>Total net investment income</b>	<b>380,140,930</b>	<b>163,943,015</b>
<b>Total additions</b>	<b>455,553,090</b>	<b>257,942,101</b>
<b>Deductions</b>		
Annuity benefits and terminations	102,318,094	94,334,813
Transfers to other plan administrators	759,844	678,605
Administrative expenses	5,705,746	6,041,638
<b>Total deductions</b>	<b>108,783,684</b>	<b>101,055,056</b>
<b>Net increase</b>	<b>346,769,406</b>	<b>156,887,045</b>
<b>Net position restricted for pensions</b>		
<b>Balance, beginning of year</b>	<b>2,151,378,301</b>	<b>1,994,491,256</b>
<b>Effect of change in accounting principle<sup>(1)</sup></b>	<b>(6,527,979)</b>	
<b>Balance, beginning, as restated</b>	<b>2,144,850,322</b>	
<b>Balance, end of year</b>	<b>\$ 2,491,619,728</b>	<b>\$ 2,151,378,301</b>

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

<sup>(1)</sup> 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, 2017 and 2016.

## INDIVIDUAL MEMBERSHIP

	2017	2016
<b>ACTIVE MEMBERS</b>		
Defined benefit plans		
Municipal	6,842	6,816
Police	768	762
Firefighters	118	120
<b>Total</b>	<b>7,728</b>	<b>7,698</b>
Cash balance plans		
Municipal	1,285	1,256
Police	18	17
Firefighters	0	1
<b>Total</b>	<b>1,303</b>	<b>1,274</b>
<b>Total active members</b>	<b>9,031</b>	<b>8,972</b>
<b>RETIREEES AND BENEFICIARIES</b>		
Retirees	5,099	4,784
Beneficiaries	600	576
<b>Total retirees and beneficiaries</b>	<b>5,699</b>	<b>5,360</b>
<b>INACTIVE PARTICIPANTS WITH RIGHTS TO DEFERRED PENSION (VESTED)</b>		
Defined benefit	834	872
Cash balance	316	301
<b>Total vested</b>	<b>1,150</b>	<b>1,173</b>
Defined benefit	28	7
Cash balance	0	0
<b>Total non-vested</b>	<b>28</b>	<b>7</b>
<b>Total individual memberships</b>	<b>15,908</b>	<b>15,512</b>

## PARTICIPATING LOCAL GOVERNMENT EMPLOYERS

	2017		2016	
	DEFINED BENEFITS	CASH BALANCE	DEFINED BENEFITS	CASH BALANCE
Counties	4	0	4	0
Cities	18	0	18	0
Boroughs	146	58	146	53
Townships of the first class	19	3	18	3
Townships of the second class	166	152	166	145
Authorities and other units	171	80	170	76
Police	189	17	191	16
Firefighters	9	1	9	1
<b>Total*</b>	<b>722</b>	<b>311</b>	<b>722</b>	<b>294</b>

\* 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. The most common method of granting a postretirement benefit increase is 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) 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.

### 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 pooled 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 an estimated useful life of eight years prior to January 1, 2017 and the following useful lives for assets purchased after December 31, 2016.

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 re-

ported 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, 2017 and 2016, \$206,695 and \$189,557, 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, 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.

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.

During the year ended December 31, 2016, the System adopted GASB Statement No. 72, "Fair Value Measurement and Application" which addresses accounting and financial reporting issues related to fair value measurements.

During the year ended December 31, 2016, the System adopted GASB Statement No. 73 "Accounting and Financial Reporting for Pensions and Related Assets That Are Not within the Scope of GASB Statement 68," and "Amendments to Certain Provisions of GASB Statements No. 67 and No. 68." Upon examination of GASB Statement No. 73, it was determined to have no impact on PMRS.

During the year ended December 31, 2016, the System adopted GASB Statement No. 76 "The Hierarchy of Generally Accepted Accounting Principles for State and Local Governments." The adoption of this statement had no effect on previously reported amounts.

During the year ended December 31, 2016, the System adopted GASB Statement No. 78 "Pensions Provided through Certain Multiple-Employer Defined Benefit Pension Plans." Upon examination of GASB Statement No. 78, it was determined to have no impact on PMRS.

### **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 identi-

fication 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. 85, "Omnibus 2017" in March 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). The requirements of this Statement are effective for financial statements for fiscal years beginning after June 15, 2017.

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.

These pronouncements may have a material effect on the System's financial statements once implemented. The System will be analyzing the effects of these pronouncements 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, 2017 and 2016 consisted of the following:

	2017	2016
Municipality normal cost	\$ 52,834,116	\$ 51,622,258
Amortization of unfunded actuarial accrued liability	(5,800,659)	(7,872,340)
<b>Total<sup>(1)</sup></b>	<b>\$ 47,033,457</b>	<b>\$ 43,749,918</b>

The actual contributions were 112.3 percent of the required contributions in 2017 and 118.0 percent of the required contributions in 2016.

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

Total contributions to the System in 2016 were \$94.0 million of which \$20.8 million and \$51.6 million were made by its members and municipalities, respectively, \$21.4 million was transferred from other plan administrators, and \$227,302 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.

<sup>(1)</sup> Total does not include \$20 per member assessment fee to municipalities.



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<sup>(1)</sup>, 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,
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<sup>(2)</sup> 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 4.1 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

<sup>(1)</sup> 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.

<sup>(2)</sup> The interest rate of return assumption was reduced from 5.5 percent to 5.25 percent effective January 1, 2017.

<sup>(3)</sup> As restated.

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 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 results reflect a 5.5 percent interest rate of return assumption while the January 1, 2017 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, 2017 and 2016 was 10–30 years.

### Reserve Accounts

As of December 31, 2017 and 2016, the Reserve Account balances were as follows:

	2017	2016 <sup>(3)</sup>
Members' Reserve Account	\$ 460,805,568	\$ 451,638,421
Municipal Reserve Account	871,062,254	849,579,022
Retired Members' Reserve Account	1,018,786,059	960,943,228
DROP Participant Reserve Account	1,548,634	1,258,051
Disability Reserve Account	1,298,910	892,010
Undistributed Earnings Reserve Account	138,118,303	(119,460,410)
<b>Total</b>	<b>\$ 2,491,619,728</b>	<b>\$ 2,144,850,322</b>

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, 2017 and 2016 was 5.25 percent and 5.5 percent, respectively.

Upon retirement or disability of an active member, the member's accumulated contributions plus inter-

est 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, 2017.

#### *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, 2017 and 2016 was 5.25 percent and 5.5 percent, respectively. The account is fully funded as of December 31, 2017.

#### *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, 2017 and 2016 was 5.25 percent and 5.5 percent, respectively. The account is not fully funded as of December 31, 2017.

#### *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 2017 ranged from 0.78 percent to 1.42 percent with 1.04 percent as the average for the 12-month period. The average monthly yield for 2016 ranged from 0.25 percent to 0.78 percent with 0.55 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, 2017.

#### *Disability Reserve Account*

The Disability Reserve Account is credited with the contributions made by municipalities toward the dis-

ability 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, 2017 and 2016 was 5.25 percent and 5.5 percent, respectively. The account is fully funded as of December 31, 2017.

#### *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 member accounts, the municipal accounts, and the retiree accounts as directed by the municipality.

The System did not distribute excess interest in 2017 or 2016. Such calculation would have been prepared in accordance with a Board approved formula and would have been based on the actuarial value (fair value) of the System's assets as of December 31, 2016 and 2015, respectively, and the expected cash flows of the System for 2017 and 2016 if excess interest had been distributed.

## **(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 in

regard to 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

For the years ended December 31, 2017 and 2016, the annual money-weighted rate of return on pension plan investments, net of pension plan investment expense, was 17.84 percent and 8.23 percent, respectively. The money-weighted rate of return expresses investment performance, net of investment expense, adjusted for the changing amounts actually invested.

The Board has authorized investments in U.S. Government and agency securities, foreign government bonds denominated in U.S. dollars and rated “AA,” corporate bonds rated “A” or better, equity securities, direct real estate, and real estate commingled funds allowing for equity participation. The Board specifically prohibits investments in commodities, mineral rights, and options. Additionally, short-selling and margin purchase transactions are prohibited.

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.

The System invests in the Commonwealth of Pennsylvania Treasury Department’s short-term cash management fund. The fund comprises various short-term investments, including repurchase agreements. Restrictions on these repurchase agreements are outlined as follows.

Repurchase agreements are allowable if (a) collateralized by United States Government Obligations deemed acceptable by the Treasury Department prior to the transaction; (b) the fair value of collateral equals at least 102 percent of the principal and accrued interest; and (c) the collateral is delivered to the Treasury’s bank account. For tri-party agreements, collateral shall be delivered to the Treasury’s account with an independent third-party sub-custodian (either a money center bank or a nationally recognized non-bank financial institution).

### 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 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 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. Because they are liquid funds, there are no unfunded commitments for these types of investments.

Short-term and other investments are reported at amortized cost.

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

### INVESTMENTS

As of December 31, 2017

INVESTMENTS BY FAIR VALUE LEVEL	2017	FAIR VALUE MEASUREMENTS USING		
		LEVEL 1	LEVEL 2	LEVEL 3
Common and preferred stock	\$ 1,267,101,725	\$ 1,267,101,725	-	-
<b>Total investments by fair value level</b>	<b>1,267,101,725</b>	<b>1,267,101,725</b>	<b>-</b>	<b>-</b>
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
<b>Total investments measured at NAV</b>	<b>1,177,212,838</b>	<b>-</b>		
INVESTMENTS AT OTHER THAN FAIR VALUE				
Short-term and other investments	61,149,949			
<b>Total investments at other than fair value</b>	<b>61,149,949</b>			
<b>Total investments</b>	<b>\$2,505,464,512</b>			

At December 31, 2016, the System had the following investments.

### INVESTMENTS

As of December 31, 2016

INVESTMENTS BY FAIR VALUE LEVEL	2016	FAIR VALUE MEASUREMENTS USING		
		LEVEL 1	LEVEL 2	LEVEL 3
Common and preferred stock	\$ 959,384,362	\$ 959,384,362	-	-
<b>Total investments by fair value level</b>	<b>959,384,362</b>	<b>959,384,362</b>	<b>-</b>	<b>-</b>
INVESTMENTS MEASURED AT NET ASSET VALUE (NAV)		UNFUNDED COMMITMENTS	REDEMPTION FREQUENCY	REDEMPTION NOTICE PERIOD
Commingled funds - debt	281,014,640	-	Daily, monthly	1-15 days
Commingled funds - equity	436,395,452	-	Daily, monthly	1-15 days
Real estate	424,341,951	-	Not eligible	Not eligible
<b>Total investments measured at NAV</b>	<b>1,141,752,043</b>	<b>-</b>		
INVESTMENTS AT OTHER THAN FAIR VALUE				
Short-term and other investments	55,609,101			
<b>Total investments at other than fair value</b>	<b>55,609,101</b>			
<b>Total investments</b>	<b>\$2,156,745,506</b>			

#### Custodial Credit Risk

Custodial credit risk is the risk of loss resulting from the failure of the custodian such that the System would not be able to recover the value of its investments or collateral securities in the possession of the custodian. Since the State Treasurer, as custodian, holds all investments in the name of the System, the System's investments are not exposed to custodial credit risk. The Treasury Department has formally adopted a written investment policy which addresses custodial credit risk.

The System's exposure to the risk of loss of investments due to errors and omissions on behalf of its advisors is covered by the contractual obligation for the advisors to maintain errors and omissions insurance. The investment managers also must provide proof of a fidelity bond covering the advisor, the

office, and its employees.

In accordance with a contract between the Treasurer of the Commonwealth of Pennsylvania and the Treasurer's custodial agent, the System may participate in a securities lending program. Under this program, the custodial agent, acting as the lending agent, lends securities (equities, fixed income, and money market instruments) to independent brokers and dealers in exchange for collateral in amounts up to 105 percent of the fair value of securities lent. Collateral is marked-to-market daily. If the fair value of the collateral held falls below the minimum guidelines for securities lent, additional collateral is obtained. In lieu of securities or cash, the borrower may deliver to the lending agent irrevocable bank letters of credit, government securities, or repurchase agreements as collateral. If the collateral

obtained consists in whole or in part of cash, the lending agent may use or invest the cash in accordance with reinvestment guidelines approved by the State Treasurer.

All securities loans can be terminated on demand by either the System or the borrower. Cash collateral is invested in the lending agent's short-term investment pool. The relationship between the maturities of the investment pool and the System's loans is affected by the maturities of the securities loans made by other entities that use the lending agent's pool, which the System cannot determine. The System cannot pledge or sell collateral securities received unless the borrower defaults.

As of December 31, 2017 and 2016, the System had no credit risk exposure to borrowers because participation in the securities lending program was halted in 2008.

### Credit Risk Concentration

Credit risk concentration is the risk of loss attributed to investments (other than those issued or guaranteed by the U.S. Government) in any one organization that represented 5 percent or more of the plan's net position. The System had no single issuer that exceeded 5 percent of total investments at December 31, 2017 and 2016. Investment in mutual funds, external investment pools and other pooled investments were excluded in accordance with GASB.

### 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 had no actively managed long-term fixed income investments. The fixed-income portfolio consists of the following:

#### 2017 CREDIT AND INTEREST RATE RISK

SECURITY	QUALITY RATING	MODIFIED ADJUSTED DURATION	FAIR VALUE
U.S. Government fixed income pooled funds	AAA	5.5	\$ 237,811,458
Corporate bond pooled funds	AA	5.5	109,257,220
State Treasury STIF	Not rated	0.1	9,782,676

#### 2016 CREDIT AND INTEREST RATE RISK

SECURITY	QUALITY RATING	MODIFIED ADJUSTED DURATION	FAIR VALUE
U.S. Government fixed income pooled funds	AAA	5.5	\$ 192,551,231
Corporate bond pooled funds	AA	5.5	88,463,409
State Treasury STIF	Not rated	0.1	20,551,021

### Foreign Currency Risk

Foreign currency risk is the risk that changes in exchange rates will adversely affect the fair value of an investment. As part of the System's program of diversification, the System invests in non-U.S. markets. At December 31, the System had the following non-U.S. currency exposure:

#### 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

#### 2016 FOREIGN CURRENCY RISK

CURRENCY	EQUITY	SHORT-TERM	TOTAL
European Euro	\$ 67,281,234	\$ (11)	\$ 67,281,223
Japanese Yen	51,055,154	-	51,055,154
British Pound Sterling	24,361,893	(28)	24,361,865
Hong Kong Dollar	15,963,001	-	15,963,001
Swiss Franc	11,432,195	-	11,432,195
Danish Krone	5,702,438	(5)	5,702,433
Australian Dollar	4,667,542	-	4,667,542
Norwegian Krone	4,380,051	-	4,380,051
Swedish Krona	2,761,621	-	2,761,621

### (5) SECURITIES LENDING

Under the securities lending program, the lending agent provides indemnification to the Commonwealth if the borrowers fail to return the underlying securities (and the collateral is inadequate to replace the securities lent) or fail to pay income distributions on them. As of December 31, 2017 and 2016, the System had no securities out for loan and no cash collateral invested in the custodial agent's short-term collateral investment pool because of a continued Board policy prohibiting participation in securities lending.

## (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 will no longer apply 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, 2016, are summarized in the following table:

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%)
<b>Total</b>	<b>100%</b>	

### 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, 2016 and 2015, and the total pension liability used to calculate the net pension liability was determined by an actuarial valuation at December 31, 2016 and 2015.

The following methods and assumptions were used in the actuarial valuation at December 31, 2016 and 2015:

ACTUARIAL METHODS	
Actuarial cost method	Entry age
Amortization method	Straight-line amortization of investments over five years and amortization of assumption changes and non-investment gains/losses over the average expected remaining service lives of all employees that are provided benefits
Asset valuation method	Fair (market) value

ACTUARIAL ASSUMPTIONS	
Investment rate of return/ discount rate	7.25% net of expenses including inflation for December 31, 2016; 7.5% net of expenses including inflation for December 31, 2015
Projected salary increases	Average of 5.60% with range of 3.70%–8.90% including inflation for December 31, 2016; average of 5.70% with range of 3.85%–9.05% including inflation for December 31, 2015
Inflation	2.6% for December 31, 2016; 2.75% for December 31, 2016
Mortality rate	Projected RP-2000 Mortality Tables adjusted for actual plan experience and future improvement
Cost of living adjustments	Ad hoc

At December 31, 2017, PMRS reported a net pension liability of \$4.5 million and \$4.7 million at December 31, 2016 for its proportionate share of the net pension liability for the SERS plan on the Statement of Fiduciary Net Position. At December 31, 2016, PMRS' proportion was 0.02323614 percent and 0.02580846 percent at December 31, 2015.

Deferred outflows of resources of \$1.2 million and \$944,083 at December 31, 2017 and 2016, respectively, are reported in deferred outflows of resources on the Statement of Fiduciary Net Position. The amount reported as deferred outflows of resources at December 31, 2017 and 2016 includes contributions subsequent to the measurement date of \$452,537 and \$371,833, respectively, which are recognized as a reduction of the net pension liability in the years ended December 31, 2018 and 2017. Deferred inflows of resources of \$423,837 and \$2,590 at December 31, 2017 and 2016, respectively, are reported in deferred inflows of resources on the Statement of Fiduciary Net Position. The amounts reported as deferred outflows of resources and deferred inflows of resources will be recognized over a 5 year closed amortization period, depending on the type of deferral.

For the years ended December 31, 2017 and 2016, PMRS recognized pension expenses of \$390,827 and \$797,959, respectively, in administrative expenses on the Statement of Changes in Fiduciary Net Position.

### 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:

	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](http://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 \$380 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 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 or return for each major asset class included in the target asset allocation are summarized in the following table:

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%
<b>Total</b>	<b>100%</b>	

### 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, 2017 and 2016, and the total OPEB liability used to calculate the net OPEB liability was determined by an actuarial valuation dated March 2018.

The total OPEB liability in the June 30, 2017 and 2016 actuarial valuation was determined using the following actuarial assumptions, applied to all periods included in the measurement:

	JUNE 30, 2017	JUNE 30, 2016
Discount rate	3.58%	2.85%
Investment rate of return	5.00%	5.00%
Inflation	2.60%	2.60%
Initial medical trend rate	6.0%	6.0%
Ultimate medical trend rate	3.9%	3.9%
Year ultimate trend rate reached	2075	2075

At December 31, 2017, PMRS reported a net OPEB liability of \$6.8 million for its proportionate share of the net OPEB liability on the Statement of Fiduciary Net Position. At June 30, 2017, PMRS' proportion of the net pension liability was 0.034 percent.

Deferred outflows of resources of \$165,550 at December 31, 2017 are reported in deferred outflows of resources on the Statement of Fiduciary Net Position. The amount reported as deferred outflows of resources includes contributions subsequent to the measurement date which will be recognized as a reduction of the net OPEB liability in the year ended December 31, 2018. Deferred inflows of resources of \$623,000 at December 31, 2017 are reported in deferred inflows of resources on the Statement of Fiduciary Net Position. The amount reported as deferred inflows of resources will be recognized over a 5 year closed amortization period.

For the year ended December 31, 2017, PMRS recognized OPEB expenses of \$225,096 in administrative expenses on the Statement of Changes in Fiduciary Net Position.

### 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 (2.58 percent) or 1-percentage-point higher (4.58 percent) than the current 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 (2.9 percent) or 1-percentage-point higher (4.9 percent) than the current 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](http://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**

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.

### **(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 June 28, 2018, 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
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 EMPLOYEE PAYROLL	NET PENSION LIABILITY AS A PERCENTAGE OF COVERED EMPLOYEE PAYROLL	PLAN FIDUCIARY NET POSITION AS A PERCENTAGE OF TOTAL PENSION LIABILITY
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 EMPLOYEE PAYROLL	NET OPEB LIABILITY AS A PERCENTAGE OF COVERED EMPLOYEE PAYROLL	PLAN FIDUCIARY NET POSITION AS A PERCENTAGE OF TOTAL OPEB LIABILITY
6/30/2017	0.034393%	\$ 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, 2017 and 2016

	2017	2016
<b>PERSONNEL EXPENSES</b>		
Salaries and wages	\$ 1,684,581	\$ 1,511,682
Social security contributions	121,402	109,945
Pension expense	390,827	797,959
OPEB expense	225,096	444,310
Insurance expenses	256,450	291,393
Other employee benefits	5,648	6,154
<b>Total personnel expenses</b>	<b>2,684,004</b>	<b>3,161,443</b>
<b>PROFESSIONAL SERVICES</b>		
Actuarial	1,101,212	1,045,587
Data processing	225,972	26,399
IT consultants	205,908	219,423
Investment consultants	190,000	190,125
Legal	144,478	178,796
Audit	134,030	230,695
Miscellaneous professional	104,514	90,264
Proxy voting services	17,171	17,065
<b>Total professional costs</b>	<b>2,123,285</b>	<b>1,998,354</b>
<b>COMMUNICATION</b>		
Telephone	59,735	44,778
Travel and conferences	30,796	43,330
Printing	5,827	1,730
Postage	5,098	22,136
Advertising	4,845	6,480
<b>Total communication</b>	<b>106,301</b>	<b>118,454</b>
<b>OTHER SERVICES AND CHARGES</b>		
Contracted EDP services	399,679	568,817
Office space rental	223,623	112,444
Equipment leasing	33,002	29,319
Supplies	10,558	15,495
Dues and subscriptions	7,997	6,980
Maintenance	602	1,119
Bonding and insurance, net	531	(681)
<b>Total other services and charges</b>	<b>675,992</b>	<b>733,493</b>
<b>DEPRECIATION</b>	<b>116,164</b>	<b>29,894</b>
<b>Total administrative expenses</b>	<b>\$ 5,705,746</b>	<b>\$ 6,041,638</b>

## SCHEDULE 2 – INVESTMENT EXPENSES

Comparative Two-Year Schedule  
Years Ended December 31, 2017 and 2016

	2017	2016
Investment management fees	\$ 10,748,081	\$ 9,035,332
Custodial fees	92,577	92,000
<b>Total investment expenses</b>	<b>\$ 10,840,658</b>	<b>\$ 9,127,332</b>

### SCHEDULE 3 – PAYMENTS TO CONSULTANTS

Comparative Two-Year Schedule  
Years Ended December 31, 2017 and 2016

FIRM NAME	NATURE OF SERVICE	2017	2016
Cheiron	Actuary	\$ 1,101,212	\$ 1,045,587
CliftonLarsonAllen, LLP	Auditor	134,030	230,695
Dahab Associates, Inc.	Investment consultant	190,000	190,125
OST, Inc.	IT consultants	157,134	163,536
IMR	Records Management Services	196,076	-
Dell	IT consultants	48,774	55,887
ISS	Proxy voting services	17,171	17,065
<b>Total</b>		<b>\$ 1,844,397</b>	<b>\$ 1,702,895</b>



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# Investments

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## 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 unallocated cash and pending sales and purchases. The difference noted above represents the difference between the investment balance of \$2,505,464,512 presented in the Financial Section and the balance of \$2,500,352,133 reported in this section as of December 31, 2017. The difference noted above also results in a difference in the investment income of \$390,981,588 presented in the Financial Section and the investment return of \$389,894,445 reported in this section for the year ended December 31, 2017.

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. Mortgage-backed securities are valued on the basis of future principal and interest payments and are discounted at prevailing interest rates for similar instruments. 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, 2017, the Pennsylvania Municipal Retirement Board's investment portfolio was valued at \$2,500,352,133, which was an increase of \$347,420,149 from the December 31, 2016 ending value of \$2,152,931,984. For the year ended December 31, 2017, the fund had net withdrawals of \$42,474,296 and an investment return of \$389,894,445.

For the five years ended December 31, 2017, the fund had net withdrawals of \$145,814,474 and an investment return of \$988,882,918. The System's investment portfolio increased from \$1,657,283,689 as of December 31, 2012 to \$2,500,352,133 as of December 31, 2017.

Since inception in December 1985, the fund had net withdrawals of \$289,881,461 and an investment return of \$2,627,838,163. The System's investment portfolio increased from \$162,395,431 as of December 31, 1985 to \$2,500,352,133 as of December 31, 2017. If the fund had earned an annualized compound rate of 5.5% since inception, it would have been worth \$550,656,458 or \$1,949,695,675 less than the actual value as of December 31, 2017.

## 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 specifically spelled out 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 any 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.

## **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 sub-custodian.

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 (currently averaging three cents per share or less).

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, 2017 and 2016, total investment managers' fees were 43 basis points and 42 basis points, respectively, of the System's total investment portfolio.

### **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, 2017, the gross rate of return for the System's total portfolio was 18.4 percent, which was 1.8 percent more than the shadow index return of 16.6 percent and ranked in the 6th percentile of the Investment Metrics (IM) Public Fund universe. For the five years ended December 31, 2017, the gross rate of return for the System's total portfolio was 10.2 percent, which was 0.2 percent more than the shadow index return of 10.0 percent and ranked in the 13th percentile. Since inception, the gross rate of return for the System's total portfolio was 8.9%, compared to the shadow index return of 8.9%.

#### **Large Cap Equity**

For the year ended December 31, 2017, the gross rate of return for the large cap equity portfolio was 24.6 percent, which was 2.8 percent more than the S&P 500 Index return of 21.8 percent and ranked in the 30th percentile. For the five years ended December 31, 2017, the gross rate of return for the large cap equity portfolio was 16.2 percent, which was 0.4 percent more than the S&P 500 Index return of 15.8 percent, and ranked in the 35th percentile.

#### **Small Cap Equity**

For the year ended December 31, 2017, the gross rate of return for the small cap equity portfolio was 15.8 percent, which was 1.2 percent more than

the Russell 2000 Index return of 14.6 percent and ranked in the 47th percentile. For the five years ended December 31, 2017, the gross rate of return for the small cap equity portfolio was 14.9 percent, which was 0.8 percent more than the Russell 2000 Index return of 14.1 percent and ranked in the 56th percentile.

#### **Developed International Equity**

For the year ended December 31, 2017, the gross rate of return for the developed international equity portfolio was 33.6 percent, which was 8.0 percent more than the MSCI EAFE Index return of 25.6 percent and ranked in the 36th percentile. For the five years ended December 31, 2017, the gross rate of return for the developed international equity portfolio was 10.3 percent, which was 1.9 percent more than the MSCI EAFE Index return of 8.4 percent and ranked in the 31st percentile.

#### **Emerging Markets Equity**

For the year ended December 31, 2017, the gross rate of return for the emerging market equity portfolio was 37.5 percent, which was 0.3 percent less than the MSCI Emerging Markets Index return of 37.8 percent and ranked in the 47th percentile. For the five years ended December 31, 2017, the gross rate of return for the emerging market equity portfolio was 4.1 percent, which was 0.6 percent less than the MSCI Emerging Markets Index return of 4.7 percent and ranked in the 81st percentile.



## Real Estate

For the year ended December 31, 2017, the gross rate of return for the real estate portfolio was 6.7 percent, which was 0.3 percent less than the NCREIF Property Index return of 7.0 percent. For the five years ended December 31, 2017, the gross rate of return for the real estate portfolio was 9.7 percent, which was 0.5 percent less than the NCREIF Property Index return of 10.2 percent.

## Fixed Income

For the year ended December 31, 2017, the gross rate of return for the fixed income portfolio was 3.6 percent, which was 0.1 percent more than the Barclays Aggregate Index return of 3.5 percent and ranked in the 81st percentile. For the five years ended December 31, 2017, the gross rate of return for the fixed income portfolio was 2.1 percent, compared to the Barclays Aggregate Index return of 2.1 percent and ranked in the 80th percentile.

## Asset Allocation

The following table shows the allocation of assets as of December 31, 2017.

\* Numbers may not add due to rounding.

### ASSET ALLOCATION

(As of December 31, 2017)

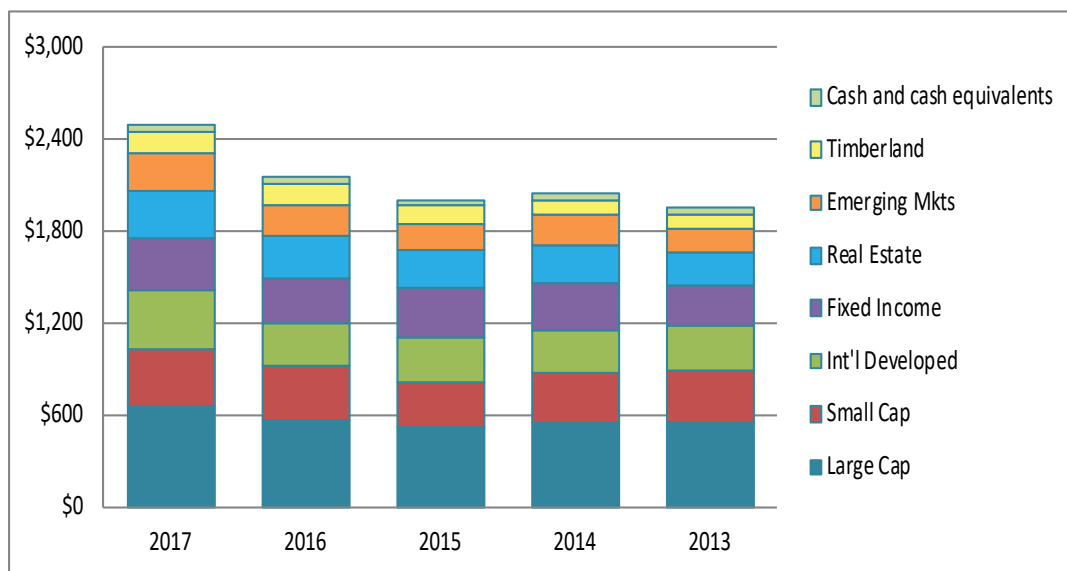
TYPE	PERCENTAGE OF PORTFOLIO	AMOUNT
Large cap equity	26.3%	\$ 656,513,331
Small cap equity	15.1%	377,645,753
<b>Total domestic equity</b>	<b>41.4%</b>	<b>1,034,159,084</b>
International developed markets	14.8%	371,324,012
International emerging markets	10.2%	254,550,785
<b>Total international equity</b>	<b>25.0%</b>	<b>625,874,797</b>
<b>Total equities</b>	<b>66.4%</b>	<b>1,660,033,881</b>
<b>Real estate</b>	<b>17.6%</b>	<b>440,283,466</b>
<b>Fixed income</b>	<b>13.9%</b>	<b>347,068,678</b>
<b>Cash and cash equivalents<sup>(1)</sup></b>	<b>2.1%</b>	<b>52,966,108</b>
<b>Total portfolio</b>	<b>100.0%</b>	<b>\$ 2,500,352,133</b>

<sup>(1)</sup> 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, 2017.

### PORTFOLIO DISTRIBUTION — FIVE YEAR TREND

(Fair Value – Amounts in Millions)



## Portfolio Rates of Return<sup>(1)</sup>

(As of December 31, 2017)

The following table compares the gross rates of return for the System's total investment portfolio as of December 31, 2017 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	18.4%	8.8%	10.2%	6.3%	8.9%
Public Fund Rank <sup>(2)</sup>	(6)	(7)	(13)	(44)	-
Shadow Index <sup>(3)</sup>	16.6%	8.6%	10.0%	6.3%	8.9%
Large Cap Equity	24.6%	11.5%	16.2%	8.6%	10.9%
Large Cap Rank <sup>(4)</sup>	(30)	(35)	(35)	(56)	-
S&P 500	21.8%	11.4%	15.8%	8.5%	10.8%
Small Cap Equities	15.8%	10.2%	14.9%	9.1%	-
Small Cap Rank <sup>(4)</sup>	(47)	(61)	(56)	(70)	-
Russell 2000	14.6%	9.9%	14.1%	8.7%	9.6%
International Equity	33.6%	11.0%	10.3%	4.0%	-
International Equity Rank <sup>(5)</sup>	(36)	(37)	(31)	(47)	-
MSCI EAFE	25.6%	8.3%	8.4%	2.4%	8.1%
Emerging Markets Equity	37.5%	9.2%	4.1%	-	-
Emerging Markets Rank <sup>(6)</sup>	(47)	(58)	(81)	-	-
MSCI Emerging Markets	37.8%	9.5%	4.7%	2.0%	-
Real Estate	6.7%	8.9%	9.7%	4.3%	6.9%
NCREIF	7.0%	9.4%	10.2%	6.1%	7.9%
Fixed Income	3.6%	2.3%	2.1%	4.0%	6.6%
Core Fixed Income Rank <sup>(7)</sup>	(81)	(86)	(80)	(90)	-
Barclays Aggregate	3.5%	2.3%	2.1%	4.0%	6.5%

<sup>(1)</sup> 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.

<sup>(2)</sup> Ranked against balanced funds.

<sup>(3)</sup> 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.

<sup>(4)</sup> Ranked against equity oriented funds.

<sup>(5)</sup> Ranked against international developed markets oriented funds.

<sup>(6)</sup> Ranked against international emerging markets oriented funds. PMRS entered emerging markets equities in late 2008.

<sup>(7)</sup> Ranked against fixed income oriented funds.

## Asset Allocation

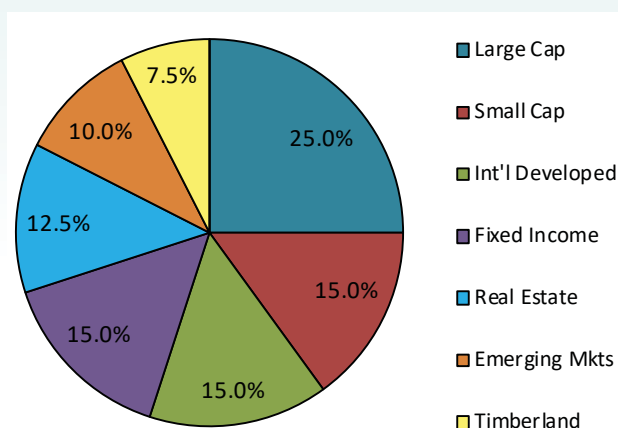
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International equities (emerging markets)	10 percent
Fixed income	15 percent
Real estate	12.5 percent
Timberland	7.5 percent

The System's asset allocation as of December 31, 2017, was \$1.034 billion committed to domestic equities (\$656.5 million to large cap and \$377.6 small cap), \$625.9 million to international equities (\$371.3 million to international developed and \$254.6 million to emerging markets), \$347.1 million to bonds, \$305.6 million to real estate, \$134.7 million to timber, and \$53.0 million to cash equivalents. The percentage distribution is illustrated below.

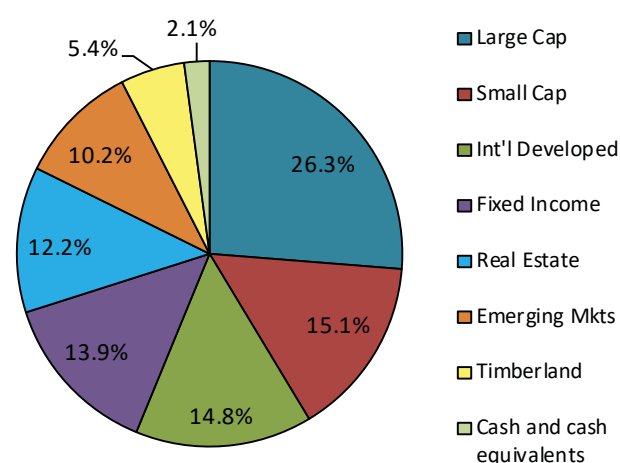
## ASSET ALLOCATION TARGETS

As of December 31, 2017



## ACTUAL ASSET ALLOCATION

As of December 31, 2017



## ASSET ALLOCATION

As of December 31, 2017

SECTOR	TARGET PERCENTAGE ALLOCATION	TARGET DOLLAR ALLOCATION	CURRENT PERCENTAGE ALLOCATION	CURRENT DOLLAR ALLOCATION	DOLLAR VARIANCE	PERCENTAGE VARIANCE
Large cap	25%	\$ 625,088,033	26.3%	\$ 656,513,331	\$ 31,425,298	1.3%
Small cap	15%	375,052,820	15.1%	377,645,753	2,592,933	0.1%
<b>Total domestic equity</b>	<b>40%</b>	<b>1,000,140,853</b>	<b>41.4%</b>	<b>1,034,159,084</b>	<b>34,018,231</b>	<b>1.4%</b>
International developed	15%	375,052,820	14.8%	371,324,012	(3,728,808)	-0.2%
Emerging markets	10%	250,035,213	10.2%	254,550,785	4,515,572	0.2%
<b>Total international equity</b>	<b>25%</b>	<b>625,088,033</b>	<b>25.0%</b>	<b>625,874,797</b>	<b>786,764</b>	<b>0.0%</b>
<b>Total equity</b>	<b>65%</b>	<b>1,625,228,886</b>	<b>66.4%</b>	<b>1,660,033,881</b>	<b>34,804,995</b>	<b>1.4%</b>
Fixed income	15%	375,052,820	13.9%	347,068,678	(27,984,142)	-1.1%
Real estate	12.5%	312,544,017	12.2%	305,590,747	(6,953,270)	-0.3%
Timber	7.5%	187,526,410	5.4%	134,692,719	(52,833,691)	-2.1%
Cash and cash equivalents	0%	-	2.1%	52,966,108	52,966,108	2.1%
<b>TOTAL</b>	<b>100%</b>	<b>\$ 2,500,352,133</b>	<b>100%</b>	<b>\$ 2,500,352,133</b>		

# Investment Summary

## SUMMARY OF INVESTMENT EXPENSES

Comparative Two-Year Schedule  
Years ended December 31, 2017 and 2016

FIRM NAME	2017	2016
<b>Large Cap Domestic Managers</b>		
Eagle Capital Management <sup>(1)</sup>	\$ 989,948	\$ 713,596
Polen Capital Management	827,905	692,646
LSV Asset Management	624,597	577,844
Federated Investors <sup>(2)</sup>	631,490	525,402
DePrince, Race & Zollo <sup>(3)</sup>	-	11,740
<b>Total Large Cap Domestic Manager Fees</b>	<b>3,073,940</b>	<b>2,521,228</b>
<b>Small Cap Domestic Managers</b>		
Emerald Advisers	560,702	447,494
Smith Graham & Co. <sup>(4)</sup>	501,060	72,430
LSV Asset Management <sup>(4)</sup>	410,199	62,859
AMI Asset Management <sup>(5)</sup>	93,052	-
Copeland Asset Management <sup>(5)</sup>	60,398	-
BMO Global Asset Management <sup>(6)</sup>	-	510,948
Brandywine Global Investment <sup>(6)</sup>	-	3
<b>Total Small Cap Domestic Manager Fees</b>	<b>1,625,411</b>	<b>1,093,734</b>
<b>Passive Manager</b>		
State Street Global Advisors	273,621	277,964
<b>Total Passive Manager Fees</b>	<b>273,621</b>	<b>277,964</b>
<b>International Managers</b>		
HGK Asset Management	754,154	607,113
Hardman Johnston Global Advisors	618,374	493,530
Jarislowky, Fraser Limited	363,938	317,501
<b>Total International Manager Fees</b>	<b>1,736,466</b>	<b>1,418,144</b>
<b>Real Estate Managers</b>		
TIAA Global Asset Management	1,759,860	1,632,440
Forest Investment Associates	1,145,606	1,170,032
Prudential Financials, Inc.	1,133,177	921,790
<b>Total Real Estate Manager Fees</b>	<b>4,038,643</b>	<b>3,724,262</b>
<b>Total Investment Management Fees</b>	<b>\$ 10,748,081</b>	<b>\$ 9,035,332</b>
Custodial Fees – BNY Mellon	92,577	92,000
<b>Total Investment Expenses</b>	<b>\$ 10,840,658</b>	<b>\$ 9,127,332</b>

<sup>(1)</sup> Investment manager hired 1st quarter 2016.

<sup>(2)</sup> Investment manager hired 2nd quarter 2015.

<sup>(3)</sup> Investment manager terminated 1st quarter 2016.

<sup>(4)</sup> Investment manager hired 4th quarter 2016.

<sup>(5)</sup> Investment manager hired 3rd quarter 2017.

<sup>(6)</sup> Investment manager terminated 4th quarter 2016.

## TEN LARGEST COMMON STOCK HOLDINGS

As of December 31, 2017 (Fair Value)

STOCK	SHARES	FAIR VALUE	PERCENTAGE OF PORTFOLIO
Alphabet Inc., Class C	24,386	\$ 25,517,510	1.03%
Oracle Corp.	480,366	22,711,704	0.91%
Microsoft Corp.	265,163	22,682,043	0.91%
Facebook Inc.	112,511	19,853,691	0.80%
Adobe Systems Inc.	100,515	17,614,249	0.71%
VISA Inc.	151,030	17,220,441	0.69%
Automatic Data Processing Inc.	109,506	12,833,008	0.52%
Nike Inc	197,180	12,333,609	0.50%
Berkshire Hathaway Inc.	60,975	12,086,465	0.49%
Accenture PLC	76,173	11,661,325	0.47%

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

## PORTFOLIO SUMMARY

As of December 31, 2017

TYPE OF INVESTMENT	COST VALUE	FAIR VALUE	PERCENTAGE OF TOTAL FAIR VALUE
Corporate and government bonds			
U.S. Government bonds	\$ 196,983,101	\$ 237,811,458	10%
Corporate bonds	90,499,533	109,257,220	4%
<b>Total</b>	<b>287,482,634</b>	<b>347,068,678</b>	<b>14%</b>
Common stock			
Domestic	737,970,078	1,033,457,721	41%
International	420,434,745	625,204,742	25%
<b>Total</b>	<b>1,158,404,823</b>	<b>1,658,662,463</b>	<b>66%</b>
Other investments			
Real estate	348,806,465	438,583,422	18%
Short-term and other investments	61,149,949	61,149,949	2%
<b>Total</b>	<b>409,956,414</b>	<b>499,733,371</b>	<b>20%</b>
<b>Grand total</b>	<b>\$ 1,855,843,871</b>	<b>\$ 2,505,464,512</b>	<b>100%</b>

## PORTFOLIO QUALITY

Two-Year Comparative Analysis  
As of December 31, 2017 and 2016

BOND RATING	FAIR VALUE	PERCENTAGE OF TOTAL FAIR VALUE	PERCENTAGE OF TOTAL CARRYING VALUE
December 31, 2017			
AAA	\$ 237,811,458	69%	69%
AA	109,257,220	31%	31%
<b>Total bonds</b>	<b>\$ 347,068,678</b>	<b>100%</b>	<b>100%</b>
December 31, 2016			
AAA	\$ 192,551,231	69%	69%
AA	88,463,409	31%	31%
<b>Total bonds</b>	<b>\$ 281,014,640</b>	<b>100%</b>	<b>100%</b>

## SUMMARY OF COMMISSIONS PAID TO BROKERS

Year Ended December 31, 2017

BROKER NAME	COMMISSIONS PAID	BROKER NAME	COMMISSIONS PAID
Baird, Robert W. & Co. Inc., Milwaukee	\$ 8,699	ICBC Fincl. Svcs., New York	1,136
Banque Paribas, Paris	304	Instinet Clearing Ser. Inc., New York	1,805
Barclays Capital Inc./LE, New Jersey	3,054	Instinet Corp., New York	9,763
Barclays Capital, London	532	Instinet Europe Limited, London	20,714
Bernstein, Sanford C. & Co., New York	13,514	Instinet Pacific LTD, Hong Kong	932
Bloomberg Tradebook LLC, New York	5,363	Investment Tech. Group Inc., New York	382
Bloomberg Tradebook, New York	14,611	Investment Technology Group LTD, Dublin	1,280
BMO Capital Markets Corp, New York	289	ISI Group Inc., NY	1,060
BNP Paribas Prime Brokerage, Inc., New York	357	ITG Inc., New York	2,045
BNP Paribas SEC Svcs. SA, Singapore	2,686	J P Morgan Sec. LTD/Stock Lending, London	3,193
BNP Paribas SEC Svcs., London	2,382	J.P. Morgan Secs. LTD, London	13,736
BNY Convergenx Execution Sol, New York	2,685	J.P. Morgan Securities Inc., New York	6,109
BNY Convergenx, New York	7,359	J.P. Morgan Clearing Corp., New York	16,165
Boenning & Scattergood, W Conshohocken	1,043	Janney Montgomery Scott, Philadelphia	157
Brockhouse and Cooper, Montreal	93	Jefferies & Co. Inc., New York	12,061
Buckingham Research, New York	789	Jefferies & Co. LTD, London	1,072
Canadian Depository, Toronto	268	JMP Securities, San Francisco	86
Cantor Fitzgerald & Co. Inc., New York	144	Jonestrading Instl. Svcs. LLC, New York	1,929
Citibank NA, London	35	Keefe Bruyette & Woods Inc., Jersey City	155
Citigroup Gbl. Mkts. Inc., New York	11,197	Keybank Capital Markets Inc., New York	2,705
Citigroup Gbl. Mkts./Salomon, New York	3,254	King (CL) & Associates, Albany	207
Citigroup Global Markets Ltd., London	5,956	Knight Clearing Services LLC, Jersey City	255
Convergenx Execution Solution, New York	877	Knight Equity Markets LP, New York	581
Cowen and Co. LLC, New York	1,394	Leerink Swann and Company, New York	2,197
Cowen and Company, LLC, Jersey City	772	Liberum Capital Limited, London	1,359
Craig Hallum, New York	1,026	Liquidnet Inc., New York	2,580
Credit Lyonnais Secs (Asia), Hong Kong	1,181	Longbow Securities LLC, New York	1,301
Credit Lyonnais Secs., Singapore	9,837	Macquarie Capital (USA) Inc., New York	347
Credit Suisse, New York	30,491	Maxim Group, Jersey City	154
D Carnegie AB, Stockholm	1,576	Mellon Trust of New England, Pittsburgh	1,322
Daiwa Sec. SMBC Europe LTD, London	5,577	Merrill Lynch Intl. London Equities	18,069
Daiwa Secs. (HK) LTD, Hong Kong	468	Merrill Lynch Pierce Fenner Smith Inc., NY	39,953
Daiwa Secs. Amer Inc, New York	1,836	Merrill Lynch Professional Clrg., Purchas	426
Davidson (D A) & Co. Inc., New York	1,488	Mirabaud Securities LLP, London	741
Deutsche Bk. AG, London	814	Mizuho Securities USA Inc., New York	1,957
Deutsche Bk. Intl. Eq., London	13,869	Morgan Stanley & Co. Inc., NY	17,498
Deutsche Bk. Secs. Inc., NY	2,465	National Finl. Svcs. Corp., New York	18,961
Exane, Paris	4,697	NBCN Inc. Toronto	37
Fidelity Capital Markets, New York	298	Needham and Co. LLC, New York	724
Fidelity Clearing Canada ULC, Toronto	13	Northland Secs Inc., New York	2,239
Fidentis Equities Sv. Sa., Madrid	5,355	Oppenheimer & Co. Inc., New York	7,066
First Clearing LLC, Richmond	466	Pareto Fonds As., Oslo	4,897
Fox River Execution Tech., LLC, Jersey City	176	Pershing LLC, Jersey City	24,723
Goldman Sachs & Co., NY	41,399	Pershing Securities LTD, London	223
Goldman Sachs Execution & Clearing, NY	4,149	Piper Jaffray & Co., Jersey City	2,140
Goldman Sachs Intl., London	7,605	Piper Jaffray & Co., Minneapolis	3,358
Goldman Sachs Intl., NY	1,044	Raymond James & Assoc Inc., St. Petersburg	14,453
Guggenheim Capital Markets LLC, New York	1,181	RBC Capital Markets LLC, New York	5,504

<b>BROKER NAME</b>	<b>COMMISSIONS PAID</b>
Redburn Partners LLP, London	5,380
Royal Bank of Canada Europe LTD, London	691
Sandler O'Neill and Partner LP, New York	426
Sanford C. Bernstein & Co. Inc., London	11,686
Seaport Group Securities, LLC, New York	1,033
SG SEC (London) LTD, London	1,087
Sidoti & Co. LLC, New York	121
State Street Global Markets LLC, Boston	367
Stephens Inc., Little Rock	441
Stifel Nicolaus	11,937
Sturdivant and Co. Inc., New York	816
Suntrust Capital Markets Inc., New York	76
Suntrust Robinson Humphrey Inc., Atlanta	143
Telsey Advisory Group LLC, Dallas	392
UBS Equities, London	144
UBS Securities LLC, Stamford	11,741
UBS Warburg Asia LTD, Hong Kong	957
UBS Warburg, London	22,614
Wedbush Morgan Secs Inc., Los Angeles	2,781
Weeden & Co., New York	2,057
Wells Fargo Securities LLC, Charlotte	2,790
Wells Fargo Securities LLC, New York	1,966
Westminster Res Assc/Broadcort, New York	2,338
William Blair & Co., Chicago	1,572
<b>Total Brokerage Commissions Paid</b>	<b>\$ 577,981</b>



# Actuarial



# Actuary's Certification Letter



*Classic Values, Innovative Advice*

## *Via Electronic Mail*

June 12, 2018

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

Dear Board Members:

At your request, we are providing the following tables from the Annual Actuarial Valuation of the Pennsylvania Municipal Retirement System (the System) as of January 1, 2017 to be published in the end-of-year Comprehensive Annual Financial Report (CAFR). These tables were provided based on the results of the valuation as outlined in our actuarial valuation report. The figures and data disclosed in the following tables for the Financial and Actuarial sections were provided by Cheiron for 2012-2017.

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 funded ratio of the System as of January 1, 2017 is 97.8% funded on an actuarial asset value basis. The funded ratio on a market value basis is 92.7%.

In addition, while Cheiron did not explicitly provide the Schedule of 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 for each plan and the employers' anticipated payroll for each participating plan. It may also include 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. The investment return assumption was updated on January 1, 2017, but there were no other assumption or method changes 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, 2017 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 2017 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.


To the best of our knowledge, these tables were prepared in accordance with generally recognized and accepted actuarial principles and practices which are consistent with the Code of Professional Conduct and applicable Actuarial Standards of Practice set out by the Actuarial Standards Board. Furthermore, as credentialed actuaries, we meet the Qualification Standards 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, MAAA  
Principal Consulting Actuary

  
Karen Zangara, FSA, MAAA  
Principal Consulting Actuary

  
Anthony Bucci, EA, MAAA  
Associate Actuary

# Required Supplemental Information

## 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:

<b>Valuation date</b>	January 1, 2016 - County and cash balance plans January 1, 2017 - Municipal and cash balance plans
<b>Measurement date</b>	January 1, 2017
<b>Actuarial cost method</b>	Entry age normal
<b>Amortization method</b>	Level dollar for Plan Bases and an average for Aggregate Gain/Loss, 10% of surplus is credited against aggregate cost where applicable
<b>Actuarial assumptions:</b>	
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) <sup>(1)</sup>	RETIREES & BENEFICIARIES (2)	ACTIVE MEMBER EMPLOYER FINANCED CONTRIBUTIONS (3)	ACTUARIAL VALUE OF REPORTED ASSETS	PORTION OF ACCRUED LIABILITIES COVERED BY REPORTED ASSETS		
					(1)	(2)	(3)
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%
2012	407,199,633	639,260,852	680,756,784	1,792,809,433	100%	100%	110%

<sup>(1)</sup> 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.

## FUNDED STATUS OF ACTUARIAL LIABILITIES

VALUATION DATE JANUARY 1,	ACTUARIAL VALUE OF ASSETS (A) <sup>(1)</sup>	ACTUARIAL LIABILITY (AL) ENTRY AGE (B)	UNFUNDED AL (SURPLUS) (B-A)	FUNDED RATIO (A/B)	DISCOUNT RATE
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%
2012	1,792,809,433	1,727,217,269	(65,592,164)	103.8%	6.00%

<sup>(1)</sup> The Actuarial Value Assets (AVA) were determined based upon the methodology outlined in PMRS Policy Statement 05-2. The 1/1/2017 AVA was based upon the reserves published by PMRS in the CAFR for the years ended December 31, 2016 and 2015.

The actuarial assumptions as of January 1, 2017, 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, 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
January 1, 2010	5	691	202

## 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
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%
2012	438	16,404	228	14,252	4,394	59,411,245	7.5%	13,521	2.4%

## SCHEDULE OF TOTAL MEMBERSHIP BY STATUS

Six Year Trend

VALUATION DATE JANUARY 1,	ACTIVE MEMBERS						INACTIVE MEMBERS <sup>(1)</sup>	TOTAL
	DEFINED BENEFIT PLANS	CASH BALANCE PLANS	RETIREEES	BENEFICIARIES	DEFERRED PENSIONS			
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	

<sup>(1)</sup> 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 <sup>(1)</sup>					
	2017	2016	2015	2014	2013	2012
a. Retirees currently receiving benefits	5,099	4,784	4,566	4,423	4,160	3,899
b. Beneficiaries currently receiving benefits	600	576	542	520	520	495
c. Terminated vested employees entitled to future benefits from defined benefit plans	834	872	779	753	800	723
d. Terminated non-vested employees entitled to contribution refunds from defined benefit plans	28	7	8	14	51	21
e. Active employees in defined benefit plans	7,728	7,698	7,580	7,676	7,599	7,836
i. Aggregate salary <sup>(2)</sup>	\$422,621,214	\$394,133,120	\$384,270,155	\$389,410,214	\$376,296,674	\$366,882,467
ii. Vested <sup>(3)</sup>	4,573	4,676	4,726	4,881	4,885	4,964
iii. Non-vested	3,156	3,022	2,854	2,795	2,715	2,872
f. Participants in cash balance plans	1,619	1,575	1,462	1,476	1,429	1,387
i. Aggregate salary	\$53,998,354	\$51,642,049	\$47,537,851	\$45,193,710	\$44,490,671	\$41,143,383
ii. Active	1,303	1,274	1,214	1,185	1,131	1,158
iii. Inactive	316	301	248	291	298	229

<sup>(1)</sup> Includes defined benefit non-county plans, defined benefit county plans, and cash balance plans.

<sup>(2)</sup> Annualized salary paid during the prior plan year for defined benefit plan participants and actual salary for active cash balance participants.

<sup>(3)</sup> 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
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%)

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
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%)

### 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 Mortality

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 Mortality

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).

### MUNICIPAL RATES

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

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

### 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 plus 2 percent during the select period only then reverting to inflation and merit/seniority thereafter. Final actual salary plans assume an additional 6 percent at retirement.

### SAMPLE SALARY RATES

AGE	TOTAL RATE <sup>(1)</sup> (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:

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

## I. Social Security Projections<sup>(3)</sup>:

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:<sup>(3)</sup>

2.8 percent per year, subject to plan limitations.

## 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

### RETIREMENT RATES FOR MUNICIPAL MEMBERS

AGE	CURRENT RATE OF NORMAL RETIREMENT <sup>(2)</sup>
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%

<sup>(1)</sup> Add 2 percent for each of the first three years of service.

<sup>(2)</sup> 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.

<sup>(3)</sup> If applicable.

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 2016.

## Actuarial Methods

Contribution requirements are individually determined for each participating municipality, on an actuarial basis as described below, at least biannually. 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:

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 the portion of any additional investment income to be distributed as "excess interest." 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 asset value 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 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 Mem-



ber 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 municipalities are valued explicitly every odd calendar year. However, the liabilities for the county plans are explicitly valued every even calendar year. For the odd calendar years, the liabilities for the county plans 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 the county defined benefit plans were rolled forward based on the actual benefit payments. These liabilities reflect the assumption changes and any material changes to the liabilities that may have occurred since the prior actuarial valuation. 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 municipal and cash balance plans were explicitly valued as of January 1, 2017 based on the data, plan provisions, methods and assumptions.

### **CHANGES IN ACTUARIAL ASSUMPTIONS AND METHODS**

As a response to the recession and slow recovery as well as a review of the System liabilities, annuity purchase rates, and the long-term expected rate of return for the market value of assets, the regular interest rate was reduced by the Pennsylvania Municipal Retirement Board effective January 1, 2017 from 5.5% to 5.25%.



**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 schedules beginning on page 65 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 69 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 71 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 )

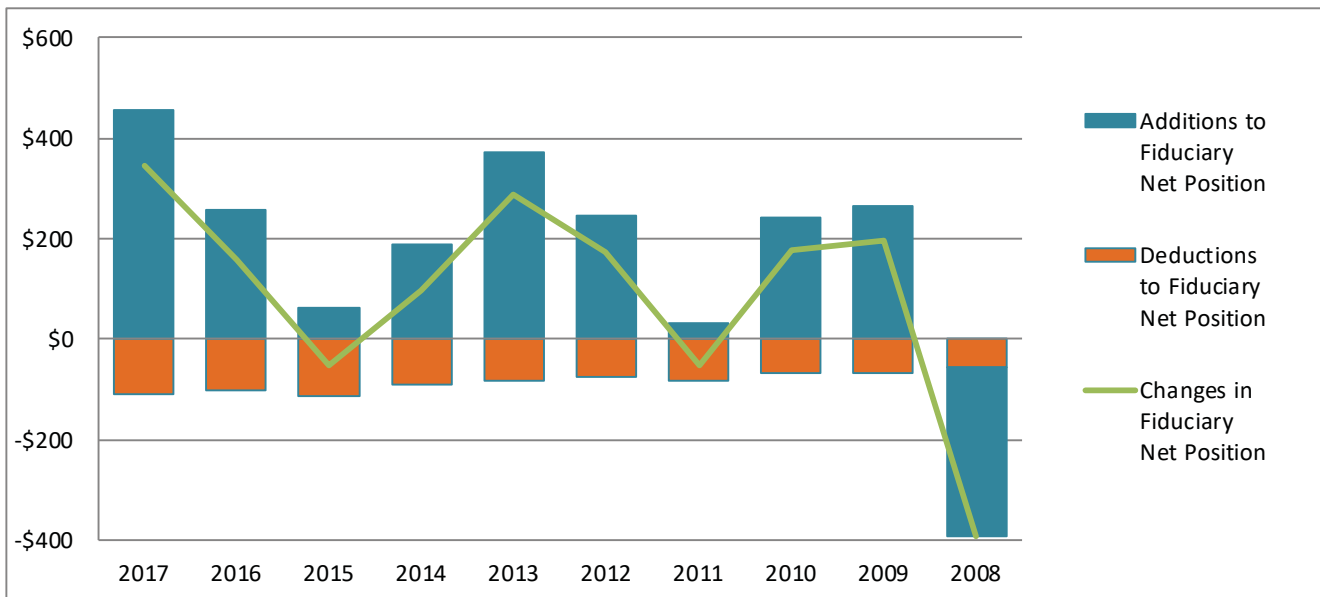
As of December 31, 2017

PLAN	PLAN MEMBERS	PERCENTAGE OF TOTAL MEMBERSHIP
Allentown City	880	5.34%
Adams County	875	5.31%
Bethlehem City	670	4.06%
Harrisburg City	452	2.74%
Jefferson County	299	1.81%
Harrisburg City Fire	213	1.29%
Easton City	205	1.24%
Monroeville Municipality	193	1.17%
Lehigh County Authority	191	1.16%
Bucks County Water & Sewer Authority	171	1.04%
Wyoming Valley Sanitary Authority	144	0.87%
Tredyffrin Township	133	0.81%
Capital Region Water	127	0.77%
Upper Moreland Township	118	0.72%
Hermitage City	112	0.68%

# Part I • Financial

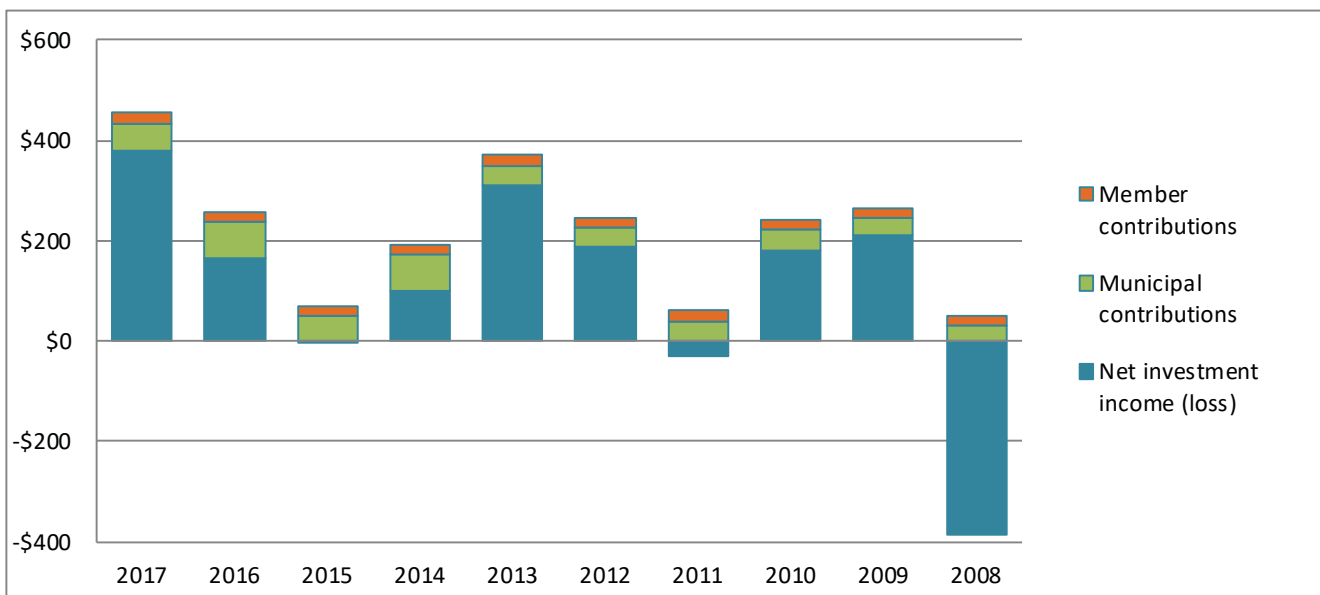
## RESULTS OF OPERATIONS - 10 YEAR TREND

(Amounts in Millions)



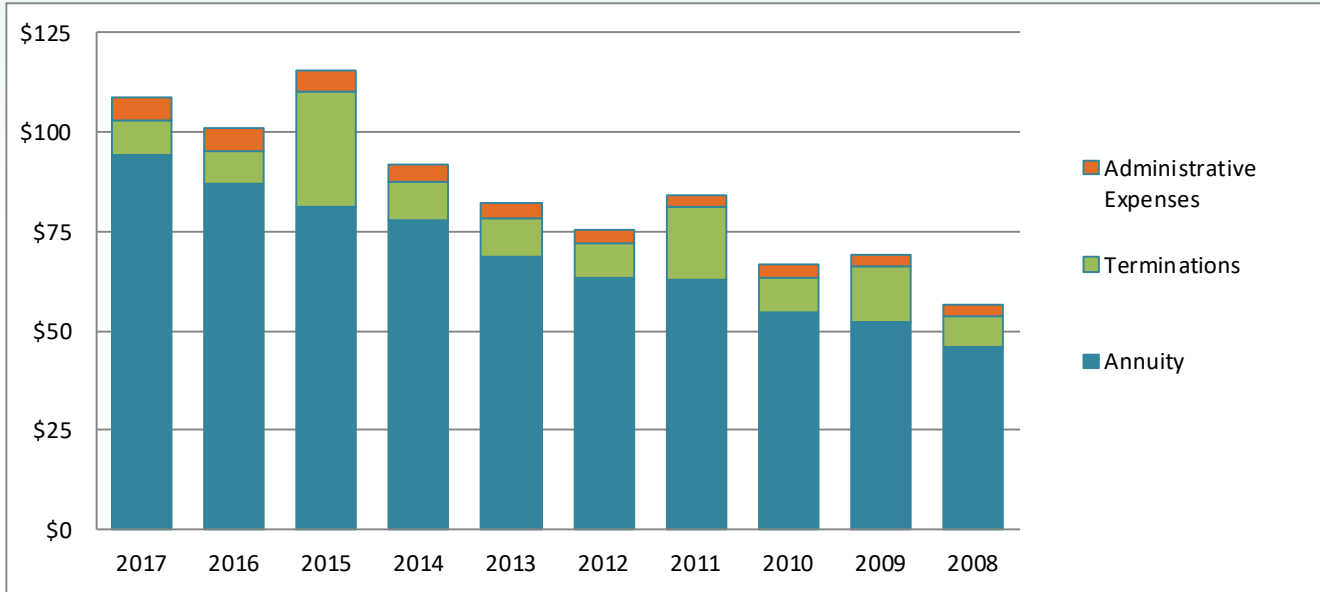
## ADDITIONS TO FIDUCIARY NET POSITION - 10 YEAR TREND

(Amounts in Millions)



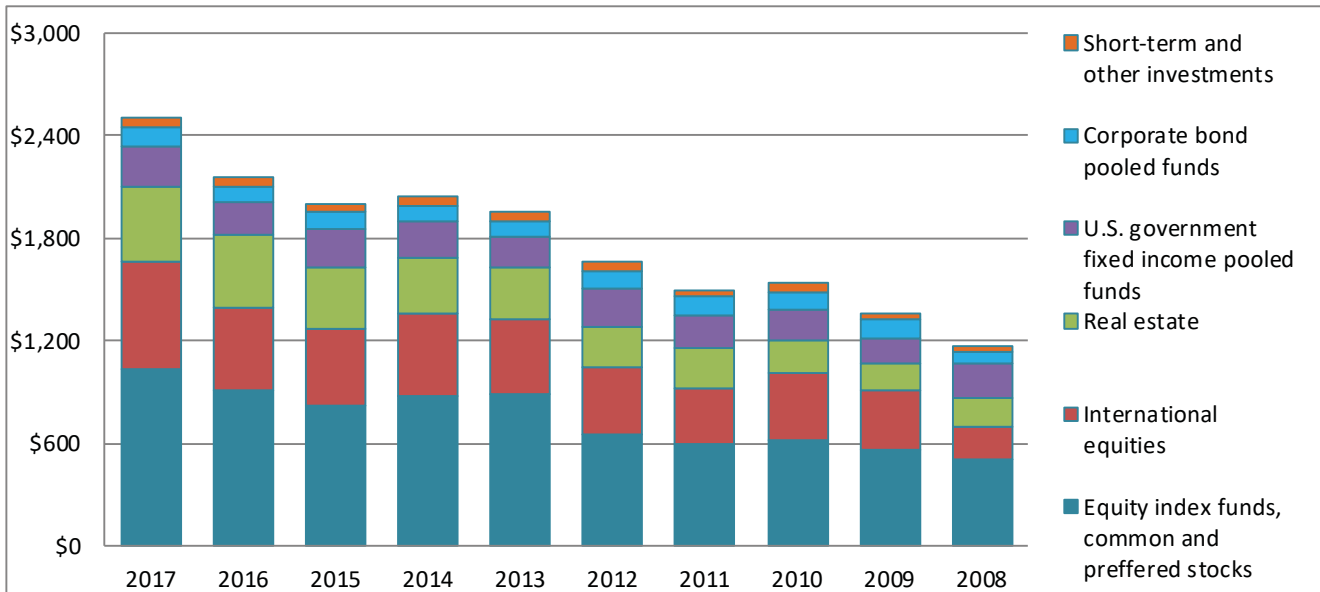
## DEDUCTIONS FROM FIDUCIARY NET POSITION - 10 YEAR TREND

(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
2017	\$ 75,412,160	\$ 380,140,930	\$ 103,077,938	\$ 5,705,746	\$ 346,769,406
2016	93,999,086	163,943,015	95,013,418	6,041,638	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
2008	49,693,605	(387,077,602)	53,771,225	2,986,656	(394,141,878)

## ADDITIONS TO FIDUCIARY NET POSITION

10 Year Trend

YEAR	MEMBER CONTRIBUTIONS	MUNICIPAL CONTRIBUTIONS AND TRANSFERS FROM OTHER PLAN ADMINISTRATORS <sup>(1)</sup>	MUNICIPAL ASSESSMENTS <sup>(2)</sup>	NET INVESTMENT INCOME (LOSS) AND MISCELLANEOUS INCOME	ADDITIONS TO FIDUCIARY NET POSITION, NET OF INVESTMENT LOSSES
2017	\$ 21,717,564	\$ 53,446,315	\$ 248,281	\$ 380,140,930	\$ 455,553,090
2016	20,776,539	72,995,245 <sup>(3)</sup>	227,302	163,943,015	257,942,101
2015	19,472,225	49,062,549	206,114	(4,943,521)	63,797,367
2014	18,441,437	71,157,740 <sup>(4)</sup>	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
2008	17,870,426	31,532,859	290,320	(387,077,602)	(337,383,997)

<sup>(1)</sup> Contributions were made in accordance with actuarially determined contribution requirements.

<sup>(2)</sup> Municipal assessments are receipts but not assets of the plans.

<sup>(3)</sup> Municipal contributions for 2016 include transfers from other plan administrators of \$21.4 million.

<sup>(4)</sup> 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		ADMINISTRATIVE EXPENSES	DEDUCTIONS FROM FIDUCIARY NET POSITION
	ANNUITY	REFUNDS		
2017	\$ 94,172,167	\$ 8,905,771	\$ 5,705,746	\$ 108,783,684
2016	87,046,730	7,966,688	6,041,638	101,055,056
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
2008	46,173,544	7,597,681	2,986,656	56,757,881

## SCHEDULE OF BENEFIT DEDUCTIONS FROM FIDUCIARY NET POSITION BY TYPE

10 Year Trend

YEAR	ANNUITY BENEFITS BY TYPE						TRANSFER AND OTHER	TOTAL ANNUITY
	NORMAL	EARLY	DISABILITY	SURVIVOR	DEATH	DROP <sup>(1)</sup>		
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
2008	34,911,175	4,549,688	1,351,900	3,897,639	1,397,947	-	65,195	46,173,544

<sup>(1)</sup> First DROP participant to terminate was on January 1, 2013.

## SCHEDULE OF REFUND DEDUCTIONS FROM FIDUCIARY NET POSITION BY TYPE

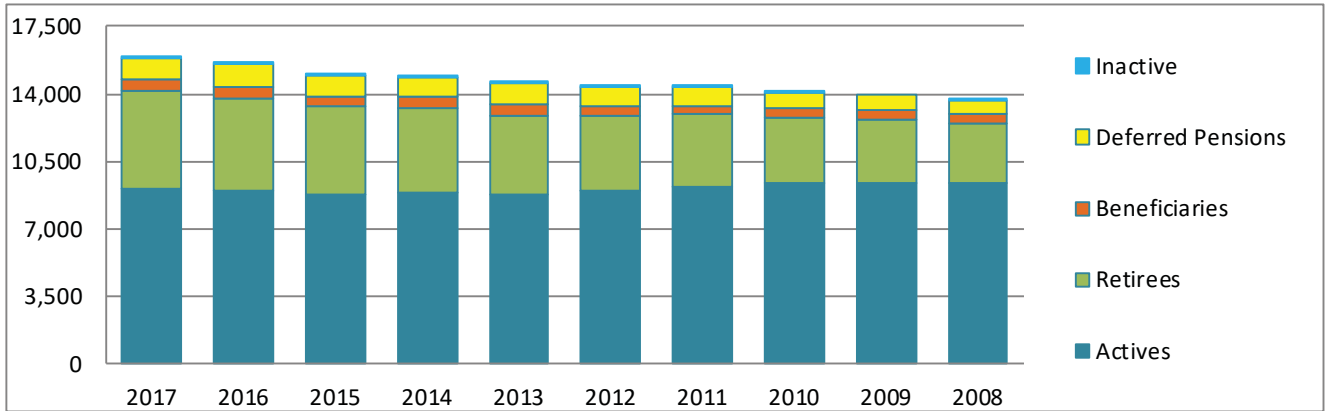
10 Year Trend

YEAR	REFUNDS BY TYPE		TOTAL REFUNDS
	TERMINATIONS	LUMP SUM	
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
2008	6,675,755	921,926	7,597,681

## Part II • Membership

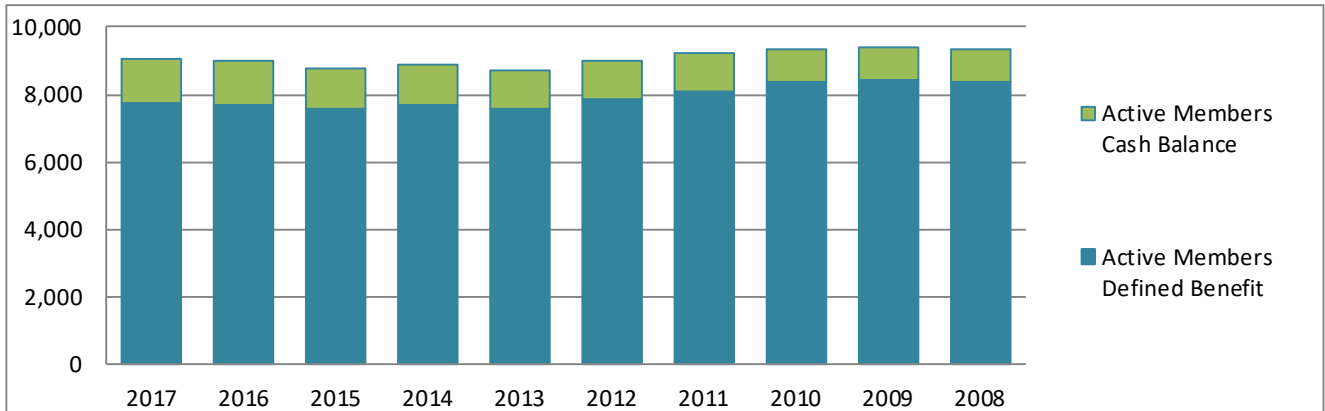
### TOTAL MEMBERSHIP - 10 YEAR TREND

(Valuation Date 1/1)



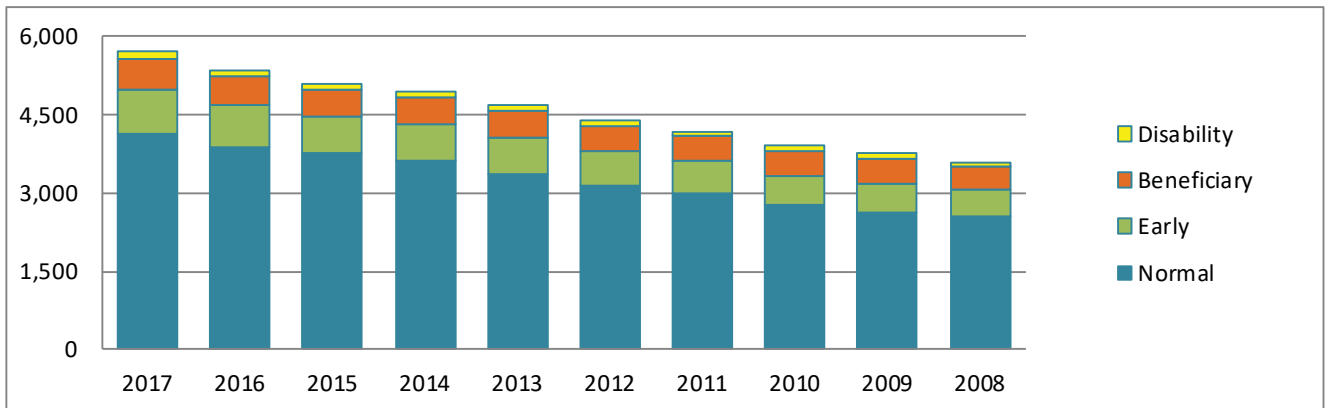
### ACTIVE MEMBERS - 10 YEAR TREND

(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, 2017

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	4	1	2	0	0	0	0	0	0	0	7
20 – 24	118	67	30	19	2	0	0	0	0	0	236
25 – 29	145	129	83	139	63	6	0	0	0	0	565
30 – 34	111	96	78	112	214	73	4	0	0	0	688
35 – 39	87	84	72	92	196	209	68	2	0	0	810
40 – 44	64	89	54	88	182	185	180	60	0	0	902
45 – 49	107	77	73	109	211	224	228	150	92	3	1,274
50 – 54	84	80	60	116	210	247	225	167	186	85	1,460
55 – 59	72	61	58	109	195	255	219	171	174	237	1,551
60 – 64	31	24	30	54	139	174	179	132	139	208	1,110
65 & up	27	3	16	31	59	65	57	51	49	70	428
<b>Total</b>	<b>850</b>	<b>711</b>	<b>556</b>	<b>869</b>	<b>1,471</b>	<b>1,438</b>	<b>1,160</b>	<b>733</b>	<b>640</b>	<b>603</b>	<b>9,031</b>

## DISTRIBUTION OF ACTIVE MEMBERS

Average Salary by Age/Service as of January 1, 2017

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	\$ 32,029	\$59,121	\$56,116	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 42,781
20 – 24	34,580	36,603	42,725	48,099	50,209	-	-	-	-	-	37,411
25 – 29	36,446	42,384	50,342	49,725	49,467	49,165	-	-	-	-	44,697
30 – 34	38,303	45,864	50,423	49,581	55,254	60,395	67,462	-	-	-	50,354
35 – 39	39,480	42,437	44,268	49,967	56,018	63,902	60,780	59,691	-	-	53,545
40 – 44	39,382	44,604	44,249	50,110	52,935	60,107	65,848	62,906	-	-	55,067
45 – 49	38,961	41,562	48,632	47,092	50,715	59,058	61,261	63,910	70,215	63,169	55,090
50 – 54	35,490	46,046	46,608	51,050	51,405	51,721	56,940	60,889	66,331	62,498	54,509
55 – 59	41,959	46,396	50,269	48,503	48,593	51,841	55,839	58,396	60,634	62,707	54,400
60 – 64	44,347	45,248	46,035	50,969	47,307	48,716	53,734	52,739	57,364	60,443	52,948
65 & up	46,888	64,486	44,009	48,241	46,612	44,884	49,841	55,354	50,929	59,301	50,554
<b>Total</b>	<b>\$ 38,249</b>	<b>\$ 43,474</b>	<b>\$ 47,535</b>	<b>\$ 49,453</b>	<b>\$ 51,633</b>	<b>\$ 55,491</b>	<b>\$ 58,381</b>	<b>\$ 59,235</b>	<b>\$ 62,214</b>	<b>\$ 61,503</b>	<b>\$ 52,776</b>

## PENSIONS IN PAYMENT STATUS ON JANUARY 1, 2017

By Type and Monthly Amount

MONTHLY AMOUNT	TYPE OF PENSION					
	TOTAL	NORMAL	INVOLUNTARY EARLY	VOLUNTARY EARLY	SERVICE DISABILITY	NON-SERVICE DISABILITY
Total	5,699	4,752	212	614	51	70
Under \$100	269	233	18	16	1	1
\$100 - \$199	335	273	28	32	1	1
200 - 299	317	246	27	43	1	0
300 - 399	316	252	26	36	0	2
400 - 499	310	254	20	32	2	2
500 - 599	324	263	10	42	3	6
600 - 699	271	220	15	32	3	1
700 - 799	264	207	12	40	2	3
800 - 899	244	191	9	31	3	10
900 - 999	234	179	6	33	7	9
1,000 - 1,199	462	365	16	63	7	11
1,200 - 1,399	359	285	6	58	5	5
1,400 - 1,599	307	256	4	33	6	8
1,600 - 1,799	240	207	6	24	1	2
1,800 - 1,999	224	191	4	25	3	1
2,000 - 2,199	187	165	2	16	2	2
2,200 - 2,399	174	160	2	11	1	0
2,400 - 2,599	144	128	0	13	1	2
2,600 - 2,799	108	96	0	9	1	2
2,800 - 2,999	96	93	0	2	0	1
3,000 - 3,499	209	194	1	13	1	0
3,500 - 3,999	133	126	0	6	0	1
4,000 and over	172	168	0	4	0	0

## PENSIONS AWARDED BY TYPE AND AMOUNT

10 Year Trend

VALUATION DATE 1/1	TOTAL		NORMAL		VOLUNTARY EARLY		INVOLUNTARY EARLY		DISABILITY	
	COUNT	AVERAGE MONTHLY AMOUNT	COUNT	AVERAGE MONTHLY AMOUNT	COUNT	AVERAGE MONTHLY AMOUNT	COUNT	AVERAGE MONTHLY AMOUNT	COUNT <sup>(1)</sup>	AVERAGE MONTHLY AMOUNT
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
2008	236	1,065	227	1,056	0	0	6	1,259	3(0)	1,350

<sup>(1)</sup> 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 <sup>(1)</sup>	INACTIVE MEMBERS <sup>(2)</sup>	TOTAL
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
2008	8,383	950	3,173	425	744	7	13,682

<sup>(1)</sup> Inactive participants with rights to deferred pension (vested)

<sup>(2)</sup> 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
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%
2008	8,383	0.8%	692	1.3%	364,865,000	1.7%	43,524	0.9%

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
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%
2008	950	3.5%	183	3.4%	31,107,000	10.3%	32,744	6.5%

## SCHEDULE OF AVERAGE NEW MONTHLY BENEFIT PAYMENTS FROM DEFINED BENEFIT PLANS<sup>(1)</sup>

10 Year Trend

RETIREMENT EFFECTIVE DATES	YEARS CREDITED SERVICE						
	< 5	5-10	10-15	15-20	20-25	25-30	30+
<b>2017</b>							
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
<b>2016</b>							
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
<b>2015</b>							
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
<b>2014</b>							
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
<b>2013</b>							
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
<b>2012</b>							
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
<b>2011</b>							
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
<b>2010</b>							
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
<b>2009</b>							
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
<b>2008</b>							
Average monthly benefit	\$384	\$421	\$579	\$1,245	\$1,184	\$2,282	\$2,742
Average final average salary	\$32,219	\$34,214	\$31,146	\$43,673	\$32,099	\$50,829	\$50,022
Number of retired members	10	23	31	48	26	32	53

<sup>(1)</sup> 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<sup>(1)</sup>

10 Year Trend

RETIREMENT EFFECTIVE DATES	YEARS CREDITED SERVICE						
	< 5	5-10	10-15	15-20	20-25	25-30	30+
<b>2017</b>							
Average monthly benefit	\$149	\$222	\$289	\$732	\$948	\$495	\$1,334
Number of retired members	6	6	7	6	6	4	11
<b>2016</b>							
Average monthly benefit	\$47	\$220	\$499	\$650	\$1,124	\$1,595	\$1,385
Number of retired members	3	13	11	9	10	8	10
<b>2015</b>							
Average monthly benefit	\$131	\$189	\$239	\$823	\$1,071	\$713	\$1,914
Number of retired members	3	10	5	8	9	4	6
<b>2014</b>							
Average monthly benefit	\$100	\$420	\$649	\$580	\$1,285	\$942	\$717
Number of retired members	12	10	9	8	6	2	6
<b>2013</b>							
Average monthly benefit	\$141	\$203	\$430	\$388	\$820	\$945	\$1,028
Number of retired members	7	10	5	4	7	3	5
<b>2012</b>							
Average monthly benefit	\$189	\$270	\$557	\$580	\$857	\$581	\$804
Number of retired members	6	7	8	5	13	5	5
<b>2011</b>							
Average monthly benefit	\$139	\$219	\$393	\$217	\$1,051	\$649	\$1,110
Number of retired members	3	11	5	7	10	4	5
<b>2010</b>							
Average monthly benefit	\$62	\$120	\$467	\$466	\$798	\$1,099	\$1,049
Number of retired members	2	6	8	1	4	2	3
<b>2009</b>							
Average monthly benefit	\$17	\$205	\$402	\$464	\$372	\$428	\$488
Number of retired members	3	7	4	9	5	3	4
<b>2008</b>							
Average monthly benefit	\$43	\$231	\$947	\$628	\$1,596	\$605	\$793
Number of retired members	3	4	4	7	2	2	2

<sup>(1)</sup> Includes normal retirement, early retirement and disability benefit payments from cash balance plans for new retirees.

## SCHEDULE OF PARTICIPATING PLANS<sup>(1)(2)</sup>

As of January 1, 2017

### 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  
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  
South Waverly Borough

<sup>(1)</sup> County names are in parentheses.

<sup>(2)</sup> The abbreviation CB designates a Cash Balance plan. NU denotes a Non-Uniformed plan.

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

### **FIREFIIGHTERS**

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

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-Robeson Joint Authority  
Wyoming Valley Sanitary Authority  
York County Planning Commission



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