

# Pennsylvania Public School Employees' Retirement System

A Component Unit of the Commonwealth of Pennsylvania



*Celebrating*



*Years (est. 1919)*



## Comprehensive Annual Financial Report

Fiscal Years Ended June 30, 2019 & 2018

# **Pennsylvania Public School Employees' Retirement System**

A Component Unit of the Commonwealth of Pennsylvania

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Harrisburg, Pennsylvania 17101-1905

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## **Comprehensive Annual Financial Report** for the Fiscal Years Ended June 30, 2019 and 2018

**Melva S. Vogler**  
***Chairman***  
***Board of Trustees***

**Nathan G. Mains**  
***Vice Chairman***  
***Board of Trustees***

**Glen R. Grell**  
***Executive Director***

*Report prepared by the Public School Employees' Retirement System  
Office of Financial Management Staff with support from many areas of PSERS*

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**Henry H. Baish**  
**PSERS' First Secretary**  
**1918 - 1944**



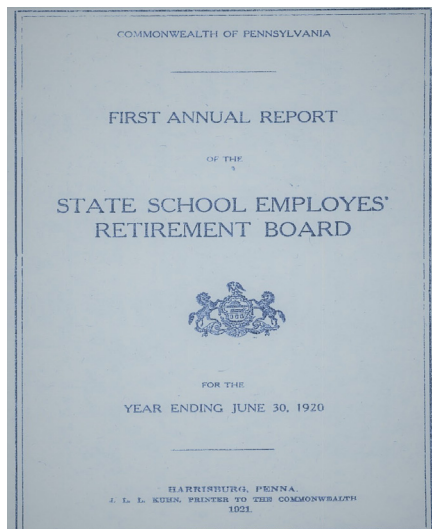
**Glen R. Grell**  
**PSERS' Executive Director**  
**2015 - Present**

# INTRODUCTORY SECTION

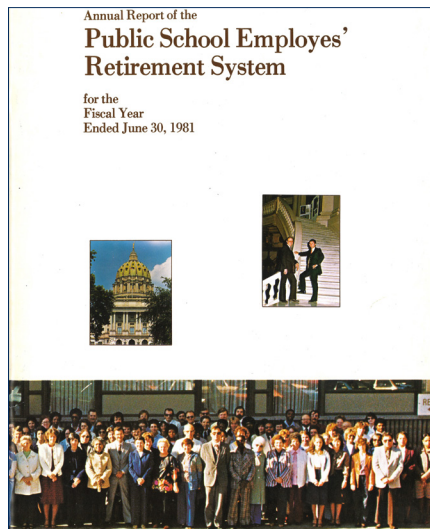
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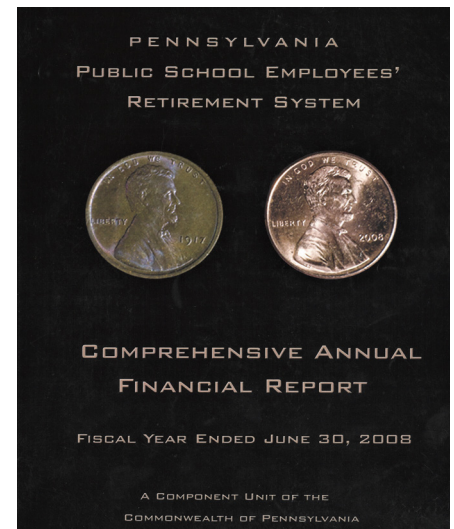
1920 CAFR Cover



1981 CAFR Cover



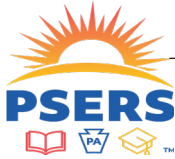
2008 CAFR Cover



## Letter of Transmittal

COMMONWEALTH OF PENNSYLVANIA

### PUBLIC SCHOOL EMPLOYEES' RETIREMENT SYSTEM



5 North 5th Street  
Harrisburg PA 17101-1905

*Toll-Free - 1-888-773-7748*

*(1-888-PSERS4U)*

*Local - 717-787-8540*

*Web Address: [www.pfers.pa.gov](http://www.pfers.pa.gov)*

November 7, 2019

The Honorable Thomas W. Wolf, Governor of Pennsylvania  
Members of the PA General Assembly  
Members of the Retirement System  
Members of the Boards of PSERS' Employers  
Pennsylvania Public School Employees' Retirement System Board of Trustees

Dear Governor Wolf, Legislators, Members, Employers' Board members, and PSERS Board of Trustees:

We are pleased to present the one-hundredth edition of the Comprehensive Annual Financial Report (CAFR) for the Pennsylvania Public School Employees' Retirement System (PSERS, System, or Fund) for the fiscal years ended June 30, 2019 (FY 2019) and 2018 (FY 2018). This report is intended to provide financial, investment, actuarial, and statistical information in a single publication in accordance with the Government Finance Officers Association standards.

This past July 1, 2019 marked the 100th anniversary since PSERS officially began operations and providing retirement benefits for public school employees throughout Pennsylvania. PSERS has paid out retirement benefits uninterrupted for 100 years through two World Wars, the Great Depression, and the Great Recession. Over 500,000 active and retired public school employees rely on PSERS for their retirement. PSERS is proud to serve our members and provide secure retirement income and we will continue our commitment to our members for the next 100 years. The theme of this year's CAFR is a celebration of all of PSERS' employees throughout our history who made PSERS' 100th anniversary possible. Through good times and bad, PSERS staff's dedication and commitment to our members has never wavered since our System began. PSERS' members remain our priority and we continue to operate the System for their exclusive benefit. In recognition of the 100th anniversary, the CAFR section title pages display a sampling of prior year CAFR report covers, financial section title pages, investment portfolio covers and actuarial reports. In addition, the CAFR also includes current and past staff photos, and a historical timeline of PSERS.

The management of the System is solely responsible for the accuracy and completion of this report, pursuant to section 24 Pa.C.S. §8502(n) of the Public School Employees' Retirement Code (Retirement Code). The entire report can be downloaded from PSERS' website at [www.pfers.pa.gov](http://www.pfers.pa.gov).

The System was established on July 18, 1917 to provide retirement benefits to public school employees of the Commonwealth of Pennsylvania (PA). The members eligible to participate in the System include all full-time public school employees, part-time hourly public school employees who render at least 500 hours of service in the school year, and part-time per diem public school employees who render at least 80 days of service in the school year in any of the reporting entities in Pennsylvania. As of June 30, 2019, the System had approximately 256,000 active members with an estimated annual active payroll of \$13.8 billion.

The annuitant membership at June 30, 2019 was comprised of over 237,000 retirees and beneficiaries who receive over \$509 million in pension and healthcare benefits each month. The average yearly benefit paid to annuitants is \$25,498. The average benefit payment for each benefit type, grouped by years of credited service, is detailed in the Statistical Section of this report. See the Distribution of Annual Pension Amounts chart in the Introductory Section of this report.

In addition to retirement benefits, PSERS administers the Premium Assistance Program that provides a health insurance premium subsidy of up to \$100 per month for those retirees who qualify. At June 30, 2019, there were over 94,000 members participating in the Premium Assistance Program. PSERS also manages a health insurance program, PSERS Health Options Program, that is entirely funded through participating member premiums and



provides Medicare Supplemental, Medicare Advantage, Prescription Drug, and Dental plans to over 99,000 retirees and their dependents.

PSERS provides a stable source of revenue for local economies throughout Pennsylvania. In FY 2019, PSERS distributed \$6.3 billion or nearly 93% of total pension benefits to retired members who reside in Pennsylvania. These pension benefits are a significant economic driver that benefit the economy of the Commonwealth. See the Pension Benefits by County map in the Introductory Section of this report.

The System is a governmental cost-sharing, multiple-employer defined benefit pension plan, to which all members and reporting units contribute. PSERS is administered by a staff of 347 and has 773 reporting units as of June 30, 2019. The System is headquartered in Harrisburg, Pennsylvania, and has seven field offices in strategic areas of the Commonwealth to enable direct contact with the membership and the System's employers.

PSERS was established by law as an independent administrative board directed by a governing board of trustees (Board), which exercises control and management of the System, including the investment of its assets. PSERS is considered a component unit of the Commonwealth of Pennsylvania as defined by the Governmental Accounting Standards Board (GASB). An annual audit of the System by an independent certified public accounting firm is required by the Retirement Code. PSERS has contracted with CliftonLarsonAllen LLP for this audit of its financial statements and has received an unmodified opinion as evidenced in the Report of Independent Auditors in the Financial Section of this CAFR. An unmodified opinion means that PSERS' financial statements fairly present, in all material respects, its financial condition. In addition, no significant findings were noted during the audit and therefore, a management letter was not issued. This is the tenth consecutive year that a management letter was not issued by the independent auditors and is reflective of the hard work and dedication of PSERS' staff to continue to improve the internal controls, operations, and efficiency of the System.

### **Economic Summary**

Economically, the past fiscal year was a volatile and challenging one for global economies. The U.S. economy showed a significant decrease in momentum during the fiscal year as measured by the manufacturing Institute of Supply Management (ISM) Purchasing Managers Index (PMI), an indicator of activity in the sector. During the fiscal year, the ISM PMI decreased by 8.3 points to 51.7 at June 30, 2019, however, this was offset by a rise in Gross Domestic Product (GDP) and a decrease in unemployment. Significant headwinds affecting many non-U.S. economies included political uncertainty in Europe, specifically the rise of populism as evidenced by the formation of a populist coalition government in Italy, Great Britain's planned exit from the European Union (Brexit), and the imposition of billions of dollars of tariffs on goods imported into the U.S. from China. Faced with these challenges, central banks globally made efforts to encourage borrowing with the European Central Bank (ECB) and the Bank of Japan keeping short-term interest rates in negative territory.

The U.S. economy showed improvement this past year, driven by favorable monetary conditions and a change in the Federal Reserve (Fed) interest rate expectations during the year. The Fed increased interest rates two times in the first half of the fiscal year; however, it pivoted in the second half of the year from a tightening bias to an easing bias which improved optimism about the U.S. economy. The Federal Funds target rate increased by 0.5% during the past fiscal year with a range of 2.25% to 2.50%. While interest rates increased, they continue to be historically low providing for improvement in broad economic conditions. The U.S. real GDP increased year-over-year an average of 2.3% per quarter during the past fiscal year with a range of 1.1% to 3.1%. The official unemployment rate fell during the fiscal year from 4.0% at June 30, 2018 to 3.7% at June 30, 2019, approaching what the Fed would consider full employment.

The Euro Area economy continued to struggle, with modest growth during the past year. The unemployment rate began to normalize and improved to 7.6% as of June 2019 from 8.3% a year earlier. The Euro Area economy fell into contraction territory as evidenced by the Markit Eurozone Manufacturing PMI measurement of 47.6 in June 2019 falling from 54.9 last June. Aggressive actions by the ECB have generated improvements in employment but have failed to sustain economic growth and inflation. Although it slightly tightened monetary conditions by ending quantitative easing in December 2018, the ECB has continued its policy of very accommodative overnight interest rates by introducing another round of Targeted Long-Term Refinancing Operations in 2019.

## **Introductory Section**

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Japan's economy has moderately retreated over the past fiscal year. As of the second quarter 2019, Japan's real GDP grew by a year-over-year rate increase of 1.2% versus a 1.5% year-over-year rate increase as of June 2018. Japanese policy makers continue to aggressively attempt to stimulate their economy through a combination of low interest rates (the Bank of Japan policy rate is negative 0.1%), the purchase of higher risk assets by the Bank of Japan, coordinated diversification into higher risk assets by large public investors, and fiscal spending policies to encourage liquidity to move into riskier assets. China had robust growth compared to the other developed regions of the world. China's real GDP increased by 6.2% over the past year, moderately slower than the 6.7% pace for the year-ended June 2018. In addition, the trade war with the United States is putting pressure on the Chinese economy with no signs of abating anytime soon.

The Board has continued to fulfill its mission to maintain stability and the long-term optimum value of the Fund. This is evidenced in the long-term growth of the System's assets and the actuarial soundness of the Fund. The annualized time-weighted rate of return for the twenty five-year period ended June 30, 2019 was 8.08% and exceeded the Fund's long-term investment rate of return assumption. Of utmost importance to the Board is the assurance that the required reserves are available for payment of retirement benefits.

### **Status of Pension Funding Initiatives**

For the third consecutive year PSERS received full actuarial funding from school employers and the Commonwealth after 15 previous years of underfunding the actuarially required amount. Full actuarial funding from employers, along with member contributions and investment income, are all necessary sources of funds that will pay down the unfunded liability of the System and bring PSERS back to fully funded status.

PSERS net assets increased by more than 4% or \$2.4 billion to \$59.1 billion in the fiscal year ended June 30, 2019. The net asset increase was generated by solid investment returns and the ongoing budgetary commitment of Gov. Tom Wolf and the Legislature authorizing the state and employers to pay the full amount of the actuarially required contributions. As a result, the System's funded ratio on a market-value basis improved for the third consecutive year. The funding ratio increased from 54.0% at June 30, 2018 to 55.7% at June 30, 2019.

Full actuarial funding, which resulted from funding reforms from Act 120 of 2010, is making a positive difference to the health of the System. Subject to future investment returns and continued commitment to making employer contributions, the funded ratio is expected to climb to 60% in the next three years and to 70% by 2028.

### **Major Initiatives**

#### **Member Self-Service**

PSERS has been highly successful in its efforts to have members take advantage of the opportunities available through their Member Self-Service (MSS) Portal. Since being implemented in April 2018, more than 140,000 members have created their online account and conducted more than 141,000 transactions for themselves. The most common action taken was to update their nomination of beneficiaries. MSS also allows members to "Go Green" and as a result, 96% of all MSS accounts have opted to go paperless and receive information from PSERS electronically. This paperless opportunity has netted approximately \$300,000 in savings cumulatively since inception in FY 2018. Looking ahead, in an ongoing effort to ensure the protection of members' data, PSERS will be introducing multi-factor authentication requirements for members and employers using PSERS' online systems. Additional enhancements coming in 2020 include more mobile friendly design and secure messaging functionality.

#### **Act 5 of 2017**

The defined contribution plan enacted under Act 5 of 2017 was successfully implemented with the assistance of Voya Institutional Plan Services (VIPS) as the Third Party Administrator and Charles W. Cammack Associates as the consultant for the DC plan. School employees who become new members of PSERS on or after July 1, 2019 can choose from two hybrid plans consisting of defined benefit and defined contribution (DC) components or a stand-alone defined contribution plan. Also, Class T-C, Class T-D, Class T-E, and Class T-F members who were active on July 1, 2019 have a one-time option from September 1 to November 30, 2019 to elect prospectively into one of the new Act 5 membership classes.

As a part of this major implementation, PSERS not only modified its own systems but also worked with all of the public school employers across the Commonwealth to ensure this transition would be ready on time. Through that process, PSERS received valuable feedback from employers and moving forward we will be seeking additional feedback from our members as well.

Upcoming enhancements to the PSERS pension administration system will include enhanced security for web services consisting of multi-factor authentication, additional customer service functionality for improved call center interactions and modifications to enable the calculation of benefits for Class T-G and Class T-H members, who have a hybrid defined benefit/defined contribution retirement benefit.

### **New Logo**

On July 1, 2019, PSERS transitioned to a brand-new logo for the System. PSERS' logo celebrates the dawn of a new era for PSERS, that includes implementing a defined contribution plan and continuing our commitment to providing secure retirement benefits to Pennsylvania public school employees.

### **PSERS Investment Expenses Declined as Assets Continued to Grow**

Investment expenses decreased by \$17.9 million from \$467.7 million in FY 2018 to \$449.8 million in FY 2019 mainly due to a decrease in management fees in absolute return and fixed income of \$23 million. The decrease in absolute return is mainly attributable to a renegotiation of fee terms and lower performance fees earned in FY 2019. The decrease in fixed income is due to a decrease in performance fees. The decreases are partially offset by increases in management fees in the international equity asset class.

As a percentage of total benefits and expenses, investment expense decreased from 6.1% in FY 2018 to 5.8% in FY 2019. Similarly, investment expense has decreased from a high of 8.2% in FY 2013 to 5.8% in FY 2019 due to a decrease in investment expenses from \$557.6 million in FY 2013 to \$449.8 million in FY 2019. During this same period net assets increased \$10.4 billion from \$48.7 billion at June 30, 2012 to \$59.1 billion at June 30, 2019.

### **PSERS Increased Internal Management of Investments & Increased Annual Fee Savings**

The Investment Office received approval to increase its professional complement during the past fiscal year. The complement increase has allowed the Investment Office to support a large increase in assets managed in-house at a significantly lower cost than if those assets were managed externally. Over the past four years, the Investment Office increased the amount of assets managed internally from 30% to 39%, or by \$5.6 billion. The estimated savings from managing those assets in-house is over \$50 million per year.

### **New Fee Reduction Plan to Save \$2.4 Billion**

PSERS investment professionals and its investment consultants developed and presented an investment fee savings plan at the August 2018 PSERS Board Meeting as directed by the Board. PSERS investment professionals took a two-pronged approach to generate fee savings. The first was to establish a plan to renegotiate management fee arrangements to create a better alignment of interest between PSERS and each investment manager. The second was to expand internal management and bring additional assets in-house at a lower cost than external management.

Together, the projected fee savings are \$2.4 billion compounded over 30 years, which represent a 9.6% annual reduction in base management fees. The detailed fee reduction plan is posted on the investment page of PSERS website [www.psers.pa.gov](http://www.psers.pa.gov).

### **Budgetary and Financial Governance**

PSERS manages multiple budgets/appropriations which support its ongoing operations. Each October, the agency submits its budget requests to the Governor's Office of the Budget. PSERS' Administrative, Defined Contribution and Directed Commissions Recapture Program Budgets each require legislative approval. None of PSERS' budgets, with the exception of the Defined Contribution Budget, are funded from the Commonwealth's General Fund, but rather from the earnings of the Fund itself. Historically, PSERS has underspent its approved budgets, keeping more funds available to invest for PSERS' members.



PSERS continues to be a leader among large U.S. public pension funds in its effective control of expenses while providing necessary services to its membership. Within the past eighteen months, the System has added significantly to the number of active and retired members electing to receive newsletters, statement of accounts, 1099-Rs and other publications electronically, which saves the agency over \$200,000 per year in postage, printing and paper costs. During FY 2019 specifically, the agency achieved a substantial decline in overtime, reduced consultant and legal fees, decreased election and data storage services, and lowered subscriptions, all of which helps to maintain more investment earnings for the benefit of the Fund. In addition to these savings, PSERS purchased programming hours from its pension administration system vendor at a reduced prepaid rate in order to allow for vital changes to be made in the near future to comply with Act 5 of 2017.

PSERS participates in an independent, international benchmarking survey evaluating its costs and service performance in comparison to other similar public pension funds. Based on the most recent survey, PSERS had a 13% lower pension administration cost per member than the average cost for its peer group. By running a lean and efficient operation, PSERS saves the Commonwealth and school employers approximately \$6.2 million annually in administrative expenses compared to its peers.

In addition, during FY 2019, PSERS continued its ongoing efforts to recover funds from securities class action litigation. The System received \$5.8 million in settlements from these cases in FY 2019.

### **Social Media**

During FY 2019 PSERS received legal approval to begin using social media as a method of communicating to PSERS members and the general public. Since that time, PSERS has created a Twitter page and posts tweets daily. PSERS Twitter handle is @PA\_PSERS. PSERS expects to create other social media accounts over the next fiscal year to further enhance communication with our members.

### **PSERS Commitment to Fee Transparency**

PSERS is one of the most transparent among large public pension funds in the nation for the disclosure of management fees. For example, certain pension funds report very little or no management fees for alternative investments because they are considered part of the cost of the investment and are netted against performance rather than shown separately. PSERS, however, gathers management fee information from each of its limited partnerships and collective trust fund investments, even if it is not specifically disclosed in the fund's standard reports or identified in capital call requests. Such management fee information includes both base and performance fees obtained from either the fund's administrator statement, capital account statement or financial statements. This information is then utilized to report all relevant management fees in the System's financial statements. While the national debate over what constitutes a "fee" continues, PSERS will endeavor to remain transparent and report fees in accordance with current GASB standards and prevailing public pension industry practices to keep PSERS' financial statements both meaningful and comparative to its peers. In addition, PSERS reports all other investment expenses, including staff compensation and overhead, consultant, legal, and bank expenses incurred.

In October 2018, PSERS Board created an ad hoc Agency Committee on Fee Transparency comprised of five Board Members and supported by PSERS staff. The committee was charged with reviewing and assessing current and emerging best industry policies, practices and standards regarding the reporting of investment management performance and fees, charges, expenses and profit-sharing arrangements. The committee is expected to make recommendations to the Board, with the goal of making PSERS a national public pension fund leader in fee and performance disclosure and transparency.

### **PSERS Health Options Program Prescription Drug Plan Earned High Rating**

The PSERS Health Options Program (HOP) Prescription Drug Employer Group Waiver Plan earned a 4.5 star rating (out of 5 stars) from the Centers for Medicare and Medicaid Services (CMS) for the 2019 calendar year. PSERS is committed to keeping the HOP prescription drug program affordable, offering meaningful member choice, and holding vendors accountable to provide our members with best-in-class service.

Each year, CMS evaluates applicable health and prescription drug plans based on a plan's quality and performance. CMS uses a 5-star rating system that helps beneficiaries know how well a plan is doing. The star rating is a quality rating system of 14 measures of Medicare beneficiaries' experience with their drug plans. Star ratings can be used by beneficiaries to compare a plan's performance with other plans. PSERS' HOP Prescription Drug Plan scored very high in its recent CMS evaluation in the following areas: Quality Improvement, Rating of Drug Plan, and Obtaining Needed Prescription Drugs.

### **Public Pension Management and Asset Investment Review Commission (PPMAIRC)**

The PPMAIRC was created under Act 5 of 2017 to study three areas of PSERS and the State Employees' Retirement System (SERS) including:

- Fee transparency & stress testing
- Evaluating benchmarks
- Developing recommendations to reduce external investment fees

PSERS testified at the Commission's October 2018 meeting. A copy of PSERS's testimony can be found on PSERS website [www.psers.pa.gov](http://www.psers.pa.gov). The Commission issued its final report in December 2018. One of PSERS' goals during 2019 was to evaluate and consider the recommendations in the PPMAIRC report. PSERS continues the evaluation process but has already implemented a number of the recommendations.

### **Financial Highlights**

The fair value of the System's fiduciary net position grew \$2.4 billion during FY 2019 to \$59.1 billion as of June 30, 2019 and the unfunded liability, on a market value basis, declined by \$1.2 billion. The System is the 15th largest state-sponsored public defined benefit pension fund in the nation and the 34th largest among public and corporate pension funds in the nation. More specific information on the System's net position is detailed in the Statements of Fiduciary Net Position and Management's Discussion and Analysis included in the Financial Section of this report.

One of PSERS' mission critical objectives is the timely and accurate payment of benefits. In FY 2019, PSERS provided over \$7.2 billion in pension and healthcare benefits to its members.

The System's administrative budget request is appropriated by the PA General Assembly and funded by the investment income of the System. For FY 2019, the appropriation was \$51.6 million. PSERS' Investment Related Expenses budget, which is also entirely sourced by the investment income of the System, totaled \$22.7 million for FY 2019.

### **Funding**

Funding is the process of specifically setting aside money for current and future use. Proper funding for a defined benefit pension plan entails an actuarial examination of the fund balances and liabilities to ensure money will be available for current and future benefit payments. The actuarial valuation measures the progress toward funding pension obligations of the System by comparing the actuarial assets to the actuarial liabilities of the System.

The results of PSERS' latest published actuarial valuation (as of June 30, 2018) indicated that the rates of contribution payable by the members and employers, when taken together with the current assets of the System, are adequate to fund the actuarial liabilities for all benefits payable under the System at that date. The total funded status as of the latest actuarial valuation was 56.5%. Additional comparative information on the funded status of PSERS can be found in the Financial Section and in the Actuarial Section of this report.

### **Investments**

In the years following the Great Recession of 2008-2009, PSERS' Board and investment professionals made significant changes to the Fund's investment asset allocation, including further refining its investment strategy and increasing the diversification of assets. In particular, PSERS actively reduced its risk profile by significantly decreasing its equity exposure and by moving portions of the Fund's assets into asset classes that are less correlated to the equity markets.

## Introductory Section

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Income from the investment portfolio represents the major source of revenue to the System, accounting for 56% of total revenues over the twenty-year period from FY 2000 to FY 2019. During FY 2019, net investment income was \$3.6 billion. The investment portfolio, which is one part of the System's net position, totaled \$57.7 billion, at fair value, as of June 30, 2019. For FY 2019, the time-weighted net rate of return on the System's investments was 6.68%.

The investment portfolio is well diversified to emphasize a long-term investment approach. The overall objective of the System is to provide benefits to its members through a carefully planned and well-executed investment program. The return objectives are to: (i) realize a return that exceeds the Policy Index (the Policy Index is a custom benchmark, based on the Board-established asset allocation structure that seeks to generate a return that meets the actuarial rate of return assumption); and (ii) invest the assets to maximize returns for the level of risk taken. The risk objectives are to: (i) diversify the assets of the System to minimize the risk of losses within any one asset class, investment type, industry or sector distribution, maturity date, or geographic location; and (ii) invest the assets so that the probability of investment losses (as measured by the Policy Index) in excess of 15.0% in any one year is no greater than 2.5% (or two standard deviations below the expected return). Additional information on the System's investments is contained in the Investment Section of this report.

### Federal and State Tax Status

The System's defined benefit and defined contribution plans are qualified trust funds under Section 401(a) of the Internal Revenue Code (IRC). As a result of the qualified status, the trust funds are entitled to an exemption, under Section 501(a) of the IRC, from federal income taxation on their investment earnings. Additionally, contributions made on behalf of the active members are tax deferred under Section 414(h) of the IRC. The trust funds and any benefits accruing to the members of PSERS are exempt from Pennsylvania state and municipal taxes. The Internal Revenue Service (IRS) issued a determination letter dated March 16, 2017 which stated that the defined benefit plan and its underlying trust qualify under the provisions of Section 501(a) of the IRC and therefore are exempt from federal income taxes. A similar letter from the IRS dated April 3, 2019 was received for the defined contribution plan.

### Internal Controls and Reporting

PSERS' management is responsible for and has implemented internal controls designed to provide reasonable assurances 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 maintains a full accrual accounting system. 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.

A system of internal controls provides reasonable, but not absolute, assurance that assets are properly safeguarded and that financial statements are reliable. The concept of reasonable assurance recognizes that first, the cost of a control should not exceed the benefits likely to be derived, and second, the valuation of the cost and benefits requires estimates and judgments by management.

PSERS' management believes the internal accounting controls currently in place are adequate to meet the purpose for which they were intended and also believes the financial statements, supporting schedules, and statistical tables are fairly presented.

### GASB 75 OPEB Reporting for Employers

In June 2019, PSERS sent information to its employers to assist them in complying with the Governmental Accounting Standards Board (GASB) Statement No. 75, *Accounting and Financial Reporting for Postemployment Benefits Other Than Pensions*. The information sent to employers included a memo explaining PSERS' role, descriptions of the material provided, and the employers' responsibilities. In addition, PSERS provided a variety of schedules audited by PSERS' independent auditors as well as unaudited schedules. PSERS strives to incorporate all the information necessary for employers to comply with GASB 75 reporting requirements in these audited and unaudited schedules. Additionally, PSERS continues to make itself available to assist employers and their auditors should they have any additional requests in order to comply with GASB 75.



### Professional Services

Professional consultants are appointed by the Board of Trustees 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 PSERS. 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.

### Other Information

In compliance with the Retirement Code, actuarial tables and the computational procedures used by the System in calculating annuities and other benefits were published in the Pennsylvania Bulletin (Vol. 48, No. 26). This information can be found at <https://www.pabulletin.com/secure/data/vol48/48-26/1029.html>.

### System Awards

#### **Government Finance Officers Association of the United States and Canada Certificate of Achievement for Excellence in Financial Reporting**

The Government Finance Officers Association of the United States and Canada (GFOA) awarded a Certificate of Achievement for Excellence in Financial Reporting to PSERS for its Comprehensive Annual Financial Report for the fiscal year ended June 30, 2018. 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.

A Certificate of Achievement is valid for a period of one year. PSERS has received a Certificate of Achievement for 36 consecutive years from FY 1983 to FY 2018. A photograph of this award appears in the Introductory Section of this report. Its attainment represents a significant accomplishment by the System, whose Office of Financial Management 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 GFOA to determine eligibility for the 2019 certificate.

#### **GFOA Popular Annual Financial Reporting Award**

The Government Finance Officers Association of the United States and Canada (GFOA) has given an Award for Outstanding Achievement in Popular Annual Financial Reporting to PSERS for its Popular Annual Financial Report for the fiscal year ended June 30, 2018, which PSERS refers to as its Summary Annual Financial Report. The Award for Outstanding Achievement in Popular Annual Financial Reporting is a prestigious national award recognizing conformance with the highest standards for preparation of state and local government popular reports.

In order to receive an Award for Outstanding Achievement in Popular Annual Financial Reporting, a government unit must publish a Popular Annual Financial Report, whose contents conform to program standards of creativity, presentation, understandability, and reader appeal.

A Certificate of Achievement is valid for a period of one year. PSERS has received a Certificate of Achievement for three consecutive years from FY 2016 to FY 2018. Its attainment represents an important accomplishment by the System.

### **Public Pension Coordinating Council Public Pension Standards Award**

The Public Pension Coordinating Council has awarded its Public Pension Standards Award for Funding and Administration to PSERS for 2018. This award is in recognition of meeting professional standards for plan design and administration as set forth in the Public Pension Standards. Achievement of the Funding portion of this award is in recognition of the commitment of the Governor and General Assembly to fund 100% of the actuarially required contributions.

The Public Pension Coordinating Council was formed in 1990 to assist the public employee retirement community. The Council is composed of representatives from three national associations whose members are directly involved in the administration of public employee retirement systems: the National Association of State Retirement Administrators (NASRA); the National Conference on Public Employee Retirement Systems (NCPERS); and the National Council on Teacher Retirement (NCTR). A reproduction of this award appears in the Introductory Section.

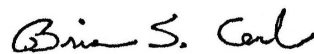
### **Acknowledgements**

The preparation of this report reflects the combined efforts of PSERS' staff under the direction of the PSERS 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,



Glen R. Grell  
Executive Director



Brian S. Carl, CPA, CTP  
Chief Financial Officer

## Pension Benefits by County

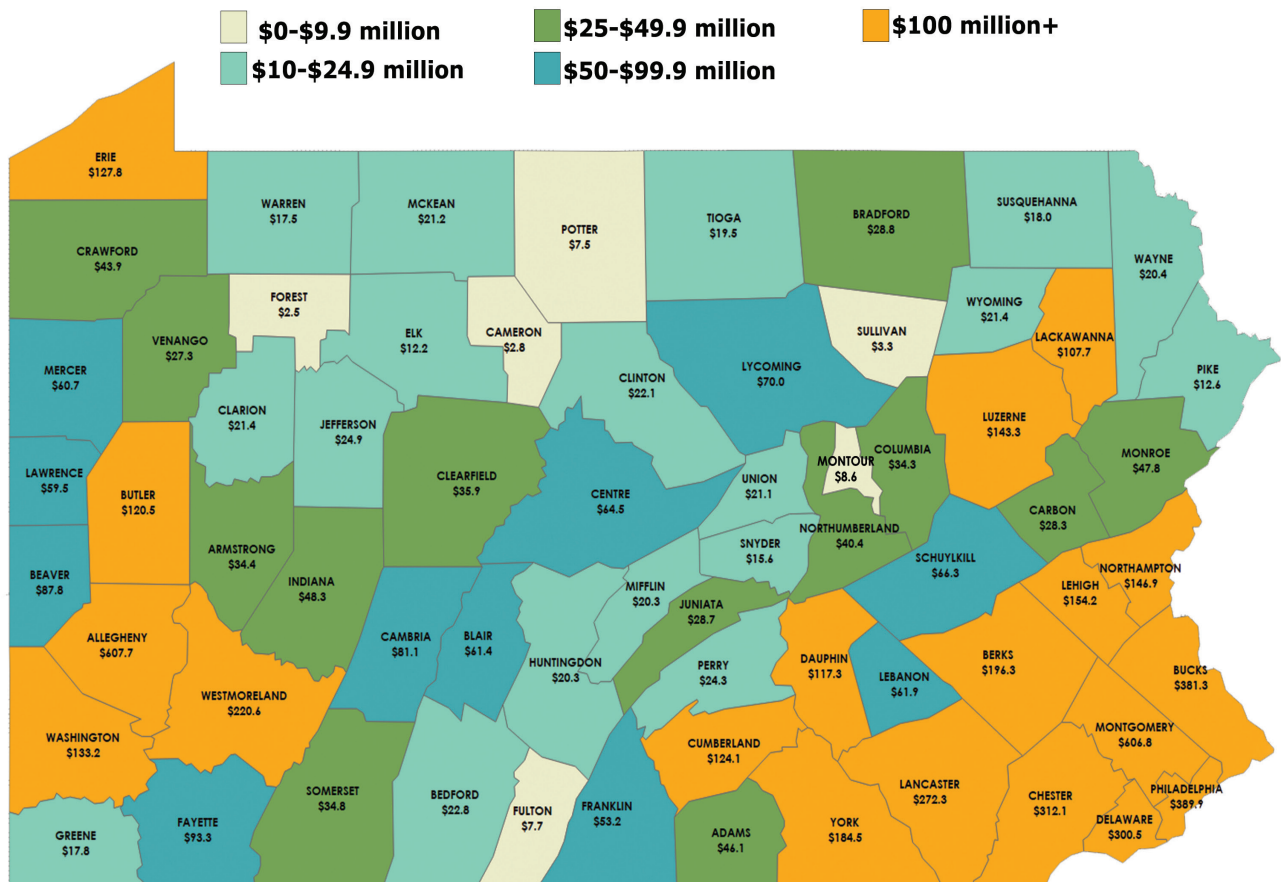
### Fiscal Year 2019

(Dollar Amounts in Millions)

PSERS provides a stable source of revenue for local economies throughout Pennsylvania. Each year PSERS pays out billions in pension benefits to retired members who reside in Pennsylvania. In fiscal year 2019, PSERS pension benefits to retirees totaled approximately \$6.7 billion. Of this amount nearly 93%, or \$6.3 billion, went directly into state and local economies. These pension benefits are a significant economic driver that benefit the economy of the Commonwealth.

Top 10 Counties Based on Pension Benefits (Dollars in Millions)	
Allegheny	\$607.7
Montgomery	\$606.8
Philadelphia	\$389.9
Bucks	\$381.3
Chester	\$312.1
Delaware	\$300.5
Lancaster	\$272.3
Westmoreland	\$220.6
Berks	\$196.3
York	\$184.5

## Total Benefits in Pennsylvania - \$6.3 Billion

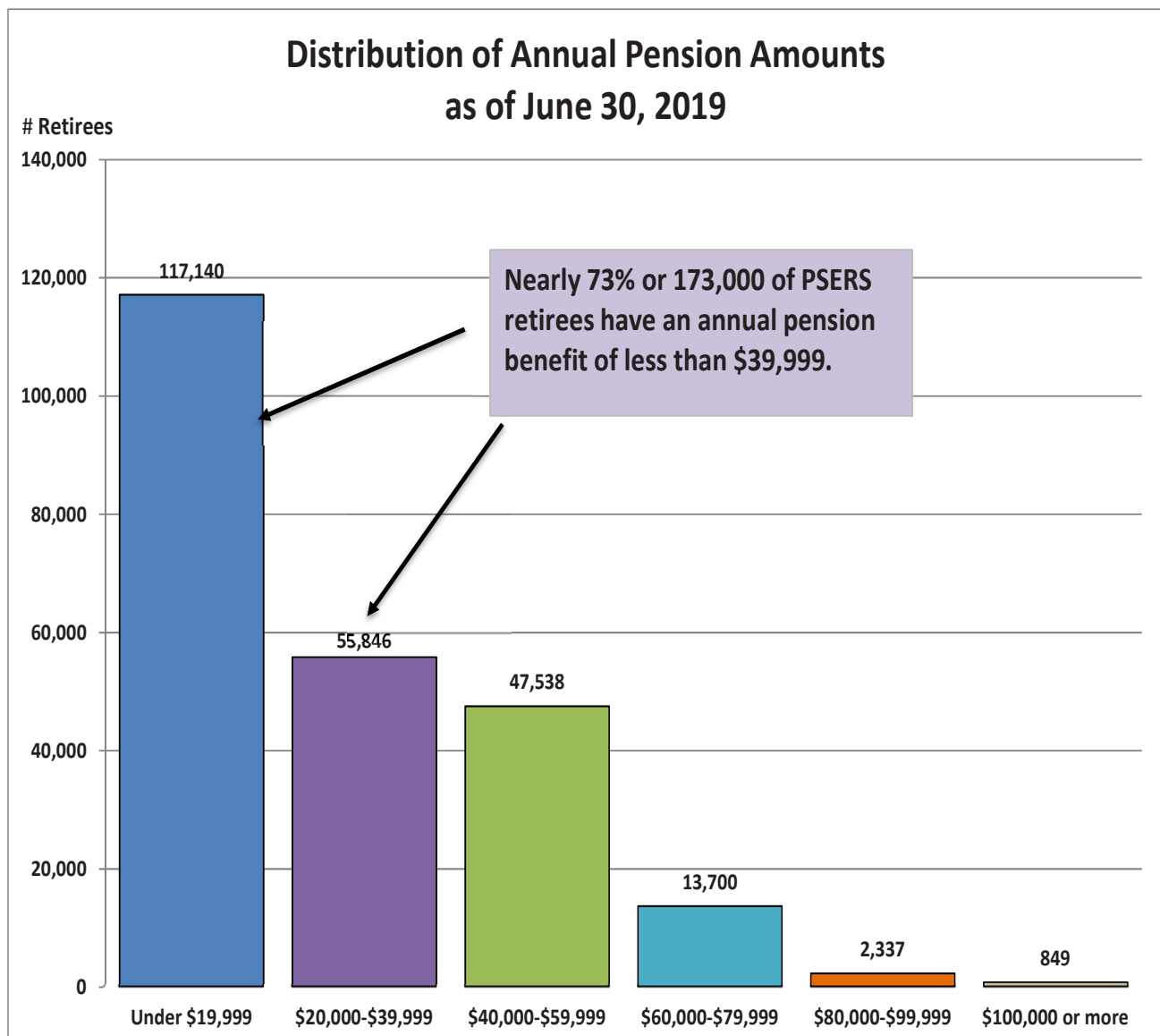




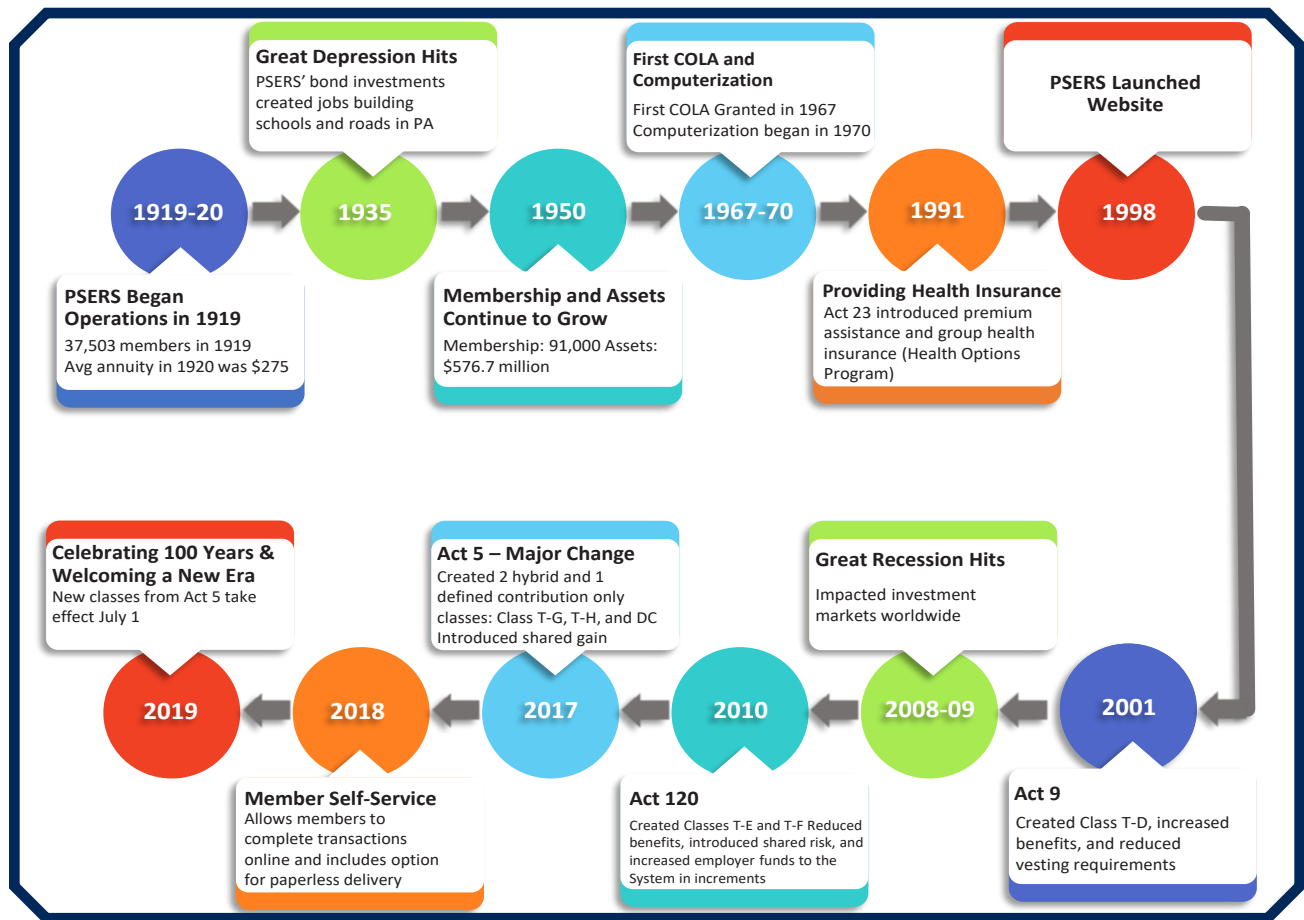
## Pension Benefit Amounts Fiscal Year 2019 (Dollar Amounts in Millions)

The average PSERS retiree receives a modest pension of \$25,498 on an annual basis, a benefit earned through a lengthy career of 23 years in public education. During their career, members make mandatory contributions to PSERS to help fund their own retirement benefit. Most members contribute between 7.50% and 10.30% of their pay depending on their class of membership to help fund their own retirement benefit. In accordance with Act 120, new members as of July 1, 2011 and thereafter are funding the majority of the cost of their benefit. This is in contrast to many non-public (private) pension plans. In over 90% of such plans, members do not contribute and the employers bear 100% of the cost of the benefit.

Six-figure pensions are rare. At June 30, 2019, there were 849 retired members receiving an annual benefit over \$100,000 out of a total 237,000 PSERS retirees. These six-figure pension retirees spent an average of 38 years working in their public education careers and contributing to their benefit.



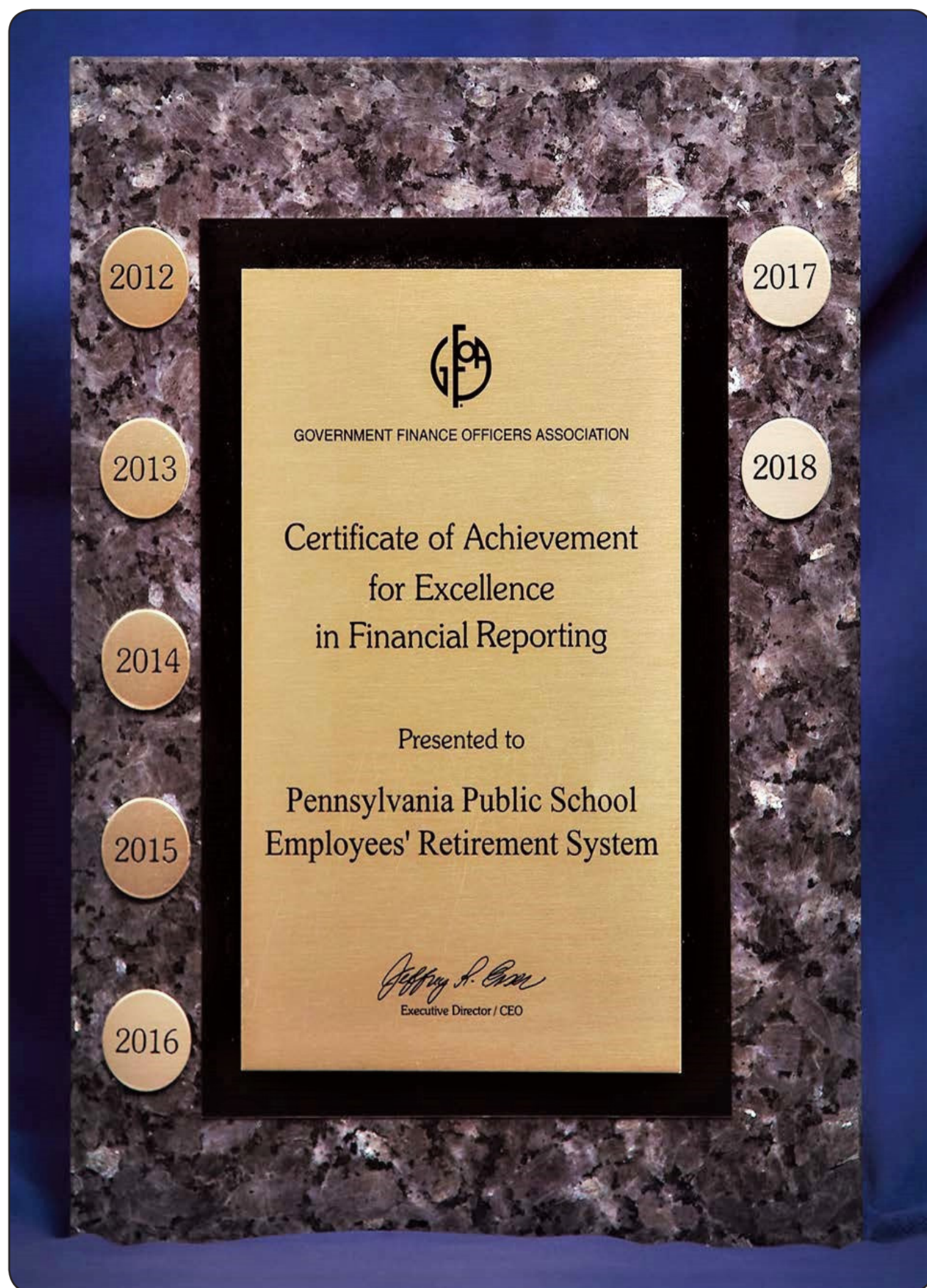
## PSERS Thru The Years



## Current Staff-Field Offices









## Public Pension Coordinating Council

### *Public Pension Standards Award For Funding and Administration 2018*

Presented to

### ***Pennsylvania Public School Employees' Retirement System***

In recognition of meeting professional standards for  
plan funding and administration as  
set forth in the Public Pension Standards.

*Presented by the Public Pension Coordinating Council, a confederation of*

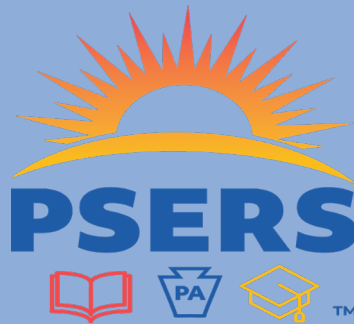
National Association of State Retirement Administrators (NASRA)  
National Conference on Public Employee Retirement Systems (NCPERS)  
National Council on Teacher Retirement (NCTR)

A handwritten signature in black ink, reading 'Alan H. Winkle'.

Alan H. Winkle  
Program Administrator



## *Mission Statement*



*The Board of Trustees and the employees of the Public School Employees' Retirement System (System) serve the members and stakeholders of the System by:*

- Providing timely and accurate payment of benefits*
- Maintaining a financially sound System*
- Prudently investing the assets of the System*
- Clearly communicating members' and employers' rights and responsibilities, and*
- Effectively managing the resources of the System*

adopted June 20, 2008

---

## Administrative Organization

### PSERS Board of Trustees



**Seated, front row:** Secretary Robin L. Wiessmann; Melva S. Vogler, Board Chairman; Susan C. Lemmo; Deborah J. Beck

**Standing, second row:** Honorable Francis X. Ryan; Miriam Fox designee for Honorable Matthew D. Bradford; Stacey Connors, designee for Honorable Patrick M. Browne; Jonathan Berger Designee for Nathan G. Mains; Christopher SantaMaria; Honorable Joseph M. Torsella; Jason M. Davis; Patrick Lord, designee for Secretary Pedro A. Rivera; Honorable John P. Blake

**Not pictured:** Eric DiTullio

## **PSERS Board of Trustees**

**Secretary of Education of the Commonwealth of Pennsylvania (ex officio)**

Mr. Pedro A. Rivera

**Secretary of Banking and Securities of the Commonwealth of Pennsylvania (ex officio)**

Ms. Robin L. Wiessmann

**Treasurer of the Commonwealth of Pennsylvania (ex officio)**

Honorable Joseph M. Torsella

**Executive Director of the Pennsylvania School Boards Association, Inc. (ex officio)**

Mr. Nathan G. Mains

**One member appointed by the Governor of the Commonwealth of Pennsylvania for a term of three years**

Vacant

**Three members elected from among the Active Certified Contributors of the System for a term of three years**

Mr. Jason M. Davis (term expires 12/31/19)

Ms. Susan C. Lemmo (term expires 12/31/21)

Mr. Christopher SantaMaria (term expires 12/31/20)

**One member elected from among the Active Non-Certified Contributors of the System for a term of three years**

Ms. Deborah J. Beck (term expires 12/31/21)

**One member elected from among the annuitants of the System for a term of three years**

Ms. Melva S. Vogler (term expires 12/31/19)

**One member elected by the members of Pennsylvania Public School Boards from among their number for a term of three years**

Mr. Eric DiTullio (term expires 12/31/20)

**Two members appointed by the Speaker of the House from the Pennsylvania House of Representatives, one representing the Majority Party and one representing the Minority Party**

Honorable Francis X. Ryan (term expires 12/31/20)

Honorable Matthew D. Bradford (term expires 12/31/20)

**Two members appointed by the President Pro Tempore of the Pennsylvania Senate, one representing the Majority Party and one representing the Minority Party**

Honorable John P. Blake (term expires 12/31/20)

Honorable Patrick M. Browne (term expires 12/31/20)

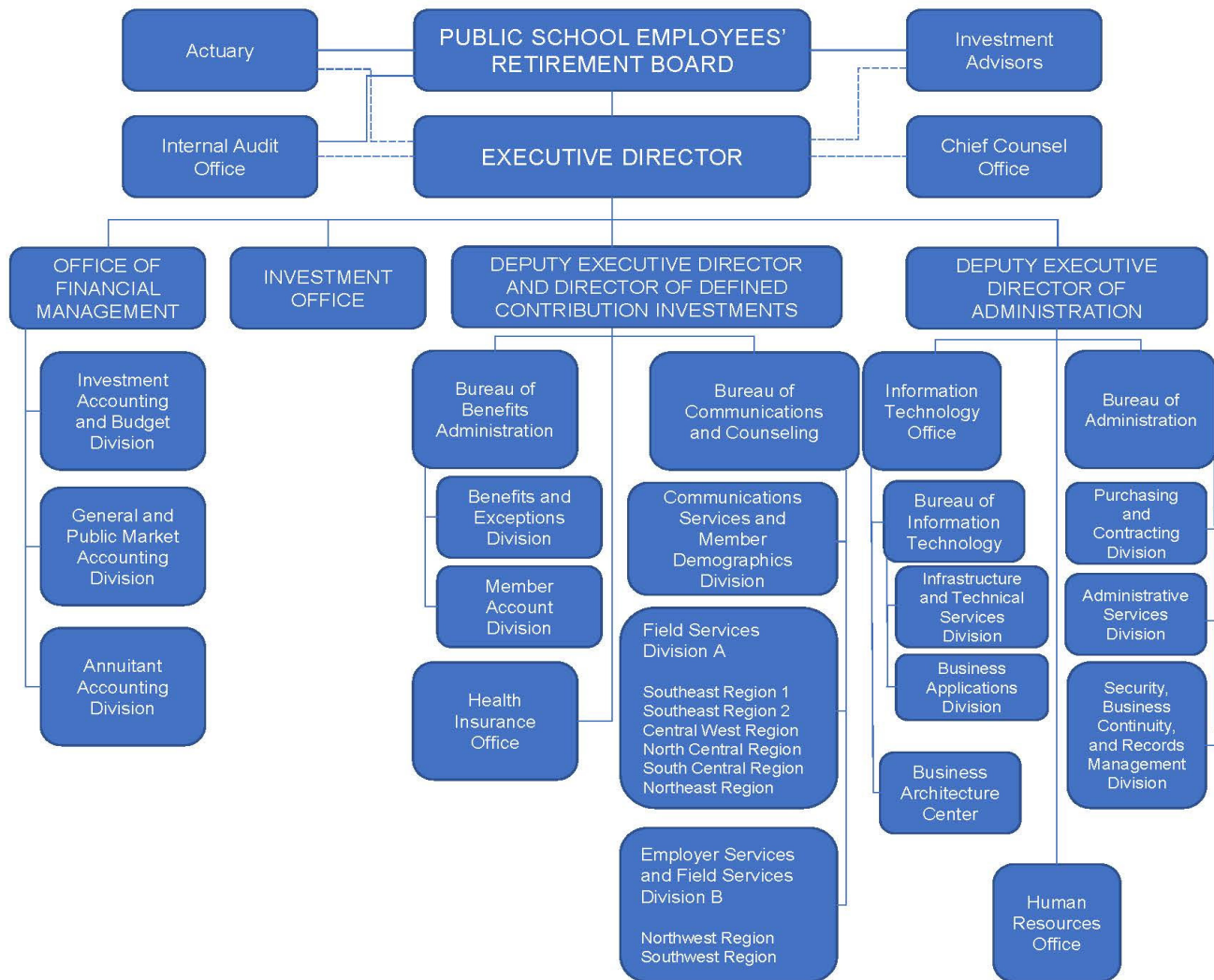
## 2019 Board Committees

	<b>Appeals/Member &amp; Employer Services</b>  Ms. Beck, Chair Mr. Davis, Vice Chair Senator Blake Representative Ryan Ms. Lemmo Mr. SantaMaria	
<b>Audit/Compliance</b>  Senator Browne, Chair Mr. Mains, Vice Chair Representative Bradford Mr. Rivera Treasurer Torsella	<b>Budget/Finance</b>  Mr. Davis, Chair Senator Blake, Vice Chair Mr. DiTullio Representative Ryan Mr. SantaMaria Ms. Wiessmann	<b>Bylaws/Policy</b>  Representative Bradford, Chair Mr. DiTullio, Vice Chair Senator Browne Mr. Davis Mr. Mains Treasurer Torsella
<b>Corporate Governance</b>  Treasurer Torsella, Chair Mr. SantaMaria, Vice Chair Representative Bradford Senator Browne Ms. Wiessmann	<b>Defined Contribution Plan</b>  Senator Blake, Chair Senator Browne, Vice Chair Representative Bradford Mr. Davis Mr. Mains Ms. Wiessmann	<b>Elections</b>  Ms. Wiessmann, Chair Mr. Rivera, Vice Chair Ms. Beck Senator Browne Representative Ryan
<b>Health Care</b>  Ms. Lemmo, Chair Mr. DiTullio, Vice Chair Ms. Beck Senator Blake Mr. Davis Representative Ryan	<b>Investment</b>  Mr. Mains, Chair Ms. Lemmo, Vice Chair  Committee is comprised of all Board Members	<b>Personnel</b>  Mr. SantaMaria, Chair Representative Bradford, Vice Chair Senator Blake Ms. Lemmo Mr. Mains Mr. Rivera

NOTE: Ms. Vogler, the chair of the Board of Trustees, is a voting ex officio member of all Committees.



## Organizational Chart of the Public School Employees' Retirement System



For Schedules of Fees and Commissions please refer to the Financial section page 79 and Investment section page 98.

As of June 30, 2019

## Administrative Staff

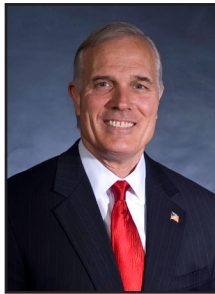
As of June 30, 2019



Glen R. Grell  
Executive Director



James H. Grossman Jr.  
Chief Investment Officer



Joseph E. Wasiak  
Deputy Executive Director  
of Administration



Jennifer Mills  
Deputy Executive Director and Director  
of Defined Contribution Investments



Charles K. Serine  
Chief Counsel



Brian S. Carl  
Chief Financial Officer



Steven C. Goldstein  
Chief Technology Officer



Patricia Dence  
Director of Administration



Peter Camacci  
Director of Health Insurance



Eugene W. Robison  
Director of Communications and Counseling



Charles Hodge  
Director of Human Resources



Todd Fulton  
Director of Benefits Administration



Tony Parisi  
Legislative Liaison



Evelyn M. Williams  
Communications Director

The Internal Auditor position was vacant.

## PSERS REGIONAL OFFICES

### Northwest

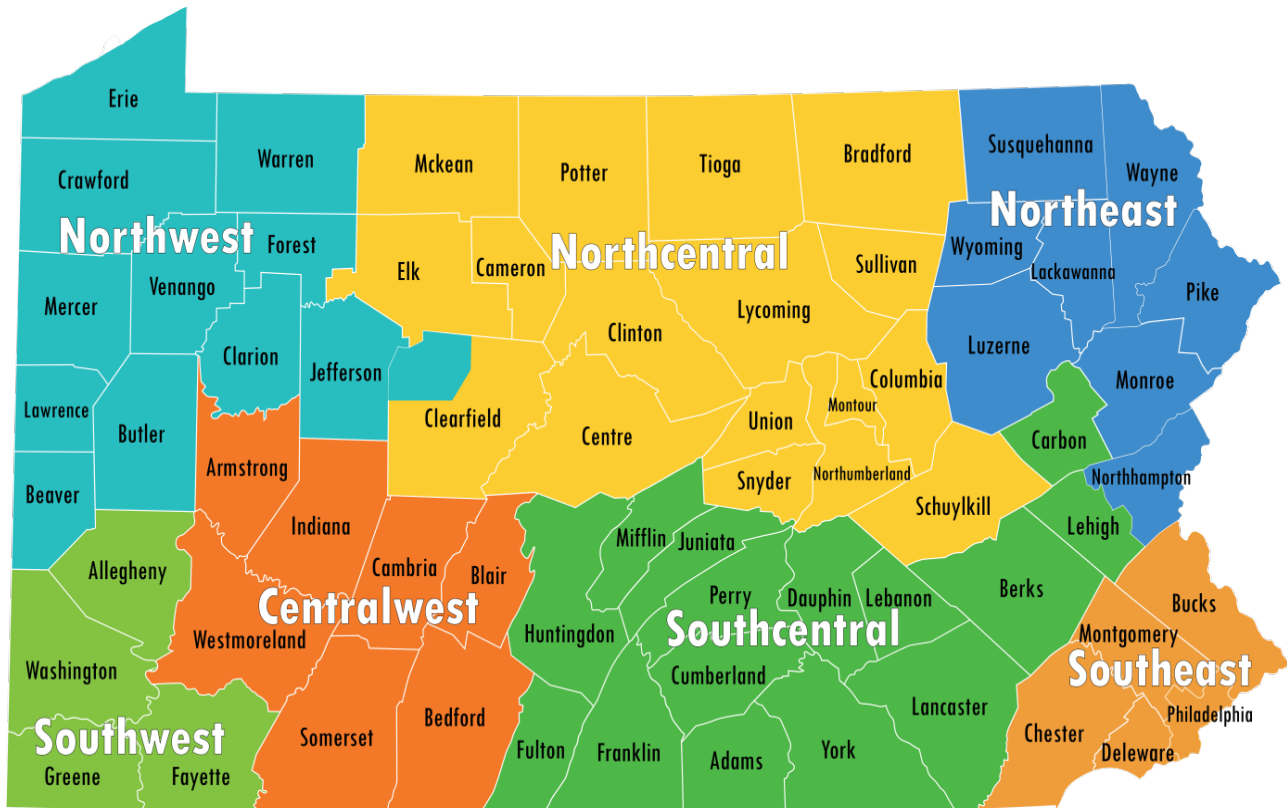
**Pennwood Center**  
**464 Allegheny Boulevard, Suite C**  
**Franklin, PA 16323-6210**  
Local: 1.814.437.9845  
FAX: 1.814.437.5826  
**Toll-Free: 1.888.773.7748**  
Donald Gregory, Administrator

### Northcentral

**300 Bellefonte Avenue, Suite 201**  
**Lock Haven, PA 17745-1903**  
Local: 1.570.893.4410  
FAX: 1.570.893.4414  
**Toll-Free: 1.888.773.7748**  
Jeremy Wible, Administrator

### Northeast

**417 Lackawanna Avenue, Suite 201**  
**Scranton, PA 18503-2013**  
Local: 1.570.614.0269  
FAX: 1.570.614.0278  
**Toll-Free: 1.888.773.7748**  
Sherry Sibio, Administrator



### Southwest

**300 Cedar Ridge Drive, Suite 301**  
**Pittsburgh, PA 15205-1159**  
Local: 1.412.920.2014  
FAX: 1.412.920.2015  
**Toll-Free: 1.888.773.7748**  
Russell Miller, Administrator

### Centralwest

**219 W. High Street**  
**Ebensburg, PA 15931-1540**  
Local: 1.814.419.1180  
FAX: 1.814.419.1189  
**Toll-Free: 1.888.773.7748**  
Brian Farester, Administrator

### Southcentral

**5 N 5th Street**  
**Harrisburg, PA 17101-1905**  
Local: 1.717.720.6335  
FAX: 1.717.783.9606  
**Toll-Free: 1.888.773.7748**  
John Tucker, Administrator

### Southeast

**605 Louis Drive, Suite 500**  
**Warminster, PA 18974-2830**  
Local: 1.215.443.3495  
FAX: 1.215.443.3487  
**Toll-Free: 1.888.773.7748**  
Joshua Catalfu, Administrator  
Linda Visco, Administrator



As of June 30, 2019



## PSERS Headquarters Building



The administrative headquarters of the Public School Employees' Retirement System (PSERS) is located at 5 North Fifth Street in downtown Harrisburg, Pennsylvania within the State Capitol complex. Regional field offices are also maintained in Ebensburg, Franklin, Lock Haven, Harrisburg, Pittsburgh, Warminster, and Scranton.

The headquarters building was constructed and first occupied by the Retirement System in 1987. It is the first time a building was constructed, for PSERS' use. It is owned by the Five North Fifth Street Corporation, a holding entity formed by PSERS, and is managed by Property Management, Inc.



## Past Staff Photo



## Current Staff-Executive Office

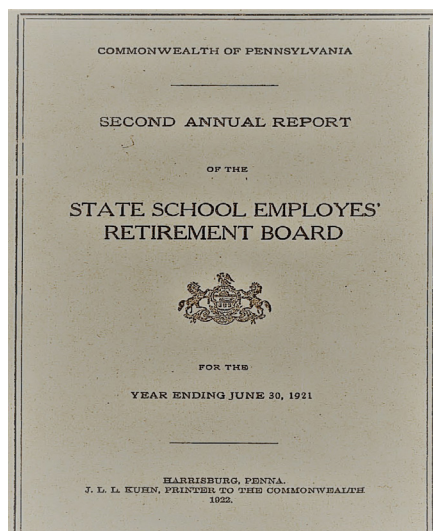


# FINANCIAL SECTION

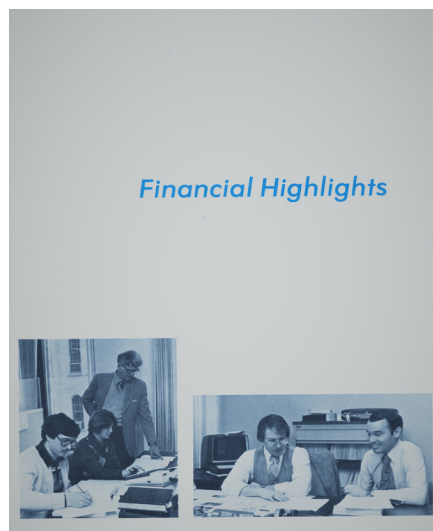
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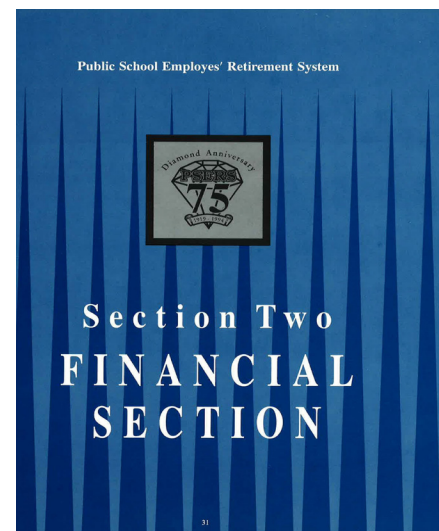
1921 CAFR Cover



1980 Financial Section Divider



1994 Financial Section Divider







CliftonLarsonAllen LLP  
CLAconnect.com

## INDEPENDENT AUDITORS' REPORT

The Board of Trustees of  
Commonwealth of Pennsylvania Public School Employees' Retirement System  
Harrisburg, Pennsylvania

### Report on the Financial Statements

We have audited the financial statements of the Commonwealth of Pennsylvania Public School Employees' Retirement System (PSERS), which comprise the Statement of Fiduciary Net Position as of June 30, 2019 and 2018, and the related Statement 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 audit. We conducted our audit 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 net position of PSERS as of June 30, 2019 and 2018, and the respective changes in its net position for the years then ended in accordance with accounting principles generally accepted in the United States of America.

The Board of Trustees of  
Commonwealth of Pennsylvania Public School Employees' Retirement System  
Harrisburg, Pennsylvania

## Other Matters

### *Required Supplementary Information*

Accounting principles generally accepted in the United States of America require that the Management's Discussion and Analysis and the Schedules of Changes in the Employer Net Pension Liability, Employer Net Pension Liability, Employer Pension Contributions, Changes in the Employer Net OPEB (Premium Assistance) Liability, Employer Net OPEB (Premium Assistance) Liability, Employer OPEB (Premium Assistance) Contributions, Investment Returns – Pension and OPEB, and related Notes, as listed in the table of contents, be presented to supplement the basic financial statements. Such information, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board who considers it to be an essential part of financial reporting for placing the basic 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 basic financial statements, and other knowledge we obtained during our audits of the basic 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.

### *Other Information*

Our audits were conducted for the purpose of forming an opinion on the basic financial statements. The Schedule of Administrative and Investment Expenses, Summary of Investment Expenses, and the Schedule of Payments to Non-Investment Consultants, as listed in the table of contents, for the year ended June 30, 2019 are presented for purposes of additional analysis and are not a required part of the basic financial statements.

The other supplementary information is the responsibility of management and was derived from and relate directly to the underlying accounting and other records used to prepare the basic financial statements. Such information has been subjected to the auditing procedures applied in the audits of the basic financial statements for the year ended June 30, 2019 and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the basic financial statements or to the basic financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the accompanying supplementary information is fairly stated, in all material respects, in relation to the basic financial statements as a whole for the year ended June 30, 2019.

The Introductory, Actuarial, Investment and Statistical section, as listed in the table of contents, have not been subjected to the auditing procedures applied in the audits of the basic financial statements, and accordingly, we do not express an opinion or provide any assurance on them.



CliftonLarsonAllen LLP

Baltimore, Maryland  
September 30, 2019



## Management's Discussion and Analysis

Management's Discussion and Analysis (MD&A) of the Commonwealth of Pennsylvania Public School Employees' Retirement System (PSERS, System, Fund) for the fiscal year ended June 30, 2019 (FY 2019) provides a narrative summary of PSERS' financial position and performance, including highlights and comparative data. The MD&A is presented as required supplementary information to the financial statements and should be read in conjunction with the financial statements, the notes to financial statements, and the supplementary schedules.

### Overview of Financial Statements

PSERS is primarily responsible for administering a defined benefit pension plan for public school employees in the Commonwealth of Pennsylvania. PSERS also administers two voluntary postemployment healthcare programs, the Health Insurance Premium Assistance Program (Premium Assistance) and the Health Options Program (HOP), for its annuitants. As part of the HOP, PSERS has an Employer/Union Direct Contract with the Centers for Medicare and Medicaid Services (CMS) to provide a Medicare Part D Prescription Drug Plan to participants. On July 1, 2019 PSERS began administration of a Defined Contribution (DC) Plan for new employees. These financial statements reflect start-up funding and expenses for the DC plan. The financial statements present the financial position and activities for the pension plan, the DC Plan and the two postemployment healthcare programs.

The *Statements of Fiduciary Net Position* provide a snapshot of the financial position of PSERS at June 30, 2019. Amounts are shown for the most recent and previous fiscal years for comparison and analysis of changes in individual line items.

The *Statements of Changes in Fiduciary Net Position* summarize PSERS' financial activities that occurred during the fiscal period from July 1, 2018 to June 30, 2019. Amounts are shown for the most recent and previous fiscal years for comparison and analysis of changes in individual line items.

The *Notes to Financial Statements* provide additional information that is essential for 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 basic financial statements such as accounting policies, plan membership and benefits, and summary disclosures of selected financial data.

The *Required Supplementary Information* immediately following the notes to financial statements provide seven schedules illustrating the Changes in the Employer Net Pension Liability, Employer Net Pension Liability,

Employer Pension Contributions, Changes in the Employer Net OPEB (Premium Assistance) Liability, Employer Net OPEB (Premium Assistance) Liability, Employer OPEB (Premium Assistance) Contributions, and Investment Returns - Pension and OPEB.

The remaining supplementary schedules provide additional detailed information concerning the administrative expenses, investment expenses, and payments to non-investment consultants. These schedules emphasize the long-term nature of the pension and premium assistance plans and show the progress of PSERS in accumulating assets sufficient to pay benefits when due. All of this supplementary information is considered useful in understanding and evaluating the financial activities of PSERS.

### Financial Highlights

- The time-weighted rate of return on investments was 6.68% for FY 2019, 9.27% for the fiscal year ended June 30, 2018 (FY 2018), and 10.14% for the fiscal year ended June 30, 2017 (FY 2017). The return for the ten-year period ended June 30, 2019 was 9.02%, which exceeded the 7.25% actuarial investment rate of return assumption. Unless otherwise noted, all rates of return are net of fees.
- PSERS' total net position increased by \$2.4 billion from \$56.7 billion at June 30, 2018 to \$59.1 billion at June 30, 2019. The change in total net position from June 30, 2017 to June 30, 2018 was an increase of \$3.2 billion from \$53.5 billion at June 30, 2017 to \$56.7 billion at June 30, 2018. The increase in both years was due mostly to net investment income plus member and employer contributions exceeding deductions for benefit and administrative expenses.
- After increasing for many years, PSERS' unfunded liability on a market value basis (Net Pension Liability) declined for the third year in a row from \$49.6 billion at June 30, 2016 to \$46.8 billion at June 30, 2019 due to the Fund receiving actuarially required contributions and earning investment returns above the assumed rate of return for the three-year period.
- Total employer contributions increased from \$4.4 billion in FY 2018 to \$4.6 billion in FY 2019. This increase was primarily attributable to an increase in the total employer contribution rate from 32.57% in FY 2018 to 33.43% in FY 2019 in accordance with Act 120 of 2010. The increase in the employer contribution rate was the smallest since FY 2010. PSERS' employers fully funded the actuarially required contributions in FY 2019, FY 2018 and

**Management's Discussion and Analysis (continued)**

FY 2017 and these contributions are making a positive difference in PSERS' funding.

- PSERS' total benefit expense slightly increased from \$7.1 billion in FY 2018 to \$7.2 billion in FY 2019. The average monthly benefit and the number of members receiving benefits increased in FY 2019. This growth was partially offset by a decrease in lump sum payments in FY 2019 due to a small decrease in the number of retirees electing to receive lump sums.

**Progress of Act 120 on PSERS' Funding**

On November 23, 2010, the Governor signed HB 2497 into law. The legislation is now known as Act 120 of 2010. Act 120 preserves the benefits of existing members and includes a series of actuarial and funding changes to PSERS and benefit reductions for individuals who become new members of PSERS on or after July 1, 2011 to June 30, 2019. The Act created two new membership classes, T-E and T-F. T-E and T-F members are "shared-risk," meaning

that their employee contributions can increase or decrease due to investment performance. Act 120 addressed the pending employer contribution rate spike projected for FY 2013 by smoothing the projected rate increases over a five-to nine-year time period. Instead of a large rate spike in one year, under Act 120, the employer contribution rate has increased steadily each year from the 5.64% in effect when Act 120 became law to the 33.43% rate in FY 2019. Prior to Act 120, PSERS' Annual Required Contribution (ARC) percentage of contributions received under Governmental Accounting Standards Board (GASB) standards was only 27%. As a result of the Act 120 funding increases, on July 1, 2016, PSERS began receiving 100% of actuarially required contributions based on sound actuarial practices and principles for the first time in 15 years. This marks a significant milestone in PSERS' contribution history and establishes a path to full funding. PSERS received the actuarially required contributions in FY 2017, FY 2018, & FY 2019, and the large annual employer contribution rate increases that occurred from FY 2012 to FY 2018 are now

<b>Analysis of Fiduciary Net Position</b>					
<b>(Dollar Amounts in Thousands)</b>					
<b>Summary of Fiduciary Net Position</b>	<b>FY 2019</b>	<b>Increase (Decrease)</b>	<b>FY 2018</b>	<b>Increase (Decrease)</b>	<b>FY 2017</b>
<b>Assets:</b>					
Receivables	\$ 2,571,738	\$ 367,737	\$ 2,204,001	\$ (332,841)	\$ 2,536,842
Investments	57,728,557	1,826,227	55,902,330	3,416,519	52,485,811
Securities lending collateral pool	4,518,372	1,538,253	2,980,119	964,056	2,016,063
Capital assets	21,345	(2,085)	23,430	(571)	24,001
Miscellaneous	25,378	7,849	17,529	278	17,251
<b>Total Assets</b>	<b>64,865,390</b>	<b>3,737,981</b>	<b>61,127,409</b>	<b>4,047,441</b>	<b>57,079,968</b>
<b>Liabilities:</b>					
Payables and other liabilities	1,211,801	(206,762)	1,418,563	(138,396)	1,556,959
Obligations under securities lending	4,518,372	1,538,253	2,980,119	964,056	2,016,063
<b>Total Liabilities</b>	<b>5,730,173</b>	<b>1,331,491</b>	<b>4,398,682</b>	<b>825,660</b>	<b>3,573,022</b>
<b>Net Position</b>	<b>\$ 59,135,217</b>	<b>\$ 2,406,490</b>	<b>\$ 56,728,727</b>	<b>\$ 3,221,781</b>	<b>\$ 53,506,946</b>
<b>Summary of Changes in Fiduciary Net Position</b>					
<b>Additions:</b>					
Contributions	\$ 5,666,392	\$ 278,420	\$ 5,387,972	\$ 430,367	\$ 4,957,605
Commonwealth of Pennsylvania	5,200	(1,601)	6,801	6,801	-
Participant premiums and CMS	436,828	12,934	423,894	13,477	410,417
Net investment income	3,634,950	(1,082,676)	4,717,626	(279,077)	4,996,703
<b>Total Additions</b>	<b>9,743,370</b>	<b>(792,923)</b>	<b>10,536,293</b>	<b>171,568</b>	<b>10,364,725</b>
<b>Deductions:</b>					
Benefit expense	7,237,244	93,903	7,143,341	219,437	6,923,904
Administrative expenses	99,636	8,541	91,095	6,658	84,437
<b>Total Deductions</b>	<b>7,336,880</b>	<b>102,444</b>	<b>7,234,436</b>	<b>226,095</b>	<b>7,008,341</b>
<b>Effect of change in accounting principle</b>	<b>-</b>	<b>80,076</b>	<b>(80,076)</b>	<b>(80,076)</b>	<b>-</b>
<b>Changes in Net Position</b>	<b>\$ 2,406,490</b>	<b>\$ (815,291)</b>	<b>\$ 3,221,781</b>	<b>\$ (134,603)</b>	<b>\$ 3,356,384</b>

## Management's Discussion and Analysis (continued)

complete. Employer contribution rate increases in the future are expected to be in line with inflation.

### Funded Status and State Accumulation Account

PSERS uses an actuarial reserve type of funding that is financed by member contributions, employer contributions, and earnings from invested assets. Figure 1 illustrates a thirty five-year history of PSERS' funded status. An independent actuarial valuation of PSERS' actuarial assets and liabilities is performed annually. As part of this valuation, the progress toward funding pension obligations of PSERS 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. PSERS' funded ratio increased from 56.3% at June 30, 2017 to 56.5% as of June 30, 2018, the most recent actuarial valuation. Due to fully funded employer contributions, favorable demographic experience, and positive investment returns, the funded ratio on an actuarial value basis improved a year sooner than expected. The 56.5% actuarial funded ratio as of June 30, 2018, is a significant turning point for the System as future funded ratio projections are now expected to rise, reversing years of decline since the 123.8% funded ratio peak at June 30, 2000.

The results of operations for FY 2019 will be reflected in the actuarial valuation for the year ended June 30, 2019. Due to the normal lag time for completion of the actuarial valuation, the resulting funded status will be available at the end of the 2019 calendar year and will be reported in the financial statements for the fiscal year ending June 30, 2020 (FY 2020). Based on the investment performance for the ten-year period ended June 30, 2019, which is above the investment rate of return assumption during

that time period, and due to receiving the full actuarially required contributions the funded ratio at June 30, 2019 is expected to increase. The June 30, 2018 actuarial valuation recognized the last year of losses from the Great Recession under the System's ten-year asset smoothing. As a result, the funded ratio in the June 30, 2019 valuation and thereafter is expected to improve.

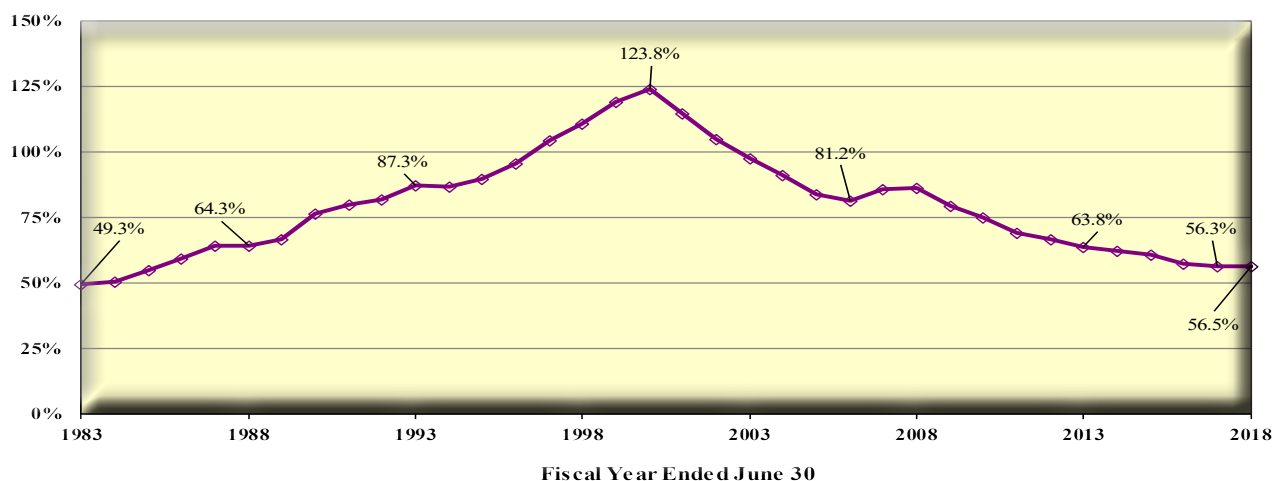
Under GASB 67, the market value funded ratio, which is referred to as the plan fiduciary net position as a percentage of total pension liability, increased from 54.00% at June 30, 2018 to 55.66% at June 30, 2019 as the Fund received the full actuarially determined contributions, had investment returns close to the investment return assumption and experienced a small growth in benefit payments in FY 2019. This is the third year in a row that the market value funded ratio increased as the Fund has reached a turning point after experiencing declining actuarial and market value funded ratios for many years. The Fund's net pension liability also declined for the third year in a row. All the ingredients are now in place and a path to full funding has been established.

PSERS' State Accumulation Account improved from \$(17.2) billion at June 30, 2018 to \$(15.4) billion at June 30, 2019 due to favorable investment performance, and employer contributions at the actuarially required level that exceeded benefit payments and administrative expenses. Investment earnings and actuarially required employer contributions will continue to reduce the deficit in this account in the future (See Note 3).

### Investments

PSERS is a long-term investor and manages the pension fund with long-term objectives in mind. A primary element

**Figure 1 - PSERS' Funded Ratio**  
Funded Ratio = Actuarial Value of Assets / Actuarial Accrued Liability



## Management's Discussion and Analysis (continued)

of PSERS' investment philosophy is diversification among various asset classes, which is the best way to achieve its goals. PSERS 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.

This past fiscal year was a volatile and challenging one for global economies. The U.S. economy showed a significant decrease in momentum during the fiscal year as measured by the Institute for Supply Management (ISM) Purchasing Managers' Index (PMI), an indicator of activity in the sector. During the fiscal year, the ISM PMI decreased by 8.3 points to 51.7 at June 30, 2019, however, this was offset by a rise in Gross Domestic Product (GDP) and a decrease in unemployment. Significant headwinds affecting many non-U.S. economies included political uncertainty in Europe, specifically the rise of populism as evidenced by the formation of a populist coalition government in Italy, Great Britain's planned exit from the European Union (Brexit), and the imposition of billions of dollars of tariffs on goods imported into the U.S. from China. Faced with these challenges, central banks globally made efforts to encourage borrowing with the European Central Bank (ECB) and the Bank of Japan keeping short-term interest rates in negative territory.

The U.S. economy showed improvement this past year, driven by favorable monetary conditions and a change in the Federal Reserve (Fed) interest rate expectations during the year. The Fed increased interest rates two times in the first half of the fiscal year; however, it pivoted in the second half of the year from a tightening bias to an easing bias which improved optimism about the U.S. economy. The Federal Funds target rate increased by 0.5% during the past fiscal year with a range of 2.25% to 2.50%. While interest rates increased, they continue to be historically low providing for improvement in broad economic conditions. The U.S. real GDP increased year-over-year an average of 2.3% per quarter during the past fiscal year with a range of 1.1% to 3.1%. The official unemployment rate fell during the fiscal year from 4.0% at June 30, 2018 to 3.7% at June 30, 2019, approaching what the Fed would consider full employment.

The Euro Area economy continued to struggle, with modest growth during the past year. The unemployment rate began to normalize and improved to 7.6% as of June 2019 from 8.3% a year earlier. The Euro Area economy fell into contraction territory as evidenced by the Markit Eurozone Manufacturing PMI measurement of 47.6 in June 2019 falling from 54.9 last June. Aggressive actions by the ECB have generated improvements in employment but have failed to sustain economic growth and inflation. Although it slightly tightened monetary conditions by ending quantitative easing in December 2018, the ECB

has continued its policy of very accommodative overnight interest rates by introducing another round of Targeted Long-Term Refinancing Operations in 2019.

Japan's economy has moderately retreated over the past fiscal year. As of the second quarter 2019, Japan's real GDP grew by a year-over-year rate increase of 1.2% versus a 1.5% year-over-year rate increase as of June 2018. Japanese policy makers continue to aggressively attempt to stimulate their economy through a combination of low interest rates (the Bank of Japan policy rate is negative 0.1%), the purchase of higher risk assets by the Bank of Japan, coordinated diversification into higher risk assets by large public investors, and fiscal spending policies to encourage liquidity to move into riskier assets. China had robust growth compared to the other developed regions of the world. China's real GDP increased by 6.2% over the past year, moderately slower than the 6.7% pace for the year-ended June 2018. In addition, the trade war with the United States is putting pressure on the Chinese economy with no signs of abating anytime soon.

For FY 2019, PSERS' time-weighted rate of return on investments was 6.68% which was below PSERS' total fund Policy Index of 7.68% for the same time period. A time-weighted rate of return considers investment performance of a hypothetical dollar invested from the beginning of an investment period to the period's end. The Policy Index is a custom benchmark, based on the Board-established asset allocation structure, that seeks to generate a return that meets the actuarial rate of return assumption. Net investment income of \$3.6 billion in FY 2019 declined from a net investment income of \$4.7 billion in FY 2018. FY 2018 returns exceeded the actuarial investment rate of return.

The time-weighted annualized rate of return over the past three- and five-year periods ended June 30, 2019 was 8.71% and 6.04%, respectively. The time-weighted return for the three-year period exceeded the total fund Policy Index return by 62 basis points. The time-weighted return for the five-year period trailed the total fund Policy Index return by 2 basis points. The annualized time-weighted rate of return for the ten- and twenty five-year periods ended June 30, 2019 was 9.02% and 8.08%, respectively.

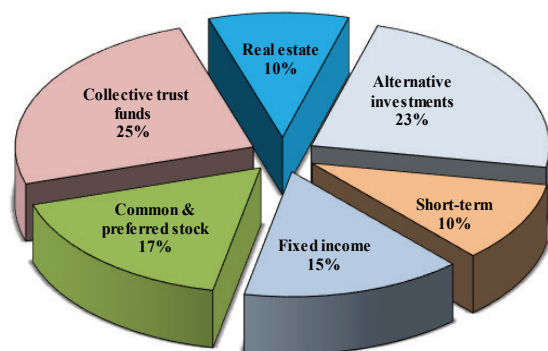
PSERS' long-term actuarial investment rate of return assumption was 7.25% during FY 2019 and FY 2018.

The asset distribution of PSERS' investment portfolio at June 30, 2019, 2018, and 2017, at fair value, and including defined contribution and postemployment healthcare assets, is presented in Figure 2 and Table 1.



## Management's Discussion and Analysis (continued)

**Figure 2 - Asset Distribution  
June 30, 2019**



## FY 2019

- **Short-term investments** (cash and cash equivalents) decreased from \$6.2 billion at June 30, 2018 to \$6.0 billion at June 30, 2019 mainly due to a reclassification of assets.
- **Fixed income investments** increased by \$3.5 billion from \$5.2 billion at June 30, 2018 to \$8.7 billion at June 30, 2019. Due to a reallocation of exposure from other asset classes, PSERS significantly increased its fixed income investments during FY 2019.
- **Common and preferred stock investments** decreased by \$3.0 billion from \$12.8 billion at June 30, 2018 to \$9.8 billion at June 30, 2019. Due to a reallocation of exposure to other asset classes, PSERS decreased its common and preferred stock investments during FY 2019.
- **Collective trust funds** increased by \$0.3 billion from \$14.0 billion at June 30, 2018 to \$14.3 billion at June 30, 2019 mostly due to positive investment performance.
- **Real estate investments** increased by \$0.5 billion from \$5.0 billion at June 30, 2018 to \$5.5 billion at June 30, 2019 due to significant contributions to new and existing partnerships combined with valuation increases in partnership portfolio holdings which exceeded significant partnership distributions.
- **Alternative investments** increased by \$0.8 billion from \$12.6 billion at June 30, 2018 to \$13.4 billion at June

30, 2019 due to contributions to new and existing partnerships combined with valuation increases in partnership portfolio holdings which exceeded significant distributions.

## FY 2018

- **Short-term investments** (cash and cash equivalents) remained consistent at \$6.1 billion at June 30, 2017 and \$6.2 billion at June 30, 2018.
- **Fixed income investments** increased by \$0.2 billion from \$5.0 billion at June 30, 2017 to \$5.2 billion at June 30, 2018 mainly due to investment performance.
- **Common and preferred stock investments** increased by \$1.5 billion from \$11.3 billion at June 30, 2017 to \$12.8 billion at June 30, 2018. Due to a reallocation of exposure from other asset classes and favorable investment performance, PSERS increased its common and preferred stock investments during FY 2018.
- **Collective trust funds** increased by \$1.2 billion from \$12.8 billion at June 30, 2017 to \$14.0 billion at June 30, 2018 mostly due to investment performance.
- **Real estate investments** decreased by \$0.3 billion from \$5.3 billion at June 30, 2017 to \$5.0 billion at June 30, 2018 due to significant partnership distributions which exceeded contributions to new and existing partnerships and valuation increases in partnership portfolio holdings.
- **Alternative investments** increased by \$0.7 billion from \$11.9 billion at June 30, 2017 to \$12.6 billion at June 30, 2018 due to contributions to new and existing partnerships combined with valuation increases in partnership portfolio holdings which exceeded significant partnership distributions.

## Securities Lending

The System's net income from securities lending activities increased from \$12.5 million in FY 2018 to \$14.3 million in FY 2019. Lending income and expense both rose significantly as the economy in general moved from a low interest to a higher interest rate environment.

**Table 1 - Investment Balances by Asset Class**

Asset Class	(Dollar Amounts in Thousands)					
	2019	%	2018	%	2017	%
Short-term	\$ 6,027,740	10.4	\$ 6,173,655	11.0	\$ 6,107,020	11.6
Fixed income	8,652,870	15.0	5,235,603	9.4	4,961,284	9.5
Common and preferred stock	9,813,146	17.0	12,832,667	23.0	11,337,865	21.6
Collective trust funds	14,305,045	24.8	14,011,193	25.1	12,816,147	24.4
Real estate	5,484,621	9.5	5,039,237	9.0	5,340,555	10.2
Alternative investments	13,445,135	23.3	12,609,975	22.5	11,922,940	22.7
<b>Total</b>	<b>\$ 57,728,557</b>	<b>100.0</b>	<b>\$ 55,902,330</b>	<b>100.0</b>	<b>\$ 52,485,811</b>	<b>100.0</b>

## Management's Discussion and Analysis (continued)

The spread increased from FY 2018 to FY 2019 as gross earnings on the borrowers' collateral outpaced the amounts rebated to the borrowers.

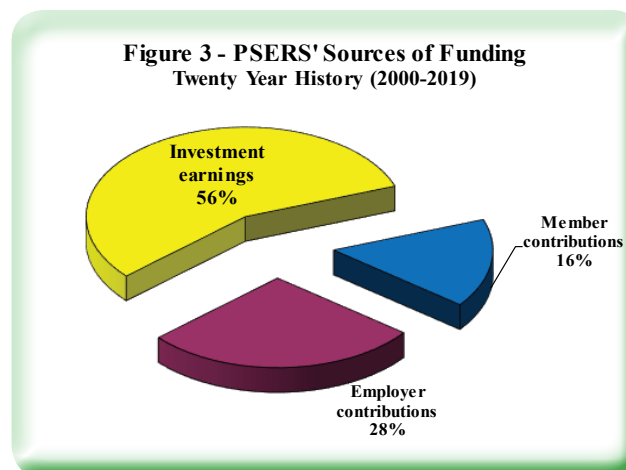
### Contributions

Employer contributions increased from \$4.4 billion in FY 2018 to \$4.6 billion in FY 2019 due to the increase in the total employer contribution rate from 32.57% in FY 2018 to 33.43% in FY 2019. Total employer contributions increased from \$3.9 billion in FY 2017 to \$4.4 billion in FY 2018. This increase was primarily attributable to an increase in the total employer contribution rate from 30.03% in FY 2017 to 32.57% in FY 2018.

Total member contributions slightly increased from \$1.03 billion in FY 2018 to \$1.06 billion in FY 2019. The increase was mainly due to an increase in member contributions from active member payroll. Total member contributions increased from \$1.01 billion in FY 2017 to \$1.03 billion in FY 2018. The increase was mainly due to an increase in member contributions from active member payroll and purchase of service.

As a result of an increase in member purchase of service contributions, member contribution receivables increased from \$350.4 million at June 30, 2018 to \$352.4 million at June 30, 2019. Due to the increase in the receivables of member contributions from active member payroll, in the last quarter of FY 2017 to the last quarter of FY 2018, member contribution receivables increased from \$349.7 million at June 30, 2017 to \$350.4 million at June 30, 2018. The increase in the employer contribution rate from FY 2018 to FY 2019, resulted in the employer contribution receivables rising from \$1.2 billion at June 30, 2018 to \$1.3

Below is a thirty five-year history of PSERS' contribution rates:

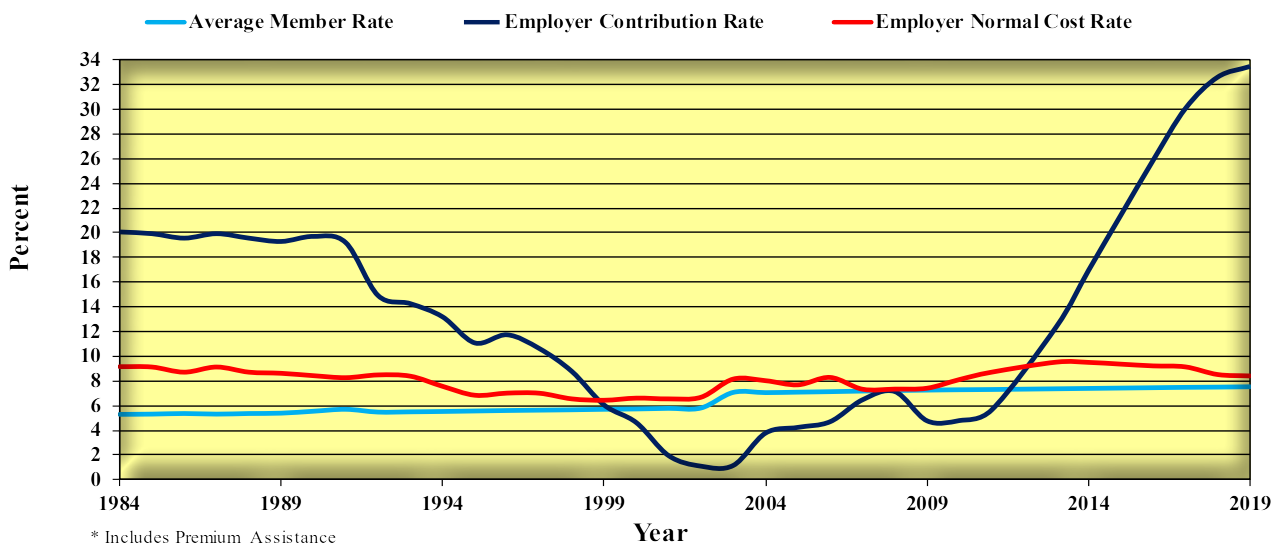


billion at June 30, 2019. See Figure 4 for a thirty five-year history of PSERS' contribution rates.

### Commonwealth Share of Employer Contributions

The Commonwealth reimburses all school entity employers (school districts, intermediate units and vocational technical schools) a portion of all employer contributions paid to the System. The Commonwealth reimburses at least 50% of school entities' contributions. The Commonwealth reimbursement rate, however, could be larger based on its Market Value / Personal Income Aid Ratio, which is a Commonwealth of Pennsylvania Department of Education calculation of local tax rates and socioeconomic factors. This reimbursement that school entities receive from the Commonwealth is referred to as the Commonwealth Share of employer contributions. The Commonwealth Share of contributions is paid to the school entities approximately 75 days after the end of each quarter. School entities have five days after receiving the Commonwealth Share to pay

**Figure 4 - History of PSERS' Contribution Rates as a Percent of Payroll\***



## Management's Discussion and Analysis (continued)

the total employer contributions to PSERS. Total employer contributions are comprised of the Commonwealth Share and remaining contributions which are referred to as the school and non-school entity share.

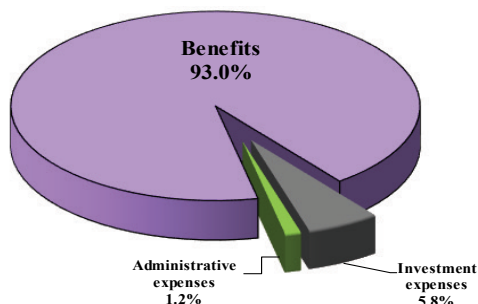
For non-school entity employers (state college/universities, community colleges, and state agencies) the Commonwealth remits directly to the System 50% of total employer contributions due, and the non-school entity employer remits 50% of the total employer contributions due directly to the System.

The Commonwealth Share of total employer contributions for FY 2019 was \$2.5 billion. The school and non-school entity share of total employer contributions for FY 2019 was \$2.1 billion. For FY 2019 total employer contributions received was \$4.6 billion.

### Investment Income

Net investment income decreased from \$4.7 billion in FY 2018 to \$3.6 billion in FY 2019, which is consistent with the decrease in the time-weighted investment rate of return from 9.27% for FY 2018 to 6.68% for FY 2019. The investment returns in FY 2018 exceeded the actuarial return assumption. Net investment income slightly decreased from \$5.0 billion in FY 2017 to \$4.7 billion in FY 2018, which is consistent with the decrease in the time-weighted investment rate of return from 10.14% for FY 2017 to 9.27% for FY 2018. As depicted in Figure 3, investment earnings provided 56% of PSERS' funding over the past 20 years. Net investment income also includes investment expenses as a deduction. The "Total PSERS' Benefits and Expenses" section that follows includes an analysis of investment expenses.

**Figure 5 - Total PSERS' Benefits and Expenses**  
Fiscal Year Ended June 30, 2019



### Total PSERS' Benefits and Expenses

The primary source of expense during FY 2019 was for the payment of pension and healthcare benefits approximating \$7.2 billion. The breakdown consisted of \$6.7 billion for

Pension, \$112.8 million for Premium Assistance, and \$363.3 million for HOP benefits. Figure 5 illustrates the significant portion of expenses attributable to benefit payments.

Total PSERS' benefit expense slightly increased from \$7.1 billion in FY 2018 to \$7.2 billion in FY 2019. The increase is attributable to an ongoing increase to the average monthly benefit and an increase in the number of members receiving benefits. This increase was partially offset by a decrease in lump sum payments in FY 2019 due to a small decrease in the number of retirees electing to receive lump sums. Pension benefits payable increased slightly from \$582.4 million at June 30, 2018 compared to \$585.0 million at June 30, 2019. This increase was mainly attributable to an increase in pension and death payments payable. Total PSERS' benefit expense increased from \$6.9 billion in FY 2017 to \$7.1 billion in FY 2018. The increase is attributable to an ongoing increase to the average monthly benefit and an increase in the number of members receiving benefits. Pension benefits payable increased from \$529.8 million at June 30, 2017 compared to \$582.4 million at June 30, 2018. This increase was mainly attributable to an increase in pension payments payable which was partially offset by a small decrease in death payments payable. New retirements during FY 2018 increased by approximately 2% from FY 2017 and lump sum rollovers increased by 10%.

Investment expenses decreased by \$17.9 million from \$467.7 million in FY 2018 to \$449.8 million in FY 2019 mainly due to a decrease in management fees in absolute return and fixed income of \$23 million. The decrease in absolute return is mainly attributable to a renegotiation of fee terms and lower performance fees earned in FY 2019. The decrease in fixed income is due to a decrease in performance fees. The decreases are partially offset by increases in management fees in the international equity asset class of \$8 million. As a percentage of total benefits and expenses, investment expense decreased from 6.1% in FY 2018 to 5.8% in FY 2019.

As a percentage of total benefits and expenses, investment expense has decreased from a high of 8.2% in FY 2013 to 5.8% in FY 2019 as investment expenses have declined from \$557.6 million in FY 2013 to \$449.8 million in FY 2019. During this same period net assets increased \$10.4 billion from \$48.7 billion at June 30, 2012 to \$59.1 billion at June 30, 2019.

PSERS continues to be one of the most transparent among large public pension funds in the nation for the disclosure of management fees. For example, certain pension funds report no or very little management fees for alternative investments because they are considered part of the cost of the investment and are netted against performance rather than shown separately. PSERS, however, gathers

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**Management's Discussion and Analysis (continued)**

management fee information from each of its limited partnerships and collective trust fund investments, even if it is not specifically disclosed in the fund's standard reports or identified in capital call requests. Such management fee information includes both base and performance fees obtained from either the fund's administrator statement, capital account statement or financial statements. This information is then utilized to report all relevant management fees in the System's financial statements. While the national debate over what constitutes a "fee" continues, PSERS will endeavor to remain transparent and report fees in accordance with current GASB standards and prevailing public pension industry practices to keep PSERS' financial statements both meaningful and comparative to its peers. In addition, PSERS reports all other investment expenses, including staff compensation and overhead, consultant, legal, and bank expenses incurred.

Administrative expenses increased by \$8.5 million from \$91.1 million during FY 2018 compared to \$99.6 million during FY 2019. This rise was mainly attributable to the increase in administrative costs for HOP due to an increase in the number of participants and the acquisition of third party administrative and consulting services for the Defined Contribution Plan. As depicted in Figure 5, administrative expenses represent only 1.2% of total benefits and expenses.

**New GASB Standards**

During the fiscal year ended June 30, 2018 the System adopted GASB Statement No. 75, *Accounting and Financial Reporting for Postemployment Benefits Other Than Pensions (OPEB)*. GASB 75 addresses financial accounting and reporting for governments that provide or finance OPEB. GASB 75 replaces GASB 45, *Accounting and Financial Reporting by Employers for Postemployment Benefits Other Than Pensions*, as amended, and GASB No. 57, *OPEB Measurements by Agent Employers and Agent Multiple-Employer Plans*, for OPEB.



## Management's Discussion and Analysis (continued)

### Postemployment Healthcare

PSERS administers two postemployment healthcare programs, the Health Insurance Premium Assistance Program (Premium Assistance) and the Health Options Program (HOP), for its annuitants. The following paragraphs and summary financial data provide supplementary information to the financial statements which contain the financial position and activities for the two postemployment healthcare programs.

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#### Health Insurance Premium Assistance Program (Premium Assistance)

##### Financial Highlights

- Total net position increased by \$2.5 million in FY 2019 mainly due to net investment income and employer contributions exceeding benefit expense deductions and from a net decrease in administrative expenses. The total net position continues to be sufficient to fund one full year of benefits. The change from June 30, 2017 to June 30, 2018 was a decrease of \$1.0 million mainly due to deductions for benefits and administrative expenses slightly exceeding net investment income and employer contributions. The contribution rate remained the same at 0.83% for FY 2018 and FY 2019.
- Investments increased from \$91.7 million at June 30, 2018 to \$93.6 million at June 30, 2019 as revenue exceeded expenses in FY 2019.

##### Contributions

Total employer contributions for Premium Assistance increased slightly from \$112.0 million in FY 2018 to \$115.0 million in FY 2019 due to an increase in active member payroll.

##### Investment Income

Total investment income for Premium Assistance increased from \$1.5 million for FY 2018 to \$2.3 million for FY 2019 due to higher short-term interest rates.

##### Benefits and Expenses

Overall deductions for Premium Assistance slightly increased from \$114.5 million in FY 2018 to \$114.7 million in FY 2019. This increase is due to the increase in the number of members receiving premium assistance benefits offset by a decrease in administrative expenses.

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#### Health Options Program (HOP)

##### Financial Highlights

- Total net position increased by \$31.7 million in FY 2019 primarily due to the rise in premiums and investment income and a slight decline in total expenses that outpaced the rise in administrative expenses. The change from June 30, 2017 to June 30, 2018 is also primarily due to the rise in premiums and investment income that outpaced the rise in expenses in both benefit payments and administrative expenses.
- Total receivables decreased from \$58.6 million at June 30, 2018 to \$54.5 million at June 30, 2019. The decrease is attributed to a change in the CMS reimbursement.
- Investments increased from \$237.5 million at June 30, 2018 to \$286.1 million at June 30, 2019 as HOP income exceeded expenses, which produced more funds for investment.
- Total liabilities increased 16.1% from \$63.3 million at June 30, 2018 to \$73.4 million at June 30, 2019. The increase is mainly due to increased participation in the program and claim costs causing an increase in drug claims payable and administrative expense payable.

##### Participant and CMS Premiums

Total Participant and CMS premiums for HOP increased from \$423.9 million for FY 2018 to \$436.8 million for FY 2019 due to an increase in plan participation.

##### Investment Income

Investment income for HOP increased from \$2.0 million for FY 2018 to \$3.7 million for FY 2019 due to the increase in investments and higher short-term interest rates.

##### Benefits and Expenses

Overall deductions for HOP decreased from \$418.2 million in FY 2018 to \$408.8 million in FY 2019. This decrease is due to the increase in prescription drug rebate dollars which offset the increase in claim expenses and administrative costs.

## Management's Discussion and Analysis (continued)

Premium AssistanceSummary of Fiduciary Net Position

(Dollar Amounts in Thousands)

	FY 2019	Increase (Decrease)	FY 2018	Increase (Decrease)	FY 2017
<b>Assets:</b>					
Receivables	\$ 35,814	\$ 606	\$ 35,208	\$ (5,718)	\$ 40,926
Investments	93,625	1,920	91,705	8,788	82,917
Miscellaneous	307	60	247	(8)	255
<b>Total Assets</b>	<b>129,746</b>	<b>2,586</b>	<b>127,160</b>	<b>3,062</b>	<b>124,098</b>
<b>Liabilities:</b>					
Payables and other liabilities	4,561	135	4,426	4,071	355
<b>Total Liabilities</b>	<b>4,561</b>	<b>135</b>	<b>4,426</b>	<b>4,071</b>	<b>355</b>
<b>Net Position</b>	<b>\$ 125,185</b>	<b>\$ 2,451</b>	<b>\$ 122,734</b>	<b>\$ (1,009)</b>	<b>\$ 123,743</b>

Summary of Changes in Fiduciary Net Position

	FY 2019	Increase (Decrease)	FY 2018	Increase (Decrease)	FY 2017
<b>Additions:</b>					
Contributions	\$ 114,829	\$ 2,843	\$ 111,986	\$ 1001	\$ 110,985
Net investment income	2,313	858	1,455	792	663
<b>Total Additions</b>	<b>117,142</b>	<b>3,701</b>	<b>113,441</b>	<b>1,793</b>	<b>111,648</b>
<b>Deductions:</b>					
Benefit expenses	112,777	930	111,847	1,618	110,229
Administrative expenses	1,914	(689)	2,603	364	2,239
<b>Total Deductions</b>	<b>114,691</b>	<b>241</b>	<b>114,450</b>	<b>1,982</b>	<b>112,468</b>
<b>Changes in Net Position</b>	<b>\$ 2,451</b>	<b>\$ 3,460</b>	<b>\$ (1,009)</b>	<b>\$ (189)</b>	<b>\$ (820)</b>

Health Options ProgramSummary of Fiduciary Net Position

(Dollar Amounts in Thousands)

	FY 2019	Increase (Decrease)	FY 2018	Increase (Decrease)	FY 2017
<b>Assets:</b>					
Receivables	\$ 54,512	\$ (4,065)	\$ 58,577	\$ (8,669)	\$ 67,246
Investments	286,077	48,579	237,498	17,747	219,751
Miscellaneous	48	(2,669)	2,717	2,624	93
<b>Total Assets</b>	<b>340,637</b>	<b>41,845</b>	<b>298,792</b>	<b>11,702</b>	<b>287,090</b>
<b>Liabilities:</b>					
Payables and other liabilities	73,445	10,173	63,272	4,049	59,223
<b>Total Liabilities</b>	<b>73,445</b>	<b>10,173</b>	<b>63,272</b>	<b>4,049</b>	<b>59,223</b>
<b>Net Position</b>	<b>\$ 267,192</b>	<b>\$ 31,672</b>	<b>\$ 235,520</b>	<b>\$ 7,653</b>	<b>\$ 227,867</b>

Summary of Changes in Fiduciary Net Position

	FY 2019	Increase (Decrease)	FY 2018	Increase (Decrease)	FY 2017
<b>Additions:</b>					
Participant and CMS premiums	\$ 436,828	\$ 12,934	\$ 423,894	\$ 13,477	\$ 410,417
Net investment income	3,654	1,694	1,960	1,282	678
<b>Total Additions</b>	<b>440,482</b>	<b>14,628</b>	<b>425,854</b>	<b>14,759</b>	<b>411,095</b>
<b>Deductions:</b>					
Benefit expenses	363,295	(13,053)	376,348	36,252	340,096
Administrative expenses	45,515	3,662	41,853	4,782	37,071
<b>Total Deductions</b>	<b>408,810</b>	<b>(9,391)</b>	<b>418,201</b>	<b>41,034</b>	<b>377,167</b>
<b>Changes in Net Position</b>	<b>\$ 31,672</b>	<b>\$ 24,019</b>	<b>\$ 7,653</b>	<b>\$ (26,275)</b>	<b>\$ 33,928</b>

**Statements of Fiduciary Net Position**  
**June 30, 2019 and 2018**  
(Dollar Amounts in Thousands)

	2019				
			Postemployment Healthcare		
	Pension	Defined Contribution (DC)	Premium Assistance	Health Options Program	Totals
<b>Assets:</b>					
Receivables:					
Members	\$ 349,892	\$ -	\$ 2,475	\$ 82	\$ 352,449
Employers	1,284,751	-	33,241	-	1,317,992
Investment income	514,815	19	98	173	515,105
Investment proceeds	330,059	-	-	-	330,059
CMS Part D and prescriptions	-	-	-	54,257	54,257
Interfund receivable	1,876	-	-	-	1,876
Total Receivables	2,481,393	19	35,814	54,512	2,571,738
Investments, at fair value:					
Short-term	5,637,562	10,476	93,625	286,077	6,027,740
Fixed income	8,652,870	-	-	-	8,652,870
Common and preferred stock	9,813,146	-	-	-	9,813,146
Collective trust funds	14,305,045	-	-	-	14,305,045
Real estate	5,484,621	-	-	-	5,484,621
Alternative investments	13,445,135	-	-	-	13,445,135
Total Investments	57,338,379	10,476	93,625	286,077	57,728,557
Securities lending collateral pool	4,518,372	-	-	-	4,518,372
Capital assets (net of accumulated depreciation \$34,515)	21,345	-	-	-	21,345
Miscellaneous	25,023	-	307	48	25,378
Total Assets	64,384,512	10,495	129,746	340,637	64,865,390
<b>Liabilities:</b>					
Accounts payable and accrued expenses	97,129	1,386	295	3,377	102,187
Benefits payable	584,960	-	81	38,098	623,139
HOP Participant premium advances	-	-	-	31,970	31,970
Investment purchases and other payables	289,484	-	2,462	-	291,946
Obligations under securities lending	4,518,372	-	-	-	4,518,372
Interfund payable	-	153	1,723	-	1,876
Other liabilities	160,683	-	-	-	160,683
Total Liabilities	5,650,628	1,539	4,561	73,445	5,730,173
<b>Net position restricted for pension, DC and postemployment healthcare benefits</b>					
	\$ 58,733,884	\$ 8,956	\$ 125,185	\$ 267,192	\$ 59,135,217

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

**Statements of Fiduciary Net Position**  
**June 30, 2019 and 2018**  
(Dollar Amounts in Thousands)

	2018				
			Postemployment Healthcare		
	Pension	Defined Contribution (DC)	Premium Assistance	Health Options Program	Totals
<b>Assets:</b>					
Receivables:					
Members	\$ 347,684	\$ -	\$ 2,703	\$ 40	\$ 350,427
Employers	1,207,900	-	31,789	-	1,239,689
Investment income	192,262	53	124	156	192,595
Investment proceeds	362,317	-	-	-	362,317
CMS Part D and prescriptions	-	-	-	58,381	58,381
Interfund receivable	-	-	592	-	592
Total Receivables	2,110,163	53	35,208	58,577	2,204,001
Investments, at fair value:					
Short-term	5,837,717	6,735	91,705	237,498	6,173,655
Fixed income	5,235,603	-	-	-	5,235,603
Common and preferred stock	12,832,667	-	-	-	12,832,667
Collective trust funds	14,011,193	-	-	-	14,011,193
Real estate	5,039,237	-	-	-	5,039,237
Alternative investments	12,609,975	-	-	-	12,609,975
Total Investments	55,566,392	6,735	91,705	237,498	55,902,330
Securities lending collateral pool	2,980,119	-	-	-	2,980,119
Capital assets (net of accumulated depreciation \$31,840)	23,430	-	-	-	23,430
Miscellaneous	14,565	-	247	2,717	17,529
Total Assets	60,694,669	6,788	127,160	298,792	61,127,409
<b>Liabilities:</b>					
Accounts payable and accrued expenses	82,219	29	313	2,541	85,102
Benefits payable	582,430	-	72	26,721	609,223
HOP Participant premium advances	-	-	-	34,010	34,010
Investment purchases and other payables	537,857	-	4,041	-	541,898
Obligations under securities lending	2,980,119	-	-	-	2,980,119
Interfund payable	592	-	-	-	592
Other liabilities	147,738	-	-	-	147,738
Total Liabilities	4,330,955	29	4,426	63,272	4,398,682
<b>Net position restricted for pension, DC and postemployment healthcare benefits</b>					
	\$ 56,363,714	\$ 6,759	\$ 122,734	\$ 235,520	\$ 56,728,727

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



**Statements of Changes in Fiduciary Net Position**  
**Years Ended June 30, 2019 and 2018**  
(Dollar Amounts in Thousands)

	2019				
	Pension	Defined Contribution (DC)	Postemployment Healthcare		Totals
			Premium Assistance	Health Options Program	
<b>Additions:</b>					
Contributions:					
Members	\$ 1,064,043	\$ -	\$ -	\$ -	\$ 1,064,043
Employers	4,487,520	-	114,829	-	4,602,349
<b>Total contributions</b>	<b>5,551,563</b>	<b>-</b>	<b>114,829</b>	<b>-</b>	<b>5,666,392</b>
HOP Participant premiums	-	-	-	376,449	376,449
Centers for Medicare & Medicaid Services premiums	-	-	-	60,379	60,379
Commonwealth of Pennsylvania	-	5,200	-	-	5,200
Investment income:					
From investing activities:					
Net appreciation in fair value of investments	2,829,899	-	434	-	2,830,333
Short-term	124,184	273	1,907	3,682	130,046
Fixed income	256,597	-	-	-	256,597
Common and preferred stock	322,865	-	-	-	322,865
Collective trust funds	6,373	-	-	-	6,373
Real estate	226,303	-	-	-	226,303
Alternative investments	298,004	-	-	-	298,004
<b>Total investment activity income</b>	<b>4,064,225</b>	<b>273</b>	<b>2,341</b>	<b>3,682</b>	<b>4,070,521</b>
Investment expenses	(449,768)	-	(28)	(28)	(449,824)
<b>Net income from investing activities</b>	<b>3,614,457</b>	<b>273</b>	<b>2,313</b>	<b>3,654</b>	<b>3,620,697</b>
From securities lending activities:					
Securities lending income	116,564	-	-	-	116,564
Securities lending expense	(102,311)	-	-	-	(102,311)
<b>Net income from securities lending activities</b>	<b>14,253</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>14,253</b>
<b>Total net investment income</b>	<b>3,628,710</b>	<b>273</b>	<b>2,313</b>	<b>3,654</b>	<b>3,634,950</b>
<b>Total Additions</b>	<b>9,180,273</b>	<b>5,473</b>	<b>117,142</b>	<b>440,482</b>	<b>9,743,370</b>
<b>Deductions:</b>					
Benefits	6,734,145	-	112,777	363,295	7,210,217
Refunds of contributions	27,027	-	-	-	27,027
Administrative expenses	48,931	3,276	1,914	45,515	99,636
<b>Total Deductions</b>	<b>6,810,103</b>	<b>3,276</b>	<b>114,691</b>	<b>408,810</b>	<b>7,336,880</b>
<b>Net increase</b>	<b>2,370,170</b>	<b>2,197</b>	<b>2,451</b>	<b>31,672</b>	<b>2,406,490</b>
<b>Net position restricted for pension, DC and postemployment healthcare benefits:</b>					
<b>Balance, beginning of year</b>	<b>56,363,714</b>	<b>6,759</b>	<b>122,734</b>	<b>235,520</b>	<b>56,728,727</b>
<b>Balance, end of year</b>	<b>\$ 58,733,884</b>	<b>\$ 8,956</b>	<b>\$ 125,185</b>	<b>\$ 267,192</b>	<b>\$ 59,135,217</b>

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

**Statements of Changes in Fiduciary Net Position**  
**Years Ended June 30, 2019 and 2018**  
(Dollar Amounts in Thousands)

	2018				
	Pension	Defined Contribution (DC)	Postemployment Healthcare		Totals
			Premium Assistance	Health Options Program	
<b>Additions:</b>					
Contributions:					
Members	\$ 1,026,375	\$ -	\$ -	\$ -	\$ 1,026,375
Employers	4,249,611	-	111,986	-	4,361,597
<b>Total contributions</b>	<b>5,275,986</b>	<b>-</b>	<b>111,986</b>	<b>-</b>	<b>5,387,972</b>
HOP Participant premiums	-	-	-	359,896	359,896
Centers for Medicare & Medicaid Services premiums	-	-	-	63,998	63,998
Commonwealth of Pennsylvania	-	6,801	-	-	6,801
<b>Investment income:</b>					
From investing activities:					
Net appreciation in fair value of investments	3,710,566	-	1	-	3,710,567
Short-term	85,074	53	1,485	1,988	88,600
Fixed income	193,759	-	-	-	193,759
Common and preferred stock	321,547	-	-	-	321,547
Collective trust funds	5,166	-	-	-	5,166
Real estate	367,526	-	-	-	367,526
Alternative investments	485,718	-	-	-	485,718
<b>Total investment activity income</b>	<b>5,169,356</b>	<b>53</b>	<b>1,486</b>	<b>1,988</b>	<b>5,172,883</b>
Investment expenses	(467,653)	-	(31)	(28)	(467,712)
<b>Net income from investing activities</b>	<b>4,701,703</b>	<b>53</b>	<b>1,455</b>	<b>1,960</b>	<b>4,705,171</b>
From securities lending activities:					
Securities lending income	38,506	-	-	-	38,506
Securities lending expense	(26,051)	-	-	-	(26,051)
<b>Net income from securities lending activities</b>	<b>12,455</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>12,455</b>
<b>Total net investment income</b>	<b>4,714,158</b>	<b>53</b>	<b>1,455</b>	<b>1,960</b>	<b>4,717,626</b>
<b>Total Additions</b>	<b>9,990,144</b>	<b>6,854</b>	<b>113,441</b>	<b>425,854</b>	<b>10,536,293</b>
<b>Deductions:</b>					
Benefits	6,635,265	-	111,847	376,348	7,123,460
Refunds of contributions	19,881	-	-	-	19,881
Administrative expenses	46,544	95	2,603	41,853	91,095
<b>Total Deductions</b>	<b>6,701,690</b>	<b>95</b>	<b>114,450</b>	<b>418,201</b>	<b>7,234,436</b>
<b>Net increase (decrease)</b>	<b>3,288,454</b>	<b>6,759</b>	<b>(1,009)</b>	<b>7,653</b>	<b>3,301,857</b>
<b>Net position restricted for pension, DC and postemployment healthcare benefits:</b>					
<b>Balance, beginning of year</b>	<b>53,075,260</b>	<b>-</b>	<b>123,743</b>	<b>227,867</b>	<b>53,426,870</b>
<b>Balance, end of year</b>	<b>\$ 56,363,714</b>	<b>\$ 6,759</b>	<b>\$ 122,734</b>	<b>\$ 235,520</b>	<b>\$ 56,728,727</b>

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

## Notes to Financial Statements

## Years Ended June 30, 2019 and 2018

## 1. Organization and Description of the System

## (A) Organization

The System was established on July 18, 1917, under the provisions of Pamphlet Law 1043, No. 343 as a governmental cost-sharing multiple-employer plan that provides retirement allowances and other benefits to its members. Membership in the System is mandatory for nearly all qualifying public school employees in the Commonwealth of Pennsylvania (Commonwealth). At June 30, 2019, there were 773 participating employers, generally school districts. Membership at June 30, 2018, the most recent year for which actual amounts are available, is presented in Table 2.

The Public School Employees' Retirement Board (Board) is established by state law as an independent administrative board of the Commonwealth. The Board exercises control and management of the System, including the investment of its assets. The Board has fifteen members including the Commonwealth's Secretary of Education, the Commonwealth's Secretary of Banking and Securities, the State Treasurer, the Executive Director of the Pennsylvania School Boards Association, one member appointed by the Governor, six elected members (three from among the System's certified members, one from among the System's noncertified members, one from among the System's annuitants, and one from among school board members in Pennsylvania), two members from the Senate, and two members from the House of Representatives.

The State Treasurer is the custodian of the System's Fund. The retirement plan of the System is a contributory defined benefit plan for which the benefit payments to members and contribution provisions by employers and employees are specified in the Pennsylvania Public School Employees' Retirement Code (Code). Changes in benefit and contribution provisions for the retirement plan must

be made by legislation. Pursuant to state law, all legislative bills and amendments proposing to change the System's retirement plan are to be accompanied with an actuarial note prepared by an enrolled pension actuary from the Independent Fiscal Office (IFO) providing an estimate of the cost and actuarial effect of the proposed change.

Based upon criterion of financial accountability as defined by governmental accounting standards, the System is considered a component unit of the Commonwealth of Pennsylvania financial reporting entity and is included in the Comprehensive Annual Financial Report of the Commonwealth of Pennsylvania.

## (B) Pension Plan

## i. Pension Benefits

Under the provisions of the 1975 revision of the Code by the Pennsylvania General Assembly, members are eligible for monthly retirement benefits upon reaching (a) age 62 with at least 1 year of credited service; (b) age 60 with 30 or more years of credited service; or (c) 35 or more years of service regardless of age. Act 120 of 2010 (Act 120) preserves the benefits of existing members and introduced benefit reductions for individuals who become new members on or after July 1, 2011 through June 30, 2019. Act 120 created two new membership classes, Membership Class T-E (Class T-E) and Membership Class T-F (Class T-F). To qualify for normal retirement, Class T-E and Class T-F members must work until age 65 with a minimum of 3 years of service or attain a total combination of age and service that is equal to or greater than 92 with a minimum of 35 years of service. The Internal Revenue Code (IRC) limitation on the annual benefits for a defined benefit plan was \$225,000 for 2019 and \$220,000 for 2018.

Benefits are generally equal to 2% or 2.5%, depending upon membership class, of the member's final average salary (as defined in the Code) multiplied by the number of years of credited service. For members whose membership started prior to July 1, 2011, after completion of five years of service, a member's right to the defined benefits is vested and early retirement benefits may be elected. For Class T-E and Class T-F members, the right to benefits is vested after ten years of service. Active members may purchase credit for various types of school and non-school service on a lump-sum, installment purchase basis, or through an actuarially calculated benefit reduction. Class T-E and Class T-F members must purchase Non-Qualifying Part Time service and most other types of non-school or non-state service credit at full actuarial cost. Class T-E and Class T-F members must purchase credit for Non-Qualifying Part Time service within 365 days of enrollment in the System.

Table 2 - Membership as of June 30, 2019

Active members:	
Vested	165,775
Nonvested	89,974
<b>Total active members</b>	<b>255,749</b>
Inactive members:	
Retirees and beneficiaries currently receiving benefits	237,339
Inactive members and vestees entitled to but not receiving benefits	25,514
<b>Total retirees and other members</b>	<b>262,853</b>
<b>Total number of members</b>	<b>518,602</b>

**Notes to Financial Statements (continued)**

The contribution rates based on qualified member compensation for virtually all members are presented below:

**PSERS members whose membership started prior to July 1, 2011:**

Membership Class T-C	Active Members hired before July 22, 1983	5.25%
Membership Class T-C	Active Members hired on or after July 22, 1983	6.25%
Membership Class T-D	Active Members hired before July 22, 1983	6.50%
Membership Class T-D	Active Members hired on or after July 22, 1983	7.50%

**PSERS members whose membership started on or after July 1, 2011 (Act 120 members):**

Membership Class T-E*	7.50%
Membership Class T-F**	10.30%

\* Shared risk program could cause future contribution rates to fluctuate between 7.5% and 9.5%

\*\* Shared risk program could cause future contribution rates to fluctuate between 10.3% and 12.3%

In addition to regular retirement benefits, the System also provides for disability retirement benefits and death benefits. Participants are eligible for disability retirement benefits after completion of five years of credited service. Such benefits are generally equal to 2% or 2.5%, depending upon membership class, of the member's final average salary (as defined in the Code) multiplied by the number of years of credited service, but not less than one-third of such salary nor greater than the benefit the member would have had at normal retirement age. Members over normal retirement age may apply for disability benefits.

Death benefits are payable upon the death of an active member who has reached age 62 with at least one year of credited service (age 65 with at least three years of credited service for Class T-E and Class T-F members) or who has at least five years of credited service (ten years for Class T-E and Class T-F members). Such benefits are actuarially equivalent to the benefit that would have been effective if the member had retired on the day before death.

Members with credited service in the Commonwealth of Pennsylvania State Employees' Retirement System (SERS) may elect to have that service combined with service in the Public School Employees' Retirement System upon commencement of employment in the public school system. Similarly, a member with credited service in the System may elect to combine such service with SERS upon becoming a member of that system.

All members are fully vested in their individual balance in the Members' Savings Account which is described in Note 3. All non-vested members may receive a refund of their individual balance of member contributions and interest from the Members' Savings Account upon termination of public school employment. Vested members who enrolled prior to July 1, 2011 may elect to receive a return of their accumulated contributions and interest upon their retirement which results in a reduced monthly annuity. Effective with Act 5 which was enacted on June 12, 2017, vested Class T-E and Class T-F members can now withdraw their accumulated contributions and interest from the

Members' Savings Account upon their retirement.

**ii. Contributions**

The contribution policy is set by the Code and requires contributions by active members, employers, and the Commonwealth. The System's funding policy provides for periodic employer and Commonwealth contributions at actuarially determined rates, expressed as a percentage of annual covered payroll, such that they, along with employee contributions and an actuarially determined rate of investment return, are adequate to accumulate assets to pay retirement benefits when due. Level percentage of payroll employer contribution rates are determined using the entry age normal actuarial funding method. This method determines the amount of contributions necessary to (1) fully fund all current costs, (also known as normal cost), which represents the estimated amount necessary to pay for the benefits earned by the employees during the current service year; and (2) liquidate the prior service cost for service earned prior to the current service year and subsequent benefit increases, which represents the amount necessary to fund accrued liabilities over the appropriate amortization periods.

Contribution rates for active members are set by law (redefined with the provisions of Act 9 of 2001 and Act 120) and are dependent upon membership class. The Internal Revenue Code (IRC) limitation on the annual compensation for a defined benefit plan was \$280,000 for 2019 and \$275,000 for 2018.

Active members who enrolled between July 1, 2001, the effective date of Act 9, and June 30, 2011 are Membership Class T-D (Class T-D). The contribution rates for all members in Class T-D were effective January 1, 2002. For Act 120 members, all new members automatically become Class T-E members. New members, however, have a one-time opportunity to elect Class T-F within 45 days of receiving written notification from PSERS. Failure to elect Class T-F at time of original eligibility will make the member ineligible for Class T-F forever. Act 120 introduced



**Notes to Financial Statements (continued)**

a shared risk program that could affect Class T-E and Class T-F members' contribution rates in future fiscal years. With the shared risk program Class T-E and Class T-F members benefit when investments of the Fund are doing well and share some of the risk when investments underperform. The member contribution rate will stay within the specified range allotted for Class T-E or Class T-F; but could increase or decrease by 0.5% every three years dependent on investment performance of PSERS. The member contribution rate will never go below the base rate of 7.5% for Class T-E and 10.3% for Class T-F members, or above 9.5% for Class T-E and 12.3% for Class T-F members.

The total contribution rate for the employers and the Commonwealth was 33.43% and 32.57% (32.60% and 31.74% for pension component) of qualified compensation for the years ended June 30, 2019 and 2018, respectively.

Act 120 suppressed the employer contribution rate by using rate caps in future years to keep the rate from rising too high, too fast for budgetary purposes.

The rate caps limit the amount the pension component of the employer contribution rate can increase over the prior year's rate. For FY 2014 and thereafter, the rate can increase no more than 4.5% plus the premium assistance contribution rate.

The rate cap remained at 4.5% until FY 2017 when the actuarially calculated contribution rate exceeded the prior year's rate by less than 4.5%. As a result, the rate caps are no longer in effect. Since the rate caps no longer apply, the employer normal cost is the contribution rate floor.

According to requirements established in Act 29 of 1994, the Commonwealth reimburses school entity employers a portion of the employer contributions paid to the System. All school entity employers are reimbursed by the Commonwealth at least 50% of the total employer contributions based on the total contribution rate. The Commonwealth reimburses certain school entity employers at a rate greater than 50% based on the Commonwealth of Pennsylvania Department of Education's Market Value/ Personal Income Aid Ratio and other factors. School entities remit 100% of total employer contributions directly to the System. The Commonwealth remits 50% of the total employer contributions for employers other than school entities directly to the System. All contributions from employers and the Commonwealth are shown as employer contributions on the Statements of Changes in Fiduciary Net Position.

The Commonwealth Share of total employer contributions for FY 2019 was \$2.5 billion. The school and non-school entity share of total employer contributions for FY 2019

was \$2.1 billion. For FY 2019 total employer contributions received was \$4.6 billion.

**(C) Postemployment Healthcare Plans**

**i. Health Insurance Premium Assistance Program**

**(a) Premium Assistance Benefits**

The System provides a Health Insurance Premium Assistance Program (Premium Assistance) for all eligible annuitants who qualify and elect to participate. Under this program, employer contribution rates for Premium Assistance are established to provide reserves in the Health Insurance Account that are sufficient for the payment of Premium Assistance benefits for each succeeding year. Effective January 1, 2002, under the provisions of Act 9 of 2001, participating eligible annuitants are entitled to receive premium assistance payments equal to the lesser of \$100 per month or their out-of-pocket monthly health insurance premium. To receive premium assistance, eligible annuitants must have an out-of-pocket premium expense from an approved plan. Plans approved for Premium Assistance are health insurance plans maintained by a Commonwealth School Employer or the PSERS sponsored Health Options Program. As of June 30, 2019, there were no assumed future benefit increases to participating eligible annuitants in the Premium Assistance program. Membership at June 30, 2018, the most recent year for which actual amounts are available, is presented in Table 3.

**(b) Contributions**

A portion of each employer contribution to the System is set aside for the funding of Premium Assistance. The Premium Assistance contribution rate is set at a level necessary to establish reserves sufficient to provide Premium Assistance payments for all participating eligible members for the subsequent fiscal year. The portion of the total contribution rate for employers used to fund Premium Assistance was 0.83% for the years ended June 30, 2019 and 2018. Members do not contribute to Premium Assistance.

**Table 3 - Premium Assistance Membership at June 30, 2019**

Retirees and beneficiaries currently receiving benefits	94,119
Inactive members and vestees entitled to but not receiving benefits	452
<b>Total retirees and other inactive members</b>	<b>94,571</b>
<b>Total active members</b>	<b>255,749</b>
<b>Total number of members</b>	<b>350,320</b>

## Notes to Financial Statements (continued)

### ii. Health Options Program

The Health Options Program (HOP) is a PSERS-sponsored voluntary health insurance program for the sole benefit of annuitants of PSERS, spouses of annuitants, survivor annuitants and their dependents who participate in HOP. The HOP is funded exclusively by the premiums paid by its participants for the benefit coverage they elect. The PSERS pension fund assets are not available to fund or satisfy obligations of the HOP.

HOP offers several health plans. Participants may select among two self-funded Medicare supplement plans, three Medicare Rx plans, and multiple Medicare Advantage plans for those eligible for Medicare. Participants not eligible for Medicare have a choice between a self-funded high deductible indemnity plan and multiple managed care plans. Medicare Advantage and managed care plans are available to retirees residing in the plan's service area. The Medicare supplements and pre-65 high deductible plan are self-funded and claims are adjudicated by a third party administrator. The Medicare Rx Options and the prescription drug benefit of the pre-65 high deductible plan are also self-funded and claims are adjudicated by a pharmacy benefits manager. The Medicare Advantage and managed care plans are provided by private insurance companies or managed care organizations and benefits are fully insured. HOP also offers dental benefits through a fully insured carrier.

Effective January 1, 2006, PSERS entered into an Employer/Union Entity contract with the Centers for Medicare and Medicaid Services (CMS) to operate a voluntary Medicare Prescription Drug Plan (PDP). The PDP covers over 92,000 participants. CMS provides partial funding of the PDP in the form of monthly per capita payments and reinsurance. An independent actuarial consulting firm sets the rates for the self-funded benefits. The HOP maintains reserves for claims that are Incurred But Not Reported (IBNR) and for claim fluctuation for the self-funded benefit plans. At June 30, 2019 and 2018 PSERS recorded \$19,125,000 and \$17,880,000, respectively, in IBNR. The IBNR is included in benefits payable.

### (D) Defined Contribution Plan

On June 12, 2017, Commonwealth of Pennsylvania Act 5 of 2017 was signed into law. This legislation establishes a new hybrid defined benefit/defined contribution (DC) retirement benefit plan applicable to all school employees who become new members of PSERS on July 1, 2019 and thereafter. The three new plan design options under Act 5 include two hybrid plans consisting of defined benefit and defined contribution components and a stand-alone defined contribution plan. A stand-alone defined benefit plan is no longer available to new members after June 30, 2019. The

financial statements for FY 2019 & FY 2018 reflect start-up funding and expenses for the DC plan.

## 2. Summary of Significant Accounting Policies

### (A) Basis of Accounting

The financial statements of the System are prepared on the accrual basis of accounting under which expenses are recorded when the liability is incurred, revenues are recorded in the accounting period in which they are earned and become measurable, and investment purchases and sales are recorded as of their trade date. Member and employer contributions are recognized in the period for which employees' salaries are reported. Benefits and refunds are recognized when due and payable in accordance with the terms of the plan.

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

### (B) Investments

The System's investments are reported at fair value. Fair value is the amount that the System 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. See Note 4(B) for the description of the Fair Value of Investments.

Net appreciation (depreciation) is determined by calculating the change in fair value of investments between the beginning of the year and end of the year, less purchases of investments at cost, plus sales of investments at fair value.

Investment purchases and sales are recorded as of the trade date. Interest income is comprised of dividend, interest, and other investment income. Dividend income is recognized on the ex-dividend date. Interest and other investment income is recognized when earned.

Investment expenses consist of investment manager fees and those administrative expenses directly related to the System's investment operations. Investment proceeds receivable generally includes unsettled investment sales. Unsettled investment purchases are included in investment purchases and other payables.

**Notes to Financial Statements (continued)**

**(C) Capital Assets**

Capital assets consist primarily of data processing equipment, software, and internally developed computer software recognized as intangible assets. Capital assets are depreciated using the straight-line method over an estimated useful life of five years. Intangible assets are amortized using the straight-line method over an estimated useful life of twenty years for assets purchased prior to July 1, 2012 and up to 10 years for assets purchased after June 30, 2012.

**(D) Benefits Payable**

Benefits payable identifies the obligations of the System, on an accrual basis, at the end of the fiscal year. It includes the estimated retirement and death benefits payable, federal taxes withheld but not yet due to IRS, premium assistance benefits payable, and the HOP IBNR claims for its participants.

**(E) Pensions for Employees of the System**

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 the Pennsylvania State Employees' Retirement System (SERS) and additions to/deductions from SERS' fiduciary net position have been determined on the same basis as they are reported by SERS. Please refer to Note 8 for additional information regarding SERS. PSERS' net pension liability for its employees to SERS is reported in Other liabilities. Deferred inflows of resources are reported in Other liabilities. Deferred outflows of resources are reported in Miscellaneous assets. Pension expense is reported in administrative expenses and is detailed on the Schedule of Administrative and Investment Expenses Supplementary Schedule.

**(F) Postemployment Healthcare Plan for Employees of the System**

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 of Pennsylvania Retired Employees Health Program (REHP) and additions to/deductions from REHP fiduciary net position have been determined on the same basis as they are reported by the REHP. Please refer to Note 9 for additional information regarding the REHP. PSERS' net OPEB liability for its employees to the REHP is reported in Other liabilities. Deferred inflows of resources are reported in Other liabilities. Deferred outflows of resources are reported in Miscellaneous assets. OPEB expense is reported in Administrative and Investment Expenses Supplementary Schedule.

**(G) 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% and 100% of sick days available at retirement, up to 161 maximum days paid. At June 30, 2019 and 2018, \$5,044,000 and \$4,216,000, respectively, were accrued for unused vacation and sick leave for the System's employees and are included in Accounts payable and accrued expenses on the Statements of Fiduciary Net Position.

**(H) Participant Premium Advances**

Premium advances at June 30, 2019 and 2018 are for HOP premiums related to health care coverage to be provided in July of 2019 and 2018, respectively.

**(I) Federal Income Taxes**

The Internal Revenue Service (IRS) issued a determination letter dated March 16, 2017 which stated that the plan and its underlying trust qualify under the provisions of Section 501(a) of the IRC and therefore are exempt from federal income taxes.

**(J) Risk Management**

The System is exposed to various liabilities and risks of loss, including, without limitation, the ordinary risks of investment losses, risks related to theft or destruction of assets, liabilities resulting from injuries to employees, and liabilities resulting from court challenges to fiduciary decisions. As an administrative agency of the Commonwealth of Pennsylvania, the System is accorded sovereign immunity. For claims not shielded by sovereign immunity, the System participates in certain Commonwealth pooled insurance programs and requires asset managers to carry certain insurance coverage for the protection of the System. The System has implemented a self-insurance program for fiduciary and director and officer liability coverage. During the past three fiscal years, insurance settlements did not exceed insurance coverage.

**(K) Reclassifications**

Certain 2018 amounts have been reclassified in conformity with the 2019 presentation. These reclassifications had no effect on net position restricted for pension benefits or the change in fiduciary net position.

## Notes to Financial Statements (continued)

### (L) Members Receivables

Members receivables include an amount for members' obligations to the System for the purchase of service credit. Members have a variety of options to remit purchase of service payments:

- Remit a lump sum payment.
- Request an installment plan from one to seven years where the member's employer establishes a payroll deduction process. The member's employer then forwards monthly payments of the withheld amounts to PSERS.
- Accept an actuarial reduction debt through which the amount of the purchase plus accumulated interest will reduce the member's retirement or death benefit.
- Rollover funds from an eligible distribution.

The following is a summary of the members receivables at June 30, 2019 and 2018:

	(Dollar Amounts in Thousands)	
	2019	2018
<b>Pension:</b>		
Member contributions	\$ 74,846	\$ 85,842
Purchase of service	270,529	258,807
Other	4,517	3,035
<b>Total Members Receivables</b>	<b>\$ 349,892</b>	<b>\$ 347,684</b>

### (M) Interfund Transactions and Balances

Interfund transfers of assets take place on a regular recurring basis between Pension, Premium Assistance and Defined Contribution. The transfers occur upon receipt of employer contributions and payment of benefits or expenses. The interfund receivables and payables related to interfund activity are classified under receivables and liabilities on the financial statements.

### (N) Change in Accounting Principle

Due to the implementation of GASB Statement No. 75 in FY 2018, the net position restricted for pension, DC and postemployment healthcare benefits was restated by \$(80,076,000) as of July 1, 2017. The purpose of the restatement was to record the July 1, 2017 net OPEB liability of \$(82,591,000) and the July 1, 2017 deferred outflows of resources for contributions subsequent to the measurement date of \$1,900,000 to the Commonwealth of Pennsylvania REHP.

### (O) Adoption of New Accounting Standards

GASB Statement No. 83, *Certain Asset Retirement*

*Obligations*, addresses accounting and financial reporting for certain asset retirement obligations, (AROs) and was issued November 2016. This Statement establishes criteria for determining the timing and pattern of recognition of a liability and a corresponding deferred outflow of resources for AROs. Upon examination, it was determined that the System is currently presenting information in accordance with the requirements.

GASB Statement No. 84, *Fiduciary Activities*, improves guidance regarding the identification of fiduciary activities for accounting and financial reporting purposes and how those activities should be reported. GASB 84 was issued January 2017. The System is evaluating GASB 84 and its potential impact to the financial statements.

GASB Statement No. 87, *Leases*, was issued in June 2017, and requires recognition of certain lease assets and liabilities for leases that previously were classified as operating leases and recognized as inflows of resources or outflows of resources based on provisions of the contract. The System is evaluating GASB 87 and its potential impact to the financial statements.

GASB Statement No. 88, *Certain Disclosures Related to Debt, including Direct Borrowings and Direct Placements*, was issued in March 2018. This statement improves information that is disclosed in notes to government financial statements and clarifies which liabilities governments should include in their note disclosures related to debt. Upon examination, it was determined that the System is currently presenting information in accordance with the requirements.

GASB Statement No. 89, *Accounting for Interest Cost Incurred before the End of a Construction Period*, was issued on March 2018. This statement's primary objective is to enhance the relevance and comparability of information about capital assets and the costs of borrowing for a reporting period, and to simplify the accounting for interest costs incurred before the end of a construction period. Upon examination, it was determined that the System is currently presenting information in accordance with the requirements.

GASB Statement No. 90, *Majority Equity Interests*—an amendment of GASB Statements No. 14 and No. 61, was issued August 2018. This statement's primary objectives are to improve the consistency and comparability of reporting a government's majority equity interest in a legally separate organization and to improve the relevance of financial statement information for certain component units. The System is evaluating GASB 90 and its potential impact to the financial statements.



## Notes to Financial Statements (continued)

<b>Table 4 - Account Balance</b>			
(Dollar Amounts in Thousands)			
	<b>2019</b>		<b>2018</b>
<b>Pension:</b>			
State Accumulation Account	\$ (15,401,248)	\$	(17,236,211)
Members' Savings Account	16,839,956		16,120,538
Annuity Reserve Account	57,295,176		57,479,387
	<b>\$ 58,733,884</b>	<b>\$</b>	<b>56,363,714</b>
<b>Defined Contribution Plan</b>	<b>\$ 8,956</b>	<b>\$</b>	<b>6,759</b>
<b>Postemployment Healthcare:</b>			
Health Insurance Account	\$ 125,185	\$	122,734
Health Insurance Program Account	\$ 267,192	\$	235,520

### 3. Description of Accounts

The Code requires the System to maintain the following accounts which represent reserves held for future and current benefit payments as follows and as illustrated in Table 4.

#### (A) State Accumulation Account

The State Accumulation Account is credited with contributions from the Commonwealth and the employers. Additionally, interest earnings of the System (after crediting the Members' Savings Account with 4% interest and the reserve for retirement with 5.50% statutory interest) are credited to this account. Each year, the necessary amounts, as determined by the actuary for the payment of retirement, disabilities, and death benefits, are transferred from the State Accumulation Account to the Annuity Reserve Account increasing the reserve credit to the 7.25% valuation assumption rate determined by the actuary. All administrative expenses necessary for the operation of the System, except for Premium Assistance, HOP, and Defined Contribution Plan expenses, are paid from the State Accumulation Account.

#### (B) Members' Savings Account

The Members' Savings Account is credited with all contributions made by active members of the System. Interest is added to the member's individual account at an annual rate of 4%. Upon death or retirement of a member, the accumulated contributions plus interest are transferred to the Annuity Reserve Account for subsequent payment of benefits.

#### (C) Annuity Reserve Account

The Annuity Reserve Account represents the amounts transferred from the Members' Savings and State Accumulation Accounts, plus additional contributions made

by the Commonwealth and employers for the payment of supplemental annuities and cost-of-living increases. All death, disability, and retirement benefits are paid from this account. Annual interest of 5.50% is credited to the Annuity Reserve Account.

#### (D) School Employees' Defined Contribution Trust (Defined Contribution Plan)

The School Employees' Defined Contribution Trust accumulates DC member and employer contributions, investment earnings and DC plan expenses of the School Employees Defined Contribution Plan. The trust is comprised of individual investment accounts, all assets in those accounts and any assets held that are not allocated to the individual investment accounts. The assets of the plan are held in trust for the exclusive benefit of the participants and their beneficiaries and may be used for payment of fees, costs and expenses related to the administration and investment of the plan and the trust.

#### (E) Health Insurance Account

The Health Insurance Account is credited with contributions from the employers for Premium Assistance. Effective January 1, 2002, under the provisions of Act 9 of 2001, participating eligible annuitants are entitled to receive premium assistance payments equal to the lesser of \$100 per month or their out-of-pocket monthly health insurance premium. The Health Insurance Account pays all administrative expenses necessary to operate the Premium Assistance.

#### (F) Health Insurance Program Account

The Health Insurance Program Account is credited with premiums from members of the HOP and from CMS. All benefits related to the HOP (premium payments to the insurance companies and self-funded benefits) are paid from this account. The Health Insurance Program Account pays all administrative expenses necessary to operate the HOP.

### 4. Investments

#### (A) Summary of Investments

The Board has the responsibility to invest and reinvest available funds of the System in accordance with the guidelines and limitations set forth in the Code and other applicable state law. The Board accomplishes the daily management of the System's investments through investment advisors who act as agents for the System and through internal investment managers.

## Notes to Financial Statements (continued)

The Board invests the funds of the System using the Prudent Investor Standard, as articulated in the Code, which means “the exercise of that degree of judgment, skill and care under the circumstances then prevailing which persons 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 the permanent disposition of the fund, considering the probable income to be derived therefrom as well as the probable safety of their capital.” The Board has adopted its investment policy to formally document investment objectives and responsibilities. This policy, as well as applicable state law, establishes guidelines for permissible investments of the System.

### (B) Fair Value of Investments

#### i. Fair Value Levels

PSERS 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 fair value in that particular market.
- **Level 2 inputs:** Level 2 inputs are prices that are observable either directly or indirectly. Level 2 inputs may include quoted prices for similar instruments in active markets; quoted prices for identical or similar instruments in markets that are not active; and model-derived valuations in which all significant inputs are observable such as interest rates, yield curves, implied volatilities, credit spreads or market-corroborated inputs.
- **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.

Debt, equity, and derivative instrument securities classified in Level 1 of the fair value hierarchy are valued using prices quoted in active markets for those securities. Debt securities classified in Level 2 of the fair value hierarchy are valued using a matrix pricing technique. Matrix pricing is used

to value securities based on the securities’ relationship to benchmark quoted prices and recently published security specific trading levels. Short-term securities are carried at cost, which approximates fair value, unless they have published market prices or quotations from national securities exchanges or securities pricing services, in which case they are valued at the published market price. Fixed income securities and common and preferred stocks are generally valued based on published market prices and quotations from national securities exchanges or securities pricing services. Securities which are not traded on a national securities exchange are valued by the respective fund manager or other third parties based on similar sales.

For alternative investments, which include private equity, special situation, venture capital and equity real estate investments where no readily ascertainable market value exists, management, in consultation with the general partner and investment advisors, has determined the fair values for the individual investments based upon the partnership’s most recent available financial information.

Directly-owned real estate investments are primarily valued based on appraisals performed by independent appraisers and, for properties not appraised, the present value of the projected future net income stream is used. Directly-owned real estate investments are reported net of related debt borrowed against the market value of the property. At both June 30, 2019 and 2018, \$132,000,000 in open-ended repurchase agreements were netted against the related property valuation and classified as Level 1. The agreements are payable at an interest rate equivalent to 1 month LIBOR plus 40 basis points and are collateralized by certain fixed income investments of the System.

Derivative instruments classified in Level 1 of the fair value hierarchy are valued using observable exchange, dealer, or broker market pricing.

#### ii. Investments at Net Asset Value (NAV)

- (a) Collective trust fund investments (CTF) consist primarily of domestic and international institutional funds. The fair value of CTF is based on the reported share value of the respective fund. CTF are managed by state chartered banks for which various state banking departments have regulatory oversight and investment advisors for which regulatory agencies such as the Securities and Exchange Commission have regulatory oversight. Investments that are not subject to this oversight are subject to annual independent audits. Redemption frequency for these assets range from monthly, to quarterly, to annual.

Notes to Financial Statements (continued)

At June 30, 2019, the System had the following recurring fair value measurements.

Investments and Derivative Instruments Measured at Fair Value

(Dollar Amounts in Thousands)

		Fair Value Measurements Using		
	2019	Level 1	Level 2	Level 3
<b>Pension investments:</b>				
<b>Investments by fair value level</b>				
<b>Short term:</b>				
PSERS Short-Term Investment Fund	\$ 5,521,295	\$ 2,732,041	\$ 2,789,254	\$ -
Other domestic short-term	98,669	79,699	18,970	-
International short-term	17,598	13,193	4,405	-
	<u>5,637,562</u>	<u>2,824,933</u>	<u>2,812,629</u>	<u>-</u>
<b>Fixed income:</b>				
Domestic asset-backed and mortgage-backed securities	493,011	-	493,011	-
U.S. government and agency obligations	5,605,208	5,027,359	577,849	-
Domestic corporate and taxable municipal bonds	2,286,060	237,039	2,045,364	3,657
International fixed income	268,591	-	268,591	-
	<u>8,652,870</u>	<u>5,264,398</u>	<u>3,384,815</u>	<u>3,657</u>
<b>Common and preferred stock:</b>				
Domestic common and preferred stock	5,374,971	5,371,911	3,060	-
International common and preferred stock	4,438,175	4,438,175	-	-
	<u>9,813,146</u>	<u>9,810,086</u>	<u>3,060</u>	<u>-</u>
<b>Directly-owned real estate</b>	<u>654,253</u>	<u>(132,000)</u>	<u>-</u>	<u>786,253</u>
<b>Total investments by fair value level</b>	<u>24,757,831</u>	<u>\$ 17,767,417</u>	<u>\$ 6,200,504</u>	<u>\$ 789,910</u>
<b>Investments measured at the net asset value (NAV)</b>				
<b>Collective trust funds</b>	<u>14,305,045</u>			
<b>Equity real estate</b>	<u>4,830,368</u>			
<b>Alternative investments:</b>				
Private equity	6,379,347			
Special situations	6,004,654			
Venture capital	1,061,134			
	<u>13,445,135</u>			
<b>Total investments measured at the NAV</b>	<u>32,580,548</u>			
<b>Total investments measured at fair value</b>	<u>\$ 57,338,379</u>			
<b>Investment derivative instruments</b>				
Futures	\$ 31,039	\$ 31,039	\$ -	\$ -
Total return type swaps	330,229	330,229	-	-
Foreign exchange contracts	(39,666)	(39,666)	-	-
<b>Total investment derivative instruments</b>	<u>\$ 321,602</u>	<u>\$ 321,602</u>	<u>\$ -</u>	<u>\$ -</u>

## Notes to Financial Statements (continued)

At June 30, 2018, the System had the following recurring fair value measurements.

## Investments and Derivative Instruments Measured at Fair Value

(Dollar Amounts in Thousands)

		Fair Value Measurements Using			
	2018	Level 1	Level 2	Level 3	
<b>Pension investments:</b>					
<b>Investments by fair value level</b>					
<b>Short term:</b>					
PSERS Short-Term Investment Fund	\$ 5,584,103	\$ 3,024,471	\$ 2,559,632	\$ -	
Other domestic short-term	229,596	84,915	144,681	-	
International short-term	24,018	16,677	7,341	-	
	<u>5,837,717</u>	<u>3,126,063</u>	<u>2,711,654</u>	<u>-</u>	
<b>Fixed income:</b>					
Domestic asset-backed and mortgage-backed securities	1,843,721	-	1,839,471	4,250	
U.S. government and agency obligations	1,053,358	1,039,502	13,856	-	
Domestic corporate and taxable municipal bonds	1,985,513	297,689	1,687,824	-	
International fixed income	353,011	-	353,011	-	
	<u>5,235,603</u>	<u>1,337,191</u>	<u>3,894,162</u>	<u>4,250</u>	
<b>Common and preferred stock:</b>					
Domestic common and preferred stock	7,159,479	7,159,479	-	-	
International common and preferred stock	5,673,188	5,673,157	-	31	
	<u>12,832,667</u>	<u>12,832,636</u>	<u>-</u>	<u>31</u>	
<b>Directly-owned real estate</b>	<u>602,609</u>	<u>(132,000)</u>	<u>-</u>	<u>734,609</u>	
<b>Total investments by fair value level</b>	<u>24,508,596</u>	<u>\$ 17,163,890</u>	<u>\$ 6,605,816</u>	<u>\$ 738,890</u>	
<b>Investments measured at the net asset value (NAV)</b>					
<b>Collective trust funds</b>	<u>14,011,193</u>				
<b>Equity real estate</b>	<u>4,436,628</u>				
<b>Alternative investments:</b>					
Private equity	5,950,167				
Special situations	5,607,778				
Venture capital	1,052,030				
	<u>12,609,975</u>				
<b>Total investments measured at the NAV</b>	<u>31,057,796</u>				
<b>Total investments measured at fair value</b>	<u>\$ 55,566,392</u>				
<b>Investment derivative instruments</b>					
Futures	\$ 20,952	\$ 20,952	\$ -	\$ -	
Total return type swaps	(108,341)	(108,341)	-	-	
Foreign exchange contracts	68,333	68,333	-	-	
Options	43,904	43,904	-	-	
<b>Total investment derivative instruments</b>	<u>\$ 24,848</u>	<u>\$ 24,848</u>	<u>\$ -</u>	<u>\$ -</u>	



## Financial Section

### Notes to Financial Statements (continued)

At June 30, 2019, the System had the following recurring fair value measurements.

Investments Measured at Fair Value

(Dollar Amounts in Thousands)

	2019	Fair Value Measurements Using			
		Level 1	Level 2	Level 3	
<b>Premium Assistance investments:</b>					
<b>Investments by fair value level</b>					
<b>Short term:</b>					
PSERS Short-Term Investment Fund	\$ 10,860	\$ 5,374	\$ 5,486	\$ -	
Other domestic short-term	82,765	-	82,765	-	
<b>Total investments measured at fair value</b>	<b>\$ 93,625</b>	<b>\$ 5,374</b>	<b>\$ 88,251</b>	<b>\$ -</b>	

At June 30, 2018, the System had the following recurring fair value measurements.

Investments Measured at Fair Value

(Dollar Amounts in Thousands)

	2018	Fair Value Measurements Using		
		Level 1	Level 2	Level 3
<b>Premium Assistance investments:</b>				
<b>Investments by fair value level</b>				
<b>Short term:</b>				
PSERS Short-Term Investment Fund	\$ 5,565	\$ 3,014	\$ 2,551	\$ -
Other domestic short-term	86,140	-	86,140	-
<b>Total investments measured at fair value</b>	\$ 91,705	\$ 3,014	\$ 88,691	\$ -

At June 30, 2019, the System had the following recurring fair value measurements.

Investments Measured at Fair Value

(Dollar Amounts in Thousands)

	2019	Fair Value Measurements Using		
		Level 1	Level 2	Level 3
<b>Health Options Program investments:</b>				
<b>Investments by fair value level</b>				
<b>Short term:</b>				
PSERS Short-Term Investment Fund	\$ 93,363	\$ 46,198	\$ 47,165	\$ -
Other domestic short-term	192,714	192,714	-	-
<b>Total investments measured at fair value</b>	<b>\$ 286,077</b>	<b>\$ 238,912</b>	<b>\$ 47,165</b>	<b>\$ -</b>

**Notes to Financial Statements (continued)**

At June 30, 2018, the System had the following recurring fair value measurements.

Investments Measured at Fair Value

(Dollar Amounts in Thousands)

	2018	Fair Value Measurements Using		
		Level 1	Level 2	Level 3
<b>Health Options Program investments:</b>				
<b>Investments by fair value level</b>				
<b>Short term:</b>				
PSERS Short-Term Investment Fund	\$ 91,094	\$ 49,333	\$ 41,761	\$ -
Other domestic short-term	146,404	146,404	-	-
<b>Total investments measured at fair value</b>	<b>\$ 237,498</b>	<b>\$ 195,737</b>	<b>\$ 41,761</b>	<b>\$ -</b>

At June 30, 2019, the System had the following recurring fair value measurements.

Investments Measured at Fair Value

(Dollar Amounts in Thousands)

		Fair Value Measurements Using		
	2019	Level 1	Level 2	Level 3
<b>Defined Contribution investments:</b>				
<b>Investments by fair value level</b>				
<b>Short term:</b>				
PSERS Short-Term Investment Fund	\$ 10,476	\$ 5,184	\$ 5,292	\$ -
<b>Total investments measured at fair value</b>	<b>\$ 10,476</b>	<b>\$ 5,184</b>	<b>\$ 5,292</b>	<b>\$ -</b>

At June 30, 2018, the System had the following recurring fair value measurements.

Investments Measured at Fair Value

(Dollar Amounts in Thousands)

		Fair Value Measurements Using		
	2018	Level 1	Level 2	Level 3
<b>Defined Contribution investments:</b>				
<b>Investments by fair value level</b>				
<b>Short term:</b>				
PSERS Short-Term Investment Fund	\$ 6,735	\$ 3,647	\$ 3,088	\$ -
<b>Total investments measured at fair value</b>	\$ 6,735	\$ 3,647	\$ 3,088	\$ -

Notes to Financial Statements (continued)

The valuation method for investments measured at the net asset value (NAV) per share (or its equivalent) at June 30, 2019 and 2018 are presented in the following tables.

<b>Investments measured at the NAV</b> (Dollar Amounts in Thousands)				
	<u>June 30, 2019</u>	<u>Unfunded Commitments</u>	<u>Redemption Frequency</u>	<u>Redemption Notice Period</u>
<b>Collective trust funds (a)</b>	<u>\$ 14,305,045</u>	\$ -	see note (a)	0 - 90 Days
<b>Equity real estate (b)</b>	<u>4,830,368</u>	2,945,064	see note (b)	see note (b)
<b>Alternative investments:</b>				
Private equity (c)	6,379,347	3,105,373	see note (c)	see note (c)
Special situations (d)	6,004,654	3,639,565	see note (d)	see note (d)
Venture capital (e)	1,061,134	591,118	see note (e)	see note (e)
	<u>13,445,135</u>			
<b>Total investments measured at the NAV</b>	<u>\$ 32,580,548</u>			

<b>Investments measured at the NAV</b> (Dollar Amounts in Thousands)				
	<u>June 30, 2018</u>	<u>Unfunded Commitments</u>	<u>Redemption Frequency</u>	<u>Redemption Notice Period</u>
<b>Collective trust funds (a)</b>	<u>\$ 14,011,193</u>	\$ -	see note (a)	0 - 90 Days
<b>Equity real estate (b)</b>	<u>4,436,628</u>	2,726,771	see note (b)	see note (b)
<b>Alternative investments:</b>				
Private equity (c)	5,950,167	3,514,005	see note (c)	see note (c)
Special situations (d)	5,607,778	3,175,638	see note (d)	see note (d)
Venture capital (e)	1,052,030	538,517	see note (e)	see note (e)
	<u>12,609,975</u>			
<b>Total investments measured at the NAV</b>	<u>\$ 31,057,796</u>			

(b) Equity real estate includes real estate funds that invest primarily in U.S., Latin American, European and Asian commercial real estate. Fund investments can be made across the capital structure of each property venture. The fair value of the investments in this type have been determined using the NAV per share (or its equivalent) of the System's ownership interest in partners' capital. These investments cannot be easily redeemed. Distributions from each fund may be received as: 1) cash flows from operations or 2) return of capital from dispositions. It is expected that the underlying assets of the funds will be liquidated over the next 7 to 12 years.

(c) Private equity includes U.S. buyout funds and international buyout funds that invest mostly in private companies across a variety of industries (although they may invest in public companies from time to time). The fair value of the investments in this type

have been determined using the NAV per share (or its equivalent) of the System's ownership interest in partners' capital. These investments cannot be easily redeemed. The nature of private equity investments is that distributions are received through the liquidation of the underlying assets of the fund. The expected holding period of a private equity portfolio company is 3 to 7 years.

(d) Special situations includes private investment funds that invest across the fixed income capital structure primarily in North America and Western Europe. The fair value of the investments in this type have been determined using the NAV per share (or its equivalent) of the System's ownership interest in partners' capital. These investments cannot be easily redeemed. Instead, the nature of the investments in this type is that distributions are received through the orderly liquidation of the underlying assets of

**Notes to Financial Statements (continued)**

the fund throughout the stated term of the fund. It is expected that the underlying assets of the funds will be liquidated over the next 3 to 7 years.

- (e) Venture capital includes U.S. based private funds, that finance young, relatively small, rapidly growing companies, typically in either the health care or information technology sectors. The fair value of the investments in this type have been determined using the NAV per share (or its equivalent) of the System's ownership interest in partners' capital. These investments cannot be easily redeemed. The nature of venture capital investments is that distributions are received through the liquidation of the underlying assets of the fund. It is expected that the underlying assets of the funds will be liquidated over the next 5 to 10 years.

**(C) Deposit and Investment Risk Disclosures****i. Deposits**

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

The System, through its third party administrator, maintains certain bank deposits for the operation of its voluntary HOP. These deposits are not required to be collateralized by statute or policy. These deposits totaled \$192,714,000 and \$146,404,000 at June 30, 2019 and 2018, respectively, and are under the custody of M&T Bank which has an A- rating by Standard and Poor's (S&P) and an A3 rating by Moody's Investor Services (Moody's).

**ii. Investment Risks**

The System's investments, including derivatives and other similar investments, may be subject to various risks. Among these risks are concentration of credit risk, custodial credit risk, credit risk, interest rate risk, and foreign currency risk. The policies addressing each one of these risks, discussed in more detail below, are contained within the Investment Policy Statement, Objectives, and Guidelines reviewed and approved by the Board. Due to the level of risk associated with certain investments, it is possible that changes in the values of investments may occur in the near term and that such changes could materially affect the amounts reported in the Statements of Fiduciary Net Position.

**(a) Concentration of Credit Risk**

Concentration of credit risk is the risk of loss attributed to the magnitude of the System's investment in a single issuer. As of June 30, 2019 and 2018, the System had no single issuer that exceeded 5% of total investments. Investments issued or explicitly guaranteed by the U.S. government and investments in mutual funds, external investment pools, and other pooled investments were excluded.

**(b) Custodial Credit Risk**

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

**(c) Credit Risk**

Credit risk is the risk that an issuer or other counterparty to an investment will not fulfill its obligations. The credit risk of a debt instrument is measured by nationally recognized statistical rating organizations (NRSRO) such as Fitch Investor Services (Fitch), Moody's, and S&P. Annually, the Board establishes an asset allocation plan. This plan manages the overall credit risk of the fixed income asset class through a clearly defined long-term asset allocation policy. This policy establishes a long-term target allocation of the fixed income asset class at 36.0% of the investment portfolio. The fixed income target allocation consists of:

- An allocation of 10.0% of the portfolio has been made to the U.S. long treasury and U.S. core plus segment of the fixed income asset class benchmarked to the Barclays Capital U.S. Aggregate Long Treasury Index and the Barclays Capital U.S. Aggregate Index. The U.S. long treasury allocation is composed of primarily long duration U.S. Treasury securities issued by the U.S. government. The U.S. core plus allocation is composed of primarily investment grade, relatively liquid, public domestic bonds with an overall weighted-average NRSRO credit rating of A or better.



## Notes to Financial Statements (continued)

For derivatives exposed to credit risk, the table below presents aggregate market value by the least favorable credit rating provided by NRSROs at June 30, 2019 and 2018.

Quality Rating	(Dollar Amounts in Thousands)	
	2019 Fair Value	2018 Fair Value
A	\$ 270,551	\$ (156,006)
BBB	59,678	47,665
<b>Total Swaps-Total Return</b>	<b>\$ 330,229</b>	<b>\$ (108,341)</b>

- An allocation of 10.0% of the portfolio has been made to the high yield segment of the fixed income asset class benchmarked to the Barclays Capital U.S. High Yield Index. The high yield allocation is composed of less liquid public non-investment grade fixed income securities with an overall weighted-average NRSRO credit rating of B- or better.
- An allocation of 15.0% of the portfolio has been made to the Treasury Inflation-Protected Securities (TIPS) segment of the fixed income asset class benchmarked to the Barclays Capital World Government Inflation-Linked Bond Index (Hedged to USD) and composed of primarily government issued TIPS with an overall weighted-average NRSRO credit rating of AA or better. The portfolio manager is permitted to leverage the portfolio using TIPS total return swaps up to 3:1.
- An allocation of 1.0% of the portfolio has been made to the emerging markets fixed income asset class benchmarked to the Barclays Capital EM Local Currency-Government-MV Weighted (Unhedged) -10% Country Cap Index composed of primarily investment grade, relatively liquid non-U.S. public bonds with an overall weighted-average NRSRO credit rating of BB- or better.

PSERS applies leverage opportunistically in implementing its asset allocation policy, providing an additional mechanism to increase expected volatility in order to target higher expected return when warranted. Total Leverage is allocated at (14.0%); Leverage is netted against the System's Cash allocation of 6% for a Net Leverage Allocation of (8%).

- An allocation of 6.0% of the portfolio has been made to cash benchmarked to the Bank of America/Merrill Lynch U.S. Treasury Bill 0-3 Months Index composed of primarily investment grade, relatively liquid U.S. and non-U.S. public bonds with an overall weighted-average NRSRO credit rating of AA or better.

The following table discloses aggregate market value by credit quality rating category. Many securities have ratings from more than one NRSRO and sometimes those ratings differ from one NRSRO to another. The data listed below uses the rating (expressed as S&P equivalent) available from Fitch, Moody's and/or S&P that indicates the lowest credit quality at June 30, 2019 and 2018.

Quality Rating	(Dollar Amounts in Thousands)	
	2019 Fair Value	2018 Fair Value
AAA	\$ 3,485,216	\$ 1,479,225
AA	1,540,932	3,558,536
A	751,820	1,161,417
BBB	1,413,528	1,517,533
BB and Below	472,903	394,183
NR*	6,462,354	7,152,758
<b>Total Exposed to Credit Risk</b>	<b>14,126,753</b>	<b>15,263,652</b>
<b>U.S. Government Guaranteed**</b>	<b>5,593,605</b>	<b>1,698,960</b>
<b>Total Fixed Income and Short-Term Investments</b>	<b>\$ 19,720,358</b>	<b>\$ 16,962,612</b>

\* Not Rated securities include \$5,039,748 and \$5,553,354 in collective trust funds and \$461,142 and \$499,678 in PSERS Short Term Investment Fund assets at June 30, 2019 and 2018, respectively.

\*\* Comprised of U.S. government and agency obligations explicitly guaranteed by the U.S. government and not considered to have credit risk.

## (d) 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 manages its interest rate risk by diversifying the fixed income portfolio and maintaining the fixed income portfolio at a Board-approved effective duration range of the benchmark index.

Duration is a measure of the approximate sensitivity of a bond's value to interest rate changes. The higher the duration, the greater the changes in fair value when interest rates change. For example, a duration of 4.0 would mean that, given a 100-basis point change up/down in rates, a bond's price would move down/up approximately 4.0%. PSERS measures interest rate risk using option-adjusted duration, which recognizes the fact that yield changes may change the expected cash flows due to embedded options.

## (e) Foreign Currency Risk

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

**Notes to Financial Statements (continued)**

hedge their non-U.S. foreign currency exposure back to U.S. dollars. In addition, the System partially hedges non-U.S. developed market currency exposure not hedged by the investment managers back to U.S. dollars.

**(D) Securities Lending**

The System participates in a securities lending program with a third party agent. Under this program, the lending agent loans securities (equities, fixed income, and money market instruments) to independent brokers and dealers in exchange for U.S. dollar cash collateral in an amount not less than 102% of the fair value of any securities loaned. Collateral is marked-to-market daily. If the fair value of the collateral held falls below the minimum guidelines for securities loaned, additional collateral is obtained. The lending agent invests the cash collateral in accordance with reinvestment guidelines approved by the System.

As of June 30, 2019 and 2018, the System had no credit risk exposure to borrowers because the amounts the System owed the borrowers exceeded the amounts the borrowers owed the System. Under the securities lending program, the lending agent provides indemnification to the System if a borrower fails to return borrowed securities (and the collateral is inadequate to replace the loaned securities) or fails to pay income distributions on them. The lending agent also provides indemnification to the System if investment of cash collateral results in investment loss. There were no losses during the fiscal years ended June 30, 2019 and 2018 resulting from a default of the borrowers or the lending agent.

All securities loans can be terminated on demand by either the System or the borrower, although the average term of the loan is one day. There were no term loans at June 30, 2019 and 2018.

Cash collateral is invested in a short-term collateral investment pool that is managed by the lending agent, is segregated from all other clients of the lending agent, and is not subject to custodial credit risk. The System's income from securities lending represents its pro-rata share from participating in the program. The weighted-average maturity of the investments in the pool was one day at June 30, 2019 and 2018. During the fiscal years ended June 30, 2019 and 2018, the mismatch between the maturities of the investments made with cash collateral and the maturities of the securities loans may have posed some interest rate risk to the System. In the event of a default, the lending agent may use the collateral to replace the loaned securities.

As of June 30, 2019, the fair value of loaned securities was \$4,430,554,000. The fair value of the associated collateral was \$4,518,372,000, all of which was cash. As of June 30, 2018, the fair value of loaned securities was \$2,917,358,000. The fair value of the associated collateral was \$2,980,119,000, all of which was cash.

**5. Derivative and Other Similar Investments**

The System enters into a variety of financial contracts, which include options and futures. The System also enters into foreign exchange positions, such as forward and spot contracts to obtain or hedge foreign currency exposure; swap agreements to gain exposure to certain sectors of the

At June 30, 2019 and 2018, the System's fixed income portfolio had the following option-adjusted durations by fixed income sector:

Investment Type	(Dollar Amounts in Thousands)			
	2019		2018	
	Option-Adjusted Duration	Fair Value	Option-Adjusted Duration	Fair Value
Domestic asset-backed and mortgage-backed securities	0.2	\$ 493,011	2.2	\$ 1,843,721
U.S. government and agency obligations	12.1	5,605,208	8.1	1,053,358
Domestic corporate and taxable municipal bonds	1.3	2,286,060	1.3	1,985,513
International fixed income	0.4	268,591	1.0	353,011
Collective trust funds	5.7	5,039,748	6.6	5,553,354
PSERS Short-Term Investment Fund	0.1	5,635,993	0.1	5,687,497
Other Short Term Assets	0.1	391,747	0.1	486,158
<b>Total</b>	<b>5.1*</b>	<b>\$ 19,720,358</b>	<b>3.1*</b>	<b>\$ 16,962,612</b>

\* Fixed income investment managers enter into futures contracts to adjust the durations of their portfolios as a whole rather than any particular investment type within the portfolio. In total, the futures contracts have adjusted PSERS' total portfolio duration upward by 0.1 at June 30, 2019 and 2018. The total portfolio option-adjusted duration is calculated by weighting each investment type by fair value.

## Financial Section

### Notes to Financial Statements (continued)

Non-U.S. currency exposures at June 30, 2019 and 2018:

2019						
(Dollar Amounts in Thousands)						
Currency	Equity	Fixed Income	Alternative Investments & Real Estate	Short-Term*	Currency Hedge	Total Fair Value
Euro	\$ 845,070	\$ 1,960	\$ 1,520,488	\$ 8,750	\$ (1,598,636)	\$ 777,632
British pound sterling	653,411	-	253,652	2,784	(545,783)	364,064
Taiwan new dollar	127,402	-	-	109	-	127,511
South Korean won	121,498	-	-	(1,667)	(95)	119,736
Indian rupee	99,225	-	-	19	-	99,244
South African rand	64,782	13,099	-	234	(55)	78,060
Brazil real	74,116	-	-	91	-	74,207
Hong Kong dollar	219,613	-	-	332	(164,167)	55,778
Mexican peso	42,800	12,769	-	172	-	55,741
Other non-U.S. currencies	1,818,553	93,454	7,034	32,723	(1,984,698)	(32,934)
<b>Total</b>	<b>\$ 4,066,470</b>	<b>\$ 121,282</b>	<b>\$ 1,781,174</b>	<b>\$ 43,547</b>	<b>\$ (4,293,434)</b>	<b>\$ 1,719,039</b>

2018						
(Dollar Amounts in Thousands)						
Currency	Equity	Fixed Income	Alternative Investments & Real Estate	Short-Term*	Currency Hedge	Total Fair Value
Euro	\$ 1,102,053	\$ 80,144	\$ 1,590,146	\$ 6,907	\$ (1,951,095)	\$ 828,155
British pound sterling	885,533	8,291	209,662	1,158	(786,747)	317,897
South Korean won	161,072	-	-	1,143	107	162,322
Taiwan new dollar	147,945	-	-	438	(83)	148,300
South African rand	84,499	9,956	-	204	(383)	94,276
Indian rupee	70,039	-	-	(32)	-	70,007
Brazil real	54,967	2	-	849	(725)	55,093
Danish krone	126,043	275	-	2,537	(69,691)	59,164
Hong Kong Dollar	251,845	-	-	338	(198,563)	53,620
Other non-U.S. currencies	2,398,858	135,132	7,358	20,525	(2,459,545)	102,328
<b>Total</b>	<b>\$ 5,282,854</b>	<b>\$ 233,800</b>	<b>\$ 1,807,166</b>	<b>\$ 34,067</b>	<b>\$ (5,466,725)</b>	<b>\$ 1,891,162</b>

\* Includes investment receivables and payables

At June 30, 2019 and 2018, the System had the following foreign currency exposures for its derivatives (except for foreign exchange contracts which are included in Note 5):

(Dollar Amounts in Thousands)		
Currency	2019	2018
	Notional Value	Notional Value
Euro	\$ 167,692	\$ 196,957
Japanese yen	51,681	157,013
British pound sterling	61,898	73,117
Canadian dollar	39,205	46,428
Australian dollar	64,094	42,585
Hong Kong dollar	7,115	8,604
<b>Total Futures Contracts and Total Return Swaps</b>	<b>\$ 391,685</b>	<b>\$ 524,704</b>

**Notes to Financial Statements (continued)**

The following table summarizes the System's foreign exchange contracts by currency at June 30, 2019 and 2018:

<b>2019</b>				
(Dollar Amounts in Thousands)				
<b>Currency</b>	<b>Buys</b>	<b>Unrealized Gain/(Loss)</b>	<b>Sells</b>	<b>Unrealized Gain/(Loss)</b>
Euro	\$ 17,802	\$ 101	\$ 1,616,438	\$ (20,244)
Japanese yen	4,273	11	773,874	(1,621)
Swiss franc	55	-	245,004	(3,248)
Australian dollar	86	-	320,883	(5,052)
Swedish krona	660	1	87,129	(1,431)
Canadian dollar	109	-	388,673	(5,924)
Singapore dollar	387	4	48,058	(351)
British pound sterling	-	-	547,848	(55)
New Zealand dollar	-	-	29,318	(775)
Other non-U.S. currencies	4,343	18	263,924	(1,100)
<b>Total</b>	<b>\$ 27,715</b>	<b>\$ 135</b>	<b>\$ 4,321,149</b>	<b>\$ (39,801)</b>

<b>2018</b>				
(Dollar Amounts in Thousands)				
<b>Currency</b>	<b>Buys</b>	<b>Unrealized Gain/(Loss)</b>	<b>Sells</b>	<b>Unrealized Gain/(Loss)</b>
Euro	\$ 72,860	\$ (24)	\$ 2,023,955	\$ 15,064
Japanese yen	9,165	(117)	1,095,908	13,532
Swiss franc	9,006	(69)	285,786	1,005
Australian dollar	3,606	(85)	360,830	8,780
Swedish krona	3,111	(92)	118,132	3,051
Canadian dollar	2,623	1	479,328	11,398
Singapore dollar	2,390	(46)	67,055	1,165
Mexican peso	1,373	65	54	-
British pound sterling	772	(6)	787,519	12,232
New Zealand dollar	-	-	23,392	553
Other non-U.S. currencies	4,237	(35)	333,909	1,961
<b>Total</b>	<b>\$ 109,143</b>	<b>\$ (408)</b>	<b>\$ 5,575,868</b>	<b>\$ 68,741</b>



### Notes to Financial Statements (continued)

equity and fixed income markets; collateralized mortgage obligations (CMOs); other forward contracts; and U.S. Treasury STRIPS. The System is not a dealer, but an end-user of these instruments. The contracts are used primarily to enhance performance and/or reduce the volatility of the portfolio. The System is exposed to credit risk in the event of non-performance by counterparties to financial instruments. The System generally enters into transactions only with high quality institutions. Legal risk is mitigated through selection of executing brokers and review of all documentation. The System is exposed to market risk, the risk that future changes in market conditions may make an instrument less valuable. Exposure to market risk is managed in accordance with risk limits set by senior management, through buying or selling instruments or entering into offsetting positions.

The notional or contractual amounts of derivatives indicate the extent of the System's involvement in the various types and uses of derivative financial instruments and do not measure the System's exposure to credit or market risks and do not necessarily represent amounts exchanged by the parties. The amounts exchanged are determined by reference to the notional amounts and the other terms of the derivatives.

Futures contracts are contracts in which the buyer agrees to purchase and the seller agrees to make delivery of a specific financial instrument at a predetermined date and price. Gains and losses on futures contracts are settled daily based on a notional (underlying) principal value and do not involve an actual transfer of the specific instrument. Futures contracts are standardized and are traded on exchanges. The exchange assumes the risk that a counterparty will not pay and generally requires margin payments to minimize such risk. In addition, the System enters into short sales, sales of securities it does not presently own, to neutralize the market risk of certain equity positions. Initial margin requirements on futures contracts and collateral for short sales are provided by investment securities pledged as collateral and by cash held by various brokers. Although the System has the right to access individual pledged securities, it must maintain the amount pledged by substituting other securities for those accessed. The value of securities pledged and the amount of cash held at June 30, 2019 and 2018 represent a restriction on the amount of assets available at year-end for other purposes.

Option contracts provide the option purchaser with the right, but not the obligation, to buy or sell the underlying security at a set price during a period or at a specified date. The option writer is obligated to buy or sell the underlying security if the option purchaser chooses to exercise the option. The System generally uses exchange listed currency, index, stock, and futures options. In FY 2018, the System purchased over-the-counter put options on the

S&P 500 Index. The fair value of these option contracts of \$43,904,000 at June 30, 2018 is included in the Statements of Fiduciary Net Position. The options were not exercised and expired worthless during FY 2019.

Foreign exchange contracts involve an agreement to exchange the currency of one country for the currency of another country at an agreed-upon price and settlement date. To reduce the risk of counterparty non-performance, the investment managers generally enter into these contracts with institutions regarded as meeting high standards of credit worthiness. The contracts reported in Table 5 primarily include forwards. The \$4,348,864,000 of foreign currency contracts outstanding at June 30, 2019 consist of "buy" contracts, which represent the U.S. dollar equivalents of commitments to purchase foreign currencies of \$27,715,000 and "sell" contracts, which represent U.S. dollar equivalents of commitments to sell foreign currencies of \$4,321,149,000. The \$5,685,011,000 of foreign currency contracts outstanding at June 30, 2018 consist of "buy" contracts of \$109,143,000 and "sell" contracts of \$5,575,868,000. The unrealized gain/(loss) on contracts of \$(39,666,000) and \$68,333,000 at June 30, 2019 and 2018, respectively, is included in the Statements of Fiduciary Net Position and represents the fair value of the contracts.

Swap agreements provide for periodic payments at predetermined future dates between parties based on the change in value of securities, indexes, or interest rates referenced to a notional (underlying) principal value. During the years ended June 30, 2019 and 2018, the System entered into total return type swaps. Under the total return type swap arrangements, the System receives the net return of certain equity securities or indexes in exchange for a short-term rate minus a spread or a predetermined fixed charge. The notional values of the swap contracts outstanding of \$9,447,923,000 and \$7,608,586,000 at June 30, 2019 and 2018, respectively, are presented in Table 5. The receivable (payable) on the total return type swap contracts of \$330,229,000 and \$(108,341,000) at June 30, 2019 and 2018, respectively, is included in the Statements of Fiduciary Net Position and represents the fair value of the contracts. The contracts have varying maturity dates ranging from August 7, 2019 to May 29, 2020.

The System also invests in mortgage-backed securities (MBS) such as CMOs and MBS forwards to maximize yields. These securities are sensitive to prepayments of mortgages, which may result from a drop in interest rates.

## Notes to Financial Statements (continued)

Table 5 - Notional Amounts of Derivatives

The table presented below summarizes the aggregate notional or contractual amounts for the System's derivative financial instruments at June 30, 2019 and 2018.

	(Dollar Amounts in Thousands)	
	2019	2018
Futures contracts - long:		
Treasury futures	\$ 1,129,615	\$ 3,003,525
U.S. equity futures	419,990	591,676
Non-U.S. equity futures	391,684	524,749
Commodity futures	327,723	355,009
Non-U.S. bond futures	132,762	163,823
Futures contracts - short:		
Treasury futures	25,594	39,132
Non- U.S. bond futures	-	33,706
Foreign exchange forward and spot contracts, gross	4,348,864	5,685,011
Options - puts purchased	-	2,132,285
Swaps - total return type	9,447,923	7,608,586

The fair values of derivative instruments outstanding at June 30, 2019 and 2018 are classified by type and by the changes in fair value of the derivative instrument in the table below.

Investment Derivative Type	(Dollar Amounts in Thousands)			
	Change in Fair Value Gain/(Loss) FY 2019		Fair Value at June 30, 2019	
	Classification	Amount	Classification	Amount
Futures	Investment income	\$ 31,039	Receivable/(Payable)	\$ 31,039
Total return type swaps	Investment income	330,229	Receivable/(Payable)	330,229
Foreign exchange contracts	Investment income	(39,666)	Receivable/(Payable)	(39,666)
Options	Investment income	(63,128)	Investment	-
<b>Total</b>		<b>\$ 258,474</b>		<b>\$ 321,602</b>

Investment Derivative Type	Change in Fair Value Gain/(Loss) FY 2018		Fair Value at June 30, 2018	
	Classification	Amount	Classification	Amount
Futures	Investment income	\$ 20,952	Receivable/(Payable)	\$ 20,952
Total return type swaps	Investment income	(108,341)	Receivable/(Payable)	(108,341)
Foreign exchange contracts	Investment income	68,333	Receivable/(Payable)	68,333
Options	Investment income	(19,224)	Investment	43,904
<b>Total</b>		<b>\$ (38,280)</b>		<b>\$ 24,848</b>

Notes to Financial Statements (continued)

The MBS forwards are subject to credit risk in the event of nonperformance by counterparties. The fair value of CMOs at June 30, 2019 and 2018 is \$456,934,000 and \$548,512,000, respectively.

The System invests in U.S. Treasury STRIPS which essentially act as zero coupon bonds and are subject to market volatility from a rise or drop in interest rates.

Through certain collective trust funds, the System also indirectly holds various derivative financial instruments. The collective trust funds invest in futures and options thereon; forward foreign currency contracts; options; interest rate, currency, equity, index, and total return swaps; interest-only STRIPS; and CMOs, to enhance the performance and/or reduce the volatility of their portfolios.

6. Net Pension Liability of Participating Employers

The components of the net pension liability of the participating employers at June 30, 2019 were as follows:	
(Dollar amounts in thousands)	
Total pension liability	\$ 105,516,492
Less: Plan fiduciary net position	58,733,884
Employer net pension liability	\$ 46,782,608
Plan fiduciary net position as a percentage of the total pension liability	55.66%

Actuarial Assumptions

The total pension liability at June 30, 2019 was determined by rolling forward the System's total pension liability at June 30, 2018 to June 30, 2019 using the following actuarial assumptions, applied to all periods included in the measurement:

- Actuarial cost method - Entry Age Normal - level % of pay.
- Investment return - 7.25%, includes inflation at 2.75%.
- Salary growth - Effective average of 5.00%, comprised of inflation of 2.75% and 2.25% for real wage growth and for merit or seniority increases.
- Mortality rates were based on the RP-2014 Mortality Tables for Males and Females, adjusted to reflect PSERS' experience and projected using a modified version of the MP-2015 Mortality Improvement Scale.

Investments

The long-term expected rate of return on pension plan investments was determined using a building-block method in which best-estimate ranges of expected future real rates

of return (expected returns, net of pension plan investment expense 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.

The pension plan's policy in regard to the allocation of invested plan assets is established and may be amended by the Board. Plan assets are managed with a long-term objective of achieving and maintaining a fully funded status for the benefits provided through the pension.

For the year ended June 30, 2019, the annual money-weighted rate of return on pension plan investments, net of pension plan investment expense, was 6.58%. The money-weighted rate of return expresses investment performance, net of investment expense, adjusted for the changing amounts actually invested. Table 6 shows the Board's adopted asset allocation policy and best estimates of geometric real rates of return for each major asset class at June 30, 2019.

Discount Rate

The discount rate used to measure the total pension liability was 7.25%. The projection of cash flows used to determine the discount rate assumed that contributions from plan members will be made at the current contribution rate and that contributions from employers will be made at contractually required rates, actuarially determined. Based on those assumptions, the pension plan's fiduciary net position was projected to be available to make all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

Table 6 - Pension Asset Allocation		
Pension - Asset Class	Target Allocation	Long-Term Expected Real Rate of Return
Global public equity	20.0%	5.6%
Fixed income	36.0%	1.9%
Commodities	8.0%	2.7%
Absolute return	10.0%	3.4%
Risk parity	10.0%	4.1%
Infrastructure/MLPs	8.0%	5.5%
Real estate	10.0%	4.1%
Alternative investments	15.0%	7.4%
Cash	3.0%	0.3%
Financing (LIBOR)	(20.0%)	0.7%
	100.0%	

## Notes to Financial Statements (continued)

### Sensitivity of the Net Pension Liability

Table 7 presents the net pension liability, calculated using the discount rate of 7.25%, as well as what the net pension liability would be if it were calculated using a discount rate that is 1-percentage point lower (6.25%) or 1-percentage point higher (8.25%) than the current rate:

Table 7 - Sensitivity of the Net Pension Liability (Dollar amounts in thousands)			
	1% Decrease	Current Discount Rate	1% Increase
	6.25%	7.25%	8.25%
Net pension liability \$	58,272,877	\$ 46,782,608	\$ 37,053,172

### 7. Net Other Postemployment Benefits (OPEB) Liability of Participating Employers

The components of the net OPEB liability of the participating employers at June 30, 2019 for the Premium Assistance Program were as follows:

(Dollar amounts in thousands)	
Total OPEB liability	\$ 2,252,027
Less: Plan fiduciary net position	125,185
Employer net OPEB liability	\$ 2,126,842
Plan fiduciary net position as a percentage of the total OPEB liability	5.56%

### Postemployment Healthcare Plans

PSERS provides a Health Insurance Premium Assistance program funded by employer contributions which makes up the OPEB liability.

HOP is a PSERS sponsored voluntary health insurance program funded exclusively by the premiums paid by its participants for benefit coverage they elect. The HOP is not part of the OPEB liability.

### Change in Actuarial Assumptions

The following change in assumption was used in the measurement of the Total OPEB Liability beginning June 30, 2019. The Investment Rate of Return was adjusted from 2.98% to 2.79% which represents the S&P 20 Year Municipal Bond Rate.

### Actuarial Assumptions

The total OPEB liability at June 30, 2019 was determined by rolling forward the System's total OPEB liability at June 30, 2018 to June 30, 2019 using the following actuarial assumptions, applied to all periods included in the measurement:

- Actuarial cost method - Entry Age Normal - level % of pay.
- Investment return - 2.79% - S&P 20 Year Municipal Bond Rate.
- Salary growth - Effective average of 5.00%, comprised of inflation of 2.75% and 2.25% for real wage growth and for merit or seniority increases.
- Premium Assistance reimbursement is capped at \$1,200 per year.
- Assumed Healthcare cost trends were applied to retirees with less than \$1,200 in premium assistance per year.
- Mortality rates were based on the RP-2014 Mortality Tables for Males and Females, adjusted to reflect PSERS' experience and projected using a modified version of the MP-2015 Mortality Improvement Scale.

### Investments

The Board has the responsibility to invest and reinvest available funds of the System in accordance with the guidelines and limitations set forth in the Code and other applicable state law. The Board accomplishes the daily management of the System's investments through investment advisors who act as agents for the System and through internal investment managers. Investments consist primarily of short term assets designed to protect the principal of plan assets. Table 8 reflects the Fund's OPEB asset allocation policy and best estimates of geometric real rates of return for each asset class at June 30, 2019.

Under the program, employer contribution rates for Premium Assistance are established to provide reserves in the Health Insurance Account that are sufficient for the payment of Premium Assistance benefits for each succeeding year.

For the year ended June 30, 2019, the annual money-weighted rate of return on OPEB plan investments, net of OPEB plan investment expense, was 2.68%. The money-weighted rate of return expresses investment performance, net of investment expense, adjusted for the changing amounts actually invested.



## Notes to Financial Statements (continued)

Table 8 - OPEB Asset Allocation

OPEB - Asset Class	Target Allocation	Long-Term Expected Real Rate of Return
Cash	13.2%	0.2%
US Core Fixed Income	83.1%	1.0%
Non-U.S. Developed Fixed	3.7%	0.0%
	100.0%	

**Discount Rate**

The discount rate used to measure the total OPEB liability was 2.79%. The Health Insurance Premium Assistance Program is funded by employer contributions. Under the plan's funding method, the OPEB plan's fiduciary net position was not projected to be sufficient to meet projected future benefit payments. Therefore, the plan is considered a "pay-as-you-go" plan and a discount rate of 2.79%, which represents the S&P 20 year Municipal Bond Rate at June 30, 2019, was applied to all projected benefit payments to measure the total OPEB liability.

**Sensitivity of the Net OPEB Liability**

Table 9 presents the net OPEB liability, calculated using the discount rate of 2.79%, as well as what the net OPEB liability would be if it were calculated using a discount rate that is 1-percentage point lower (1.79%) or 1-percentage point higher (3.79%) than the current rate:

Table 9 - Sensitivity of the Net OPEB Liability

(Dollar amounts in thousands)			
	1% Decrease	Current Discount Rate	1% Increase
	1.79%	2.79%	3.79%
Net OPEB liability	\$ 2,422,936	\$ 2,126,842	\$ 1,881,454

**Healthcare Cost Trend Rates**

Healthcare cost trends were applied to retirees with less than \$1,200 in Premium Assistance per year. Premium Assistance is capped at a maximum of \$1,200 per year. At June 30, 2018, there were 92,516 members receiving the maximum amount allowed of \$1,200 in Premium Assistance per year and their Premium Assistance benefits are not subject to future healthcare cost increases. At June 30, 2018, there were 884 members receiving less than the maximum amount allowed of \$1,200 per year. The actual number of retirees receiving less than the \$1,200 per year cap is a small percentage of the total population and has a minimal impact from Healthcare Cost Trends, as depicted in Table 10, which discloses the effect of a 1% increase or decrease in the rate.

Table 10 - Sensitivity of the Net OPEB Liability to Change in Healthcare Cost Trend Rates

(Dollar amounts in thousands)			
	1% Decrease	Current Trend Rate	1% Increase
Net OPEB liability	\$ 2,126,515	\$ 2,126,842	\$ 2,127,106

**8. Pension Plan for Employees of the System****(A) SERS' Plan Description**

As an employer, the System contributes to 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. SERS provides retirement, death, and disability benefits. Article II of the Commonwealth's Constitution assigns the authority to establish and amend the benefit provision of the plan to the General Assembly.

**(B) SERS' Benefits Provided to Employees of the System**

SERS member retirement benefits are generally determined by taking years of credited service times final average salary times 1.0%, 1.25%, 2% or 2.5%, depending on date of hire. The normal retirement age ranges from 50 - 65, depending on the membership class. According to the State Employees' Retirement Code (SERC), all obligations of SERS will be assumed by the Commonwealth should SERS terminate.

**(C) Contributions to SERS**

The contribution requirements of SERS plan members is mandated by Commonwealth statute. The member contribution rate for the majority of SERS' members is 6.25%. At December 31, 2018 and 2017 the blended employer contribution rates were 33.43% and 30.04%, respectively. Contributions to SERS from PSERS were \$7.8 million for the year ended June 30, 2019.

**(D) Proportionate Share of Pension Liabilities, Pension Expense, and Deferred Inflows of Resources and Deferred Outflows of Resources**

At June 30, 2019, PSERS reported a liability of \$78.2 million and \$60.2 million at June 30, 2018, for its proportionate share of the net pension liability for

## Notes to Financial Statements (continued)

the SERS plan in Other liabilities on the Statement of Fiduciary Net Position. The net pension liability was measured at December 31, 2018 and 2017, and the total pension liability used to calculate the net pension liability was determined by an actuarial valuation at December 31, 2018 and 2017. PSERS' proportion of the net pension liability was calculated utilizing a projected-contribution method. At December 31, 2018, PSERS' proportion was 0.37527829 percent and 0.34849162 percent at December 31, 2017.

PSERS recognized total pension expense of \$13.1 million in FY 2019 on the Statement of Changes in Fiduciary Net Position. Of the \$13.1 million of pension expense, \$7.8 million was reflected in administrative expenses and \$5.3 million was reflected in investment expenses. Deferred inflows of resources of \$1.3 million and \$4.3 million at June 30, 2019, and June 30, 2018, respectively, are reported in Other liabilities on the Statement of Fiduciary Net Position. Deferred outflows of resources of \$22.2 million and \$12.4 million at June 30, 2019, and June 30, 2018, respectively, are reported in Miscellaneous assets. Of the \$22.2 million of deferred outflows of resources at June 30, 2019, PSERS recorded \$4.2 million for contributions subsequent to the measurement date which will be recognized as a reduction of the net pension liability in the year ending June 30, 2020. Other amounts reported as deferred outflows of resources and deferred inflows of resources will be recognized in pension expense as follows:

Year Ending June 30:	(Dollar amounts in thousands)
2020	5,854
2021	3,946
2022	2,776
2023	3,743
Thereafter	291

### (E) 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).

## 9. Postemployment Healthcare Plan for Employees of the System

### (A) REHP Plan Description

As an employer, the System participates in the Commonwealth's REHP. The REHP is a single employer plan and provides certain healthcare benefits

to qualifying individuals meeting specified age and/or service requirements. The Commonwealth's Office of Administration (OA), in its sole discretion, determines available REHP benefits on an ongoing basis. The Pennsylvania Employees Benefit Trust Fund (PEBTF) is a third-party administrator for the REHP under the provisions of an Administration Agreement between OA and PEBTF.

### (B) OPEB Benefits Provided to Employees of the System

The Commonwealth sponsors the REHP for eligible retirees and their dependents to receive subsidized health coverage for the retiree's lifetime. The REHP is provided as part of collective bargaining agreements with most Commonwealth labor unions. All policy decisions, types and levels of benefits for the REHP fall under the purview of the Commonwealth's Executive Board and the Secretary of Administration.

### (C) Contributions to the REHP

Employer costs for retiree healthcare benefits are charged as a component of payroll expenditures, on a 'pay as you go' basis. All employing agencies contributed \$300 per biweekly pay period for the first six months of the year and \$288 per biweekly pay period for the next six months of the year, for each current REHP eligible active employee during fiscal year ended June 30, 2019 to the REHP Trust. PSERS' contributions to the REHP for FY 2019 were \$2.4 million. 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.

### (D) Proportionate Share of OPEB Liabilities, OPEB Expense and Deferred Inflows of Resources and Deferred Outflows of Resources

At June 30, 2019, PSERS reported a liability of \$56.4 million and \$76.3 million at June 30, 2018 for its proportionate share of net OPEB liability for the REHP plan in Other Liabilities on the Statement of Fiduciary Net Position. The current liability portion of the net OPEB liability is \$2.3 million. The net OPEB liability was measured at June 30, 2018, and the total OPEB liability used to calculate the net OPEB liability was determined by an actuarial valuation at June 30, 2018. Since the REHP has insufficient assets to meet next year's projected benefit payments, the discount rate used to measure the total OPEB liability is based on the 20-year tax-exempt general obligation municipal bond index rate which was 3.857% on June 30, 2019.

**Notes to Financial Statements (continued)**

PSERS’ proportion of the net OPEB liability was calculated utilizing a contribution method. At June 30, 2018, PSERS’ proportion was 0.383876 percent and at June 30, 2017 PSERS’ proportion was 0.387675 percent.

REHP had a decrease in Total OPEB Liability of approximately \$5.3 billion. The primary cause was due to actual experience over the past year that was significantly different than expected. This experience gain was caused primarily by decreases or lower than expected increases in claims costs due to favorable self-insured claims experience, higher than expected Employer Group Waiver Plan subsidies, higher than expected CVS/SilverScript formulary rebates, and lower than expected increases in fully-insured rates. This positive experience change was the primary cause for the decrease to OPEB expense.

PSERS recognized total OPEB expense of \$(0.58) million in FY 2019 on the Statement of Changes in Fiduciary Net Position. Of the \$(0.58) million of OPEB revenue, \$(0.49) million was reflected in administrative expenses and \$(0.09) million was reflected in investment expenses. Deferred outflows of resources of \$2.8 million and \$1.9 million at June 30, 2019 and June 30, 2018, respectively are reported in Miscellaneous assets. Of the \$2.8 million of deferred outflows at June 30, 2019, PSERS recorded \$2.4 million for contributions subsequent to the measurement date which will be recognized as a reduction of the net OPEB liability in the year ending June 30, 2020. Deferred inflows of resources of \$24.0 million and \$7.0 million at June 30, 2019 and June 30, 2018, respectively are reported in Other liabilities on the Statement of Fiduciary Net Position and will be recognized in OPEB expense as follows:

<b>Year Ending June 30:</b>	<b>(Dollar amounts in thousands)</b>
2020	(5,386)
2021	(5,385)
2022	(5,385)
2023	(4,944)
Thereafter	(2,924)

**(E) REHP Plan Fiduciary Net Position**

Detailed information about the REHP fiduciary net position is available in the Commonwealth’s Comprehensive Annual Financial Report which can be found at [www.budget.pa.gov](http://www.budget.pa.gov).

**10. 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.

**11. Commitments**

At June 30, 2019, PSERS had commitments for the future purchase of investments in alternative investments of \$7.3 billion and real estate of \$2.9 billion.

## Required Supplementary Information

### Schedule 1 Schedule of Changes in the Employer Net Pension Liability (Unaudited – See Accompanying Auditor’s Report) (Dollar Amounts in Thousands)

	2019	2018	2017	2016	2015	2014
Total pension liability						
Service cost	\$ 1,921,417	\$ 1,890,906	\$ 1,873,844	\$ 1,932,401	\$ 1,926,539	\$ 2,139,037
Interest	7,465,228	7,334,484	7,110,987	7,028,292	6,857,497	6,523,484
Changes of benefit terms	-	-	(449)	-	-	-
Differences between expected and actual experience	(1,477,660)	(745,306)	644,051	(348,429)	(223,437)	-
Changes of assumptions	-	-	-	2,236,118	-	-
Benefit payments	(6,761,172)	(6,655,146)	(6,473,579)	(6,360,325)	(6,220,601)	(6,053,505)
Net change in total pension liability	1,147,813	1,824,938	3,154,854	4,488,057	2,339,998	2,609,016
Total pension liability -beginning	104,368,679	102,543,741	99,388,887	94,900,830	92,560,832	89,951,816
Total pension liability - ending (a)	\$ 105,516,492	\$ 104,368,679	\$ 102,543,741	\$ 99,388,887	\$ 94,900,830	\$ 92,560,832
Plan fiduciary net position						
Contributions - employer	\$ 4,487,520	\$ 4,249,611	\$ 3,832,773	\$ 3,189,510	\$ 2,596,731	\$ 1,992,084
Contributions - member	1,064,043	1,026,375	1,013,847	989,266	984,634	966,926
Net investment income	3,628,710	4,714,158	4,995,362	473,206	1,328,516	7,097,761
Benefit payments	(6,761,172)	(6,655,146)	(6,473,579)	(6,360,325)	(6,220,601)	(6,053,505)
Administrative expense	(48,931)	(46,544)	(45,127)	(45,118)	(42,331)	(38,712)
Net Change in plan fiduciary net position	2,370,170	3,288,454	3,323,276	(1,753,461)	(1,353,051)	3,964,554
Plan fiduciary net position - beginning	56,363,714	53,155,336	49,832,060	51,585,521	52,980,115	49,015,561
Effect of change in accounting principle	-	(80,076)	-	-	(41,543)	-
Plan fiduciary net position - beginning restated	-	53,075,260	-	-	52,938,572	-
Plan fiduciary net position - ending (b)	\$ 58,733,884	\$ 56,363,714	\$ 53,155,336	\$ 49,832,060	\$ 51,585,521	\$ 52,980,115
Employer net pension liability - ending (a)-(b)	\$ 46,782,608	\$ 48,004,965	\$ 49,388,405	\$ 49,556,827	\$ 43,315,309	\$ 39,580,717

Required Supplementary Schedules are intended to show information for 10 years. Additional years will be displayed as they become available.

See accompanying independent auditor’s report and notes to the required supplementary information.



## Required Supplementary Information

### Schedule 2 Schedule of Employer Net Pension Liability (Unaudited – See Accompanying Auditor’s Report) (Dollar Amounts in Thousands)

	2019	2018	2017	2016	2015	2014
Total pension liability	\$ 105,516,492	\$ 104,368,679	\$ 102,543,741	\$ 99,388,887	\$ 94,900,830	\$ 92,560,832
Less: Plan fiduciary net position	58,733,884	56,363,714	53,155,336	49,832,060	51,585,521	52,980,115
Employer net pension liability	<u>\$ 46,782,608</u>	<u>\$ 48,004,965</u>	<u>\$ 49,388,405</u>	<u>\$ 49,556,827</u>	<u>\$ 43,315,309</u>	<u>\$ 39,580,717</u>
Plan fiduciary net position as a percentage of the total pension liability	55.66%	54.00%	51.84%	50.14%	54.36%	57.24%
Covered payroll	\$ 13,791,197	\$ 13,466,526	\$ 13,313,900	\$ 12,951,077	\$ 12,866,473	\$ 12,760,785
Employer net pension liability as a percentage of covered payroll	339.22%	356.48%	370.95%	382.65%	336.65%	310.17%

### Schedule 3 Schedule of Employer Pension Contributions (Unaudited – See Accompanying Auditor’s Report) (Dollar Amounts in Thousands)

	Pension					
	2019	2018	2017	2016	2015	2014
Actuarially determined contribution	\$ 4,478,236	\$ 4,243,328	\$ 3,824,908	\$ 3,540,304	\$ 3,289,615	\$ 2,965,715
Contributions in relation to the actuarially determined contribution <sup>(1) (2)</sup>	4,478,236	4,243,328	3,824,908	3,181,438	2,582,114	1,992,084
Contribution deficiency	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ 358,866</u>	<u>\$ 707,501</u>	<u>\$ 973,631</u>
Covered payroll	\$ 13,791,197	\$ 13,466,526	\$ 13,313,900	\$ 12,951,077	\$ 12,866,473	\$ 12,760,785
Contributions as a percentage of covered payroll	32.47%	31.51%	28.73%	24.57%	20.07%	15.61%

<sup>(1)</sup> Amounts for 2015-2019 exclude purchase of service contributions.

<sup>(2)</sup> Same as contractually required contributions.

Required Supplementary Schedules are intended to show information for 10 years. Additional years will be displayed as they become available.

See accompanying independent auditor’s report and notes to the required supplementary information.

## Required Supplementary Information

### Schedule 4

#### Schedule of Changes in the Employer Net OPEB (Premium Assistance) Liability (Unaudited – See Accompanying Auditor’s Report) (Dollar Amounts in Thousands)

	2019	2018	2017
Total OPEB liability			
Service cost	\$ 40,201	\$ 37,809	\$ 42,038
Interest	65,319	67,091	61,404
Differences between expected and actual experience	1,435	15,019	-
Changes of assumptions	50,166	38,456	(110,610)
Benefit payments	(112,777)	(111,847)	(110,229)
Net change in total OPEB liability	44,344	46,528	(117,397)
Total OPEB liability - beginning	2,207,683	2,161,155	2,278,552
Total OPEB liability - ending (a)	\$ 2,252,027	\$ 2,207,683	\$ 2,161,155
Plan fiduciary net position			
Contributions - employer	\$ 114,829	\$ 111,986	\$ 110,985
Net investment income	2,313	1,455	663
Benefit payments	(112,777)	(111,847)	(110,229)
Administrative expense	(1,914)	(2,603)	(2,239)
Net Change in plan fiduciary net position	2,451	(1,009)	(820)
Plan fiduciary net position - beginning	122,734	123,743	124,563
Plan fiduciary net position - ending (b)	\$ 125,185	\$ 122,734	\$ 123,743
Employer net OPEB liability - ending (a) - (b)	\$ 2,126,842	\$ 2,084,949	\$ 2,037,412

Required Supplementary Schedules are intended to show information for 10 years. Additional years will be displayed as they become available.

See accompanying independent auditor’s report and notes to the required supplementary information.

## Required Supplementary Information

### Schedule 5 Schedule of Employer Net OPEB (Premium Assistance) Liability (Unaudited – See Accompanying Auditor’s Report) (Dollar Amounts in Thousands)

	2019	2018	2017	2016
Total OPEB liability	\$ 2,252,027	\$ 2,207,683	\$ 2,161,155	\$ 2,278,552
Less: Plan fiduciary net position	125,185	122,734	123,743	124,563
Employer net OPEB liability	<u>\$ 2,126,842</u>	<u>\$ 2,084,949</u>	<u>\$ 2,037,412</u>	<u>\$ 2,153,989</u>
Plan fiduciary net position as a percentage of the total OPEB liability	5.56%	5.56%	5.73%	5.47%
Covered payroll	\$ 13,791,197	\$ 13,466,526	\$ 13,313,900	\$ 12,951,077
Employer net OPEB liability as a percentage of covered payroll	15.42%	15.48%	15.30%	16.63%

### Schedule 6 Schedule of Employer OPEB (Premium Assistance) Contributions (Unaudited – See Accompanying Auditor’s Report) (Dollar Amounts in Thousands)

	OPEB			
	2019	2018	2017	2016
Actuarially determined contribution	\$ 139,484	\$ 134,607	\$ 125,694	\$ 129,494
Contributions in relation to the actuarially determined contribution <sup>(1) (2)</sup>	114,571	111,724	110,558	112,557
Contribution deficiency	<u>\$ 24,913</u>	<u>\$ 22,883</u>	<u>\$ 15,136</u>	<u>\$ 16,937</u>
Covered payroll	\$ 13,791,197	\$ 13,466,526	\$ 13,313,900	\$ 12,951,077
Contributions as a percentage of covered payroll	0.83%	0.83%	0.83%	0.87%

<sup>(1)</sup> Amounts exclude purchase of service contributions.

<sup>(2)</sup> Same as contractually required contributions.

Required Supplementary Schedules are intended to show information for 10 years. Additional years will be displayed as they become available.

See accompanying independent auditor’s report and notes to the required supplementary information.

## Required Supplementary Information

### Schedule 7

#### Schedule of Investment Returns - Pension and OPEB (Unaudited – See Accompanying Auditor's Report)

	<b>2019</b>	2018	2017	2016	2015	2014
Annual money-weighted rate of return, net of investment expense- Pension	<b>6.58%</b>	9.30%	10.15%	1.11%	3.08%	14.98%
Annual money-weighted rate of return, net of investment expense- OPEB	<b>2.68%</b>	1.63%	0.90%	0.65%	0.30%	-

Required Supplementary Schedules are intended to show information for 10 years. Additional years will be displayed as they become available.

See accompanying independent auditor's report and notes to the required supplementary information.

**Notes to Required Supplementary Information  
for the Years Ended June 30, 2014 thru June 30, 2019**

**Pension**

***Changes in benefit terms***

With the passage of Act 5 on June 12, 2017, class T-E & T-F members are now permitted to elect a lump sum payment of member contributions upon retirement.

***Changes in assumptions used in measurement of the Total Pension Liability beginning June 30, 2017, beginning June 30, 2018 & beginning June 30, 2019***

None.

***Changes in assumptions used in measurement of the Total Pension Liability beginning June 30, 2016***

The Investment Rate of Return was adjusted from 7.50% to 7.25%. The inflation assumption was decreased from 3.00% to 2.75%.

Salary growth changed from an effective average of 5.50%, which was comprised of inflation of 3.00%, real wage growth and for merit or seniority increases of 2.50%, to an effective average of 5.00%, comprised of inflation of 2.75% and 2.25% for real wage growth and for merit or seniority increases.

Mortality rates were modified from the RP-2000 Combined Healthy Annuitant Tables (male and female) with age set back 3 years for both males and females to the RP-2014 Mortality Tables for Males and Females, adjusted to reflect PSERS' experience and projected using a modified version of the MP-2015 Mortality Improvement Scale. For disabled annuitants the RP-2000 Combined Disabled Tables (male and female) with age set back 7 years for males and 3 years for females to the RP-2014 Mortality Tables for Males and Females, adjusted to reflect PSERS' experience and projected using a modified version of the MP-2015 Mortality Improvement Scale.

***Method and assumptions used in calculations of actuarially determined contributions***

The actuarially determined contributions are calculated as of the June 30 preceding the fiscal year in which contributions are made. That is, the contribution calculated as of the June 30, 2018 actuarial valuation will be made during the fiscal year ending June 30, 2020. The following actuarial methods and assumptions were used to determine contribution rates reported in that schedule:

- Investment return - 7.25%, includes inflation at 2.75% and the real rate of return 4.50%.
- Salary growth - Effective average of 5.00%, which reflects an allowance for inflation of 2.75%, real wage growth and merit or seniority of 2.25%.
- Benefit payments - no postretirement benefit increases assumed in the future.
- Mortality rates were based on the RP-2014 Mortality Tables for Males and Females, adjusted to reflect PSERS' experience and projected using a modified version of the MP-2015 Mortality Improvement Scale.

***10-year reporting requirements***

Required Supplementary Schedules 1-3 and 7, as related to pensions, are intended to show information for 10 years. Additional years will be displayed as they become available.

***The Accounting Valuation***

The GASB 67 accounting valuation can be found on PSERS' website at [www.psers.pa.gov](http://www.psers.pa.gov).



## Notes to Required Supplementary Information for the Years Ended June 30, 2014 thru June 30, 2019

### OPEB

#### *Changes in benefit terms*

None.

#### *Changes in assumptions used in measurement of the Total OPEB Liability beginning June 30, 2019*

The Discount Rate decreased from 2.98% to 2.79%.

#### *Changes in assumptions used in measurement of the Total OPEB Liability beginning June 30, 2018*

The Discount Rate decreased from 3.13% to 2.98%.

#### *Changes in assumptions used in measurement of the Total OPEB Liability beginning June 30, 2017*

The Discount Rate increased from 2.71% to 3.13%.

#### *Changes in assumptions used in measurement of the Total OPEB Liability beginning June 30, 2016*

Salary growth changed from an effective average of 5.50%, which was comprised of inflation of 3.00%, real wage growth and for merit or seniority increases of 2.50%, to an effective average of 5.00%, comprised of inflation of 2.75% and 2.25% for real wage growth and for merit or seniority increases.

Mortality rates were modified from the RP-2000 Combined Healthy Annuitant Tables (male and female) with age set back 3 years for both males and females to the RP-2014 Mortality Tables for Males and Females, adjusted to reflect PSERS' experience and projected using a modified version of the MP-2015 Mortality Improvement Scale. For disabled annuitants the RP-2000 Combined Disabled Tables (male and female) with age set back 7 years for males and 3 years for females to the RP-2014 Mortality Tables for Males and Females, adjusted to reflect PSERS' experience and projected using a modified version of the MP-2015 Mortality Improvement Scale.

#### *Method and assumptions used in calculations of actuarially determined contributions*

The actuarially determined contributions are calculated as of the June 30 preceding the fiscal year in which contributions are made. That is, the contribution calculated as of the June 30, 2018 actuarial valuation will be made during the fiscal year ending June 30, 2020. The following actuarial methods and assumptions were used to determine contribution rates reported in that schedule:

- Investment return - 2.79% - 20 year S&P Municipal Bond Rate.
- Salary growth - Effective average of 5.00%, which reflects an allowance for inflation of 2.75%, real wage growth and merit or seniority of 2.25%.
- Benefit payments - no postretirement benefit increases assumed in the future.
- Mortality rates were based on the RP-2014 Mortality Tables for Males and Females, adjusted to reflect PSERS' experience and projected using a modified version of the MP-2015 Mortality Improvement Scale.
- Assumed Healthcare cost trends were applied to retirees with less than \$1,200 in premium assistance per year.

#### *10-year reporting requirements*

Required Supplementary Schedules 4-7, as related to OPEB, are intended to show information for 10 years. Additional years will be displayed as they become available.

#### *The Accounting Valuation*

The GASB 74 accounting valuation can be found on PSERS' website at [www.psers.pa.gov](http://www.psers.pa.gov).

**Supplementary Schedule 1**  
**Schedule of Administrative and Investment Expenses**  
**Year Ended June 30, 2019**  
(Dollar Amounts in Thousands)

	<b>Administrative Expenses</b>				
	<b>Pension</b>	<b>Defined Contribution</b>	<b>Post-employment Healthcare (1)</b>	<b>Investment Expenses (2)</b>	<b>Total</b>
<b>Personnel costs:</b>					
Salaries and wages	\$ 15,732	\$ 492	\$ 1,431	\$ 7,944	\$ 25,599
Employee benefits	11,403	276	1,269	4,497	17,445
<b>Total personnel costs</b>	<b>27,135</b>	<b>768</b>	<b>2,700</b>	<b>12,441</b>	<b>43,044</b>
<b>Operating costs:</b>					
Investment managers' fees	-	-	-	425,353	425,353
Custodian fees	-	-	-	2,518	2,518
Specialized services	139	-	849	886	1,874
Third party administrator	-	1,380	31,307	-	32,687
Fitness program administrator	-	-	8,477	-	8,477
Healthcare project management	-	-	3,571	-	3,571
Rental of real estate, electricity	1,957	-	167	245	2,369
Consultant and legal fees	1,484	370	280	4,351	6,485
Treasury and other Commonwealth services	1,729	-	-	194	1,923
Postage	884	-	-	-	884
Contracted maintenance and repair services	4,051	-	-	8	4,059
Printing and office supplies	265	-	-	5	270
Rental of equipment and software	5,293	646	-	-	5,939
Travel and training	217	5	5	49	276
Telecommunications	546	-	-	79	625
Equipment (non-capital assets)	882	-	-	110	992
Subscriptions	308	-	-	1,843	2,151
Miscellaneous expenses	557	1	-	358	916
<b>Total operating costs</b>	<b>18,312</b>	<b>2,402</b>	<b>44,656</b>	<b>435,999</b>	<b>501,369</b>
<b>Other charges:</b>					
Depreciation	2,675	-	-	-	2,675
<b>Total Administrative and Investment Expenses Before Pension &amp; OPEB Expense</b>	<b>48,122</b>	<b>3,170</b>	<b>47,356</b>	<b>448,440</b>	<b>547,088</b>
Pension expense (3)	3,153	94	228	1,850	5,325
OPEB expense (4)	(2,344)	12	(155)	(466)	(2,953)
<b>Total Administrative and Investment Expenses</b>	<b>\$ 48,931</b>	<b>\$ 3,276</b>	<b>\$ 47,429</b>	<b>\$ 449,824</b>	<b>\$ 549,460</b>

(1) Administrative expenses for Postemployment Healthcare includes \$1,914 related to Premium Assistance and \$45,515 related to Health Options Program for the fiscal year ended June 30, 2019.

(2) Includes investment expenses of \$28 related to Postemployment Healthcare Premium Assistance and \$28 related to Health Options Program for the fiscal year ended June 30, 2019 and does not include \$4,184 in capitalized broker commissions for the fiscal year ended June 30, 2019.

(3) Total GASB 68 pension expense is \$13.1 million and is reflected under Employee benefits and Pension expense. Employer contributions of \$7.8 million are included as Employee benefits under Personnel costs and \$5.3 million is reflected as Pension expense.

(4) Total GASB 75 OPEB expense is \$(0.6) million and is reflected under Employee benefits and OPEB expense. Employer contributions of \$2.4 million are included as Employee benefits under Personnel costs and \$(3.0) million is reflected as OPEB expense.

**Supplementary Schedule 2**  
**Summary of Investment Expenses\***  
**Year Ended June 30, 2019**  
(Dollar Amounts in Thousands)

	<b>Investment Management</b>		<b>Other Expenses</b>	<b>Total</b>
	<b>Base</b>	<b>Performance</b>		
<b>External management:</b>				
Domestic equity	\$ 1,527	\$ 1,561	\$ -	\$ 3,088
International equity	20,479	15,947	-	36,426
Fixed income	99,924	1,414	-	101,338
Real estate	47,659	-	-	47,659
Alternative investments	96,024	-	-	96,024
Absolute return	85,095	16,623	-	101,718
Commodities	7,312	-	-	7,312
Infrastructure	2,382	-	-	2,382
Master limited partnership	8,145	-	-	8,145
Risk parity	16,414	4,847	-	21,261
<b>Total external management</b>	<b>384,961</b>	<b>40,392</b>	<b>-</b>	<b>425,353</b>
<b>Total internal management</b>	<b>-</b>	<b>-</b>	<b>17,602</b>	<b>17,602</b>
<b>Total investment management</b>	<b>384,961</b>	<b>40,392</b>	<b>17,602</b>	<b>442,955</b>
Custodian fees	-	-	2,518	2,518
Consultant and legal fees	-	-	4,351	4,351
<b>Total investment expenses</b>	<b>\$ 384,961</b>	<b>\$ 40,392</b>	<b>\$ 24,471</b>	<b>\$ 449,824</b>

\* External investment management fees classified on an asset allocation basis.

**Supplementary Schedule 3**  
**Schedule of Payments to Non-Investment Consultants**  
**Year Ended June 30, 2019**  
(Dollar Amounts Greater than \$100,000)

<b>Consultant</b>	<b>Fees</b>	<b>Services Provided</b>
Coresource, Inc.	\$ 31,307,090	Postemployment healthcare benefits administration and claims adjudication
ViTech Systems Group, Inc.	6,290,000	Pension administration system services
Optum RX, Inc.	5,681,861	Administration of postemployment healthcare benefits and prescription drug plan
The Segal Company	3,571,134	Actuarial services and consulting for HOP and prescription drug plan
Voya Holdings, Inc.	1,380,000	Defined Contribution Plan investment services and benefits administration
BluePeak Advisors LLC	1,263,817	Pharmacy benefit consulting services
Tivity Health	838,823	Administration of the Silver Sneakers Fitness Program
OST, Inc.	489,423	Information technology, training, testing and consulting services
Buck Global LLC	225,758	Pension benefit actuarial services
Gartner, Inc.	161,400	Information technology consulting services
Charles W. Cammack Associates	133,332	Defined Contributions Plan consulting services
CliftonLarsonAllen LLP	112,450	Financial audit of pension system, defined contribution plan and postemployment healthcare programs

## Past Staff Photo



## Current Staff-Office of Financial Management





## Current Staff-Bureau of Communications and Counseling



## Current Staff-Bureau of Administration



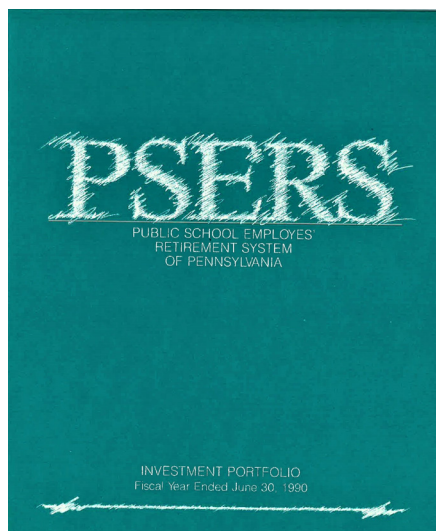


# INVESTMENT SECTION

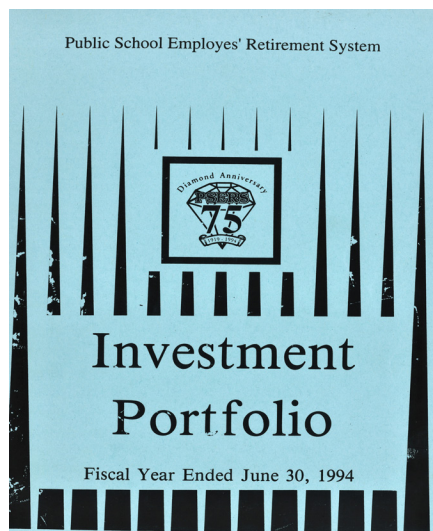
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1990 Investment Portfolio Cover



1994 Investment Portfolio Cover



1995 Investment Portfolio Cover

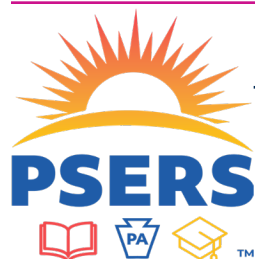


### Past Staff Photo



### Current Staff-Investment Office





COMMONWEALTH OF PENNSYLVANIA  
PUBLIC SCHOOL EMPLOYEES' RETIREMENT SYSTEM

James H. Grossman Jr., CPA, CFA  
Chief Investment Officer

November 7, 2019

Dear PSERS Board of Trustees:

It is a privilege to present to you the Investment Section of the Comprehensive Annual Financial Report for the fiscal year ended June 30, 2019.

### Authority and Fiduciary Standard

The Board has the responsibility to invest funds of the System in accordance with guidelines and limitations set forth in the Code and other applicable state law. As fiduciaries, the members of the Board and Professional Staff must act solely in the interests of the members of the System and for the exclusive benefit of the System's members. In performance of their duties, the members of the Board and Staff who have been delegated investment authority shall be held to the Prudent Investor Standard.

The Prudent Investor Standard, as articulated in the Code, means "the exercise of that degree of judgment, skill, and care under the circumstances then prevailing which persons 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 the permanent disposition of the fund, considering the probable income to be derived therefrom as well as the probable safety of their capital."

The Prudent Investor Standard requires a trustee to act prudently and with caution, discretion, loyalty, and care but does not restrict the assets in which the Board can invest. Under the Prudent Investor Standard, which recognizes modern portfolio theory, the Board's investment and management decisions with respect to individual assets shall be considered in the context of the portfolio as a whole and as part of an overall investment strategy, and not in isolation. No specific investment or course of action, taken alone, shall be considered inherently prudent or imprudent. This Standard recognizes the trade-off between risk and return.

### Policies and Objectives

The Board is responsible for the formulation of investment policies for the System. Professional Staff is responsible for the implementation of those investment policies. The overall investment objectives of the System are as follows:

**Return Objectives** – the System has a return objective of meeting or exceeding the targeted actuarial rate of return of 7.25% over the long-term (i.e. 25 to 30 years). In addition, the Board has the following broad objectives:

1. The assets of the System shall be invested to maximize the returns for the level of risk taken, and
2. The System shall strive to achieve a net of fee return that exceeds the Policy Index (the Policy Index is a custom benchmark, based on the Board-established asset allocation structure that seeks to generate a return that meets the actuarial rate of return assumption).

### Risk Objectives

1. The assets of the System shall be diversified to minimize the risk of losses at the portfolio level and within any one asset class, investment type, industry or sector distribution, maturity date, or geographic location. Failure to do so could impair the System's ability to achieve its funding and long-term investment goals and objectives; and,
2. The System's assets shall be invested so that the probability of investment losses (as measured by the Policy Index) in excess of 15% in any one year is no greater than 2.5% (or two standard deviations below the expected return).



## Investment Section

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To achieve these objectives, the Board meets during the second half of the calendar year to review the overall asset allocation plan and investment policies for the System. Implementation of investment policy decisions necessitates asset management. Implementation is accomplished through the use of external investment management firms who act as agents for the System as well as through the use of internal investment managers. The Board also retains various investment consultants to assist with the formulation and implementation of investment policies.

### Operations

The Board, via its Investment Committee, provides oversight of investment activities. The Investment Committee generally conducts six meetings per year and may meet more frequently as needed. Investment Office professionals, as well as external investment advisors, Investment Accounting professionals, and Internal Audit professionals, assist the Board in achieving investment objectives and monitoring compliance with investment policies. For the fiscal year ended June 30, 2019, Aon Hewitt Investment Consulting, Inc. (Aon Hewitt) served as the general investment consultant to assist the Board and Professional Staff in formalizing investment objectives, establishing an asset allocation plan, conducting investment advisor searches, reviewing performance, and commenting on compliance with investment policies. In addition, the Board retained Aksia, LLC as an absolute return consultant and Hamilton Lane Advisors, L.L.C. as an alternative and real estate investment consultant. Alternative investments generally consist of investments in private debt, private equity, and venture capital limited partnerships. Investment Office professionals implement investment decisions within the guidelines established in the Investment Policy Statement, Objectives and Guidelines regarding asset allocation, manager selection, security selection, and other objectives directed by the Board.

The Board employs both external investment management firms and internal investment managers to manage the investment portfolio of the System. At fiscal year-end, 63 external public market investment management firms were managing \$15.7 billion in assets of the System, \$23.1 billion in assets were managed by the System's internal investment managers, and the remaining \$18.9 billion in assets were managed by numerous alternative investment and real estate investment managers. The performance of each external investment management firm and each internal manager is monitored quarterly against a pre-established benchmark as well as the performance of the manager's peer group.

### Asset Allocation

The Board reviews the long-term asset allocation targets of the System annually. The Board consults with its actuary, consultants, Investment Office professionals, and other sources of information it deems appropriate in formulating the asset allocation plan. The level of risk assumed by the System is largely determined by the Board's strategic asset allocation plan. The Board, in determining its long-term asset allocation, takes the following factors into consideration:

- The System's investment time horizon;
- The demographics of the plan participants and beneficiaries;
- The cash flow requirements of the System;
- The actuarial assumptions approved by the Board;
- The funded status of the System;
- The Board's willingness and ability to take risk, and
- The employers' (Commonwealth and school districts) financial strength.

In approving the asset allocation for the System that is recommended by Investment Office professionals and PSERS' general investment consultant, the Board considers capital market expectations for expected return, volatility, and asset class correlations as prepared by its general investment consultant. The current long-term, top-down asset allocation targets of the Board, based on targeted exposures, are discussed in the following paragraphs. Targeted exposures include positions obtained through derivative exposure with minimal capital requirements.

The current target allocation as of June 30, 2019, included an equity target allocation of 30.0% consisting of publicly traded stocks (15.0%) and private markets (15.0%). Specific publicly traded stock targets have been established for U.S. equity (4.8%) and non-U.S. equity (10.2%). Within the U.S. equity target, the portfolios are diversified between large and small capitalization investment mandates. The non-U.S. equity exposure includes both developed and emerging markets portfolios as well as large and small capitalization investment mandates. The non-U.S. developed markets equity exposure is 75% currency-hedged back to the U.S. Dollar. The primary vehicle used to invest funds in private markets is the limited partnership. The partnerships are established by individual management groups that have been selected by the System for



the purpose of investing in and managing private equity, venture capital, and debt positions on behalf of PSERS and other limited partners.

The fixed income target allocation of 42.0% consisted of investment grade exposure (10.0%), credit-related exposure (11.0%), inflation-protected exposure (15.0%) and cash (6.0%). Investment grade exposure consisted of U.S. core fixed income (4.0%) and U.S. Long-term Treasuries (6.0%). Credit-related exposure consisted of private credit (10.0%) and emerging markets fixed income (1.0%). Inflation protected exposure consisted of U.S. and non-U.S. inflation-linked bonds. Within these categories, all sectors of the fixed income market are represented. The cash allocation consisted of short-duration, high quality government and investment grade securities. The Board, Investment Office professionals, and Aon Hewitt deemed it prudent to have an allocation to cash given the known and potential cash flow requirements of the System.

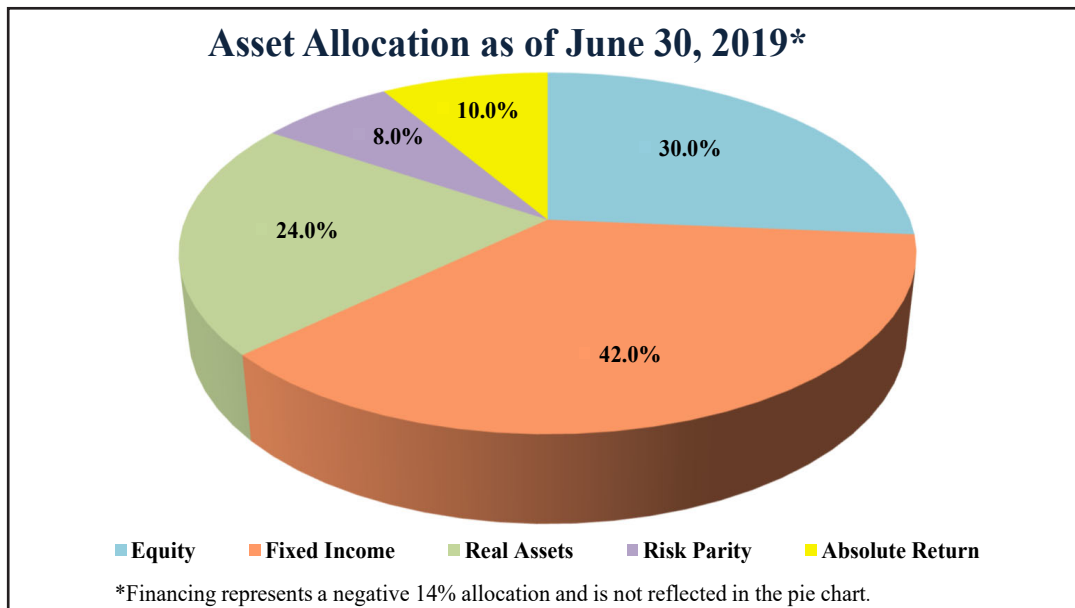
The real asset exposure of 24.0% consisted of real estate (10.0%), master limited partnerships (4.0%), infrastructure (2.0%) and commodities (8.0%, including 3% to gold). The real estate allocation consisted of limited partnerships and publicly-traded real estate securities. The types of partnerships the System invests in include core, value-added, and opportunistic real estate limited partnerships. The commodities allocation consisted primarily of commodity futures, commodity swaps, and commodity-related publicly traded stocks. Commodities are included in the allocation for inflation protection and to diversify the System's total portfolio risk. The master limited partnership (MLP) allocation consisted of publicly traded partnerships that own and operate assets such as pipelines, processing facilities, and storage facilities for natural gas, crude oil, and refined products that are a vital part of the U.S. energy infrastructure. MLPs are included in the allocation due to their attractive current yields, reasonable growth potential, and ability to diversify the System's total portfolio risk. The Infrastructure allocation targets stable, defensive investments primarily within the energy, power, water, and transportation sectors. Infrastructure plays a strategic role within the System by providing steady returns and cash yields, defensive growth, inflation protection, capital preservation, and diversification benefits. The infrastructure allocation consists primarily of publicly-traded companies.

The absolute return target allocation of 10.0% consisted primarily of investment managers retained by the System to generate positive returns over time that are independent of how the equity, fixed income, and commodity markets perform. Strategies implemented to achieve this target include, but are not limited to, global macro, event-driven, and relative value strategies such as insurance-linked securities and long/short credit. The absolute return program is included in the allocation to generate returns equal to or greater than 3-month LIBOR plus 3.5% with low volatility and low correlation to the public financial markets to diversify the System's total portfolio risk.

The risk parity allocation of 8.0% consisted primarily of global equities, global nominal bonds, global inflation-linked securities, and commodities in an allocation that balances risk across these asset classes with structurally offsetting biases to the primary drivers of asset class returns - growth and inflation. Risk parity provides diversification and liquidity to the System.

Leverage was utilized at the asset allocation level to provide additional exposure to diversifying asset classes. The System utilized 14.0% leverage through use of derivative instruments that allow the System to gain incremental asset class exposure with minimal margin requirements. Leverage is utilized in the fixed income, real asset, and risk parity allocations.

The System also participates in a securities lending program administered by Deutsche Bank AG. This program is designed to provide incremental income to the System by lending publicly-traded securities in the System's portfolio held by the System's custodial bank, The Bank of New York Mellon, to securities dealers in exchange for cash collateral, which can be reinvested to generate income. This program generated \$14.3 million in net income during the year.

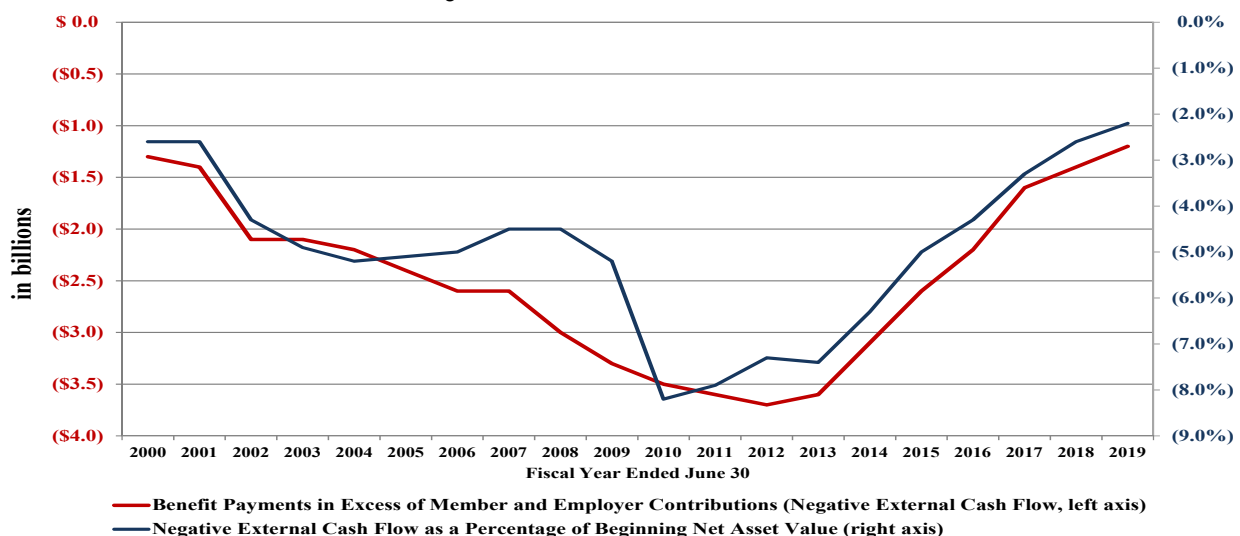


### Liquidity and Asset Allocation

The System's risk profile is, in part, driven by its liquidity needs. Over the past twenty fiscal years, the System has paid out \$50.8 billion more in benefits than it has received in member and employer contributions (i.e., the System has experienced negative cash flow). The average negative cash flow was approximately \$2.5 billion per year during this period. This annual funding deficiency has amounted to 2.1% or more of beginning net assets each year and represents the amount of investment return needed each year to make up the shortfall (i.e., if the System earned 3.0% in a given year with a 3.0% cash flow shortfall, then the net assets of the System will be unchanged). The large negative annual cash flow has improved significantly since fiscal year 2012 due to the implementation of Act 120 in 2010 (see chart below). Act 120 provided for increased employer contributions to the actuarial required contribution levels. The large annual cash flow shortfall, while much improved, will continue over the next few years and necessitates a larger liquidity position and lower risk profile than a retirement system that has smaller liquidity requirements.

Given the significant net cash outflows, the Board has prudently reduced the risk profile of the System since the financial crisis in 2008. It has done so by decreasing its return dependence on the equity markets and increasing its risk exposures to asset classes that are less correlated to equity markets such as inflation-linked bonds, commodities, and absolute return. The goal of such an allocation is to generate the desired return profile with less volatility.

### History of External Cash Flows



While such an allocation will not provide for a large upside in returns, it is expected to minimize downside risks to the System's assets in the event of a large equity market drawdown as experienced during the financial crisis in 2008.

## **The Economy During The Past Fiscal Year**

### ***The U.S. Economy***

The U.S. economy showed improvement this past fiscal year, driven by continued easy monetary conditions and a pivot from the Federal Reserve on interest rate expectations during the year. Monetary conditions in the U.S. at first tightened as the Federal Reserve increased interest rates two times in the first half of the fiscal year; however, the Fed pivoted in the second half of the year from a tightening bias to a neutral or easing bias which improved optimism about the U.S. economy, encouraged more risk taking and inflated asset prices. The Federal Funds target rate increased by 0.5% and had a range of 2.25% to 2.50%. While short term interest rates increased, they continue to be historically low and provided a low cost of borrowing so that broad economic conditions can continue to improve. The U.S. real Gross Domestic Product (GDP) increased year-over-year an average of 2.3% per quarter during the past fiscal year with a range of 1.1% to 3.1%. The official unemployment rate (otherwise known as the U3 unemployment rate) fell during the fiscal year from 4.0% as of June 2018 to 3.7% as of June 2019, approaching what the Fed would consider full employment.

The more encompassing U6 unemployment rate, which measures not only people without work seeking full-time employment (U3 unemployment rate) but also counts "marginally attached workers and those working part-time for economic reasons" fell to levels last seen in 2001 at 7.2% as of fiscal year end, down from 7.8% at the end of the last fiscal year. However, the U.S. Labor Participation Rate (LPR), which measures the total labor force as a percentage of the working age population, remains depressed relative to historical levels. The LPR remained unchanged from June 2018 at 62.9%. The LPR was as high as 67.3% in March 2000. If the LPR were at 2000 levels today, the official unemployment rate would probably be significantly higher.

The U.S. economy showed a significant decrease in momentum during the fiscal year as measured by the manufacturing Institute of Supply Management (ISM) Purchasing Managers Index (PMI), an indicator of activity in the sector. During the fiscal year, the ISM PMI decreased by 8.3 points to 51.7 at June 30, 2019, but was still in expansionary territory (a contraction/expansion is indicated whenever the index is below 50/above 50). Concurrently, U.S. consumer confidence, as measured by the Conference Board's Consumer Confidence Index decreased from 127.1 at June 2018 to 124.3 at June 2019.

Inflation in the United States, after years of being below the Fed's target inflation rate of 2.0%, has shown steady year-over-year increases this past fiscal year as low interest rates, tight labor markets, and fiscal expansion in the form of tax cuts have started to have an impact. The past fiscal year saw inflation relatively stable, with the U.S. Core Consumer Price Index (CPI) modestly decreasing to 2.1% year-over-year as of June 2019 from 2.3% one year ago.

### ***Select Non-U.S. Economies***

Significant headwinds affecting many non-U.S. economies include political uncertainty in Europe, specifically the rise of populism as evidenced by the formation of a populist coalition government in Italy and Great Britain's planned exit from the European Union (Brexit), and protectionist policies as evidenced by President Donald Trump's administration's imposition of billions of dollars of tariffs on goods imported into the U.S. from China. These uncertainties manifested themselves over the past couple of years and are worthy of watching during the next few years, specifically Brexit in the U.K. and the trade policies of the U.S.

The Euro Area economy continued to struggle, with modestly positive growth. As of the second quarter 2019, the Euro Area was growing at a 1.1% annual pace, meaningfully down from the 2.2% pace one year earlier. The unemployment rate continued to normalize and improved to 7.6% as of June 2018 from 8.3% a year earlier. Eurozone inflation trends weakened during the past fiscal year, falling from 2.0% on an annualized basis in June 2018 to 1.3% in June 2019, well below the European Central Bank (ECB) target of 2.0%. The Euro Area economy fell into contraction territory as evidenced by the Markit Eurozone Manufacturing PMI print of 47.6 in June 2019 from 54.9 last June (a contraction/expansion is indicated whenever the index is below 50/above 50). Aggressive actions by the ECB have generated improvements in employment but have failed to sustain economic growth and inflation. The ECB continued its policy of very accommodative overnight interest rates (negative 0.4%) but had slightly tightened monetary conditions by ending quantitative easing in December

## Investment Section

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2018 but moving to ease monetary conditions by introducing another round of Targeted Long-Term Refinancing Operations (TLTROs) in 2019.

Japan's economy slowed during the past fiscal year. As of the second quarter 2019, Japan's real GDP increased by a year-over-year rate of 1.2% versus a 1.5% year-over-year rate as of June 2018. Japan's demographics are poor as the population ages which generally means that robust growth will be difficult to sustain over the long term. However, since the size of the working age population is decreasing, unemployment has been very low and was 2.3% in June 2019, down from 2.5% last fiscal year. The inflation rate in Japan was positive 0.7% over the past year, unchanged from the end of last year. Japanese policy makers continue to aggressively attempt to stimulate their economy through a combination of low interest rates (the Bank of Japan policy rate is negative 0.1%), the purchase of higher risk assets by the Bank of Japan, coordinated diversification into higher risk assets by large public investors, and fiscal spending policies to encourage liquidity to move into riskier assets. Economic conditions deteriorated and the Japanese manufacturing sector followed Europe into contraction territory as evidenced by the Jibun Bank Japan Manufacturing PMI falling 3.7 points from 53.0 at June 2018 to 49.3 at June 2019 (a contraction/expansion is indicated whenever the index is below 50/above 50). Japanese fiscal and monetary authorities have had a difficult time finding the appropriate economic and structural reforms to put in place to enable a sustained period of economic prosperity.

China had robust growth compared to the other developed regions of the world. China's real GDP increased by 6.2% over the past year, moderately slower than the 6.7% pace for the year ended June 2018. Inflation in China accelerated over the past year to 2.7% compared to 1.9% last year. Economic conditions weakened as evidenced by the China Manufacturing PMI decreasing 2.1 from 51.5 at June 2018 to 49.4 at June 2019 (a contraction/expansion is indicated whenever the index is below 50/above 50). As noted in previous years, China continued its struggle to rebalance its economy from an investment-oriented economy to a consumer-oriented economy, while maintaining political stability. In addition, the trade war with the United States also put pressure on the Chinese economy with no signs of abating anytime soon.

### Investment Results

Aon Hewitt calculates the total investment return of the System as well as the performance of each external investment management firm and each internal investment manager retained by the Board to invest the System's assets. Performance is calculated using a time-weighted return methodology.

For the one-year period ended June 30, 2019, the System generated a total net of fee return of 6.68%. This return fell short of the actuarial required return of 7.25% by 57 basis points and the total fund Policy Index return of 7.68% by 100 basis points. Annualized total net of fee returns for the three-, five-, and ten-year periods ended June 30, 2018 were 8.71%, 6.04% and 9.02%, respectively. The three-, five- and ten-year returns ended June 30, 2019 exceeded (underperformed) the total fund Policy Index returns by 62, (2), and 59 basis points, respectively.

Significant positive contributors to performance this past fiscal year included:

- Private Equity was up 11.2%;
- Gold was up 9.8% due to investors looking for safe haven investments as the result of increasing geopolitical risks;
- U.S. Long Treasuries were up 8.9%, driven by a decrease in interest rates during the fiscal year;
- Risk Parity was up 8.2% during the fiscal year driven by strong returns in fixed income and U.S. equities; and,
- U.S. Equities were up 7.8%. Returns in U.S. equities were driven by expectations of lower interest rates starting in the second half of the fiscal year.

Significant detractors from performance this past fiscal year included:

- Diversified commodities which were down over 7.0%; due primarily to weakness in oil prices which fell roughly 9% during the fiscal year;
- Master Limited Partnerships which were up 1.6%;
- Absolute return which was up 2.4%; and
- Non-U.S. equities which were up 2.8% as growth outside the U.S. was slowing this past year.

The fiscal year was really the tale of two halves. In the first half of the year, there were signs that growth was slowing globally, causing equity and oil prices to plunge and the U.S. yield curve to flatten. The Fed was hiking rates and communicating that more tightening would be needed in the future. However, the Fed pivoted about mid-way through the fiscal year and indicated that it was ending its monetary tightening campaign and signaled that it may be cutting rates

which caused both equities and bonds to rally in the second half of the fiscal year. Central banks globally are now very accommodative as both the European Central Bank and the Bank of Japan are keeping short-term interest rates in negative territory and the Federal Reserve Bank in the U.S. is about to embark on an easing cycle later in 2019.

### **Diversification is Undeniably Effective**

Diversification into asset classes such as diversified commodities, absolute return, and non-U.S. equities were a drag on overall performance this past fiscal year. As noted by Ben Hunt in his newsletter Epsilon Theory, “Diversification isn’t a pretty bird. Diversification doesn’t make my heart skip a beat like a flock of goldfinches in July. Diversification, by design, is going to have winners and losers simultaneously. Diversification, by design, is never going to look pretty doing its job, because if your portfolio is all working in unison, swooping through the market in a beautiful glint of gold...well, you may be making money, but you sure aren’t diversified. Diversification is undeniably effective....” Many investment professionals discuss diversification using terms such as standard deviation, correlation, and co-variance. However, at its most basic level, diversification is insurance against bad future outcomes. The System diversifies simply because it doesn’t know how actual events in the future will transpire relative to what is priced into the market. Diversification is a very humble approach to investing. If an investor knew with certainty which asset class would perform best the next month, quarter, or year, the investor would simply invest in that one asset class. However, without such perfect foresight, the downside risk of such a strategy could be devastating. As Peter Bernstein, the late American financial historian, economist, and educator once wrote, “Diversification is the only rational deployment of our ignorance.”

### **Accomplishments**

The Investment Office received approval to increase its professional complement by ten during the past fiscal year. We are in the process of filling those positions with very capable investment professionals which will allow us to continue our efforts to bring additional assets in-house as well as provide depth to the investment team. The complement increase will allow the Investment Office to support the large amount of assets managed in-house at a significantly lower cost than if those assets were managed externally. Over the past three years, the Investment Office increased the amount of assets managed internally from 34% to 39%, or by \$5.6 billion. The estimated savings from managing those assets in-house is over \$50 million per year.

### **Summary**

This past fiscal year was volatile and challenging with a net of fee return of 6.68%. However, pension plans like PSERS are built to generate long-term returns, so one good (or bad) year is not going to make (or break) the Fund. The System focuses on long-term returns. For the past 10 years, the Fund’s annualized net of fee return was 9.02%, comfortably above the actuarial assumed rate of return of 7.25%. Looking forward, even with cash rates of around 2.25%, the System still needs to take prudent risks to achieve its long-term goal of 7.25%. The System has built a diversified allocation to allow it to collect risk premiums over the long-term. In the short-term, no one knows what will happen and the System should expect to go through years where returns are below 7.25%, perhaps significantly below. The System continues to believe the best way to achieve its long-term objectives is to maintain a very diversified portfolio which includes all asset classes available to the Fund, such as public and private equities, fixed income, real assets, risk parity and absolute return. In any given year, the System expects some assets to perform well, such as U.S. Long Treasuries, risk parity, and gold did this past fiscal year, and some to not do as well, such as diversified commodities this past fiscal year. However, over the long run, the System expects each of its asset classes to generate a positive return commensurate with the risks taken. The future is uncertain, but we believe the Fund is well positioned to accomplish its objectives.



James H. Grossman Jr., CPA, CFA  
Chief Investment Officer



<b>Annualized Total Returns (%) Net of Fees</b> <b>Periods Ended June 30, 2019</b>				
	<b>1 Year</b>	<b>3 Years</b>	<b>5 Years</b>	<b>10 Years</b>
<b>PSERS Total Portfolio</b>	6.68	8.71	6.04	9.02
Total Fund Policy Index	7.68	8.09	6.06	8.43
Median Public Defined Benefit Plan (DBP) Fund Universe (Aon Hewitt Database)	5.98	8.53	5.61	8.77
<b>PSERS U.S. Equity Portfolios</b>	7.84	13.63	10.16	14.95
U.S. Equity Policy Index (1)	8.96	14.04	10.24	14.60
<b>PSERS Non-U.S. Equity Portfolios</b>	2.84	11.72	6.94	9.58
Non-U.S. Equity Policy Index (2)	2.15	10.67	5.47	8.34
<b>PSERS Fixed Income Portfolios (10)</b>	7.89	6.55	5.59	8.12
Fixed Income Policy Index (3)	8.38	4.52	3.70	5.75
<b>PSERS Commodity Portfolios (10)</b>	0.19	0.63	-3.85	0.08
Commodity Policy Index (4)	0.17	-0.63	-5.22	-1.84
<b>PSERS Absolute Return Portfolios</b>	2.42	5.38	3.35	6.08
Absolute Return Policy Index (5)	6.16	5.34	4.76	6.22
<b>PSERS Risk Parity Portfolios (11)</b>	8.16	7.37	4.18	N/A
Risk Parity Policy Index (6)	9.41	7.10	5.08	9.89
<b>PSERS Master Limited Partnership (MLP) Portfolios</b>	1.55	1.99	-4.98	12.42
Standard & Poor's MLP Index	3.23	1.54	-6.65	8.88
<b>PSERS Real Estate (7) (10)</b>	7.59	9.83	10.44	9.16
Blended Real Estate Index (8)	5.99	8.49	10.14	8.73
<b>PSERS Alternative Investments (7)</b>	11.21	13.93	9.44	12.14
Burgiss Median, Vintage Year Weighted Index (9)	9.67	13.26	10.88	13.37

1. MSCI USA Investable Market Index effective April 1, 2009; previously was the Dow Jones Wilshire 5000 Index.
2. MSCI ACWI ex USA IMI with DM 75% Hedged to USD (Net) Index effective April 1, 2016. From October 1, 2014 to March 31, 2016, the index was the MSCI ACWI ex USA IMI with DM 100% Hedged to USD (Net) Index. From July 1, 2008 to September 30, 2014, the index was the MSCI All Country World (ACW) ex. USA Investable Market Index. Before July 1, 2008, the MSCI ACW ex. U.S. Index was used. The benchmark was 30% hedged to the U.S. dollar from July 1, 2006 to March 31, 2009.
3. Returns presented are a blend of the Barclays Capital U.S. Aggregate Index (17.5%), Barclays Capital Global Aggregate GDP Weighted Dev x U.S. (Unhedged) Index (3.5%), Barclays Capital Emerging Mkt 10% Country Cap Index (7.0%), Barclays Capital U.S. Treasury Long Index (8.8%), Barclays Capital U.S. High Yield Index (21.1%), and Barclays Capital U.S. TIPS Index (42.1%) effective April 1, 2016. Prior to July 1, 2013, the blend was Barclays Capital U.S. Universal Index (24.7%), JP Morgan GBI EM Global Diversified Index (9.4%), Barclays Capital U.S. High Yield Index (28.2%), Barclays Capital Multiverse Index (14.1%), and Blended Policy (Net Levered TIPS) (23.6%).
4. Returns presented are a blend of the Bloomberg Commodity Gold Index (37.5%) and the Bloomberg Commodity Index (62.5%). On July 1, 2014, the indices names were changed from DJ/UBS to Bloomberg. The returns have been adjusted for leverage.
5. Three month LIBOR +3.50% effective July 1, 2014. Previously, it was based on the assumed actuarial rate of return for the Fund which was 8.0% from July 1, 2009 through June 30, 2011. The assumed rate changed to 7.5% on July 1, 2011 and was used as the Absolute Return Policy Index through June 30, 2014.
6. Effective July 1, 2014 returns presented are a blend of MSCI ACW Index (\$Net) (50%); Barclays Capital U.S. Treasury Index (75%); Barclays Capital World Inflation Linked Bond Index Hedged (55%); Bloomberg Commodity Index (Total Return) (15%); Bloomberg Gold Subindex (5%); and 3-Month LIBOR (-100%). The weights to these indices have varied in previous quarters. The returns have been adjusted for volatility.
7. Returns reported on a one-quarter lag, except for publicly traded real estate security investments.
8. Effective April 1, 2015, comprised of a blended benchmark consisting of the National Council of Real Estate Investment Fiduciaries (NCREIF) – Open End Diversified Core Equity (ODCE) Index and Burgiss Private iQ (for Value-Added Real Estate and Opportunistic Real Estate) reported on a one-quarter lag. For periods between April 1, 2010 and March 31, 2015, the benchmark was comprised of a blended benchmark of NCREIF-ODCE (core) and various private real estate benchmarks for Value-Added and Opportunistic (including NCREIF-Closed-End Value-Added (CEVA), NCREIF/Townsend and NCREIF-NPI) reported on a one-quarter lag. For all prior periods, the benchmark was comprised of a blended benchmark strategically split between public/private using various public REIT indices (FTSE EPRA/NAREIT Global Real Estate, Wilshire Real Estate Securities and Wilshire REIT) and NCREIF-NPI (for all non-core) reported on a one-quarter lag.
9. Burgiss Median, Vintage Year Weighted Index effective January 1, 2011. Previously, the Thompson ONE, Vintage Year Weighted Index was used. Returns reported on a one-quarter lag.
10. Returns are presented on an unleveraged basis for comparability purposes to the Policy Index.
11. Returns are presented on a volatility-adjusted basis for comparability purposes to the Policy Index.

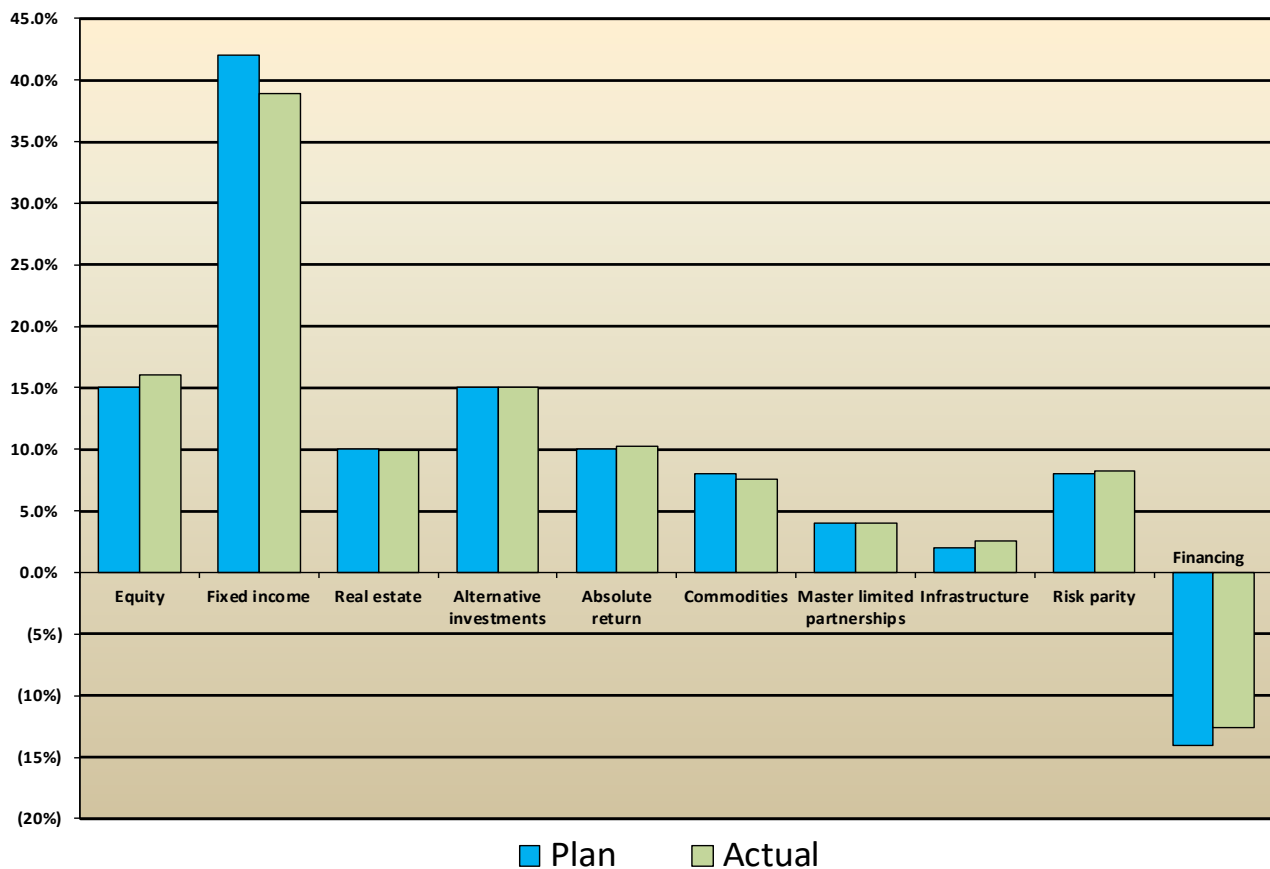
**Portfolio Summary Statistics**  
**Asset Allocation**  
**As of June 30, 2019**  
(Dollar Amounts in Thousands)

<b>Pension investments</b>	<b>Fair Value</b>	<b>% Fair Value</b>
<b>Common and preferred stock (Equity):</b>		
Large and mid cap stocks	\$ 4,366,408	7.6
Small cap stocks	671,002	1.2
Emerging markets stocks	1,314,222	2.3
<b>Total Non-U.S. equity</b>	<b>6,351,632</b>	<b>11.1</b>
Large cap stocks	2,225,270	3.9
Mid, small, and microcap stocks	661,932	1.1
<b>Total U.S. equity</b>	<b>2,887,202</b>	<b>5.0</b>
<b>Total Common and preferred stock - Asset Allocation Basis</b>	<b>9,238,834</b>	<b>16.1</b>
<b>Fixed income:</b>		
Investment grade fixed income	9,385,941	16.4
High yield fixed income	5,309,792	9.3
<b>Total U.S. Fixed income</b>	<b>14,695,733</b>	<b>25.7</b>
Non-U.S. developed markets fixed income	4,457,610	7.8
Emerging markets fixed income	374,580	0.6
<b>Total Non-U.S. Fixed income</b>	<b>4,832,190</b>	<b>8.4</b>
<b>Cash and cash equivalents</b>	<b>2,725,345</b>	<b>4.8</b>
<b>Total Fixed income - Asset Allocation Basis</b>	<b>22,253,268</b>	<b>38.9</b>
<b>Real estate</b>	<b>5,688,780</b>	<b>9.9</b>
<b>Alternative investments:</b>		
Private equity	6,379,347	11.1
Special situations	1,176,820	2.0
Venture capital	1,061,134	1.9
<b>Total Alternative investments - Asset Allocation Basis</b>	<b>8,617,301</b>	<b>15.0</b>
<b>Absolute return</b>	<b>5,909,056</b>	<b>10.3</b>
<b>Commodities</b>	<b>4,328,516</b>	<b>7.6</b>
<b>Master limited partnerships</b>	<b>2,269,241</b>	<b>4.0</b>
<b>Infrastructure</b>	<b>1,529,825</b>	<b>2.6</b>
<b>Risk parity</b>	<b>4,722,638</b>	<b>8.2</b>
<b>Financing</b>	<b>(7,215,891)</b>	<b>(12.6)</b>
<b>Total Pension investments - Asset Allocation Basis</b>	<b>57,341,568</b>	<b>100.0</b>
Net Asset Allocation Adjustment*	(3,189)	
<b>Pension investments per Statement of Fiduciary Net Position</b>	<b>57,338,379</b>	
<b>Postemployment Healthcare investments</b>	<b>\$ 379,702</b>	<b>100.0</b>
<b>Defined Contribution plan investments</b>	<b>\$ 10,476</b>	<b>100.0</b>

\* Includes reclassifications of certain investments between asset classes and investment receivables/payables to adjust the Statement of Fiduciary Net Position classification to the basis used to measure Asset Allocation. See the table and graph which follow.

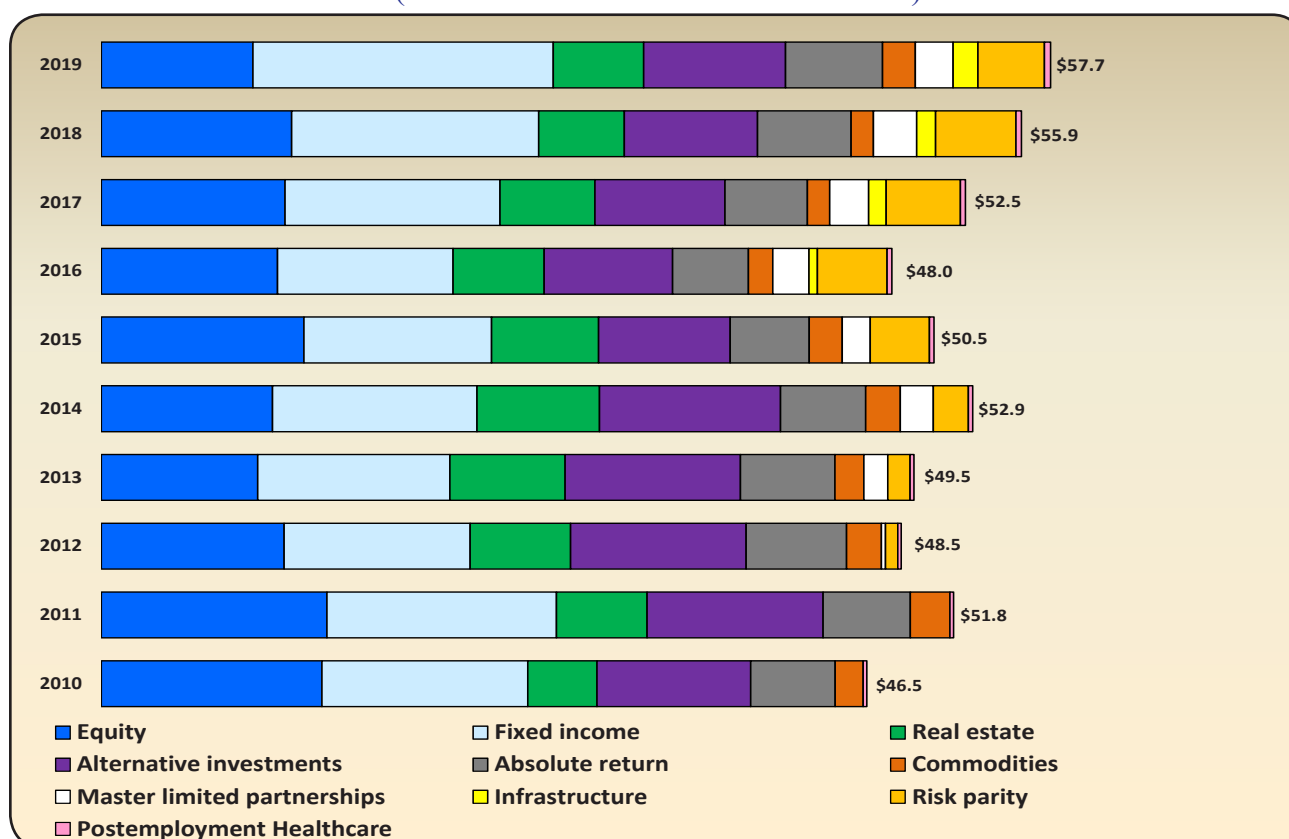
## Comparison of Actual Portfolio Distribution to Asset Allocation Plan As of June 30, 2019

Asset Category	Plan	Actual
Common and preferred stock (Equity)	15.0%	16.1%
Fixed income	42.0	38.9
Real estate	10.0	9.9
Alternative investments	15.0	15.0
Absolute return	10.0	10.3
Commodities	8.0	7.6
Master limited partnerships	4.0	4.0
Infrastructure	2.0	2.6
Risk parity	8.0	8.2
Financing	(14.0)	(12.6)
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>



## Portfolio Capital Distribution 10 Year Trend

(Fair Value - Dollar Amounts in Billions)



The following lists of portfolio detail statistics present the ten largest holdings by descending order of fair value for the largest public market asset classes. Information on the complete holdings of the System can be downloaded from the PSERS website at [www.psers.pa.gov](http://www.psers.pa.gov).

### Common and Preferred Stock - Non-U.S. Equity

#### 10 Largest Holdings in Descending Order by Fair Value

#### As of June 30, 2019

(Dollar Amounts and Shares in Thousands)

Description	No. of Shares	Fair Value
The Children's Investment Fund LP	459,880	\$ 479,395
BlackRock Emerging Markets Alpha Advantage Fund Ltd.- Class D	319	464,544
Effissimo Capital Management Feeder Fund 2	740	198,043
Steadview Capital Partners LP	164,266	165,199
Cederberg Greater China Equity Fund	1,494	154,631
BlackRock Emerging Markets Alpha Advantage Fund Ltd.- Class P	105	153,605
Enbridge Inc.	3,101	111,877
iShares MSCI ETF	1,604	82,494
Nestle SA	511	52,970
Rio Tinto PLC	642	39,862
<b>Total of 10 Largest Holdings</b>		<b>\$ 1,902,620</b>

**Common and Preferred Stock - U.S. Equity**  
**10 Largest Holdings in Descending Order by Fair Value**  
**As of June 30, 2019**  
(Dollar Amounts and Shares in Thousands)

<b>Description</b>	<b>No. of Shares</b>	<b>Fair Value</b>
SPDR Trust Unit Series 1	1,831	\$ 536,485
Enterprise Products Partners, LP	11,798	340,606
Energy Transfer Equity, LP	23,928	336,901
Williams Partners, LP	6,595	184,924
Plains All American Pipeline, LP	7,210	175,562
MPLX, LP	3,112	100,184
Targa Resources Corp.	2,436	95,649
Cheniere Energy, Inc.	1,393	95,364
iShares TR S&P Small Cap 600	1,901	85,373
Magellan Midstream Partners, LP	1,216	77,813
<b>Total of 10 Largest Holdings</b>		<b>\$ 2,028,861</b>

**Fixed Income**  
**10 Largest Holdings in Descending Order by Fair Value**  
**As of June 30, 2019**  
(Dollar Amounts and Shares in Thousands)

<b>Description</b>	<b>No. of Shares</b>	<b>Fair Value</b>
BlackRock US Extended Core Global Alpha Bond Fund Ltd.	448	\$ 1,011,972
Bain Capital Credit Managed Account, LP	N/A	397,116
TAO Partners Parallel Fund, LP	N/A	346,596
Brigade Structured Credit Offshore Fund Ltd.	200	289,260
Bain Capital Distressed and Special Situations 2016, LP	N/A	276,790
Cerberus PSERS Levered Loan Opportunities Fund, LP	N/A	267,837
PIMCO Multi-Sector Strategy Fund Ltd.	197	259,460
LBC-PSERS Credit Fund, LP	N/A	256,820
iShares TIPS Bond ETF	2,052	237,039
Avenue Europe Special Situations Fund III	N/A	234,862
<b>Total of 10 Largest Holdings</b>		<b>\$ 3,577,752</b>



**Absolute Return**  
**10 Largest Holdings in Descending Order by Fair Value**  
**As of June 30, 2019**  
(Dollar Amounts and Shares in Thousands)

Description	No. of Shares	Fair Value
Bridgewater Pure Alpha Fund II, Ltd.	240	\$ 1,007,292
Capula Global Relative Value Fund, Ltd.	3,000	479,173
Garda Fixed Income Relative Value Opportunity Fund Ltd.	291	440,767
Aeolus Property Catastrophe Keystone PF Fund, LP	426	409,153
Brigade Leveraged Capital Structures Offshore Ltd.	170	328,704
PIMCO Commodity Alpha Fund, Ltd.	256	322,204
Capula Tail Risk Fund Ltd.	3,977	307,348
PIMCO Global Credit Opportunity Offshore Fund Ltd.	280	305,268
OWS Credit Opportunity Offshore Fund III, Ltd.	200	294,698
Oceanwood Opportunities Fund	259	268,684
<b>Total of 10 Largest Holdings</b>		<b>\$ 4,163,291</b>

**Postemployment Healthcare Investments**  
**10 Largest Holdings in Descending Order by Fair Value**  
**As of June 30, 2019**  
(Dollar Amounts in Thousands)

Description	Maturity Date	Interest Rate (%)	Par Value	Fair Value
Wilmington US Government MM	N/A	Various	\$ 161,259	\$ 161,259
PSERS Short-Term Investment Fund	Various	Various	104,223	104,223
Capital One Multi-Asset	06/15/22	1.33%	6,166	6,172
Verizon Owner Trust	05/20/21	1.68%	4,279	4,285
World Omni Auto	01/17/22	1.84%	4,094	4,094
Ally Auto	11/16/20	1.73%	3,051	3,054
Ford Credit Auto	06/15/21	1.60%	2,875	2,876
Exeter Automobile	01/18/22	2.90%	2,352	2,353
GM Financial	05/20/20	2.59%	2,304	2,305
Honda Auto	11/18/22	1.33%	2,270	2,271
<b>Total of 10 Largest Holdings</b>				<b>\$ 292,892</b>

**Comparison of Investment Activity Income**  
**Fiscal Years Ended June 30, 2019 and 2018**  
(Dollar Amounts in Thousands)

Investment Activity	2019	2018
Net appreciation in fair value of investments	\$ 2,830,333	\$ 3,710,567
Short-term	130,046	88,600
Fixed income	256,597	193,759
Common and preferred stock	322,865	321,547
Collective trust funds	6,373	5,166
Real estate	226,303	367,526
Alternative investments	298,004	485,718
<b>Total investment activity income</b>	<b>\$ 4,070,521</b>	<b>\$ 5,172,883</b>

Brokers' fees on equity investment transactions for the fiscal year ended June 30, 2019 were \$4.2 million. The System has commission recapture contracts with several brokers. These contracts generally stipulate that the brokers rebate a percentage of commissions earned on investment transactions directly to the System. During the fiscal year ended June 30, 2019, the System earned \$20,000 from a commissions recapture program. A list of the brokers receiving fees in excess of \$100,000 during the fiscal year follows:

**Summary Schedule of Brokers' Fees**  
**(Cumulative Fiscal Year Amounts Exceeding \$100,000)**  
**Fiscal Year Ended June 30, 2019**

Broker Name	Fees Paid	Broker Name	Fees Paid
Instinet LLC	\$ 418,168	Macquarie Bank Ltd	\$ 141,809
Citigroup Inc.	358,582	Goldman Sachs & Company	128,263
B. Riley & Company	278,485	UBS Securities	122,405
Fimat USA	270,220	Bank of America Merrill Lynch	121,798
Wells Fargo Securities	267,939	Jefferies & Company Inc.	104,496
Liquidnet Inc.	174,800	Credit Suisse First Boston	100,044
Morgan Stanley & Company	163,008		

## Professional Consultants External Investment Advisors As of June 30, 2019

### Absolute Return Managers

- ◆ Aeolus Capital Management, Ltd.
- ◆ Apollo Aviation Group
- ◆ AKAZ Investment Partners, LP
- ◆ Bridgewater Associates, LP
- ◆ Brigade Capital Management
- ◆ Capula Investment Management, LLP
- ◆ Carlyle Aviation Management Limited
- ◆ Caspian Capital, LP
- ◆ Garda Capital Partners, LP
- ◆ HS Group Ltd.
- ◆ Independence Reinsurance Partners GP, LLC
- ◆ Nephila Capital, Ltd.
- ◆ Oceanwood Capital Management, Ltd.
- ◆ One William Street Capital Management, LP
- ◆ Pacific Investment Management Company, LLC
- ◆ Perry Capital, LLC
- ◆ Two Sigma Advisors, LP
- ◆ Venor Capital Management, LP

### Publicly-Traded Real Estate Securities Advisors

- ◆ Security Capital Research & Management, Inc.

### Non-U.S. Equity Managers

- ◆ Acadian Asset Management, LLC
- ◆ Baillie Gifford Overseas, Ltd.
- ◆ Cederberg Capital
- ◆ Effissimo Capital Management Pte. Ltd.
- ◆ Marathon Asset Management Limited
- ◆ Oberweis Asset Management, Inc.
- ◆ QS Batterymarch Financial Management, Inc.
- ◆ Steadview Capital Partners, LP
- ◆ The Children's Investment Fund, LP
- ◆ Wasatch Advisors, Inc.

### Commodity Managers

- ◆ Denham Capital Management, LP
- ◆ Gresham Investment Management, LLC
- ◆ NGP Energy Capital Management
- ◆ Wellington Management Company, LLP

### U.S. Core Plus Fixed Income Managers

- ◆ BlackRock Financial Management
- ◆ Pugh Capital Management, Inc.
- ◆ SEI Investment Management Corporation

### High Yield/Private Credit Managers

- ◆ Apollo Global Management, LLC
- ◆ Avenue Capital Group

- ◆ Bain Capital Credit, LP
- ◆ Brigade Capital Management
- ◆ The Carlyle Group
- ◆ Cerberus Business Finance, LLC
- ◆ Clearlake Capital Group, LP
- ◆ Hayfin Capital Management LLP
- ◆ Intermediate Capital Group PLC
- ◆ Latitude Management Real Estate Investors
- ◆ LBC Credit Management, LP
- ◆ Mariner Investment Group, LLC
- ◆ Oaktree Capital Management, LP
- ◆ Pacific Investment Management Company, LLC
- ◆ Park Square Capital, LLC
- ◆ Summit Partners
- ◆ TCI Fund Management Limited
- ◆ TPG Sixth Street Partners
- ◆ Varde Partners, Inc.

### Non-U.S. Developed Markets Fixed Income Manager

- ◆ AllianceBernstein, LP

### Emerging Markets Debt Manager

- ◆ Franklin Templeton Investments

### Multi-Sector Fixed Income Manager

- ◆ Pacific Investment Management Company, LLC

### Non-U.S. Inflation-Linked Securities Manager

- ◆ Bridgewater Associates, LP

### LIBOR-Plus Short-Term Investment Pool Managers

- ◆ Capula Investment Management, LLP
- ◆ Penn Mutual Asset Management, LLC
- ◆ Radcliffe Capital Management

### Master Limited Partnership Managers

- ◆ Atlantic Trust Private Wealth Management
- ◆ Harvest Fund Advisors, LLC
- ◆ Salient Capital Advisors, LLC

### Currency Hedging Manager

- ◆ Pareto Investment Management, Ltd.

## Investment Section

### Professional Consultants (Continued)

#### Infrastructure

- ◆ Blackstone Group, The
- ◆ GCM Grosvenor
- ◆ Mariner Investment Group, LLC
- ◆ Strategic Partners

#### Risk Parity Managers

- ◆ BlackRock Financial Management
- ◆ Bridgewater Associates, LP
- ◆ D.E. Shaw Investment Management, LLC

#### Real Estate Advisors

- ◆ Bell Partners, Inc.
- ◆ Charter Oak Advisors, Inc.
- ◆ GF Management, Inc.
- ◆ L&B Realty Advisors
- ◆ Property Management, Inc.

#### Real Estate Fund Managers

- ◆ Almanac Realty Investors, LLC
- ◆ Angelo, Gordon & Co., LP
- ◆ Ares Management, LLC
- ◆ Avenue Capital Group
- ◆ Bell Partners, Inc.
- ◆ BlackRock Real Estate
- ◆ Blackstone Group, The
- ◆ Brookfield Asset Management, Inc.
- ◆ Cabot Properties, Inc.
- ◆ Carlyle Group, The
- ◆ C-III Capital Partners, LLC
- ◆ DRA Advisors, LLC
- ◆ Equus Capital Partners, LTD
- ◆ Exeter Property Group
- ◆ Fortress Investment Group
- ◆ LAI Real Estate Investors, LLC
- ◆ LaSalle Mortgage Real Estate Investors
- ◆ LEM Capital Partners, LP
- ◆ O'Connor Capital Partners
- ◆ Paramount Group, Inc.
- ◆ PGIM Real Estate
- ◆ RCG Longview Management, LLC
- ◆ Silverpeak Real Estate Partners
- ◆ Stockbridge Capital Partners
- ◆ Strategic Partners
- ◆ UBS Realty Investors, LLC

#### Farmland Advisor

- ◆ Prudential Agricultural Group

#### Venture Capital Fund Managers

- ◆ Adams Capital Management, Inc.
- ◆ Aisling Capital, LLC
- ◆ Cross-Atlantic Capital Partners
- ◆ Insight Venture Management, LLC
- ◆ KBL Healthcare
- ◆ Landmark Partners
- ◆ LLR Partners
- ◆ Mid-Atlantic Venture Funds
- ◆ Psilos Group Investors
- ◆ Quaker Bio-Ventures, Inc.
- ◆ Sante Ventures
- ◆ SCP Private Equity Partners
- ◆ StarVest Associates
- ◆ Sterling Partners
- ◆ Strategic Partners
- ◆ Summit Partners
- ◆ TDH, Inc.
- ◆ Tenaya Capital

#### Private Equity Fund Managers

- ◆ Actis LLP
- ◆ APAX Partners, LLP
- ◆ Bain Capital Partners, LLC
- ◆ Baring Private Equity Asia Limited
- ◆ Blue Point Capital Partners LLC
- ◆ Bridgepoint Capital Ltd
- ◆ Capital Group
- ◆ L Catterton Management Company LLC
- ◆ Cinven
- ◆ Collier Investment Management LTD
- ◆ Crestview Advisors LLC
- ◆ CVC Capital Partners Group
- ◆ Denham Capital
- ◆ EagleTree Capital
- ◆ The Energy & Minerals Group
- ◆ Equistone Partners Europe Limited
- ◆ Evergreen Pacific Partners GP LLC
- ◆ First Reserve Corporation
- ◆ GoldPoint Partners LLC
- ◆ HgCapital
- ◆ Huntsman Gay Global Capital LLC
- ◆ Incline Management Corp.
- ◆ IPC Advisors
- ◆ K4 Capital Advisors
- ◆ Landmark Partners
- ◆ Milestone Partners
- ◆ Morgan Stanley
- ◆ New Mountain Investments
- ◆ NGP Energy Capital Management
- ◆ Odyssey Investment Partners LLC
- ◆ Orchid Asia
- ◆ PAI Europe
- ◆ Palladium Equity Partners
- ◆ Partners Group Mgmt VI LTD
- ◆ Permira

**Professional Consultants (Continued)**

- ◆ Platinum Equity Capital Partners
- ◆ Portfolio Advisors, LLC
- ◆ StepStone Group
- ◆ Sterling Partners
- ◆ Strategic Partners
- ◆ Trilantic Capital Management, LLC
- ◆ Webster Capital Management, LLC

**Risk Management System Provider**

- ◆ BlackRock Solutions

**Special Situations Fund Managers**

- ◆ Apollo Global Management, LLC
- ◆ Arrowhead Mezzanine
- ◆ Avenue Capital Group
- ◆ Black Diamond Capital Management, LLC
- ◆ Cerberus Capital Management, LP
- ◆ Clearlake Capital Group, LP
- ◆ Gold Hill Venture Lending 03, LLC
- ◆ GoldPoint Partners, LLC
- ◆ Oaktree Capital Management LP
- ◆ Searchlight Capital Partners, LP
- ◆ Tulco Management, LLC
- ◆ Venor Capital Management, LP
- ◆ Versa Capital Management, LLC
- ◆ Windjammer Capital Investors

**Custodian Bank**

- ◆ The Bank of New York Mellon Corporation

**Securities Lending Agent**

- ◆ Deutsche Bank AG

**Investment Accounting Application Service Provider**

- ◆ STP Investment Services, LLC

**Proxy Voting Agent**

- ◆ Glass, Lewis & Co., LLC

**Investment Evaluator and General Investment Consultant**

- ◆ Aon Investment Consulting

**Private Markets Investment Consultant**

- ◆ Hamilton Lane Advisors, LLC

**Real Estate Investment Consultant**

- ◆ Hamilton Lane Advisors, LLC

**Absolute Return & Risk Parity Consultant**

- ◆ Aksia, LLC



## Current Staff-Bureau of Benefits Administration(BOA)

### BOA-Member Account Division



### BOA-Benefits & Exceptions Division

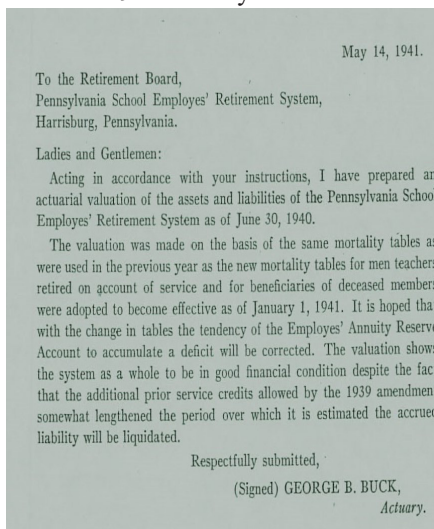


# ACTUARIAL SECTION

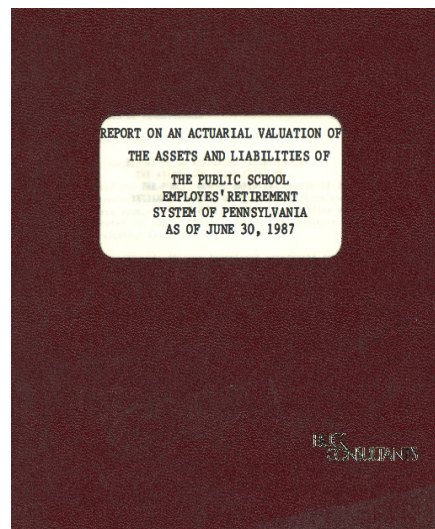
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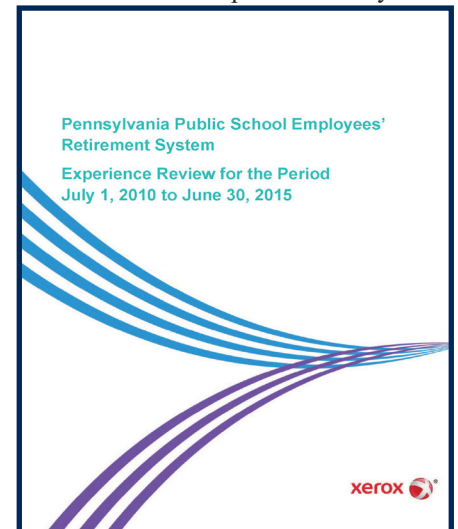
1941 Actuary's Letter



1987 Actuarial Valuation



2010-2015 Experience Study







May 31, 2019

Board of Trustees  
Pennsylvania Public School Employees' Retirement System  
5 North 5th Street  
Harrisburg, Pennsylvania 17101-1905

**Re: Actuary's Certification Letter**

Members of the Board:

An actuarial valuation of the Pennsylvania Public School Employees' Retirement System (Retirement System or PSERS) is performed annually to measure the ongoing costs and progress towards the funding goals of the Retirement System over time. The most recent actuarial valuation was completed as of June 30, 2018. The financing objective of the Retirement System is to:

- Fully fund all current costs based on the normal contribution rate determined under the funding method,
- Liquidate the unfunded accrued liability based on level percentage of pay amortization schedules required by the Public School Employees' Retirement Code, 24 Pa. C.S. §8101 et. seq. (Retirement Code) as amended by Act 120 of 2010, which requires amortization over 24 years of the unfunded accrued liability as of June 30, 2010, and of each change in the unfunded accrued liability due to actuarial experience after the June 30, 2010 valuation. Any increases in the unfunded liability arising from legislation enacted after June 30, 2010, are to be amortized over 10 years; and
- As directed by Act 5 of 2017, contribute 2.25% of pay for future Class T-G members and 2.00% for future Class T-H members and DC only participants to the School Employees' Defined Contribution Plan (Act 5 DC contributions).

The contribution policy of the Retirement System is set by statute. The Commonwealth's General Assembly has the authority to amend the benefit terms and funding policy for the System by passing bills in the Senate and House of Representatives and sending them to the Governor for approval.

Based on the June 30, 2018 actuarial valuation, a total contribution rate of 34.29% (33.36% Pension plus 0.84% Premium Assistance and 0.09% for Act 5 DC contributions) of payroll payable by employers for FY2019/2020, when taken together with the contributions payable by the members, current assets, and expected future asset returns, is sufficient to achieve the financing objective. The Act 120 minimum employer pension rate is the employer pension normal cost rate of 7.49%.

As required by the Retirement Code, the valuation takes into account all of the promised benefits to which members are entitled as of June 30, 2018, including pension and survivor benefits, as the basis for the pension contribution rate for fiscal year 2019/2020.

Act 5 of 2017 was passed in June of 2017. Under this legislation, effective immediately, Class T-E and Class T-F members became eligible to elect a cost neutral Option 4 lump sum distribution of all or a portion of the member's accumulated contributions at retirement.

Act 5 of 2017 restricted the actuarial value of assets to be no less than 70% and no more than 130% of the market value of assets. This modification had no effect on the System's unfunded accrued liability developed in the June 30, 2018 valuation.



There were no other legislative or administrative changes made to the benefits payable by PSERS since the prior valuation.

As required under Section 8502(j) of the Retirement Code, experience studies are performed for PSERS every five years, the most recent having been made as of June 30, 2015. This valuation was prepared on the basis of the demographic and economic assumptions that were recommended on the basis of the July 1, 2010 – June 30, 2015 Experience Review and approved by the Board of Trustees at its June 10, 2016 meeting, which includes a 7.25% per annum rate of investment return.

In our opinion, the actuarial assumptions used for funding purposes are reasonably related to the experience of the System and to reasonable long-term expectations. These assumptions were selected in accordance with applicable Actuarial Standards of Practice published by the Actuarial Standards Board.

The actuarial assumptions and methods used by PSERS for financial reporting meet the requirements set forth in Governmental Accounting Standards Board (GASB) Statement No. 67. The Health Insurance funding provisions of the Retirement Code differ from the GASB 74 disclosure requirements. For funding purposes, the actuarial liability equals the assets in the health insurance account, and a contribution is determined to provide for solvency of the account through the third fiscal year following the valuation date. For GASB 74 purposes the Health Insurance actuarial liability and normal cost requirements are determined under the entry age actuarial cost method. The entry age actuarial cost method meets the GASB 74 requirements for determining actuarial liability and normal cost and is the cost method specified by the Retirement Code for the PSERS pension plan.

The Retirement System reported the individual data for members of the Retirement System as of the valuation date to the actuaries. While we did not verify the data at their source, we did perform tests for internal consistency and reasonableness. The amount of assets in the trust fund taken into account in the valuation was based on statements prepared for us by the Retirement System. The accuracy of the results presented in this report is dependent on the accuracy of the data.

Future actuarial measurements may differ significantly from current measurements due to plan experience differing from that anticipated by the economic and demographic assumptions, increases or decreases expected as part of the natural operation of the methodology used for these measurements, and changes in plan provisions or applicable law. An analysis of the potential range of future results is beyond the scope of this valuation.

In our opinion, the attached schedules of valuation results fairly represent the status of the Public School Employees' Retirement System and present an accurate view of historical data. The underlying assumptions and methods used for both funding and GASB disclosure purposes are consistent with the statutory specifications and represent a best estimate of the aggregate future experience of the Retirement System.

The following supporting schedules in the Actuarial Section were prepared by Buck Global, LLC:

- Summary of Results of Actuarial Valuation as of June 30, 2018
- History of Contribution Rates and Funded Ratios
- Description of Actuarial Assumptions and Methods
- Schedule of Active Members Valuation Data
- Schedule of Retired Members and Beneficiaries Added To and Removed From Rolls
- Solvency Test
- Schedule of Funding Progress for Pensions
- Analysis of Past Financial Experience — Reconciliation of Employer Contribution Rates



In addition, Buck Global, LLC (Buck), prepared the “Schedule of Changes in the Employer Net Pension Liability,” “Schedule of Employer Net Pension Liability,” “Schedule of Employer Pension Contributions”, “Schedule of Changes in the Employer Net OPEB (Premium Assistance) Liability”, “Schedule of Employer Net OPEB (Premium Assistance) Liability”, “Schedule of Employer OPEB (Premium Assistance) Contributions”, and the “Schedule of Funding Progress” in the Financial Section.

This report was prepared solely for the Pennsylvania Public School Employees’ Retirement System for the purposes herein stated and may not be appropriate to use for other purposes. Buck does not intend to benefit and assumes no duty or liability to other parties who receive this work. Use of this report for any other purposes or by anyone other than PSERS and its auditors may not be appropriate and may result in mistaken conclusions because of failure to understand applicable assumptions, methods, or inapplicability of the report for that purpose. The attached pages should not be provided without a copy of this cover letter. Buck should be asked to review any statement to be made on basis of the results contained in this report. Buck will accept no liability for any such statement made without prior review by Buck.

David L. Driscoll is a Fellow of the Society of Actuaries and a Member of the American Academy of Actuaries. Edward Quinn and Salvador Nakar are Members of the American Academy of Actuaries. We meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein. This report has been prepared in accordance with all applicable Actuarial Standards of Practice, and we are available to answer questions concerning it.

Respectfully submitted,

A handwritten signature in black ink that reads "David L. Driscoll".

David L. Driscoll, FSA, EA,MAAA, FCA  
Principal, Consulting Actuary

A handwritten signature in black ink that reads "Edward Quinn".

Edward A. Quinn, EA, MAAA, FCA  
Director, Retirement Actuary

A handwritten signature in black ink that reads "Salvador Nakar".

Salvador Nakar, EA, MAAA, FCA  
Senior Consultant, Actuary



**SUMMARY OF RESULTS OF ACTUARIAL VALUATION**  
**AS OF JUNE 30, 2018**  
**(\$ Amounts in Thousands)**

Item	June 30, 2018	June 30, 2017
<b>Member Data</b>		
1. Number of Members		
a) Active Members	256,362	255,945
b) Vestees <sup>1</sup>	25,117	24,515
c) Annuitants, Beneficiaries and Survivor Annuitants <sup>2</sup>	233,288	230,014
d) Total	514,767	510,474
2. Annualized Salaries <sup>3</sup>	\$ 13,379,041	\$ 13,033,919
3. Annual Annuities	\$ 5,926,658	\$ 5,816,388
<b>Valuation Results</b>		
4. Present Value of Future Pension Benefits		
a) Active Members	\$ 63,249,952	\$ 62,725,773
b) Inactive Members and Vestees	2,092,376	1,944,846
c) Annuitants, Beneficiaries and Survivor Annuitants	56,742,925	56,184,146
d) Total	\$ 122,085,253	\$ 120,854,765
5. Present Value of Future Pension Normal Cost		
a) Active Members	\$ 10,008,621	\$ 9,849,017
b) Employer	9,085,724	9,156,931
c) Total	\$ 19,094,345	\$ 19,005,948
6. Pension Accrued Liability		
a) Active Members (4a) - (5c)	\$ 44,155,607	\$ 43,719,825
b) Inactive Members and Vestees	2,092,376	1,944,846
c) Annuitants, Beneficiaries and Survivor Annuitants	56,742,925	56,184,146
d) Total	\$ 102,990,908	\$ 101,848,817
7. Health Insurance Assets for Premium Assistance	\$ 122,734	\$ 123,743
8. Total Accrued Liability for Funding (6) + (7)	\$ 103,113,642	\$ 101,972,560
9. Actuarial Value of Assets	\$ 58,258,273	\$ 57,460,599
10. Funded Status (9) / (8)	56.5%	56.3%
11. Unfunded Accrued Liability (8) - (9)	\$ 44,855,369	\$ 44,511,961
12. Total Normal Cost Rate	15.08%	15.16%
13. Member Contribution Rate	7.59%	7.57%
14. Employer Normal Cost Rate (12) - (13)	7.49%	7.59%
<b>Employer Annual Funding Requirement</b>		
15. Employer Contribution Rate Calculated by Actuary	<b>Fiscal 2019/2020</b>	<b>Fiscal 2018/2019</b>
a) Normal Cost	7.49%	7.59%
b) Unfunded Accrued Liability	25.87	25.01
c) Preliminary Pension Rate	33.36%	32.60%
d) Health Insurance	0.84	0.83
e) Act 5 DC <sup>4</sup>	0.09	N/A
f) Total Rate <sup>5</sup> = (15c) + (15d) + (15e)	34.29%	33.43%

- Excludes 127,136 and 123,574 inactive members and non-members as of June 30, 2018 and June 30, 2017, respectively, who are no longer participating and are valued for their accumulated deductions only.
- Excludes 1,752 and 2,141 beneficiaries as of June 30, 2018 and June 30, 2017, respectively, who are only entitled to a pending lump sum distribution.
- The salaries shown represent an annual rate of pay for members who were in active service on the valuation date.
- Average DC contribution rate. Actual rate will vary by employer.
- The Act 120 minimum pension rate for the June 30, 2018 valuation is 7.49% and for the June 30, 2017 valuation is 7.59%.

## HISTORY OF CONTRIBUTION RATES AND FUNDED RATIOS

Fiscal Year Ending June	Budgeted Total Employer Payroll (thousands)	Contribution Rates <sup>1</sup>								Funded Ratio
		Employee	Employer Normal Cost	Employer Unfunded Liability	Preliminary Employer Pension	Final Employer Pension <sup>2</sup>	Act 5 Employer DC <sup>7</sup>	Employer Health Insurance	Total Employer	
2009	\$ 12,500,000	7.29%	6.68%	(3.37)%	3.31%	4.00%		0.76%	4.76%	79.2%
2010 <sup>3</sup>	12,899,000	7.32	7.35	(3.72)	3.63	4.00		0.78	4.78	75.1
2011 <sup>3,4</sup>	13,510,000	7.34	8.08	(0.50)	7.58	5.00		0.64	5.64	69.1
2012	14,112,000	7.37	8.12	10.15	18.27	8.00		0.65	8.65	66.4
2013 <sup>5</sup>	14,297,000	7.40	8.66	12.99	21.65	11.50		0.86	12.36	63.8
2014	13,720,000	7.43	8.57	15.25	23.82	16.00		0.93	16.93	62.0
2015	13,482,000	7.46	8.46	17.51	25.97	20.50		0.90	21.40	60.6
2016	13,375,000	7.49	8.38	19.44	27.82	25.00		0.84	25.84	57.3
2017	13,549,000	7.52	8.31	20.89	29.20	29.20		0.83	30.03	56.3
2018 <sup>6</sup>	13,449,000	7.54	7.70	24.04	31.74	31.74		0.83	32.57	56.5
2019	13,775,000	7.57	7.59	25.01	32.60	32.60		0.83	33.43	*
2020	13,880,000	7.59	7.49	25.87	33.36	33.36	0.09%	0.84	34.29	*

1. In general, the Preliminary Employer Pension Rate equals the sum of the rates for the Employer Normal Cost and the Unfunded Liability; and the Final Employer Pension Rate is the greater of the Preliminary Pension Rate and any Pension Rate Floor or Collar stated in the Retirement Code. The Total Employer Rate is the sum of the Final Employer Pension Rate, Act 5 Employer DC Rate and the Employer Health Insurance Rate.

2. The Final Employer Pension rate is limited by the Act 120 of 2010 pension rate collars for fiscal years 2012 through 2016.

3. At its January 2009 meeting, the Board voted to reduce the interest rate from 8.50% to 8.25% for the June 30, 2008 valuation and to 8.00% for subsequent valuations.

4. Act 46 of 2010 recertified the fiscal year ended June 30, 2011 pension rate from 7.58% to 5.00%.

5. Revised actuarial assumptions based on a five-year experience review ended June 30, 2010 were used to determine the contributions for the fiscal year ending June 30, 2013 and thereafter, which include an interest rate of 7.50%.

6. Revised actuarial assumptions based on a five-year experience review ended June 30, 2015 were used to determine the contributions for the fiscal year ending June 30, 2018 and thereafter, which include an interest rate of 7.25%.

7. It is assumed that new members through June 30, 2019 are Class T-E members and after June 30, 2019, it is assumed that 65% of new members elect Class T-G membership, 30% elect Class T-H membership and 5% elect DC Only participation under Act 5. In addition, the above rate is an average DC contribution rate. Actual rate will vary by employer.

\* Not Available

## DESCRIPTION OF ACTUARIAL ASSUMPTIONS AND METHODS

### ASSUMPTIONS

**Investment Rate of Return:** 7.25% per annum, compounded annually (adopted as of June 30, 2016). The components are 2.75% for inflation and 4.50% for the real rate of return. Actuarial equivalent benefits are determined based on an interest rate of 4% per year (since 1960) except, in accordance with Act 5 of 2017, an interest rate of 7.25% per year is used for Class T-E and Class T-F members' Option 4 partial withdrawal of accumulated member contributions.

**Discount Rate for GASB 67 Accounting:** 7.25% as of June 30, 2016 and June 30, 2017. Rates were determined in accordance with the methods prescribed in GASB Statement No. 67.

**Discount Rate for GASB 74 Accounting:** 2.71% as of June 30, 2016 and 3.13% as of June 30, 2017. This rate represents the S&P 20-Year Municipal Bond Rate. Rates were determined in accordance with the methods prescribed in GASB Statement No. 74.

**Separation from Service:** Illustrative rates of assumed separation from service are shown in the following table (adopted as of June 30, 2016).

Age	Annual Rate of:						
	Withdrawal Less Than 5 Years of Service	Withdrawal		Death <sup>1</sup>	Disability	Early Retirement <sup>2</sup>	Superannuation Retirement
		Between 5 and 10 Years of Service	10 or More Years of Service				
MALES							
25	14.85%	5.70%	2.57%	0.041%	0.020%		19.16%
30	12.74	3.37	2.57	0.039	0.020		
35	13.39	3.21	1.50	0.044	0.058		
40	14.49	3.97	1.34	0.050	0.116		
45	14.42	4.53	1.37	0.084	0.160		
50	14.31	4.45	1.92	0.138	0.284	18.57%	19.16
55	12.17	4.43	3.38	0.233	0.442		26.59
60	12.43	5.58	5.57	0.379	0.582		30.87
65				0.700	0.087		21.39
69				1.067	0.135		19.34
FEMALES							
25	13.41%	7.47%	5.02%	0.013%	0.018%		15.00%
30	13.81	6.05	4.02	0.017	0.023		
35	14.22	5.53	2.85	0.024	0.055		
40	11.79	4.87	1.60	0.032	0.096		
45	11.54	4.51	1.65	0.051	0.135		
50	11.66	4.43	2.06	0.088	0.229	18.59%	15.00
55	11.75	4.38	3.11	0.133	0.368		10.02
60	12.25	5.97	6.40	0.196	0.360		35.77
65				0.327	0.082		22.23
69				0.443	0.115		22.79

- These base mortality tables will then be projected on a generational basis using the Buck Modified 2015 projection scale from 2013 to the valuation date and thereafter.
- Early Retirement – Age 55 with 25 years of service, but not eligible for Superannuation retirement.

## DESCRIPTION OF ACTUARIAL ASSUMPTIONS AND METHODS

(Continued)

### Death after Retirement:

Male annuitants: RP-2014 male mortality table adjusted backward to 2006 with the MP-2014 improvement scale and projected to the valuation date with the Buck Modified 2015 projection scale.

Female Annuitants: RP-2014 female mortality table adjusted backward to 2006 with the MP-2014 mortality improvement scale, projected to 2013 with the Buck Modified 2015 projection scale adjusted for credibility. This base mortality table will then be projected on a generational basis using the Buck Modified 2015 projection scale from 2013 to the valuation date.

Disabled annuitants: RP-2014 male and female disabled mortality tables adjusted backward to 2006 with the MP-2014 mortality improvement scale and projected from 2013 to the valuation date with the Buck Modified 2015 projection scale.

The above base mortality tables are projected on a fully generational basis using the Buck Modified 2015 projection scale from the valuation date.

For determination of actuarial equivalence, a unisex table based on the above base tables, with weightings of 25% of male and 75% of female mortality probabilities, is utilized. This table is then projected on a generational basis to 2020 using the Buck Modified 2015 projection scale.

**Salary Increase:** Effective average of 5.00% per annum, compounded annually (adopted as of June 30, 2016). The components are 2.75% for inflation, and 2.25% for real wage growth and merit or seniority increases. Representative values are as follows:

Age	Annual Rate of Salary Increase
20	10.25%
30	7.75
40	5.75
50	3.75
55	3.25
60	3.25
65	3.25
70	3.25

**Payroll Growth:** A 3.50% per annum payroll growth assumption is used to liquidate the unfunded accrued liability based on level-percent-of-pay amortization schedules required by the Retirement Code as amended by Act 120 of 2010 and Act 5 of 2017, i.e., a schedule of 24 years for the unfunded accrued liability as of June 30, 2010 and each change in the unfunded accrued liability due to actuarial experience after the June 30, 2010 valuation.

Any legislation after June 30, 2010 that increases the liability due to benefit enhancements will be funded over 10 years based on level-percent-of-pay amortization.

### MISCELLANEOUS

#### Annuity Optional Forms Assumption for Retiring Active Members:

- 50% will elect Maximum Straight Life Annuity (MSLA)
- 20% will elect OPTION 1 (Straight life annuity with guaranteed payments equal to present value of MSLA)
- 20% will elect OPTION 2 (100% Joint and Survivor with males 3 years older than females)
- 10% will elect OPTION 3 (50% Joint and Survivor with males 3 years older than females)
- 0% will elect OPTION 4 annuity

**Option 4 Lump Sum Elections:** 80% of Class T-C, Class T-D, Class T-E and Class T-F members are assumed to elect a refund of contributions and a reduced annuity.

**Withdrawal Annuity:** 90% of members are assumed to commence payment immediately and 10% are assumed to defer payment to superannuation age.

#### Health Insurance:

Elections: 63% of eligible retirees are assumed to elect premium assistance.

Administrative Expenses: Assumed equal to \$1,954,000 for fiscal year 2018/2019, \$1,967,000 for fiscal year 2019/2020 and \$2,065,000 for Fiscal year 2020/2021.

#### Summary of Changes since the June 30, 2017 Valuation:

It has been assumed that, among new school employees hired on or after July 1, 2019, 65% will become Class T-G members, 30% will elect Class T-H membership, and 5% will elect Class DC participation. These are the same assumptions used in the development of the Cost Note (published May 23, 2017) for the passage of Act 5 of 2017.

Assumed administrative expenses for the Premium Assistance Plan changed from 2% of the contributions made to the trust for premium assistance for fiscal year 2017/2018 and prior to the amounts shown above for fiscal years 2018/2019 to 2020/2021.

### METHODS

**Calculations:** The actuarial calculations were performed by qualified actuaries in accordance with accepted actuarial procedures, based on the current provisions of the retirement system, and on actuarial assumptions that are internally consistent and reasonable based on the actual experience of the System.

## DESCRIPTION OF ACTUARIAL ASSUMPTIONS AND METHODS

### (Continued)

**Asset Valuation Method:** A ten-year moving market average (five-year moving market average prior to June 30, 2010) value of assets that recognizes the 7.25% (7.50% prior to June 30, 2016, 8.25% prior to June 30, 2009, and 8.50% prior to June 30, 2008) actuarial expected investment return immediately and spreads the difference between the actual return on the market value of assets and the expected return on the actuarial value of assets over a period of ten years. The actuarial value of assets can be no less than 70% and no more than 130% of the market value of assets.

**Actuarial Cost Method for Pension Funding:** Entry Age Normal Cost Method (modified slightly as of June 30, 2005 to use a pay-weighted average normal contribution rate). The results of each June 30 valuation normally determine the employer contribution rate for the second succeeding fiscal year. Act 120 revised the funding method effective with the June 30, 2010 valuation. Act 120 mandated that the outstanding balance of the unfunded accrued liability as of June 30, 2010, including changes in the unfunded accrued liability due to the funding reforms of Act 120, be amortized over a 24-year period, as a level percent of pay, beginning July 1, 2011. Future valuation gains and losses, and changes in the unfunded accrued liability resulting from changes in actuarial assumptions and methods, are amortized over a 24-year period, as a level percent of pay. As provided by Act 5 of 2017, future increases in the unfunded accrued liability due to benefit enhancement legislation will be amortized over 10-year periods, as a level percent of pay. Act 120 also modified the employer pension contribution requirements by imposing collars on the rate for fiscal years ending June 30, 2012, June 30, 2013, and on or after June 30, 2014; the pension contribution rate was limited to 3%, 3.5% and 4.5%, respectively, of total compensation of all active members, greater than the prior year's final contribution rate. Beginning with the fiscal year ending

June 30, 2017, the actuarially required contribution rate was less than the collared rate and the final contribution rate was the actuarially determined contribution rate. However, as provided by Act 120 of 2010, the final contribution rate cannot be less than the employer normal contribution rate.

**Actuarial Cost Method for Health Insurance Funding:**

The actuarial liability equals the assets in the health insurance account, and the results of the June 30 valuation determine the contribution rate for the second succeeding fiscal year. The rate so determined is the rate necessary to establish reserves sufficient to cover administrative expenses and provide premium assistance payments for all participating eligible annuitants during the third fiscal year that follows the valuation date.

**Actuarial Cost Method for GASB 74 Accounting for Health Insurance:** The actuarial liability and service cost are determined under the entry age actuarial cost method.

**Summary of Changes since the June 30, 2017 Valuation:** None.

### DATA

**Census and Assets:** The valuation was based on members of the Retirement System as of June 30, 2018 and does not take into account future members. All census data was supplied by the Retirement System and was subject to reasonable consistency checks. The actuaries adjust the data to account for service and pay earned by members on or before the valuation that is not reported by the Retirement System until after the actuarial valuation is performed. Asset data was supplied by the Retirement System.

## SCHEDULE OF ACTIVE MEMBERS VALUATION DATA

Valuation as of June 30	Number of Participating Employers	Number of Active Members	Annual Compensation (Thousands)	Average Compensation	% Increase in Average
2018	775	256,362	\$ 13,379,041	\$ 52,188	2.48%
2017	775	255,945	13,033,919	50,924	1.87
2016	781	257,080	12,851,289	49,989	2.46
2015	784	259,868	12,678,213	48,787	1.79
2014	784	263,312	12,620,862	47,931	1.92
2013	782	267,428	12,577,105	47,030	1.17
2012	773	273,504	12,714,371	46,487	0.52
2011	747	279,152	12,910,043	46,247	1.99
2010	747	282,041	12,788,847	45,344	1.26
2009	742	279,701	12,524,593	44,779	2.43



**SCHEDULE OF RETIRED MEMBERS AND BENEFICIARIES  
ADDED TO AND REMOVED FROM ROLLS**

Valuation Date as of June 30	Added to Rols		Removed from Rols		Rols at End of Year		% Increase in Annual Allowance	Average Annual Allowance
	Number	Annual Allowance (Millions)	Number	Annual Allowance (Millions)	Number	Annual Allowance <sup>1</sup> (Millions)		
2018	11,806	\$ 274.2	8,532	\$ 98.6	233,288	\$ 5,926.7	1.90%	\$ 25,405
2017	12,876	274.2	7,690	102.1	230,014	5,816.4	2.65	25,287
2016	12,686	267.1	7,633	93.5	224,828	5,666.4	2.64	25,203
2015	15,017	297.3	9,142	91.7	219,775	5,520.6	3.39	25,119
2014	15,225	300.5	8,878	84.9	213,900	5,339.5	3.74	24,962
2013	16,404	377.6	10,866	83.7	207,553	5,147.1	5.63	24,800
2012	14,579	332.7	7,186	66.6	202,015	4,872.9	4.78	24,122
2011	16,228	453.7	6,540	76.4	194,622	4,650.8	7.17	23,897
2010	12,649	372.8	5,678	77.6	184,934	4,339.6	8.59	23,466
2009	9,651	314.9	5,228	74.4	177,963	3,996.3	4.85	22,456

1. Reflects changes in annuities for continuing payees due to finalization of benefit calculations and due to the commencement of supplemental annuity payments.

**POSTEMPLOYMENT BENEFITS OTHER THAN PENSIONS  
SCHEDULE OF RETIRED MEMBERS ADDED TO AND REMOVED FROM ROLLS**

Valuation Date as of June 30	Added to Rols		Removed from Rols		Rols at End of Year		% Increase in Annual Premium Assistance	Average Annual Premium Assistance
	Number <sup>2</sup>	Annual Premium Assistance (Millions)	Number <sup>2</sup>	Annual Premium Assistance (Millions)	Number <sup>2</sup>	Annual Premium Assistance (Millions)		
2018	5,501	\$ 4.2	3,770	\$ 2.9	149,242	\$ 112.8	1.17%	\$ 1,200
2017	5,821	4.4	3,806	2.9	147,511	111.5	1.36	1,200
2016	5,758	4.4	3,516	2.7	145,496	110.0	0.00	1,200
2015	6,516	5.0	3,635	2.8	143,254	110.0	0.46	1,200
2014	4,969	3.9	2,289	1.8	140,373	109.5	0.37	1,200
2013	6,759	5.4	2,364	1.9	137,693	109.1	3.31	1,200
2012	5,751	4.6	1,372	1.1	133,298	105.6	3.43	1,200
2011	8,185	6.5	2,074	1.6	128,919	102.1	4.93	1,200
2010	6,709	5.3	2,323	1.8	122,808	97.3	3.73	1,200
2009	6,285	5.0	3,079	2.4	118,422	93.8	2.74	1,200

2. Number of retired members eligible to participate in the Health Insurance Premium Assistance; 63% of eligible retirees are assumed to elect premium assistance as of June 30, 2016 to June 30, 2018; 64% of eligible retirees are assumed to elect premium assistance as of June 30, 2015; 65% of eligible retirees are assumed to elect premium assistance as of June 30, 2014; 66% of eligible retirees are assumed to elect premium assistance for the periods June 30, 2007 to June 30, 2013.

**SOLVENCY TEST FOR PENSIONS**  
**COMPARATIVE SUMMARY OF ACCRUED LIABILITY AND**  
**ACTUARIAL VALUE OF ASSETS**  
**(\$ Amounts in Thousands)**

Valuation as of June 30	Accrued Liabilities for			Actuarial Value of Assets	Portion of Accrued Liability Covered by Valuation Assets		
	(1) Active Member Contributions	(2) Retirees and Beneficiaries	(3) Active Member Employer Financed		(1)	(2)	(3)
2018	\$ 16,120,538	\$ 56,742,925	\$ 30,127,445	\$ 58,135,539	100%	74%	0%
2017	15,500,215	56,184,146	30,164,456	57,336,856	100	74	0
2016	14,907,731	55,314,858	29,766,812	57,265,506	100	77	0
2015	14,079,658	52,739,489	27,757,563	57,240,946	100	82	0
2014	13,554,229	51,425,295	27,373,459	57,231,799	100	85	0
2013	13,089,342	49,979,444	26,883,030	57,353,262	100	89	0
2012	12,535,442	47,511,912	27,713,306	58,227,622	100	96	0
2011	12,242,308	45,648,780	27,749,295	59,141,131	100	100	5
2010	11,850,031	40,284,383	26,871,014	59,306,848	100	100	27
2009	11,087,345	37,112,318	27,321,073	59,781,575	100	100	42

**SCHEDULE OF FUNDING PROGRESS FOR PENSIONS<sup>1</sup>**  
**(\$ Amounts in Thousands)**

Valuation as of June 30	Actuarial Value of Assets	Actuarial Accrued Liability	Unfunded Actuarial Accrued Liability	Funded Ratio	Covered Payroll	Unfunded Accrued Liability as a Percentage of Covered Payroll
2018	\$ 58,135,539	\$ 102,990,908	\$ 44,855,369	56.4%	\$ 13,379,041	335.3%
2017	57,336,856	101,848,817	44,511,961	56.3	13,033,919	341.5
2016	57,265,506	99,989,401	42,723,895	57.3	12,851,289	332.4
2015	57,240,946	94,576,710	37,335,764	60.5	12,678,213	294.5
2014	57,231,799	92,352,983	35,121,184	62.0	12,620,862	278.3
2013	57,353,262	89,951,816	32,598,554	63.8	12,577,105	259.2
2012	58,227,622	87,760,660	29,533,038	66.3	12,714,371	232.3
2011	59,141,131	85,640,383	26,499,252	69.1	12,910,043	205.3
2010	59,306,848	79,005,428	19,698,580	75.1	12,788,847	154.0
2009	59,781,575	75,520,736	15,739,161	79.2	12,524,593	125.7

1. The amounts reported include assets and liabilities for Pensions.

**ANALYSIS OF PAST FINANCIAL EXPERIENCE  
RECONCILIATION OF EMPLOYER CONTRIBUTION RATES**

<b>Fiscal Year Ending June 30</b>	<b>2020</b>	<b>2019</b>	<b>2018</b>	<b>2017</b>	<b>2016</b>	<b>2015</b>	<b>2014</b>	<b>2013</b>	<b>2012</b>	<b>2011</b>
Effective Prior Year Contribution Rate	33.43%	32.57%	30.03%	25.84%	21.40%	16.93%	12.36%	8.65%	5.64%	4.78%
Prior Year Adjustment for Legislation	N/A	N/A	N/A	2.82	5.47	7.82	10.15	10.27	2.58	(0.37)
<b>Net Change Due to:</b>										
Change in Normal Rate	(0.10)	(0.11)	(0.23)	(0.07)	(0.08)	(0.11)	(0.09)	(0.22)	0.04	0.00
Payroll Growth and Liability Experience	(0.12)	(0.17)	0.96	0.14	0.58	0.68	0.72	(0.21)	0.40	(0.03)
Investment Loss/(Gain)	0.98	1.22	1.08	0.83	0.66	0.81	0.78	0.59	1.94	2.04
Health Insurance Contribution Change	0.01	0.00	0.01	(0.01)	(0.06)	(0.03)	0.07	0.21	0.01	(0.14)
Assumption/Method Change	N/A	(0.08)	0.44	N/A	N/A	N/A	N/A	3.04	N/A	1.94
Act 120 Funding Reforms	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	8.31	N/A
Act 5 Benefit and Funding Reforms <sup>3</sup>	0.09	0.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Amortization of Prior Legislation Deferrals	0.00	0.00	0.28	0.48	0.69	0.77	0.76	0.18	N/A	N/A
<b>Legislation Deferrals:</b>										
Act 46 Rate Cap <sup>1</sup>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	(2.58)
Act 120 Collar <sup>2</sup>	N/A	N/A	N/A	N/A	(2.82)	(5.47)	(7.82)	(10.15)	(10.27)	N/A
Actual Contribution Rate:	34.29%	33.43%	32.57%	30.03%	25.84%	21.40%	16.93%	12.36%	8.65%	5.64%

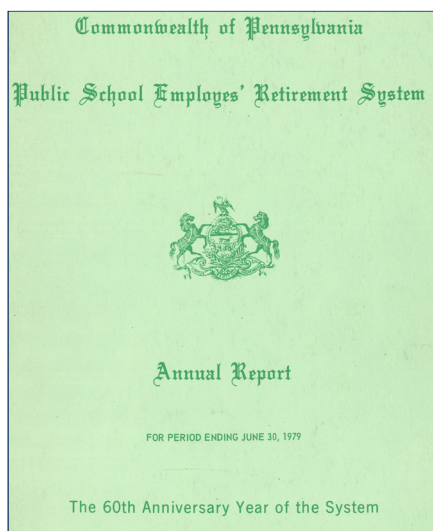
1. Act 46 of 2010 recertified the fiscal year ending June 30, 2011 pension rate from 7.58% to 5.00%.
2. The Final Employer Pension rate is limited by the Act 120 of 2010 pension rate collar. For the fiscal years ending June 30, 2012, June 30, 2013, and on or after June 30, 2014 the pension contribution rate can be no more than 3%, 3.5% and 4.5%, respectively, of total compensation of all active members, greater than the prior year's final contribution rate. Beginning with the fiscal year 2017, the actuarially required contribution rate is less than the collared rate and the final contribution rate is the actuarially determined contribution rate, provided that the final contribution rate is not less than the employer normal contribution rate.
3. Act 5 Defined Contribution rate. The above rate is an average DC contribution rate. Actual rate will vary by employer.

# STATISTICAL SECTION

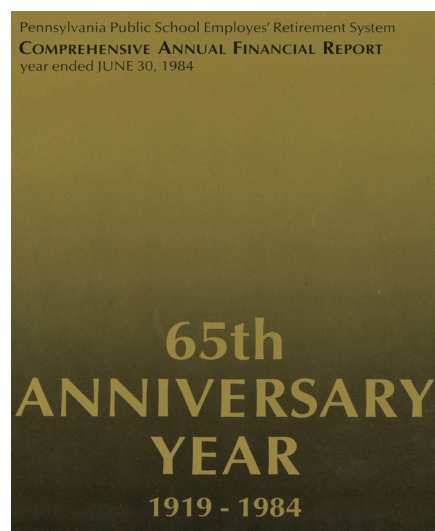
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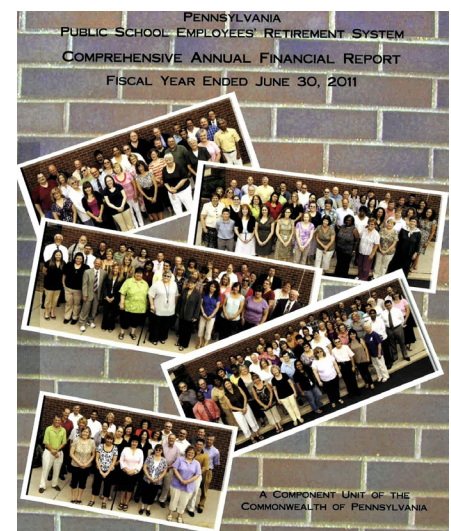
1979 CAFR Cover



1984 CAFR Cover



2011 CAFR Cover





## Current Staff-Information Technology Office (ITO)

### ITO-Bureau of Information Technology



### ITO-Business Architecture Center





## Statistical Section Narrative

To assist readers in the assessment of the System's economic condition, the Statistical Section of this Comprehensive Annual Financial Report presents information to add historical perspective, context, and detail to the financial statements, notes to financial statements, and required supplementary information presented in the preceding sections. To provide historical perspective and a sense of trend, the exhibits in this Section are presented in multiple-year formats. The information is categorized into three topical groups: *Financial Trends*, *Demographic and Economic Information*, and *Operating Information*.

### Financial Trends

The Financial Trend Schedules and Graphs provide detailed information to present how PSERS' financial position has changed over time.

The following Financial Trend Schedules are presented:

- Schedule of Trend Data
- Total Changes in Fiduciary Net Position - Pension
- Total Changes in Fiduciary Net Position - Postemployment Healthcare Plans

The following Financial Trend Graphs are presented:

- Additions to Fiduciary Net Position - Pension
- Additions to Fiduciary Net Position - Postemployment Healthcare Plans
- Deductions from Fiduciary Net Position - Pension
- Deductions from Fiduciary Net Position - Postemployment Healthcare Plans

### Demographic and Economic Information

Some of the following schedules listed are dependent upon an actuarial valuation. For those schedules, the most recent information is presented as of the year ended June 30, 2018, the date of PSERS' most current actuarial valuation completed at the time of publication.

- Summary Membership Data
- Summary Annuity Data
- Pension Benefit and Refund Deductions from Fiduciary Net Position
- Average Monthly Pension Benefit Payments
- Average Monthly Pension Benefit Payments and Average Final Average Salary
- Average Monthly Premium Assistance Benefit Payments and Average Final Average Salary

### Operating Information

- Ten Largest Employers
- Schedule of Employers

**Schedule of Trend Data**  
**10 Year**  
(Dollar Amounts in Thousands)\*

For years ended June 30	2019	2018	2017	2016	2015
Contribution Rates:					
Total Pension %	32.60	31.74	29.20	25.00	20.50
Health Care Insurance Premium Assistance %	.83	.83	.83	.84	.90
Total Employer %	33.43	32.57	30.03	25.84	21.40
Average Member %	7.57	7.54	7.52	7.49	7.46
Total Employer Contributions \$	4,602,349	4,361,597	3,943,758	3,302,817	2,713,539
Market Value of Assets \$***	58,859,000	56,486,000	53,279,000	49,957,000	51,706,000
Actuarial Value of Assets \$	**	58,258,000	57,461,000	57,390,000	57,362,000
Accrued Actuarial Liability \$	**	103,114,000	101,973,000	100,114,000	95,945,000
Actuarial Funded Ratio %	**	56.5	56.3	57.3	60.6
Total Benefits & Refunds \$	7,237,244	7,143,341	6,923,904	6,779,577	6,614,154
Average Pension \$ *	25,498	25,405	25,287	25,203	25,119
Annuityants & Beneficiaries	237,339	233,288	230,014	224,828	219,775
Average Annual Member Compensation \$ *	53,458	52,188	50,925	49,989	48,787
Active Members	255,749	256,362	255,945	257,080	259,868
Retirements	8,746	9,840	9,479	10,135	10,813

For years ended June 30	2014	2013	2012	2011	2010
Contribution Rates:					
Total Pension %	16.00	11.50	8.00	5.00	4.00
Health Care Insurance Premium Assistance %	.93	.86	.65	.64	.78
Total Employer %	16.93	12.36	8.65	5.64	4.78
Average Member %	7.43	7.40	7.37	7.34	7.32
Total Employer Contributions \$	2,109,952	1,555,078	1,085,927	747,753	638,034
Market Value of Assets \$***	53,092,000	49,116,000	48,628,000	51,311,000	45,715,000
Actuarial Value of Assets \$	57,344,000	57,454,000	58,321,000	59,252,000	59,424,000
Accrued Actuarial Liability \$	92,465,000	90,052,000	87,854,000	85,752,000	79,122,000
Actuarial Funded Ratio %	62.0	63.8	66.4	69.1	75.1
Total Benefits & Refunds \$	6,417,455	6,373,363	5,992,979	5,617,247	5,269,175
Average Pension \$ *	24,962	24,799	24,122	23,897	23,466
Annuityants & Beneficiaries	213,900	207,553	202,015	194,622	184,934
Average Annual Member Compensation \$ *	47,931	47,030	46,487	46,247	45,344
Active Members	263,312	267,428	273,504	279,152	282,041
Retirements	9,888	12,468	12,228	11,546	9,255

\* All dollar amounts are in thousands, except Average Annual Member Compensation and Average Pension.

\*\* Data for these categories relate to the actuarial valuation for fiscal year ended June 30, 2019. Results for this valuation were not available at publication date.

\*\*\* Excludes Health Options Program and Defined Contribution Plan.

**Total Changes in Fiduciary Net Position - Pension**  
**10 Year Trend**  
(Dollar Amounts in Thousands)

<b>Additions to Fiduciary Net Position</b>					
Year Ended June 30	Member Contributions	Employer Contributions	Net Investment Income	Total Additions	
2019	\$ 1,064,043	\$ 4,487,520	\$ 3,628,710	\$ 9,180,273	
2018	1,026,375	4,249,611	4,714,158	9,990,144	
2017	1,013,847	3,832,773	4,995,362	9,841,982	
2016	989,266	3,189,510	473,206	4,651,982	
2015	984,634	2,596,731	1,328,516	4,909,881	
2014	966,926	1,992,084	7,097,761	10,056,771	
2013	991,087	1,446,402	4,126,002	6,563,491	
2012	952,887	1,004,584	1,093,319	3,050,790	
2011	1,042,707	658,511	9,246,091	10,947,309	
2010	952,047	535,331	6,113,679	7,601,057	

<b>Deductions from Fiduciary Net Position</b>							
Year Ended June 30	Benefit Payments		Refunds of Contributions	Administrative*	Net Transfers**	Total Deductions	Net Increase / (Decrease)
	Annuities	Lump-Sums					
2019	\$ 5,925,048	\$ 808,016	\$ 27,027	\$ 48,931	\$ 1,081	\$ 6,810,103	\$ 2,370,170
2018	5,813,139	814,384	19,881	46,544	7,742	6,701,690	3,288,454
2017	5,673,309	780,015	20,928	45,127	(673)	6,518,706	3,323,276
2016	5,522,662	815,131	20,069	45,118	2,463	6,405,443	(1,753,461)
2015	5,356,085	840,167	20,920	42,331	3,429	6,262,932	(1,353,051)
2014	5,166,777	862,018	22,823	38,712	1,887	6,092,217	3,964,554
2013	4,905,200	1,111,692	24,461	37,480	2,893	6,081,726	481,765
2012	4,691,250	964,056	24,675	34,242	2,765	5,716,988	(2,666,198)
2011	4,322,520	958,703	17,695	37,028	9,844	5,345,790	5,601,519
2010	4,095,334	866,888	16,720	12,105	7,015	4,998,062	2,602,995

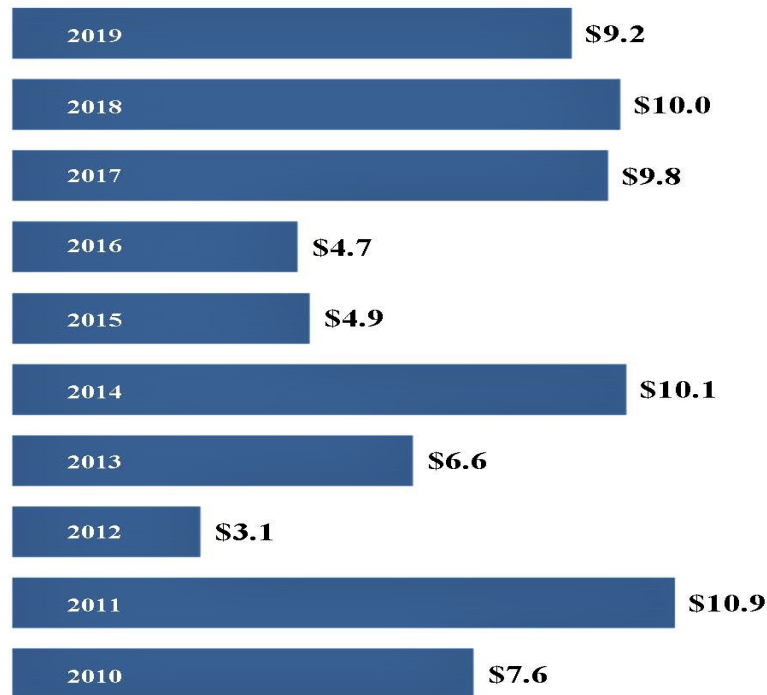
\* Reporting of administrative expenses for fiscal year ended June 30, 2010 includes effects of the capitalization of intangible assets as a result of PSERS' implementation of GASB Statement No. 51 *Accounting and Financial Reporting for Intangible Assets*.

\*\* Net transfers to the Commonwealth of Pennsylvania State Employees' Retirement System.

## Additions to Fiduciary Net Position - Pension

### 10 Year Trend

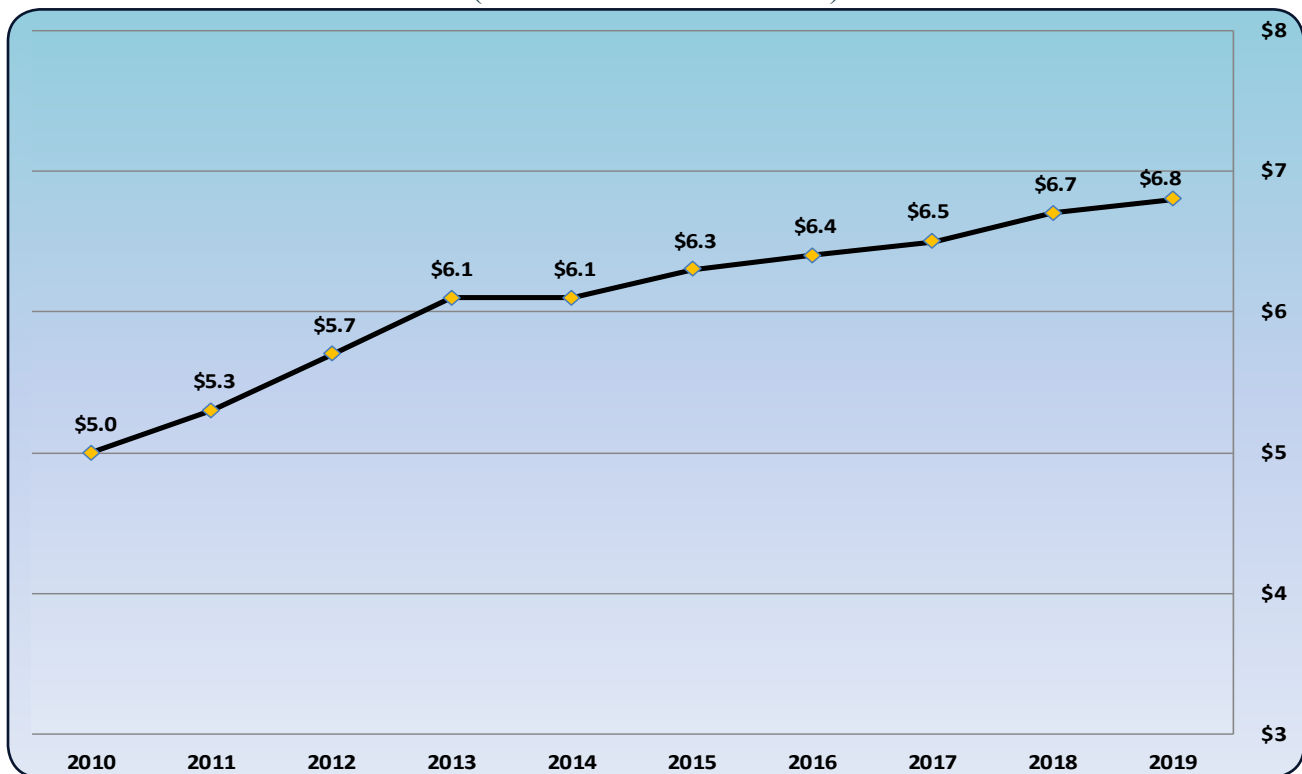
(Dollar Amounts in Billions)



## Deductions from Fiduciary Net Position - Pension

### 10 Year Trend

(Dollar Amounts in Billions)



## Total Changes in Fiduciary Net Position - Postemployment Healthcare Plans

### 10 Year Trend

(Dollar Amounts in Thousands)

#### Premium Assistance

Year Ended June 30	Additions to Fiduciary Net Position		
	Employer Contributions	Net Investment Income	Total Additions
2019	\$ 114,829	\$ 2,313	\$ 117,142
2018	111,986	1,455	113,441
2017	110,985	663	111,648
2016	113,307	542	113,849
2015	116,808	215	117,023
2014	117,868	70	117,938
2013	108,676	110	108,786
2012	81,343	423	81,766
2011	89,242	691	89,933
2010	102,703	869	103,572

Year Ended June 30	Deductions from Fiduciary Net Position			
	Benefits	Administrative	Total Deductions	Net Increase / (Decrease)
2019	\$ 112,777	\$ 1,914	\$ 114,691	\$ 2,451
2018	111,847	2,603	114,450	(1,009)
2017	110,229	2,239	112,468	(820)
2016	108,273	1,656	109,929	3,920
2015	106,298	2,142	108,440	8,583
2014	104,197	2,030	106,227	11,711
2013	100,078	2,112	102,190	6,596
2012	97,206	2,065	99,271	(17,505)
2011	93,518	1,988	95,506	(5,573)
2010	89,911	1,944	91,855	11,717



**Total Changes in Fiduciary Net Position - Postemployment Healthcare Plans**  
**10 Year Trend (continued)**  
(Dollar Amounts in Thousands)

**Health Options Program**

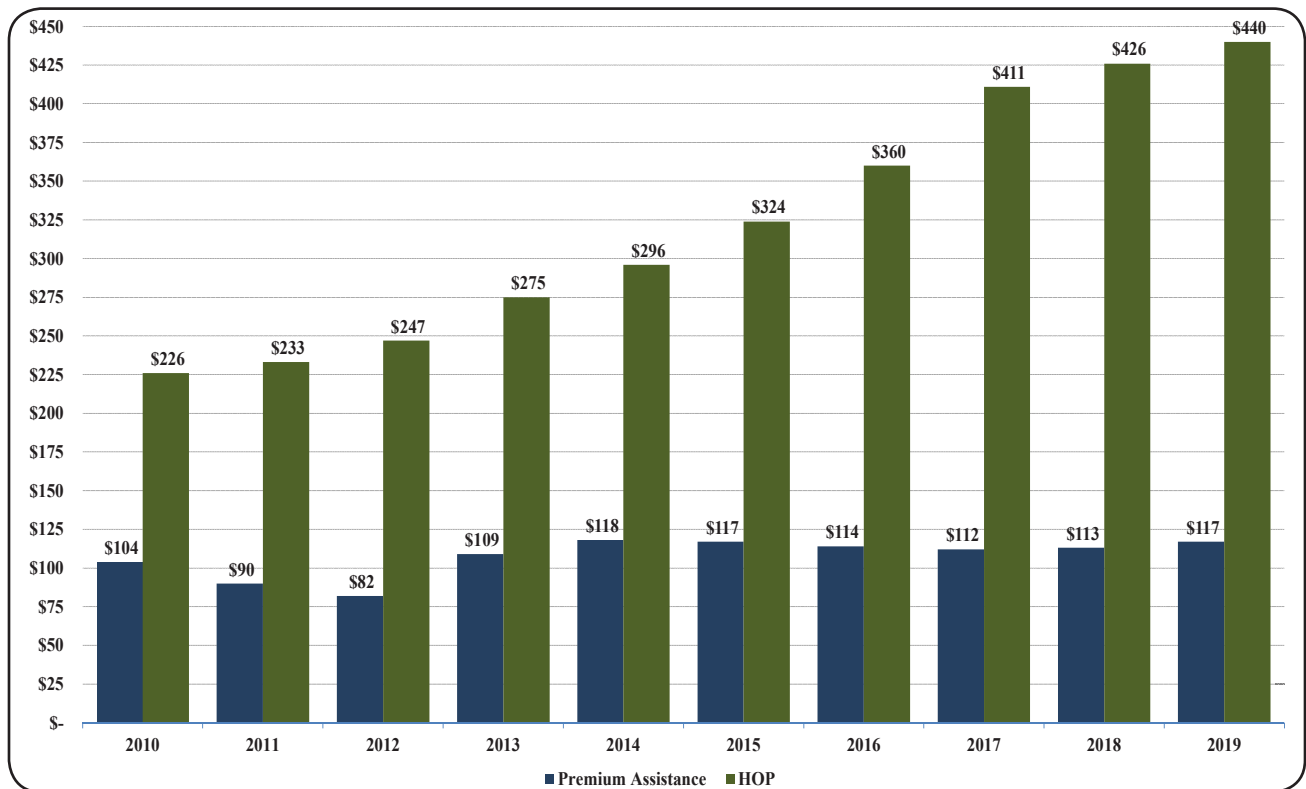
<b>Year Ended June 30</b>	<b>Additions to Fiduciary Net Position</b>			
	<b>Participant Premiums</b>	<b>CMS Contributions</b>	<b>Net Investment Income</b>	<b>Total Additions</b>
2019	\$ 376,449	\$ 60,379	\$ 3,654	\$ 440,482
2018	359,896	63,998	1,960	425,854
2017	336,646	73,771	678	411,095
2016	308,132	51,034	299	359,465
2015	281,855	42,436	152	324,443
2014	257,740	37,759	191	295,690
2013	234,516	40,698	226	275,440
2012	213,642	33,462	237	247,341
2011	201,014	32,080	310	233,404
2010	191,184	33,901	440	225,525

<b>Year Ended June 30</b>	<b>Deductions from Fiduciary Net Position</b>			<b>Net Increase / (Decrease)</b>
	<b>Benefits</b>	<b>Administrative</b>	<b>Total Deductions</b>	
2019	\$ 363,295	\$ 45,515	\$ 408,810	\$ 31,672
2018	376,348	41,853	418,201	7,653
2017	340,096	37,071	377,167	33,928
2016	310,979	33,457	344,436	15,029
2015	287,255	28,027	315,282	9,161
2014	259,753	25,975	285,728	9,962
2013	229,039	22,644	251,683	23,757
2012	213,027	20,213	233,240	14,101
2011	214,967	18,729	233,696	(292)
2010	193,307	16,443	209,750	15,775

## Additions to Fiduciary Net Position - Postemployment Healthcare Plans

### 10 Year Trend

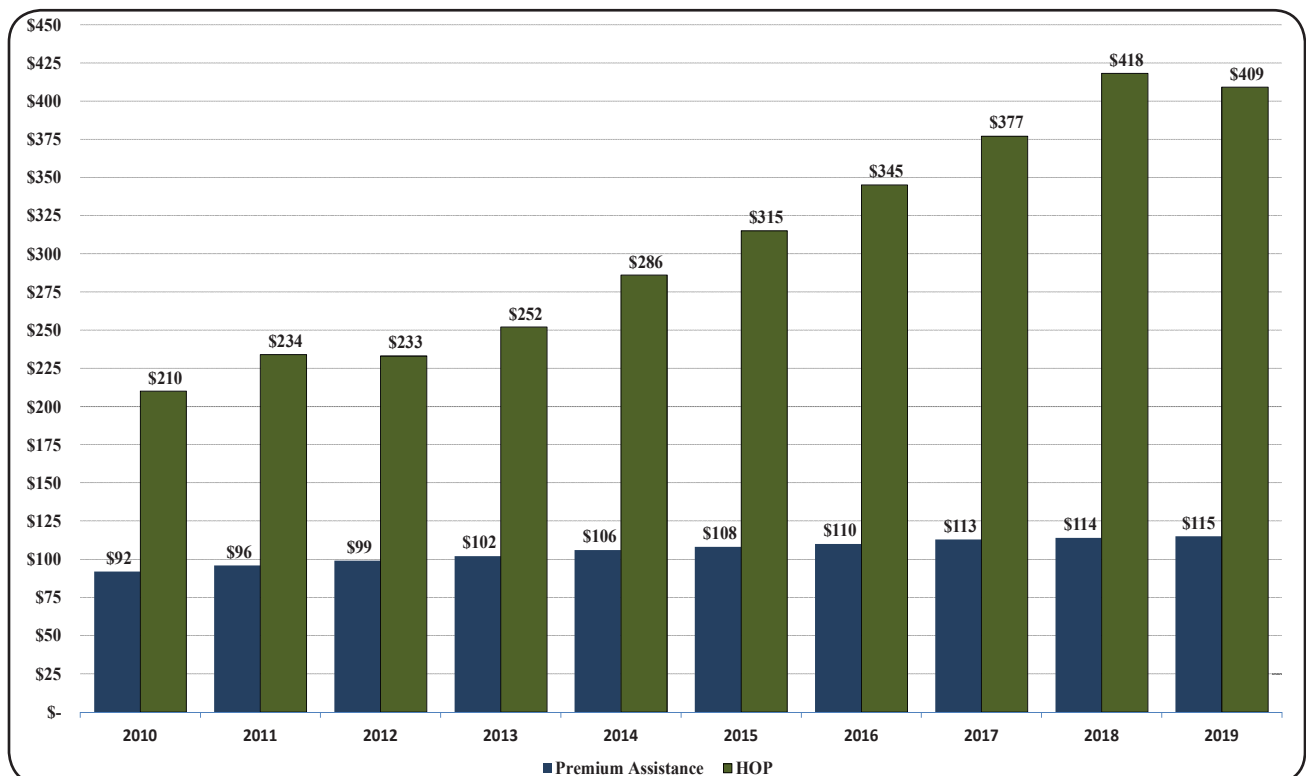
(Dollar Amounts in Millions)



## Deductions from Fiduciary Net Position - Postemployment Healthcare Plans

### 10 Year Trend

(Dollar Amounts in Millions)



### Summary Membership Data 10 Year Trend

For year ended June 30	Male			Female			Total Number of Active Members
	Average Age	Average Service	Average Annual Salaries	Average Age	Average Service	Average Annual Salaries	
2019	45.3	12.0	\$ 58,960	45.5	11.6	\$ 51,395	255,749
2018	45.2	11.8	57,722	45.4	11.4	50,115	256,362
2017	45.0	11.7	56,369	45.3	11.3	48,879	255,945
2016	44.8	11.6	55,518	45.2	11.1	47,912	257,080
2015	44.6	11.5	54,269	45.0	11.0	46,720	259,868
2014	44.5	11.2	53,248	45.0	10.9	45,918	263,312
2013	44.4	11.1	52,413	44.9	10.7	45,005	267,428
2012	44.3	10.9	51,751	44.9	10.6	44,513	273,504
2011	44.1	10.8	51,678	44.6	10.3	44,209	279,152
2010	44.2	10.9	50,770	44.6	10.3	43,306	282,041

### Summary Annuity Data 10 Year Trend

For year ended June 30	Number of Annuitants & Beneficiaries	Total Annual Annuities (In Thousands)	Average Annual Annuity
2019	237,339	\$ 6,051,632	\$ 25,498
2018	233,288	5,926,658	25,405
2017	230,014	5,816,388	25,287
2016	224,828	5,666,392	25,203
2015	219,775	5,520,620	25,119
2014	213,900	5,339,477	24,962
2013	209,204	5,147,060	24,603
2012	202,015	4,872,918	24,122
2011	194,622	4,650,798	23,897
2010	184,934	4,339,639	23,466

**Pension Benefits and Refund Deductions from Fiduciary Net Position**  
**10 Year Trend**  
(Dollar Amounts in Thousands)

For year ended June 30	Retirements				
	Normal	Early	Disability	Pension Lump Sum Benefits	Survivor and Beneficiary
2019	\$ 3,485,370	\$ 2,111,663	\$ 181,178	\$ 700,911	\$ 253,942
2018	3,357,416	2,114,708	191,527	734,989	228,883
2017	3,292,906	2,040,966	186,674	678,736	254,042
2016	3,203,542	2,007,372	182,320	686,988	257,571
2015	3,088,036	1,986,684	177,693	709,240	234,599
2014	2,953,187	1,928,614	167,676	741,386	237,932
2013	2,811,906	1,845,269	161,995	933,049	264,673
2012	2,629,151	1,758,581	149,000	887,244	231,330
2011	2,420,883	1,664,903	141,273	847,482	206,682
2010	2,273,819	1,600,435	136,174	733,333	218,461

For year ended June 30	Net Transfers*	Total Pension Benefits Deductions	Refunds	Total Pension Benefits and Refund Deductions
2019	\$ 1,081	\$ 6,734,145	\$ 27,027	\$ 6,761,172
2018	7,742	6,635,265	19,881	6,655,146
2017	(673)	6,452,651	20,928	6,473,579
2016	2,463	6,340,256	20,069	6,360,325
2015	3,429	6,199,681	20,920	6,220,601
2014	1,887	6,030,682	22,823	6,053,505
2013	2,893	6,019,785	24,461	6,044,246
2012	2,765	5,658,071	24,675	5,682,746
2011	9,844	5,291,067	17,695	5,308,762
2010	7,015	4,969,237	16,720	4,985,957

\* Net transfers to the Commonwealth of Pennsylvania State Employees' Retirement System.

## Average Monthly Pension Benefit Payments Total Annuitants Grouped by Years of Credited Service 10 Year Trend

Years of Credited Service									Total
< 5	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 34	35 - 39	40+	

**Fiscal year ended June 30, 2019**

Normal and Early	4,506	18,857	26,490	22,044	22,095	26,175	47,920	36,561	8,754	213,402
	\$ 85	\$ 215	\$ 385	817	\$ 1,414	\$ 2,199	\$ 3,226	\$ 4,194	\$ 4,603	\$ 1,904
Disability	2	1,094	1,164	943	999	887	304	5	1	5,399
	\$ 621	\$ 516	\$ 995	1,285	\$ 1,848	\$ 2,903	\$ 3,242	\$ 4,113	\$ 4,550	\$ 2,230
Beneficiary and Survivor	807	544	1,141	1,078	1,124	1,147	1,957	1,900	699	10,397
	\$ 936	\$ 198	\$ 315	550	\$ 834	\$ 1,192	\$ 1,682	\$ 2,021	\$ 2,130	\$ 1,095

**Fiscal year ended June 30, 2018**

Normal and Early	4,491	18,293	26,168	21,619	21,551	25,664	47,527	36,395	8,352	210,060
	\$ 83	\$ 218	\$ 380	\$ 807	\$ 1,388	\$ 2,176	\$ 3,210	\$ 4,180	\$ 4,572	\$ 1,890
Disability	19	1,884	2,088	1,708	1,694	1,417	353	21	1	9,185
	\$ 2,322	\$ 784	\$ 956	\$ 1,631	\$ 2,189	\$ 3,032	\$ 3,260	\$ 3,562	\$ 4,550	\$ 2,476
Beneficiary and Survivor	826	519	1,113	1,055	1,096	1,088	1,885	1,825	682	10,089
	\$ 945	\$ 196	\$ 308	\$ 528	\$ 806	\$ 1,178	\$ 1,636	\$ 1,953	\$ 2,047	\$ 1,066

**Fiscal year ended June 30, 2017**

Normal and Early	4,417	17,616	25,734	21,177	20,989	24,996	47,090	36,155	8,019	206,193
	\$ 81	\$ 222	\$ 382	\$ 793	\$ 1,357	\$ 2,145	\$ 3,193	\$ 4,161	\$ 4,539	\$ 1,875
Disability	18	1,831	2,001	1,634	1,639	1,381	346	6	1	8,857
	\$ 2,449	\$ 778	\$ 948	\$ 1,638	\$ 2,208	\$ 3,024	\$ 3,240	\$ 3,951	\$ 4,550	\$ 2,532
Beneficiary and Survivor	864	507	1,104	1,025	1,074	1,085	1,800	1,756	669	9,884
	\$ 953	\$ 195	\$ 301	\$ 505	\$ 781	\$ 114	\$ 1,586	\$ 1,880	\$ 1,960	\$ 919

**Fiscal year ended June 30, 2016**

Normal and Early	4,437	19,030	25,603	21,411	21,411	25,037	46,029	36,489	5,534	204,843
	\$ 93	\$ 189	\$ 373	\$ 798	\$ 1,383	\$ 2,200	\$ 3,247	\$ 4,250	\$ 4,616	\$ 2,173
Disability	-	1,829	2,149	1,714	1,567	1,337	554	17	9	9,176
	\$ -	\$ 777	\$ 1,001	\$ 1,342	\$ 1,985	\$ 2,807	\$ 3,588	\$ 3,078	\$ 2,553	\$ 1,613
Beneficiary and Survivor	-	6,100	580	574	593	609	1,008	943	402	10,809
	\$ -	\$ 1,256	\$ 278	\$ 421	\$ 613	\$ 902	\$ 1,233	\$ 1,452	\$ 1,508	\$ 1,129

**Fiscal year ended June 30, 2015**

Normal and Early	4,360	17,744	24,820	20,719	20,682	24,379	45,677	36,248	5,532	200,161
	\$ 94	186	359	\$ 772	1,344	\$ 2,153	\$ 3,218	\$ 4,222	\$ 4,564	\$ 2,169
Disability	-	1,841	2,134	1,686	1,534	1,332	550	19	9	9,105
	\$ -	762	980	\$ 1,306	1,937	\$ 2,773	\$ 3,602	\$ 3,235	\$ 2,353	\$ 1,584
Beneficiary and Survivor	-	5,481	619	621	628	648	1,067	1,018	427	10,509
	\$ -	1,219	271	\$ 399	611	\$ 883	\$ 1,221	\$ 1,420	\$ 1,497	\$ 1,089



**Average Monthly Pension Benefit Payments**  
**Total Annuitants Grouped by Years of Credited Service**  
**10 Year Trend (Continued)**

Years of Credited Service									Total
< 5	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 34	35 - 39	40+	

**Fiscal year ended June 30, 2014**

Normal and Early	4,232	16,238	24,007	20,109	20,068	23,694	45,272	35,798	5,468	<b>194,886</b>
	\$ 94	\$ 183	\$ 346	\$ 743	\$ 1,292	\$ 2,097	\$ 3,186	\$ 3,186	4,181	\$ <b>2,157</b>
Disability	-	1,812	2,038	1,624	1,495	1,316	557	20	8	<b>8,870</b>
	\$ -	\$ 752	\$ 954	\$ 1,266	\$ 1,888	\$ 2,712	\$ 3,598	\$ 3,216	2,240	\$ <b>1,560</b>
Beneficiary and Survivor	-	4,733	672	674	678	697	1,124	1,100	466	<b>10,144</b>
	\$ -	\$ 1,192	\$ 256	\$ 397	\$ 606	\$ 875	\$ 1,213	\$ 1,392	1,455	\$ <b>1,052</b>

**Fiscal year ended June 30, 2013**

Normal and Early	4,051	14,757	23,095	19,499	19,506	22,897	44,704	35,277	5,384	<b>189,170</b>
	\$ 93	\$ 179	\$ 331	\$ 708	\$ 1,243	\$ 2,041	\$ 3,151	\$ 4,142	\$ 4,354	\$ <b>2,146</b>
Disability	-	1,749	1,950	1,554	1,455	1,283	547	17	10	<b>8,565</b>
	\$ -	\$ 729	\$ 925	\$ 1,249	\$ 1,843	\$ 2,654	\$ 3,546	\$ 3,163	\$ 2,311	\$ <b>1,532</b>
Beneficiary and Survivor	-	5,659	724	729	728	745	1,191	1,190	503	<b>11,469</b>
	\$ -	\$ 814	\$ 254	\$ 387	\$ 620	\$ 854	\$ 1,195	\$ 1,368	\$ 1,442	\$ <b>866</b>

**Fiscal year ended June 30, 2012**

Normal and Early	3,881	13,459	22,313	18,971	18,919	21,855	43,662	34,024	5,170	<b>182,254</b>
	\$ 111	\$ 176	\$ 317	\$ 680	\$ 1,202	\$ 1,972	\$ 3,105	\$ 4,078	\$ 4,196	\$ <b>2,110</b>
Disability	-	1,698	1,882	1,517	1,397	1,257	531	15	9	<b>8,306</b>
	\$ -	\$ 694	\$ 875	\$ 1,166	\$ 1,748	\$ 2,583	\$ 3,465	\$ 2,917	\$ 2,147	\$ <b>1,467</b>
Beneficiary and Survivor	-	5,234	772	784	780	797	1,261	1,281	546	<b>11,455</b>
	\$ -	\$ 702	\$ 245	\$ 390	\$ 603	\$ 850	\$ 1,175	\$ 1,341	\$ 1,412	\$ <b>811</b>

**Fiscal year ended June 30, 2011**

Normal and Early	3,695	12,263	21,497	18,343	18,199	21,042	42,507	33,045	5,045	<b>175,636</b>
	\$ 114	\$ 174	\$ 305	\$ 656	\$ 1,158	\$ 1,921	\$ 3,064	\$ 4,041	\$ 4,133	\$ <b>2,091</b>
Disability	-	1,629	1,798	1,473	1,366	1,216	523	15	9	<b>8,029</b>
	\$ -	\$ 680	\$ 839	\$ 1,136	\$ 1,686	\$ 2,548	\$ 3,476	\$ 2,878	\$ 2,147	\$ <b>1,441</b>
Beneficiary and Survivor	-	4,389	817	819	804	842	1,322	1,362	602	<b>10,957</b>
	\$ -	\$ 652	\$ 239	\$ 372	\$ 583	\$ 842	\$ 1,170	\$ 1,322	\$ 1,383	\$ <b>796</b>

**Fiscal year ended June 30, 2010**

Normal and Early	4,695	11,529	20,812	17,777	17,356	19,973	40,625	30,716	4,755	<b>168,238</b>
	\$ 1,023	\$ 349	\$ 287	\$ 613	\$ 1,093	\$ 1,839	\$ 3,004	\$ 3,933	\$ 3,896	\$ <b>2,037</b>
Disability	-	1,633	1,761	1,453	1,352	1,227	517	18	11	<b>7,972</b>
	\$ -	\$ 694	\$ 819	\$ 1,098	\$ 1,654	\$ 2,513	\$ 3,475	\$ 2,563	\$ 1,958	\$ <b>1,424</b>
Beneficiary and Survivor	-	2,604	772	735	755	773	1,192	1,280	613	<b>8,724</b>
	\$ -	\$ 1,008	\$ 217	\$ 336	\$ 525	\$ 770	\$ 1,075	\$ 1,200	\$ 1,241	\$ <b>872</b>

**Average Monthly Pension  
Benefit Payments and Average Final Average Salary  
New Annuitants Grouped by Years of Credited Service  
10 Year Trend**

Years of Credited Service								
< 5	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 34	35 - 39	40+

**Fiscal year ended June 30, 2019**

Number of retired members	209	1,265	1,238	1,299	1,171	1,079	1,075	463	147
Final Average Salary	\$ 19,130	\$ 28,834	\$ 36,186	\$ 46,327	\$ 57,026	\$ 65,977	\$ 79,823	\$ 82,773	\$ 81,993
Monthly Benefit	\$ 102	\$ 259	\$ 629	\$ 1,224	\$ 1,973	\$ 2,756	\$ 3,986	\$ 4,935	\$ 5,496

**Fiscal year ended June 30, 2018**

Number of retired members	263	1,482	1,494	1,582	1,412	1,405	1,336	665	208
Final Average Salary	\$ 20,236	\$ 31,055	\$ 37,759	\$ 46,933	\$ 58,435	\$ 67,357	\$ 77,429	\$ 82,396	\$ 81,987
Monthly Benefit	\$ 104	\$ 275	\$ 680	\$ 1,230	\$ 2,034	\$ 2,849	\$ 3,906	\$ 4,944	\$ 5,575

**Fiscal year ended June 30, 2017**

Number of retired members	265	1,614	1,482	1,446	1,220	1,307	1,155	709	160
Final Average Salary	\$ 18,974	\$ 30,501	\$ 37,885	\$ 45,909	\$ 56,379	\$ 66,588	\$ 77,070	\$ 79,036	\$ 84,568
Monthly Benefit	\$ 111	\$ 279	\$ 651	\$ 1,217	\$ 2,000	\$ 2,839	\$ 3,929	\$ 4,736	\$ 5,806

**Fiscal year ended June 30, 2016**

Number of retired members	373	1,865	1,576	1,443	1,334	1,352	1,160	775	181
Final Average Salary	\$ 18,335	\$ 31,100	\$ 37,355	\$ 48,242	\$ 56,310	\$ 68,557	\$ 75,449	\$ 79,529	\$ 78,836
Monthly Benefit	\$ 129	\$ 269	\$ 634	\$ 1,302	\$ 1,964	\$ 2,958	\$ 3,890	\$ 4,845	\$ 5,464

**Fiscal year ended June 30, 2015**

Number of retired members	393	2,099	1,649	1,469	1,381	1,412	1,286	961	234
Final Average Salary	\$ 17,942	\$ 30,693	\$ 37,628	\$ 47,743	\$ 57,560	\$ 67,961	\$ 76,491	\$ 80,236	\$ 79,194
Monthly Benefit	\$ 113	\$ 264	\$ 637	\$ 1,274	\$ 2,031	\$ 2,929	\$ 3,995	\$ 4,884	\$ 5,402

**Fiscal year ended June 30, 2014**

Number of retired members	426	1,957	1,442	1,195	1,098	1,191	1,209	894	187
Final Average Salary	\$ 18,745	\$ 31,795	\$ 35,935	\$ 45,981	\$ 56,674	\$ 64,895	\$ 74,770	\$ 78,322	\$ 82,919
Monthly Benefit	\$ 126	\$ 267	\$ 605	\$ 1,242	\$ 2,043	\$ 2,795	\$ 3,973	\$ 4,811	\$ 5,835

**Fiscal year ended June 30, 2013**

Number of retired members	404	1,967	1,662	1,386	1,471	1,680	2,013	1,517	298
Final Average Salary	\$ 22,052	\$ 30,966	\$ 36,735	\$ 46,773	\$ 55,331	\$ 67,805	\$ 77,241	\$ 83,353	\$ 85,981
Monthly Benefit	\$ 156	\$ 280	\$ 658	\$ 1,265	\$ 1,988	\$ 2,956	\$ 4,161	\$ 5,200	\$ 6,066

**Fiscal year ended June 30, 2012**

Number of retired members	384	1,716	1,395	1,226	1,373	1,440	1,998	1,704	319
Final Average Salary	\$ 19,074	\$ 30,273	\$ 35,706	\$ 44,534	\$ 54,305	\$ 64,007	\$ 74,534	\$ 80,285	\$ 80,899
Monthly Benefit	\$ 126	\$ 286	\$ 635	\$ 1,216	\$ 1,977	\$ 2,815	\$ 4,097	\$ 5,033	\$ 5,630

**Fiscal year ended June 30, 2011**

Number of retired members	380	1,591	1,323	1,131	1,247	1,418	2,309	2,023	281
Final Average Salary	\$ 17,212	\$ 30,174	\$ 34,363	\$ 44,577	\$ 52,788	\$ 64,398	\$ 73,905	\$ 79,420	\$ 79,799
Monthly Benefit	\$ 98	\$ 315	\$ 645	\$ 1,238	\$ 1,908	\$ 2,893	\$ 4,031	\$ 4,981	\$ 5,491

**Fiscal year ended June 30, 2010**

Number of retired members	312	1,294	989	826	947	1,035	1,992	1,731	218
Final Average Salary	\$ 21,528	\$ 28,957	\$ 34,500	\$ 42,207	\$ 52,104	\$ 63,290	\$ 72,258	\$ 79,239	\$ 80,405
Monthly Benefit	\$ 312	\$ 269	\$ 634	\$ 1,140	\$ 1,906	\$ 2,833	\$ 3,979	\$ 4,963	\$ 5,550

**Average Monthly Premium Assistance  
Benefit Payments and Average Final Average Salary  
New Annuitants Grouped by Years of Credited Service  
10 Year Trend**

Years of Credited Service								
< 5	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 34	35 - 39	40+

**Fiscal year ended June 30, 2019**

Number of retired members		3	6	225	316	404	436	205	67
Final Average Salary		\$ 41,862	\$ 57,596	\$ 53,303	\$ 59,962	\$ 67,594	\$ 79,285	\$ 80,091	\$ 77,028
Monthly Benefit		\$ 100	\$ 100	\$ 100	\$ 99	\$ 99	\$ 99	\$ 99	\$ 100

**Fiscal year ended June 30, 2018**

Number of retired members		4	11	407	488	686	719	397	129
Final Average Salary		\$ 50,976	\$ 51,460	\$ 54,563	\$ 62,642	\$ 69,894	\$ 78,859	\$ 82,780	\$ 84,484
Monthly Benefit		\$ 100	\$ 100	\$ 100	\$ 99	\$ 99	\$ 99	\$ 99	\$ 99

**Fiscal year ended June 30, 2017**

Number of retired members		8	11	407	478	691	697	428	111
Final Average Salary		\$ 42,397	\$ 44,435	\$ 52,914	\$ 62,343	\$ 70,886	\$ 77,638	\$ 80,600	\$ 88,119
Monthly Benefit		\$ 98	\$ 100	\$ 99	\$ 99	\$ 99	\$ 98	\$ 98	\$ 99

**Fiscal year ended June 30, 2016**

Number of retired members		11	18	364	490	751	679	477	119
Final Average Salary		\$ 49,259	\$ 54,492	\$ 55,542	\$ 61,110	\$ 71,925	\$ 76,944	\$ 82,180	\$ 80,265
Monthly Benefit		\$ 100	\$ 98	\$ 99	\$ 99	\$ 99	\$ 99	\$ 99	\$ 99

**Fiscal year ended June 30, 2015**

Number of retired members		9	23	375	505	779	729	632	154
Final Average Salary		\$ 43,082	\$ 49,673	\$ 55,760	\$ 61,127	\$ 71,418	\$ 79,086	\$ 80,931	\$ 78,375
Monthly Benefit		\$ 98	\$ 100	\$ 100	\$ 98	\$ 99	\$ 99	\$ 98	\$ 99

**Fiscal year ended June 30, 2014**

Number of retired members		20	24	279	402	628	723	549	127
Final Average Salary		\$ 44,134	\$ 45,734	\$ 50,908	\$ 61,032	\$ 67,662	\$ 74,376	\$ 80,928	\$ 85,627
Monthly Benefit		\$ 99	\$ 100	\$ 99	\$ 99	\$ 98	\$ 99	\$ 98	\$ 100

**Fiscal year ended June 30, 2013**

Number of retired members		10	29	345	521	945	1,169	937	191
Final Average Salary		\$ 39,856	\$ 61,571	\$ 51,758	\$ 57,669	\$ 69,854	\$ 76,812	\$ 83,780	\$ 84,225
Monthly Benefit		\$ 99	\$ 100	\$ 99	\$ 100	\$ 98	\$ 98	\$ 98	\$ 100

**Fiscal year ended June 30, 2012**

Number of retired members		8	18	259	342	594	819	666	128
Final Average Salary		\$ 33,448	\$ 38,655	\$ 45,382	\$ 54,454	\$ 64,728	\$ 74,849	\$ 79,041	\$ 77,220
Monthly Benefit		\$ 100	\$ 69	\$ 100	\$ 100	\$ 99	\$ 98	\$ 97	\$ 99

**Fiscal year ended June 30, 2011**

Number of retired members		24	39	325	475	853	1,543	1,402	207
Final Average Salary		\$ 41,609	\$ 51,763	\$ 48,062	\$ 54,261	\$ 67,086	\$ 74,658	\$ 79,436	\$ 77,751
Monthly Benefit		\$ 100	\$ 100	\$ 98	\$ 99	\$ 97	\$ 96	\$ 97	\$ 98

**Fiscal year ended June 30, 2010**

Number of retired members		20	21	227	381	597	1,371	1,253	165
Final Average Salary		\$ 36,052	\$ 48,277	\$ 45,245	\$ 55,323	\$ 65,244	\$ 73,207	\$ 80,413	\$ 80,328
Monthly Benefit		\$ 100	\$ 100	\$ 98	\$ 98	\$ 98	\$ 97	\$ 97	\$ 100

**Ten Largest Employers \***  
**Current Year**  
 (Based on number of reported members)

**As of June 30, 2019**

	<b>Employer</b>	<b>Number of Reported Members</b>	<b>Percentage of Total</b>
1.	Philadelphia City School District	18,658	7.26%
2.	Pittsburgh School District	4,335	1.69%
3.	Central Bucks School District	2,940	1.14%
4.	Allentown City School District	2,245	0.87%
5.	North Penn School District	2,101	0.82%
6.	Reading School District	1,948	0.76%
7.	Bethlehem Area School District	1,912	0.74%
8.	Downingtown Area School District	1,712	0.67%
9.	Lower Merion School District	1,674	0.65%
10.	Pennsbury School District	1,630	0.63%

\* The Ten Largest Employers Schedule is intended to show information for current year and nine years prior. June 30, 2010 information was not available. As additional years become available they will be displayed.

## Schedule of Employers for FY 2019

### School Districts

**A**

Abington  
Abington Heights  
Albert Gallatin  
Aliquippa  
Allegheny Valley  
Allegheny-Clarion Valley  
Allentown City  
Altoona Area  
Ambridge Area  
Annville-Cleona  
Antietam  
Apollo-Ridge  
Armstrong  
Athens Area  
Austin Area  
Avella Area  
Avon Grove  
Avonworth

**B**

Bald Eagle Area  
Baldwin-Whitehall  
Bangor Area  
Beaver Area  
Bedford Area  
Belle Vernon Area  
Bellefonte Area  
Bellwood-Antis  
Bensalem Township  
Benton Area  
Bentworth  
Berlin Brothersvalley  
Bermudian Springs  
Berwick Area  
Bethel Park  
Bethlehem Area  
Bethlehem-Center  
Big Beaver Falls Area  
Big Spring  
Blackhawk  
Blacklick Valley  
Blairsville-Saltsburg  
Bloomsburg Area  
Blue Mountain  
Blue Ridge  
Boyertown Area  
Bradford Area  
Brandywine Heights Area  
Brentwood Borough  
Bristol Borough  
Bristol Township

Brockway Area  
Brookville Area  
Brownsville Area  
Burgettstown Area  
Burrell  
Butler Area

**C**

California Area  
Cambria Heights  
Cameron County  
Camp Hill  
Canon-McMillan  
Canton Area  
Carbondale Area  
Carlisle Area  
Carlynton  
Carmichaels Area  
Catasauqua Area  
Centennial  
Central Bucks  
Central Cambria  
Central Columbia  
Central Dauphin  
Central Fulton  
Central Greene  
Central Valley  
Central York  
Chambersburg Area  
Charleroi Area  
Chartiers Houston  
Chartiers Valley  
Cheltenham Township  
Chester-Upland  
Chestnut Ridge  
Chichester  
Clairton City  
Clarion Area  
Clarion-Limestone Area  
Claysburg-Kimmel  
Clearfield Area  
Coatesville Area  
Cocalico  
Colonial  
Columbia Borough  
Commodore Perry  
Conemaugh Township Area  
Conemaugh Valley  
Conestoga Valley  
Conewago Valley  
Conneaut  
Connellsville Area

Conrad Weiser Area  
Cornell  
Cornwall-Lebanon  
Corry Area  
Coudersport Area  
Council Rock  
Cranberry Area  
Crawford Central  
Crestwood  
Cumberland Valley  
Curwensville Area

**D**

Dallas  
Dallastown Area  
Daniel Boone Area  
Danville Area  
Deer Lakes  
Delaware Valley  
Derry Area  
Derry Township  
Donegal  
Dover Area  
Downingtown Area  
Dubois Area  
Dunmore  
Duquesne City

**E**

East Allegheny  
East Lycoming  
East Penn  
East Pennsboro Area  
East Stroudsburg Area  
Eastern Lancaster County  
Eastern Lebanon County  
Eastern York  
Easton Area  
Elizabeth Forward  
Elizabethtown Area  
Elk Lake  
Ellwood City Area  
Ephrata Area  
Erie City  
Everett Area  
Exeter Township

**F**

Fairfield Area  
Fairview  
Fannett Metal  
Farrell Area



## Statistical Section

### Schedule of Employers (Continued)

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Ferndale Area  
Fleetwood Area  
Forbes Road  
Forest Area  
Forest City Regional  
Forest Hills  
Fort Cherry  
Fort LeBoeuf  
Fox Chapel Area  
Franklin Area  
Franklin Regional  
Frazier  
Freedom Area  
Freeport Area

#### G

Galeton Area  
Garnet Valley  
Gateway  
General McLane  
Gettysburg Area  
Girard  
Glendale  
Governor Mifflin  
Great Valley  
Greater Johnstown  
Greater Latrobe  
Greater Nanticoke Area  
Greencastle-Antrim  
Greensburg Salem  
Greenville Area  
Greenwood  
Grove City Area

#### H

Halifax Area  
Hamburg Area  
Hampton Township  
Hanover Area  
Hanover Public  
Harbor Creek  
Harmony Area  
Harrisburg City  
Hatboro-Horsham  
Haverford Township  
Hazleton Area  
Hempfield  
Hempfield Area  
Hermitage  
Highlands  
Hollidaysburg Area  
Homer-Center  
Hopewell Area  
Huntingdon Area

#### I

Indiana Area  
Interboro  
Iroquois

#### J

Jamestown Area  
Jeannette City  
Jefferson-Morgan  
Jenkintown  
Jersey Shore Area  
Jim Thorpe Area  
Johnsonburg Area  
Juniata County  
Juniata Valley

#### K

Kane Area  
Karns City Area  
Kennett Consolidated  
Keystone  
Keystone Central  
Keystone Oaks  
Kiski Area  
Kutztown Area

#### L

Lackawanna Trail  
Lakeland  
Lake-Lehman  
Lakeview  
Lampeter-Strasburg  
Lancaster  
Laurel  
Laurel Highlands  
Lebanon  
Leechburg Area  
Lehighton Area  
Lewisburg Area  
Ligonier Valley  
Line Mountain  
Littlestown Area  
Lower Dauphin  
Lower Merion  
Lower Moreland Township  
Loyalsock Township

#### M

Mahanoy Area  
Manheim Central  
Manheim Township  
Marion Center Area  
Marple Newtown  
Mars Area

McGuffey  
McKeesport Area  
Mechanicsburg Area  
Mercer Area  
Methacton  
Meyersdale Area  
Mid Valley  
Middletown Area  
Midd-West  
Midland Borough  
Mifflin County  
Mifflinburg Area  
Millcreek Township  
Millersburg Area  
Millville Area  
Milton Area  
Minersville Area  
Mohawk Area  
Monessen  
Moniteau  
Montgomery Area  
Montour  
Montoursville Area  
Montrose Area  
Moon Area  
Morrisville Borough  
Moshannon Valley  
Mount Carmel Area  
Mount Pleasant Area  
Mount Union Area  
Mountain View  
Mt. Lebanon  
Muhlenberg  
Muncy

#### N

Nazareth Area  
Neshaminy  
Neshannock Township  
New Brighton Area  
New Castle Area  
New Hope-Solebury  
New Kensington-Arnold  
Newport  
Norristown Area  
North Allegheny  
North Clarion County  
North East  
North Hills  
North Penn  
North Pocono  
North Schuylkill  
North Star  
Northampton Area

## Schedule of Employers (Continued)

Northeast Bradford  
 Northeastern York  
 Northern Bedford County  
 Northern Cambria  
 Northern Lebanon  
 Northern Lehigh  
 Northern Potter  
 Northern Tioga  
 Northern York County  
 Northgate  
 Northwest Area  
 Northwestern  
 Northwestern Lehigh  
 Norwin

## O

Octorara Area  
 Oil City Area  
 Old Forge  
 Oley Valley  
 Oswayo Valley  
 Otto-Eldred  
 Owen J. Roberts  
 Oxford Area

## P

Palisades  
 Palmerton Area  
 Palmyra Area  
 Panther Valley  
 Parkland  
 Pen Argyl Area  
 Penn Cambria  
 Penn Hills  
 Penn Manor  
 Penncrest  
 Penn-Delco  
 Pennridge  
 Penns Manor  
 Penns Valley Area  
 Pennsbury  
 Penn-Trafford  
 Pequea Valley  
 Perkiomen Valley  
 Peters Township  
 Philadelphia City  
 Philipsburg-Osceola Area  
 Phoenixville Area  
 Pine Grove Area  
 Pine-Richland  
 Pittsburgh  
 Pittston Area  
 Pleasant Valley  
 Plum Borough

Pocono Mountain  
 Port Allegany  
 Portage Area  
 Pottsgrove  
 Pottstown  
 Pottsville Area  
 Punxsutawney Area  
 Purchase Line

## Q

Quaker Valley  
 Quakertown Community

## R

Radnor Township  
 Reading  
 Red Lion Area  
 Redbank Valley  
 Reynolds  
 Richland  
 Ridgway Area  
 Ridley  
 Ringgold  
 Riverside  
 Riverside Beaver County  
 Riverview  
 Rochester Area  
 Rockwood Area  
 Rose Tree Media

## S

Saint Clair Area  
 Saint Marys Area  
 Salisbury Township  
 Salisbury-Elk Lick  
 Saucon Valley  
 Sayre Area  
 Schuylkill Haven Area  
 Schuylkill Valley  
 Scranton  
 Selinsgrove Area  
 Seneca Valley  
 Shade Central City  
 Shaler Area  
 Shamokin Area  
 Shanksville-Stonycreek  
 Sharon City  
 Sharpsville Area  
 Shenandoah Valley  
 Shenango Area  
 Shikellamy  
 Shippensburg Area  
 Slippery Rock Area  
 Smethport Area

Solanco  
 Somerset Area  
 Souderton Area  
 South Allegheny  
 South Butler County  
 South Eastern  
 South Fayette Township  
 South Middleton  
 South Park  
 South Side Area  
 South Western  
 South Williamsport Area  
 Southeast Delco  
 Southeastern Greene  
 Southern Columbia Area  
 Southern Fulton  
 Southern Huntingdon County  
 Southern Lehigh  
 Southern Tioga  
 Southern York County  
 Southmoreland  
 Spring Cove  
 Spring Grove Area  
 Springfield  
 Springfield Township  
 Spring-Ford Area  
 State College Area  
 Steel Valley  
 Steelton-Highspire  
 Sto-Rox  
 Stroudsburg Area  
 Sullivan County  
 Susquehanna Community  
 Susquehanna Township  
 Susquenita

## T

Tamaqua Area  
 Titusville Area  
 Towanda Area  
 Tredyffrin-Easttown  
 Trinity Area  
 Tri-Valley  
 Troy Area  
 Tulpehocken Area  
 Tunkhannock Area  
 Turkeyfoot Valley Area  
 Tuscarora  
 Tussey Mountain  
 Twin Valley  
 Tyrone Area

## Statistical Section

### Schedule of Employers (Continued)

#### U

Union  
Union Area  
Union City Area  
Uniontown Area  
Unionville-Chadds Ford  
United  
Upper Adams  
Upper Darby  
Upper Dauphin Area  
Upper Dublin  
Upper Merion Area  
Upper Moreland Township  
Upper Perkiomen  
Upper Saint Clair

#### V

Valley Grove  
Valley View

#### W

Wallenpaupack Area  
Wallingford-Swarthmore

Warren County  
Warrior Run  
Warwick  
Washington  
Wattsburg Area  
Wayne Highlands  
Waynesboro Area  
Weatherly Area  
Wellsboro Area  
West Allegheny  
West Branch Area  
West Chester Area  
West Greene  
West Jefferson Hills  
West Middlesex Area  
West Mifflin Area  
West Perry  
West Shore  
West York Area  
Western Beaver County  
Western Wayne  
Westmont Hilltop  
Whitehall-Coplay

Wilkes-Barre Area  
Wilkinsburg Borough  
William Penn  
Williams Valley  
Williamsburg Community  
Williamsport Area  
Wilmington Area  
Wilson  
Wilson Area  
Windber Area  
Wissahickon  
Woodland Hills  
Wyalusing Area  
Wyoming Area  
Wyoming Valley West  
Wyomissing Area

#### Y

York City  
York Suburban  
Yough

### Area Vocational Technical Schools

A. W. Beattie Career Center  
Admiral Peary AVTS  
Beaver County AVTS  
Bedford County Technical Center  
Berks CTC  
Bethlehem AVTS  
Bucks County Technical High School  
Butler County AVTS  
Carbon Career & Technical Institute  
Career Institute of Technology  
Central Montco Technical High School  
Central PA Institute of Science &  
Technology  
Central Westmoreland CTC  
Clarion County Career Center  
Clearfield County CTC  
Columbia-Montour AVTS  
Crawford County CTC  
CTC of Lackawanna County  
Cumberland-Perry AVTS  
Dauphin County Technical School  
Delaware County AVTS  
Eastern Center for Arts & Technology  
Eastern Westmoreland CTC  
Erie County Technical School  
Fayette County AVTS  
Forbes Road CTC  
Franklin County CTC  
Fulton County AVTS

Greater Altoona CTC  
Greater Johnstown AVTS  
Greene County CTC  
Huntingdon County CTC  
Indiana County Technology Center  
Jefferson County-DuBois AVTS  
Lancaster County CTC  
Lawrence County CTC  
Lebanon County CTC  
Lehigh Career & Technical Institute  
Lenape Tech  
Lycoming CTC  
Mercer County Career Center  
Middle Bucks Institute of Technology  
Mifflin County Academy of Science &  
Technology  
Mon Valley CTC  
Monroe Career & Tech Institute  
North Montco Technical Career Center  
Northern Tier Career Center  
Northern Westmoreland CTC  
Northumberland County AVTS  
Parkway West CTC  
Reading-Muhlenberg CTC  
Schuylkill Technology Center  
Somerset County Technology Center  
Steel Center AVTS  
SUN Area Technical Institute  
Susquehanna County CTC

Upper Bucks County AVTS  
Venango Technology Center  
West Side AVTS  
Western Area CTC  
Western Center for Technical Studies  
Wilkes-Barre Area CTC  
York County School of Technology

**Schedule of Employers (Continued)****Intermediate Units**

Allegheny #3  
 Appalachia #8  
 Arin #28  
 Beaver Valley #27  
 Berks County #14  
 BLaST #17  
 Bucks County #22  
 Capital Area #15  
 Carbon-Lehigh #21  
 Central #10  
 Central Susquehanna #16  
 Chester County #24

Colonial #20  
 Delaware County #25  
 Intermediate Unit #1  
 Lancaster-Lebanon #13  
 Lincoln #12  
 Luzerne #18  
 Midwestern #4  
 Montgomery County #23  
 Northeastern Educational #19  
 Northwest Tri-County #5  
 Pittsburgh-Mt. Oliver #2  
 Riverview #6

Schuylkill #29  
 Seneca Highlands #9  
 Tuscarora #11  
 Westmoreland #7

**Colleges / Universities**

State System of Higher Education

- Bloomsburg University
- California University
- Cheyney University
- Clarion University of Pennsylvania
- East Stroudsburg University
- Edinboro University
- Indiana University
- Kutztown University
- Lock Haven University
- Mansfield University
- Millersville University
- Shippensburg University
- Slippery Rock University
- West Chester University

Bucks County Community College  
 Butler County Community College  
 Community College of Allegheny County  
 Community College of Beaver County  
 Community College of Philadelphia  
 Delaware County Community College  
 Harrisburg Area Community College  
 Lehigh Carbon Community College  
 Luzerne County Community College  
 Montgomery County Community College  
 Northampton County Community College  
 Penn State University  
 Pennsylvania College of Technology  
 Pennsylvania Highlands Community College  
 Reading Area Community College

Thaddeus Stevens College of Technology  
 Westmoreland County Community College

**Other**

Berks County Earned Income Tax Bureau  
 Department of Education - Commonwealth of Pennsylvania  
 Lancaster County Academy  
 Overbrook School for the Blind  
 Pennsylvania School Boards Association

Pennsylvania School for the Deaf  
 Western Pennsylvania School for Blind Children  
 Western Pennsylvania School for the Deaf  
 York Adams Academy

**Charter Schools (C S)**

21st Century Cyber C S  
 Achievement House C S  
 Act Academy Cyber C S  
 Ad Prima C S  
 Agora Cyber C S  
 Alliance For Progress C S  
 Antonia Pantoja C S  
 Architecture and Design Charter High School  
 Arts Academy C S  
 Aspira Bilingual Cyber C S  
 Avon Grove C S  
 Baden Academy C S

Bear Creek Community C S  
 Belmont C S  
 Boys' Latin of Philadelphia C S  
 Bucks County Montessori C S  
 Casa C S  
 Center for Student Learning Charter School at Pennsbury  
 Central Pennsylvania Digital Learning Foundation C S  
 Centre Learning Community C S  
 Chester County Family Academy C S  
 Christopher Columbus C S

Circle of Seasons C S  
 City Charter High School  
 Collegium C S  
 Commonwealth Connections Academy C S  
 Community Academy of Philadelphia C S  
 Crispus Attucks Youthbuild C S  
 Discovery C S  
 Dr. Robert Ketterer C S  
 Eastern University Academy C S  
 Environmental Charter School at Frick Park  
 Erie Rise Leadership Academy C S  
 Esperanza Academy C S

## Statistical Section

### Schedule of Employers (Continued)

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Esperanza Cyber C S	Mastery Charter School - Pickett Campus	Spectrum C S
Eugenio Maria de Hostos Community Bilingual C S	Mastery Charter School - Prep Elementary	Stone Valley Community C S
Evergreen Community C S	Mastery Charter School - Shoemaker Campus	Sugar Valley Rural C S
Fell C S	Mastery Charter School - Simon Gratz	SusQ - Cyber C S
First Philadelphia Charter School for Literacy	Mastery Charter School - Smedley Elementary	Sylvan Heights Science C S
Folk Arts - Cultural Treasures C S	Mastery Charter School - Thomas Campus	Tacony Academy C S
Franklin Towne Charter Elementary School	Math Civics and Sciences C S	Tidioute Community C S
Franklin Towne Charter High School	Mathematics, Science & Technology Community C S	Universal Alcorn C S
Frederick Douglas Mastery C S	Memphis Street Academy C S - J.P. Jones	Universal Audenried C S
Freire C S	Montessori Regional C S	Universal Bluford C S
Gettysburg Montessori C S	Multi-Cultural Academy C S	Universal Creighton C S
Gillingham C S	New Day C S	Universal Daroff C S
Global Leadership Academy C S	New Foundations C S	Universal Institute C S
Global Leadership Academy C S- Huey	Nittany Valley C S	Universal Vare C S
Green Woods C S	Northwood Academy C S	Urban Academy Greater Pittsburgh C S
Hardy Williams Academy C S	Olney Charter High School	Urban Pathways 6-12 C S
Hill House Passport Academy C S	Pan American Academy C S	Urban Pathways K - 5 College C S
Hope for Hyndman C S	Penn Hills C S for Entrepreneurship	Vida C S
Howard Gardner Multiple Intelligence C S	Pennsylvania Cyber C S	West Oak Lane C S
I-Lead C S	Pennsylvania Distance Learning C S	West Philadelphia Achievement Charter Elementary School
IMHOTEP Institute C S	Pennsylvania Leadership C S	Wissahickon C S
Independence C S	Pennsylvania Virtual C S	Wonderland C S
Infinity C S	People for People C S	York Academy Regional C S
Inquiry C S	Perseus House Charter School of Excellence	Young Scholars C S
Insight PA Cyber CS	Philadelphia Academy C S	Young Scholars of Central Pennsylvania C S
John B Stetson C S	Philadelphia Charter School for Arts & Sciences at H.R. Edmunds	Young Scholars of Western Pennsylvania C S
Keystone Academy C S	Philadelphia Electrical & Technology Charter High School	
Keystone Education Center C S	Philadelphia Harambee Institute of Science and Technology C S	
Khepera C S	Philadelphia Montessori C S	
Kipp Academy C S	Philadelphia Performing Arts C S	
Kipp West Philadelphia Preparatory C S	Premier Arts & Science C S	
La Academia: The Partnership C S	Preparatory Charter School of Mathematics, Science, Technology & Careers	
Laboratory C S	Propel Charter School - Braddock Hills	
Lehigh Valley Academy Regional C S	Propel Charter School - East C S	
Lehigh Valley Charter School for the Performing Arts	Propel Charter School - Hazelwood	
Lehigh Valley Dual Language C S	Propel Charter School - Homestead	
Lincoln C S	Propel Charter School - McKeesport	
Lincoln Leadership Academy C S	Propel Charter School - Montour	
Lincoln Park Performing Arts C S	Propel Charter School- Northside	
Lindley Academy CS	Propel Charter School - Pitcairn	
Manchester Academic C S	Renaissance Academy - Edison C S	
Mariana Bracetti Academy C S	Richard Allen Preparatory C S	
Maritime Academy C S	Robert Benjamin Wiley Community C S	
Mastery Charter High School	Roberto Clemente C S	
Mastery Charter School - Cleveland Elementary	Russell Byers C S	
Mastery Charter School - Clymer Elementary	Sankofa Freedom Academy C S	
Mastery Charter School - Francis D Pastorius Elementary	School Lane C S	
Mastery Charter School - Harrity Elementary	Seven Generations C S	
Mastery Charter School - John Wister Elementary	Souderton Charter School Collaborative	
Mastery Charter School - Mann Elementary		



