



Pennsylvania Public School Employees' Retirement System

A Component Unit of the Commonwealth of Pennsylvania



PA State Flower:
Mountain Laurel



PA State Animal:
White-tailed Deer



PA State Bird:
Ruffed Grouse

Annual Comprehensive Financial Report

Fiscal Years Ended June 30, 2021 & 2020

Pennsylvania Public School Employees' Retirement System

A Component Unit of the Commonwealth of Pennsylvania

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Annual Comprehensive Financial Report

for the
Fiscal Years Ended June 30, 2021 and 2020

Christopher Santa Maria

***Chairman
Board of Trustees***

Honorable Francis X. Ryan

***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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PA State
Plant:
Penngift
Crownvetch



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PA State
Flag





5 North 5th Street
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Letter of Transmittal
COMMONWEALTH OF PENNSYLVANIA
PUBLIC SCHOOL EMPLOYEES' RETIREMENT SYSTEM

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November 5, 2021

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 hundred-second edition of the Annual Comprehensive Financial Report (ACFR) for the Pennsylvania Public School Employees' Retirement System (PSERS, System, or Fund) for the fiscal years ended June 30, 2021 (FY 2021) and 2020 (FY 2020). 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. PSERS has adopted the name Annual Comprehensive Financial Report pursuant to GASB Statement No. 98 *The Annual Comprehensive Financial Report*, issued October 19, 2021. While GASB Statement No. 98 is required and effective for fiscal years ending after December 15, 2021, PSERS has elected to early implement GASB Statement No. 98 and change the name effective for this fiscal year ended June 30, 2021.

This year's ACFR highlights Pennsylvania's state symbols. The Keystone State is home to many diverse varieties of plants and wildlife that have been designated official state symbols. Our state bird, the ruffed grouse, and the state animal, the white-tailed deer, were historically essential sources of food for Pennsylvania Native Americans and early settlers. This year's ACFR celebrates these amazing natural resources and the importance of their place in Pennsylvania's environment.

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.psers.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, 2021, the System had approximately 248,000 active members with an estimated annual active payroll of \$14.2 billion.

The annuitant membership at June 30, 2021 was comprised of approximately 243,000 retirees and beneficiaries who receive approximately \$531 million in pension and healthcare benefits each month. The average yearly benefit paid to annuitants is \$25,992. 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, 2021, 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 121,000 annuitants and their dependents.

PSERS provides a stable source of revenue for local economies throughout Pennsylvania. In FY 2021, PSERS distributed \$6.7 billion or nearly 94% of total pension benefits to annuitants 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 most members and reporting units contribute. PSERS also administers a defined contribution plan to which all new members and reporting units contribute. PSERS is administered by a staff of 365 and has 769 reporting units as of June 30, 2021. 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 ACFR. 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 twelfth 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

Fiscal year 2021 will be remembered for the COVID-19 pandemic which dominated the headlines and affected everyone globally. With the advent of vaccines which received emergency approval, the economy transitioned from rolling lockdowns to being close to fully reopened in the U.S. Other headlines during the fiscal year included geopolitical tensions between the U.S. and China, and a Brexit deal between the United Kingdom and European Union in the last few days before the new year 2021 deadline. As a result of easing monetary policies, stimulative fiscal policies, and re-opening of global economies, global equities and global risk markets continued their upward march since the beginning of the fiscal year. With all of the liquidity injected into the markets, especially in the U.S., inflation significantly increased, with the U.S. Core Consumer Price Index (CPI) increasing to 4.5% year-over-year as of June 2021 from 1.2% one year ago. Housing inflation also picked up with the S&P CoreLogic Case-Shiller U.S. National Home Price Index showing home prices increased by 18.5% over the past 12 months ended June 30, 2021, the largest year-over-year increase since the index was created in 1990.

The U.S. economy had some very significant tail winds during the past fiscal year. First, the Federal Reserve continued to run very easy monetary conditions with very low interest rates and continued quantitative easing programs. The Federal Funds target rate range remained unchanged during the fiscal year at 0.00% - 0.25% with a commitment from the Federal Reserve to keep rates at rock bottom until at least 2022. In addition, the Federal Reserve continued to pump liquidity into the economy through its Treasury and MBS Asset Purchase program, injecting \$120 billion a month through asset purchases. Second, the federal government approved a \$1.9 trillion COVID-19 support package and is considering other fiscal programs, including an infrastructure bill. Finally, as COVID-19 cases moderated and with the deployment of a vaccine, the economy started to re-open and economic activity picked up significantly from being essentially shut down at the onset of the pandemic.

The Euro Area benefited from similar but weaker tail winds as the U.S. during the past fiscal year. Europe's economy did not open as quickly due to stricter lock downs and a slower pace of COVID-19 vaccination rollout. The European Central Bank increased its asset purchase program from €500 billion to €1.85 trillion to support the

market and stimulate growth. On the fiscal side, the European Union approved a €2.2 trillion budget and stimulus package which included a €750 billion pandemic relief package to be funded by joint debt. As of the second quarter 2021, the Euro Area had strong year-over-year growth of 13.7%, driven by a re-opening of the economy from COVID-19 restrictions, stimulative monetary policy, and strong fiscal support. The unemployment rate remained stable at 7.7%, the same as a year earlier due to companies receiving financial incentives to maintain employee payroll during the pandemic. Eurozone inflation trends remained stable during the past fiscal year, with Eurozone Core Inflation modestly increasing from 0.8% on an annualized basis in June 2020 to 0.9% in June 2021, continuing well below the European Central Bank (ECB) target of 2.0%. The Euro Area economy expanded this past fiscal year as evidenced by the Markit Eurozone Manufacturing PMI measurement of 63.4 in June 2021 and remained above the expansionary 50 level the entire fiscal year. The ECB continued its policy of very accommodative overnight interest rates.

Japan, and Asia in general, did not suffer from a health perspective as much as the western economies from COVID-19. As of the second quarter 2021, Japan's real GDP increased by 1.9% versus -10.1% as of June 2020. 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 as their aggressive actions fighting the COVID-19 virus allowed them to economically recover more quickly. China had strong real GDP growth of 7.9% over the past year, significantly faster than the 3.2% pace for the year ended June 2020.

Status of Pension Funding Initiatives

The ongoing budgetary commitment of Gov. Tom Wolf and the Legislature authorizing state and school employers to pay the full amount of the actuarially required contributions continues to help improve PSERS' funded status.

From FY 2017 to FY 2021 PSERS received full actuarial funding from school employers and the Commonwealth after 15 previous years of underfunding. 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 and bring PSERS back to fully funded status.

FY 2021 had strong investment returns resulting in record net investment gains that helped push the System's total net assets up by \$13.5 billion to an all-time high of \$72.5 billion. PSERS' fiscal year return of 24.58% was well above the Fund's long-term earnings assumption of 7.00%. On an actuarial basis, the funded ratio was 59.2% at June 30, 2020. Subject to future investment returns and continued commitment to making employer contributions, the actuarial funded ratio is expected to climb to 76% by 2029.

The System's funded ratio on a market-value basis was 63.67% at June 30, 2021. The increase in the FY 2021 funded ratio on a market-value basis was due to strong investment returns in FY 2021. Since June 30, 2016, when full actuarial funding began, the System's market value unfunded ratio has increased from 50.14% to 63.67% at June 30, 2021.

PSERS' actuary, Buck Global, LLC, completed a five-year experience study as required by the Retirement Code and presented the results at the March 5, June 11, and August 6, 2021 Board meetings. Based on the recommendations of the actuary, the Board adopted revised demographic and economic assumptions effective with the June 30, 2021 actuarial valuation and results will be available at the end of the 2021 calendar year. The revised demographic assumptions include new mortality, retirement, and withdrawal assumptions and updated option factors to match the new mortality tables. The revised economic assumptions include reducing the salary growth from 5.00% to 4.50%, reducing inflation from 2.75% to 2.50%, decreasing the payroll growth assumption from 3.50% to 3.25%, and reducing the investment rate of return from 7.25% to 7.00%.

Major Initiatives

PSERS Adapted Quickly to Pandemic Impacts

Since March 16, 2020, most PSERS employees have been working remotely from their homes, with limited visits to physical office locations. PSERS operations and processes quickly adjusted with staff working remotely with only brief interruptions to call center and walk-in, in-person assistance availability. Since then, overall, productivity has been maintained or even improved. Based on surveys conducted of persons attending online webinars, the majority of respondents preferred to have an in-person option for counseling. As a result, in-person counseling sessions began again in September 2021, while participating in these via a webinar will also continue to be an available option.

While all new retirees are required to set up direct deposit, PSERS had more than 11,000 annuitants receiving a monthly benefit via a paper check. PSERS faced a significant challenge due to issues with the US Postal Service in the month of March 2021 resulting in these members experiencing significant delays in receiving their benefit. Normal email and phone call volumes more than doubled due to repeated and ongoing outreach by these impacted members. PSERS conducted a campaign urging these members to switch to direct deposit netting over a 25% reduction in the number of members receiving a paper check moving forward.

PSERS is in the process of progressing from an emergency work from home experience to a permanent model of telework on a part-time or full-time basis. Not only will this help to alleviate issues of having enough space to accommodate a growing staff, but opportunities are being explored where this could equate to potential cost savings as well.

Member Self-Service

The PSERS Member Self-Service (MSS) Portal has continued to be a tremendous success. Since being implemented in April 2018, over 200,000 members have created their online account and conducted nearly 280,000 transactions for themselves. The most common actions taken are to create their own retirement estimates, update their beneficiaries, update their address and generate their own income verification. MSS also allows members to “Go Green” and as a result, nearly 95% of all MSS accounts have opted to go paperless and receive information from PSERS electronically.

In December of 2020, secure messaging functionality was added which enables members to communicate with PSERS securely within the online portal with messages retained in their online account. More than 7,000 messages have been received since this was implemented with an average response time of less than two business days.

In an ongoing effort to improve MSS, PSERS will be adding multiple enhancements in 2022 most notably a redesigned platform which will be easier to navigate from PCs and mobile devices. With this upgrade, additional information will be available to members within their accounts, more reports for employers, and additional security measures. The ability to track the status of applications submitted for a retirement estimate, retirement benefit, or refund will also become available within MSS accounts.

Improved Communication to Members

Throughout the year PSERS completed many undertakings to improve communication with members. Multiple videos have been added to the agency’s website ranging from the general PSERS overview Foundations for Your Future presentation, general updates, investments, and specific DC account information. PSERS continued monthly targeted email messages to all members and also targeted messages such as aspects unique to DC plan participants. Multiple surveys were conducted to acquire feedback on aspects including the public website, the MSS Portal, the member newsletter, DC Plan experiences, and overall engagement and satisfaction. The results will assist in developing PSERS short-term and longer-term communication plans and the redesign of current communication materials and efforts.

New members of PSERS have 90 days from notification of qualification to make an irrevocable membership class election decision which impacts their contribution amounts and their overall retirement benefit. To assist in making that decision, an online calculator was developed to enable new members to input their own personal information to

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help them project what their retirement benefit may look like under each of the membership class options they have available to them. Additionally, PSERS began conducting webinars to better educate new members of their choices and assist them in making the choice that is best for them.

Act 120 of 2010 and Act 5 of 2017 created a risk-sharing program for all members who first enrolled in PSERS after June 30, 2011 (Class T-E, Class T-F, Class T-G, and Class T-H members). With the "shared risk" provision, these members can benefit when PSERS investments are doing well and share some of the risk when PSERS investments underperform. DB contribution rates may increase or decrease by 0.50% or 0.75% within the specified range every three years. Beginning in April 2021, PSERS worked collaboratively with software providers and employers to implement an increase in required member contributions due to Shared Risk. As a result of the efforts and dedication by software providers and employers, these changes were able to be implemented relatively smoothly by July 2, 2021. The next shared risk investment performance measurement period for Class T-E, Class T-F, Class T-G, and Class T-H members ends June 30, 2023.

PSERS Health Options Program Updates

The PSERS Health Options Program (HOP) continues to see steady growth in enrollment and now has more than 121,000 PSERS retirees, spouses, and dependents enrolled as of June 30, 2021. Within the plan, there is a Dental Program offering which has eclipsed 27,000 enrollees. A Vision Program was added in January 2021 and has over 27,000 enrollees.

CMS' Medicare Star Rating program rates Medicare Advantage (MA) and Prescription Drug Programs (PDP) based on a number of metrics around quality and performance. Rating criteria is based on a 1 to 5 point system. The ratings help members select the best plans for themselves or their families. PSERS Prescription Drug Employer Group Waive Plan received the Federal Centers for Medicare and Medicaid Services (CMS) highest rating, 5 Stars, for this year for use in 2022. PSERS PDP is among only nine other plans in the U.S. to receive this award of excellence.

This marks the first time PSERS earned a 5 Star Rating in the 15-year history of offering a Medicare Part D program. The HOP PDP program has a history of earning high ratings of 4.0 to 4.5 rating annually since 2019 for overall service and quality of the prescription drug plan that retirees voluntarily pay for through monthly premiums. PSERS' latest CMS Star rating was based in part on how our members rate the plan's services and care, and how well our plan helps our members use recommended and safe prescription medications.

PSERS Increased Internal Management

PSERS Investment Office continued the process of filling vacant positions with very capable investment professionals which will allow PSERS to continue its efforts to bring additional assets in-house, provide additional depth to the investment team, and/or enhance risk management, compliance, and operational practices. The expansion of professional staff allows 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. The Investment Office currently manages approximately 51%, or \$40.3 billion of the gross assets (inclusive of leverage), in-house. The estimated savings from managing those assets in-house is over \$40 million per year.

Investment Book of Record

The Operations team in the Investment Office successfully completed phase one of the migration, PSERS' Investment Book of Record (IBOR). The IBOR project started in December 2017 and is slated to be completed in 2022. The IBOR is a technological solution designed to deliver the current best available view of investment data suitable for investment decision-making, incorporating the current status and forward projections of portfolio investment holdings and cash position, as well as reference data and derived analytics supporting the investment decision-making process. Benefits sought from the IBOR include, among other things, modernization of processes, increased transparency, and increased functionality.

Budgetary and Financial Governance

PSERS manages multiple budget 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 are funded from the Commonwealth's General Fund, but rather from the earnings of the Fund itself or participant charges. 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 of similar size and complexity in its effective control of expenses while providing necessary services to its membership. During the last three years, the number of active and retired members electing to receive newsletters, statement of accounts, 1099-Rs and other publications electronically has continued to grow, which saves the agency over \$225,000 per year in postage, printing and paper costs.

During FY 2021 specifically, the agency achieved substantial savings in postage, reduced contracted maintenance and repair services, decreased rental of equipment and software, and lowered purchases of computer hardware and other equipment, all of which keep more of PSERS assets available for the benefit of the Fund and its members. In addition to these savings, PSERS renegotiated the terms with its database management system vendor through the Commonwealth of Pennsylvania contract in order to reduce costs by \$125,000.

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 \$6.4 million annually in administrative expenses compared to its peers.

In addition, during FY 2021, PSERS continued its ongoing efforts to recover funds from securities class action litigation. The System received \$3.2 million in settlements from these cases in FY 2021 and \$41 million over the past five years.

PSERS Commitment to Fee Transparency

On December 6, 2019, PSERS Board of Trustees approved an investment transparency policy that codified many of the agency's long-standing methods of providing investment records to the public, press and policymakers in accordance with existing state laws, Commonwealth directives and best practices in government finance. The policy stresses that PSERS will abide by its legal and fiduciary obligations when using the agency's website and other means to release investment returns, fee data, and budgetary and actuarial data. PSERS provides extensive investment information on its website www.psers.pa.gov. For example, detailed reports providing investment performance by manager and detailed fee information have been added to PSERS website.

Financial Highlights

The fair value of the System's fiduciary net position increased by an all time high of \$13.5 billion during FY 2021 to \$72.5 billion as of June 30, 2021. The System is the 16th largest state-sponsored public defined benefit pension fund in the nation and the 37th 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 2021, PSERS provided approximately \$7.6 billion in pension and healthcare benefits to its members.

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The System's administrative budget request is appropriated by the PA General Assembly and funded by the assets of the System. For FY 2021, the appropriation was \$52.3 million. PSERS' Investment Related Expenses budget, which is also entirely sourced by the assets of the System, totaled \$34.1 million for FY 2021.

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, 2020) 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 59.2%. 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. In fact, the returns generated over the past 10 years were done so with one of the lowest risk profiles, as measured by standard deviation of investment returns, among public pension funds in the country as well as one of the highest investment return to risk ratios.

Income from the investment portfolio represents the major source of revenue to the System, accounting for 60% of total revenues over the twenty five-year period from FY 1997 to FY 2021. During FY 2021, net investment income was a record \$14.8 billion. The investment portfolio, which is one part of the System's net position, totaled \$72.2 billion, at fair value, as of June 30, 2021. For FY 2021, the time-weighted net rate of return on the System's investments was 24.58%.

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, 2021 was 7.70% and exceeded the Fund's long-term investment rate of return assumption (currently 7.00%). Of utmost importance to the Board is the assurance that the required reserves are available for payment of retirement benefits.

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:

- to generate returns to support the System's actuarial soundness so it may provide its members with benefits as required by law;
- to earn a long-term total return, net of fees, investment, and administrative expenses, that equals or exceeds the Actuarial Assumed Rate approved by the Board;
- to earn a long-term total return, net of fees, and investment expenses, that equals or exceeds the Policy Index approved by the Board; and
- to prudently manage investment risks that are related to the achievement of investment goals.

Additional information on the System's investments is contained in the Investment Section of this report.

Defined Contribution Plan

The Defined Contribution (DC) Plan has continued to rapidly grow. As of July 1, 2021, there were close to 30,000 participants with a total DC Plan balance exceeding \$62 million. The Retirement Code requires the DC Plan to provide no less than ten investment options offered by three or more investment providers. Currently, the DC Plan has eight providers offering twenty investment options.

In building upon the communication efforts within the relatively new defined contribution program, PSERS created a Year End Summary document highlighting changes and overall plan participation information. Notable changes within the plan included the removal of the Templeton Global Bond R6 Fund, the addition of the T. Rowe Price Target Date 2065 fund, modifications to the T. Rowe Price Target Date glide path, and fee reductions within many of the available investment funds. The online experience through Voya has also been enhanced with a revised online portal, availability of a budgeting calculator and the availability of Spanish translations for much of the online material in a participant's account. PSERS also continued its efforts to acquire feedback and conduct specialized surveys on participants' financial wellness and investment preferences.

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.

In addition, each year PSERS undergoes a very thorough internal controls assessment. This past year the in-depth assessment reviewed five areas of PSERS operations: Benefit Processing, Communications, Healthcare, Investments, and Financial Reporting. Each internal control assessment was based on five major components. The five components included, Control Environment, Risk Assessment, Control Activities, Information and Communication, and Monitoring.

As required by the Commonwealth, PSERS submitted the assessment and monitoring plan in a timely manner to the Commonwealth's Office of Budget. No significant deficiencies were identified in this past year's internal control assessment.

Introductory Section

In August 2021, the Board approved a SOC1 Type 2 Audit Study and directed staff to issue the Notice of Forthcoming Procurement for the SOC1 Type 2 Audit to provide an internal control audit of the System in compliance with Act 128 of 2020.

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 calculated 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.

Litigation and Contingencies

The System received subpoenas from various federal agencies regarding the certification of the shared risk member contribution rate, the purchase and valuation of certain directly held properties as well as investment performance and relationships with investment managers. PSERS is cooperating fully with the federal investigations. The System is subject to various threatened and pending lawsuits. The System had a lawsuit filed by a board member regarding access to various documents and communications related to investments. It is the opinion of management that the ultimate liability arising from such threatened, pending litigation and investigations will not have a material effect on the financial position of the System.

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 Annual Comprehensive Financial Report for the fiscal year ended June 30, 2020. 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 annual comprehensive financial report whose contents conform to program standards. Such an annual comprehensive 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 38 consecutive years from FY 1983 to FY 2020. 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 Annual Comprehensive 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 2021 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, 2020, 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 five consecutive years from FY 2016 to FY 2020. 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 2020. 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.

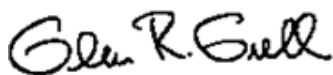
The Public Pension Coordinating Council was formed in 1990 to assist the public employee retirement community. The Council is composed of representatives from three national associations whose members are directly involved in the administration of public employee retirement systems: the National Association 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.

Acknowledgments

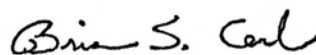
The preparation of this report reflects the combined efforts of PSERS' staff under the direction of the PSERS Board. Our sincere appreciation is extended to all who assisted in and contributed to the completion of this document. This report is intended to provide complete and reliable information in conformance with accepted standards and to document responsible stewardship of the System's assets.

We embrace our responsibilities of being prudent stewards and to proactively prepare for the anticipated challenges ahead. We will continue to take responsible action and will work with our members, employers and stakeholders to position PSERS to be a strong pension system.

Respectfully submitted,



Glen R. Grell
Executive Director



Brian S. Carl, CPA, CTP
Chief Financial Officer

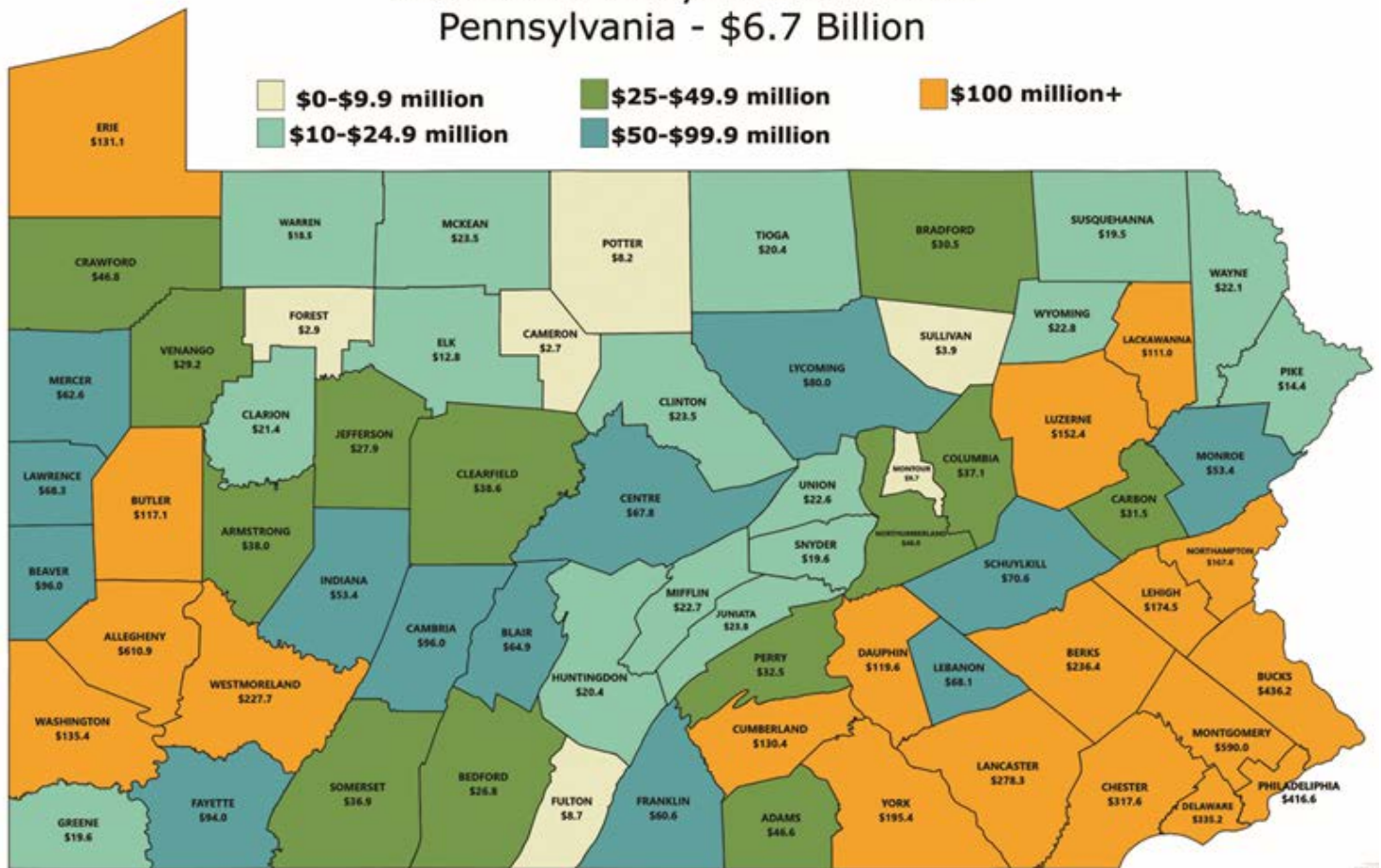
Pension Benefits by County Fiscal Year 2021 (Dollar Amounts in Millions)

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 2021, PSERS pension benefits to retirees totaled approximately \$7.1 billion. Of this amount nearly 94%, or \$6.7 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	\$610.9
Montgomery	\$590.0
Bucks	\$436.2
Philadelphia	\$416.6
Delaware	\$335.2
Chester	\$317.6
Lancaster	\$278.3
Berks	\$236.4
Westmoreland	\$227.7
York	\$195.4

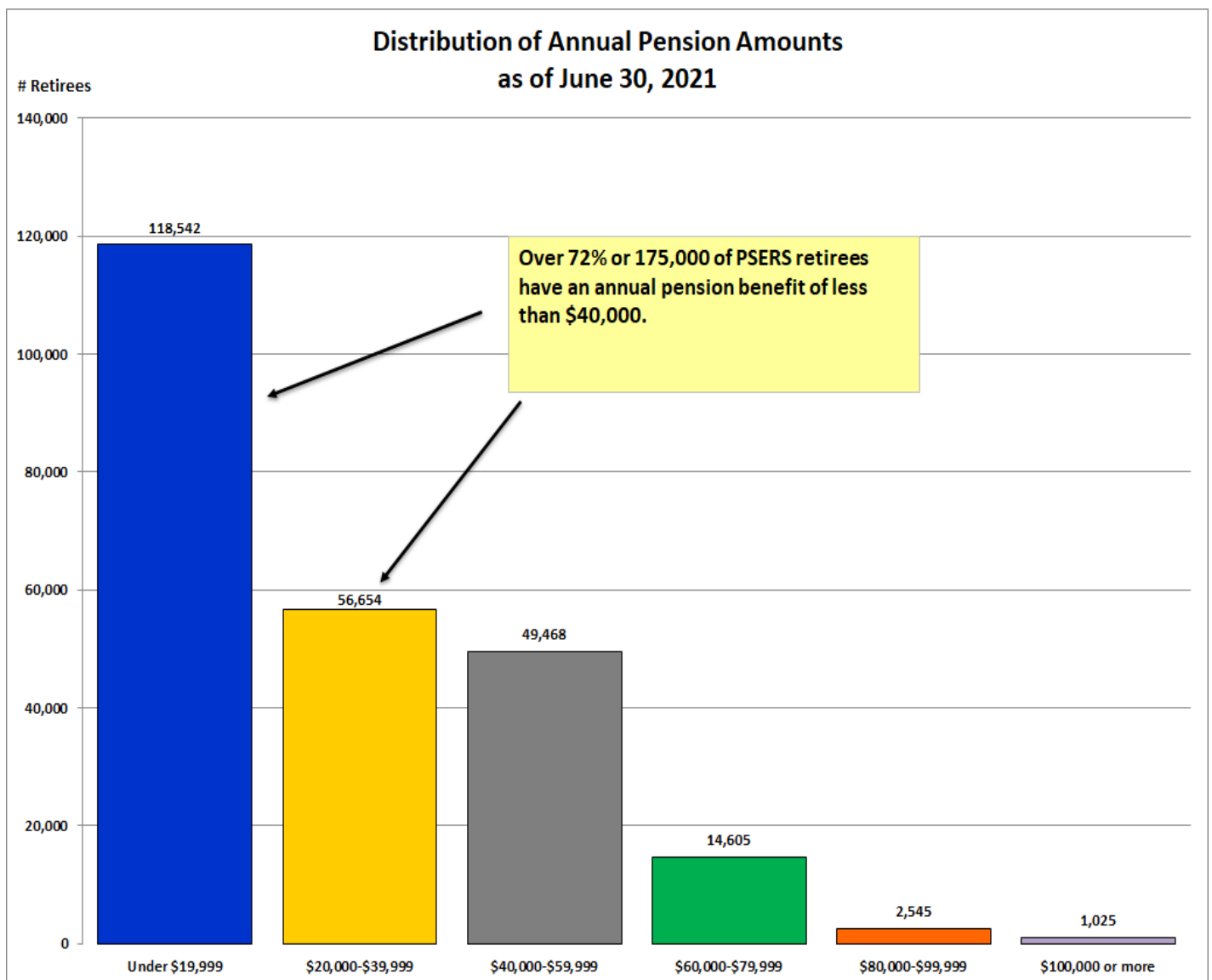
Total Benefit Payments Made in Pennsylvania - \$6.7 Billion

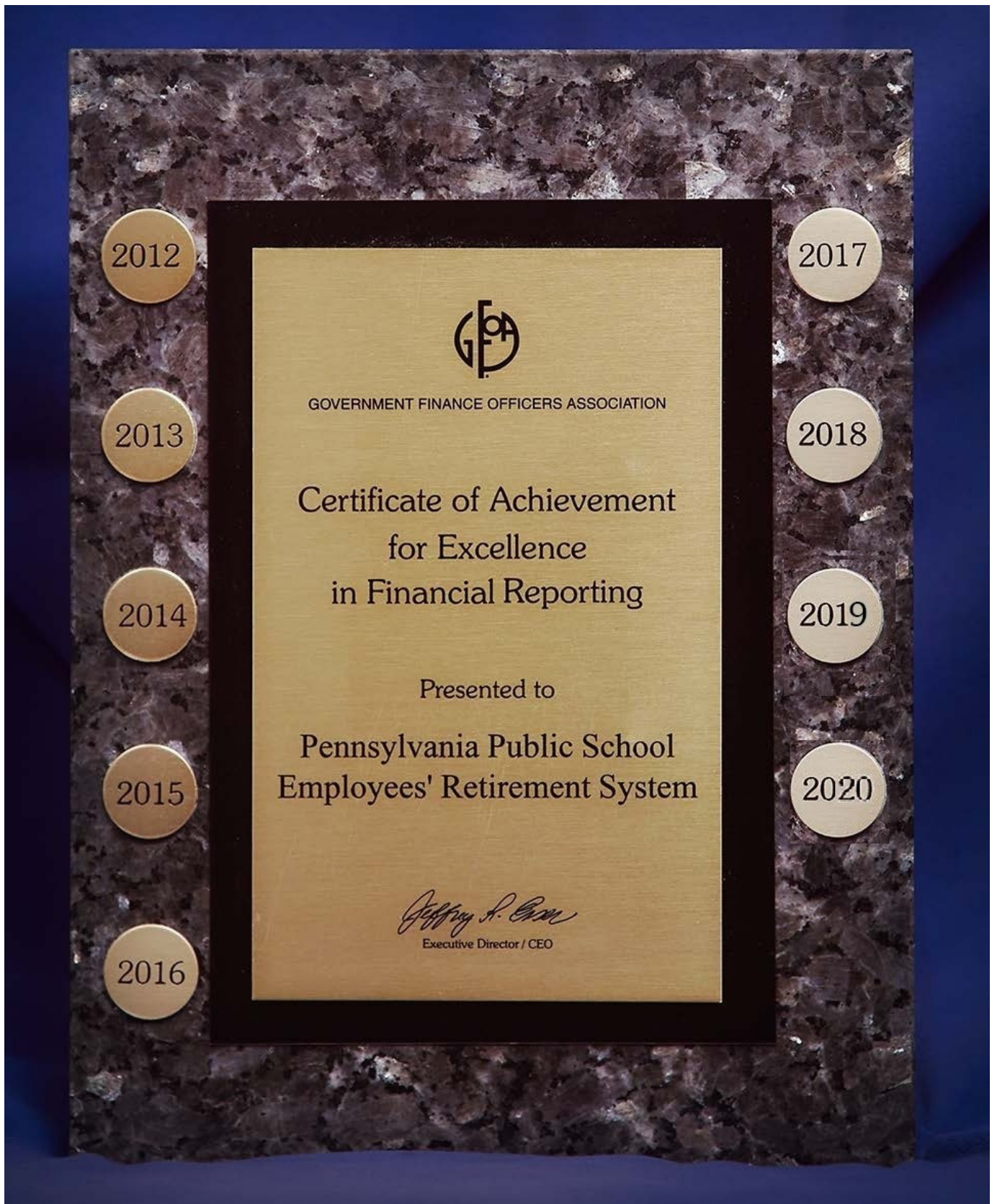


Pension Benefit Amounts Fiscal Year 2021 (Dollar Amounts in Millions)

The average PSERS retiree receives a modest pension of \$25,992 on an annual basis, a benefit earned through a lengthy career of 23 years in public education. During their career, members make mandatory contributions, most of which are 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, 2021, there were 1,025 retired members receiving an annual benefit over \$100,000 out of a total 243,000 PSERS retirees. These six-figure pension retirees spent an average of 37 years working in their public education careers and contributing to their benefit.







Public Pension Coordinating Council

*Public Pension Standards Award
For Funding and Administration*

2020

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.

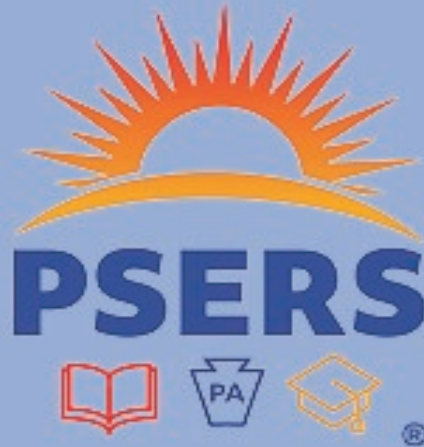
Presented by the Public Pension Coordinating Council, a confederation of

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 cursive script that reads "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

**PSERS Board of Trustees
as of June 30, 2021**

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

Secretary Noe Ortega

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

Secretary Richard Vague

Treasurer of the Commonwealth of Pennsylvania (ex officio)

Honorable Stacy Garrity

Chief Executive Officer 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

Mr. Joseph M. Torsella (term expires 01/01/24)

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

Mr. Jason M. Davis (term expires 12/31/22)

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

Mr. Christopher Santa Maria (term expires 12/31/23)

One member elected from among the Active Non-Certified Members 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 12/31/22)

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 12/31/23)

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 12/31/22)

Honorable Matthew D. Bradford (term expires 12/31/22)

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

Honorable Katie J. Muth (term expires 12/31/22)

Honorable Patrick M. Browne (term expires 12/31/22)

Seal
of
Pennsylvania

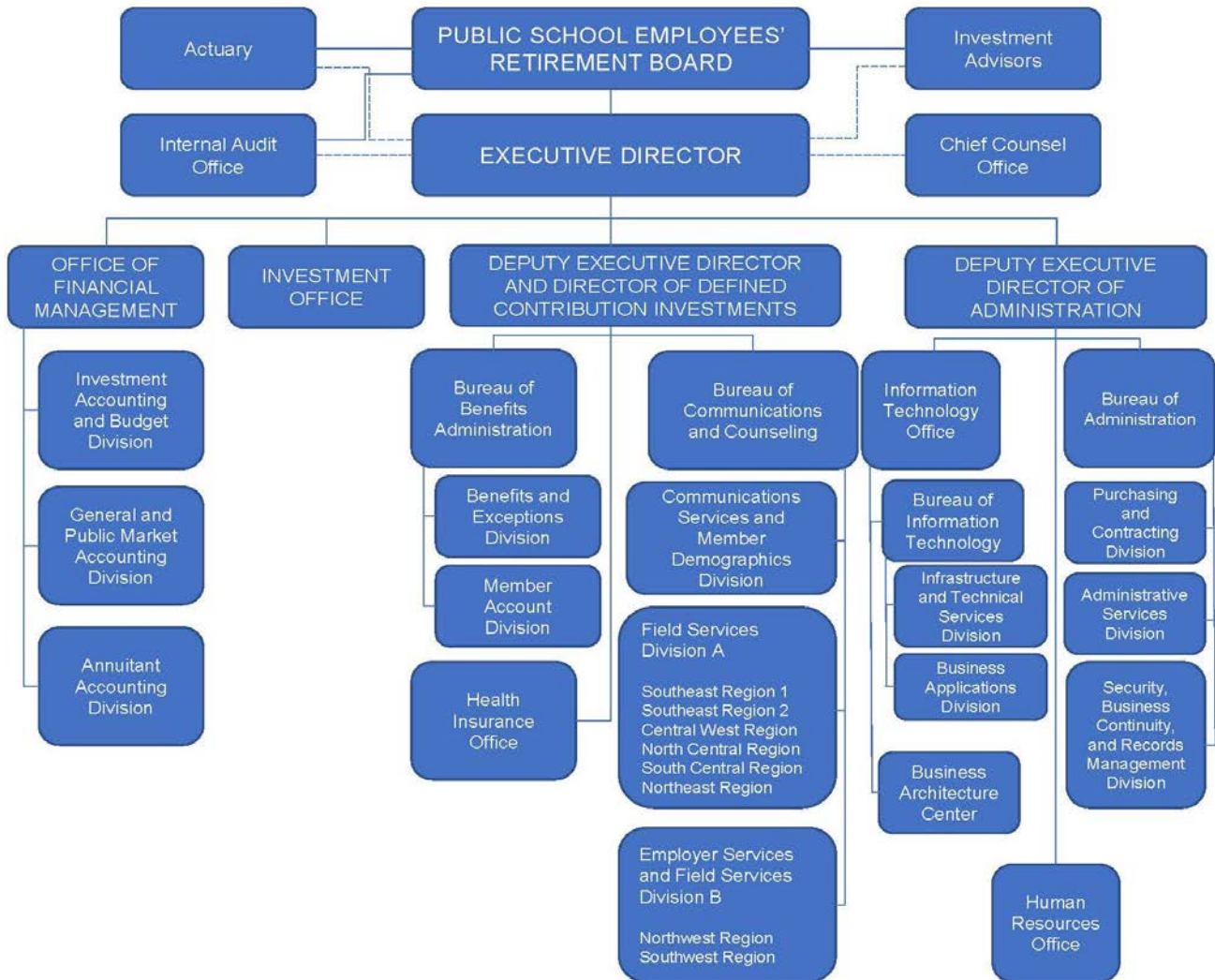


2021 Board Committees

	Appeals & Member/ Employer Services Ms. Beck, Chair Ms. Vogler, Vice Chair Representative Ryan Mr. Davis Ms. Lemmo Treasurer Garrity	
Audit/Compliance Representative Ryan, Chair Mr. Mains, Vice Chair Representative Bradford Mr. Davis Mr. Vague Treasurer Garrity	Budget/Finance Senator Browne, Chair Mr. DiTullio, Vice Chair Ms. Beck Senator Muth Mr. Ortega Mr. Torsella	Bylaws/Policy Representative Bradford, Chair Treasurer Garrity, Vice Chair Senator Browne Mr. DiTullio Mr. Mains Mr. Vague
Corporate Governance Treasurer Garrity, Chair Senator Browne, Vice Chair Representative Bradford Mr. DiTullio Ms. Vogler Mr. Torsella	Defined Contribution Plan Mr. Vague, Chair Senator Muth, Vice Chair Mr. Davis Mr. DiTullio Ms. Lemmo Mr. Mains	Elections Mr. Ortega, Chair Mr. Torsella, Vice Chair Senator Browne Mr. Davis Representative Ryan Mr. Vague
Health Care Ms. Lemmo, Chair Ms. Beck, Vice Chair Senator Muth Mr. Ortega Representative Ryan Ms. Vogler	Investment Mr. Davis, Chair Mr. DiTullio, Vice Chair Committee is comprised of all Board Members	Personnel Ms. Vogler, Chair Mr. Mains, Vice Chair Senator Muth Representative Bradford Ms. Lemmo Mr. Ortega

NOTE: Mr. Santa Maria, 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 90 and Investment section page 108.

As of September 30, 2021



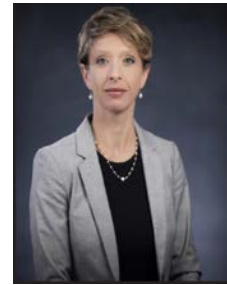
Glen R. Grell
Executive Director



James H. Grossman Jr.
Chief Investment Officer



Beverly Hudson
Deputy Executive Director of
Administration



Jennifer A. Mills
Deputy Executive Director and
Director of Defined Contribution
Investments



Jackie W. Lutz
Chief Counsel



Brian S. Carl
Chief Financial Officer



Steven C. Goldstein
Chief Technology Officer



Patricia Dence
Director of Administration



Mei Gentry
Chief Audit Officer



Eugene W. Robison
Director of Communications and
Counseling



Caitlin Witmer
Director of Human Resources



Todd Fulton
Director of Benefits Administration



Peter Camacci
Director of Health Insurance



Evelyn M. Williams
Communications Director

The Legislative Liaison position was vacant.

PSERS REGIONAL OFFICES

Northwest

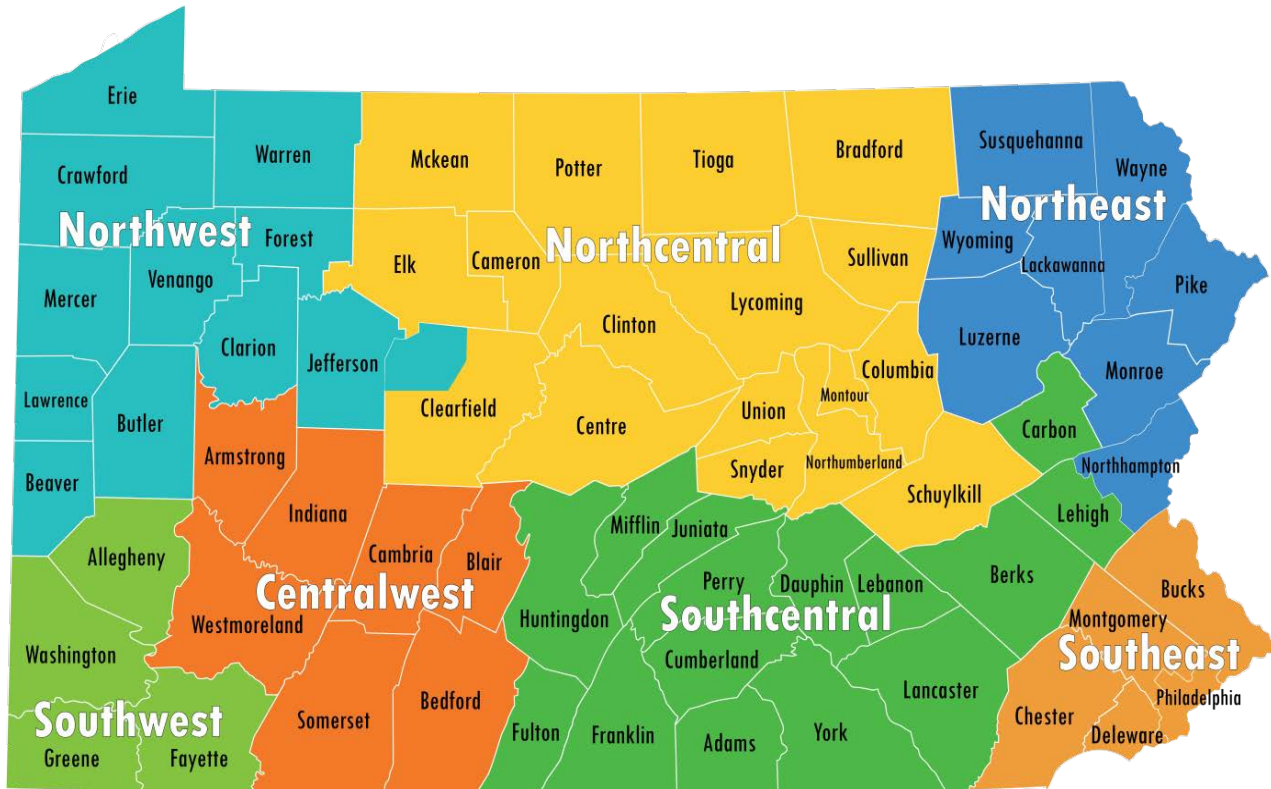
Franklin Penn Wood Center
464 Allegheny Boulevard, Suite C
Franklin, PA 16323-6210
Local: 1.814.437.9845
FAX: 1.814.437.5826
Toll-Free: 1.888.773.7748
Donald Gregory, Administrator

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

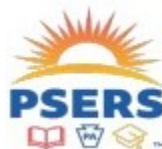
219 West High Street
Ebensburg, PA 15931-1540
Local: 1.814.419.1180
FAX: 1.814.419.1189
Toll-Free: 1.888.773.7748
Brian Farester, Administrator

Southcentral

5 North 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



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.

PA State
Animal:
White-tailed
Deer



FINANCIAL SECTION

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PA State

Dog:

Great

Dane





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), a component unit of the Commonwealth of Pennsylvania, which comprise the Statements of Fiduciary Net Position as of June 30, 2021 and 2020, and the related Statements of Changes in Fiduciary Net Position for the years then ended, and the related Notes to the Financial Statements, as listed in the table of contents.

Management's Responsibility for the Financial Statements

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

Auditors' Responsibility

Our responsibility is to express an opinion on these financial statements based on our audits. We conducted our audits in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audits 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, 2021 and 2020, 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.



CLA is an independent member of Nexia International, a leading, global network of independent accounting and consulting firms. See [nexia.com/member-firm-disclaimer](https://www.nexia.com/member-firm-disclaimer) for details.

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

Other Matters

Required Supplementary Information

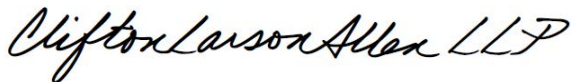
Accounting principles generally accepted in the United States of America require that the Management's Discussion and Analysis and the Schedules of Changes in the Employer Net Pension Liability, Employer Net Pension Liability, Employer Pension Contributions, Changes in the Employer Net OPEB (Premium 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 (collectively, the supplementary information), as listed in the table of contents, for the year ended June 30, 2021 are presented for purposes of additional analysis and are not a required part of the basic financial statements.

The 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, 2021 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, 2021.

The Introductory, Actuarial, Investment and Statistical sections, 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 29, 2021

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, 2021 (FY 2021) 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 a Defined Contribution (DC) plan and 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. 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, 2021 and 2020. 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, 2020 to June 30, 2021 and from July 1, 2019 to June 30, 2020. 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 24.58% for FY 2021, 1.12% for the fiscal year ended June 30, 2020 (FY 2020), and 6.68% for the fiscal year ended June 30, 2019 (FY 2019). The return for the ten-year period ended June 30, 2021 was 8.04%, which exceeded the 7.00% actuarial investment rate of return assumption. Unless otherwise noted, all rates of return are net of fees.
- PSERS' total net position increased by an all time high of \$13.5 billion from \$59.0 billion at June 30, 2020 to \$72.5 billion at June 30, 2021. The increase at June 30, 2021 was due mostly to record net investment income plus member and employer contributions exceeding deductions for benefit and administrative expenses. The change in total net position from June 30, 2019 to June 30, 2020 was a decrease of \$0.1 billion from \$59.1 billion at June 30, 2019 to \$59.0 billion at June 30, 2020. The decrease at June 30, 2020, was due mostly to deductions for benefit and administrative expenses exceeding net investment income plus member and employer contributions.
- PSERS' Plan fiduciary net position as a percentage of the total pension liability (market value funded ratio) increased from 54.32% at June 30, 2020 to 63.67% at June 30, 2021 due to strong investment returns well above the actuarial investment return assumption. The FY 2021 increase in the market value funded ratio was significant and was one of the largest single year improvements in PSERS history.
- Total employer contributions increased from \$4.8 billion in FY 2020 to \$4.9 billion in FY 2021. This increase was primarily attributable to a increase in the total employer contribution rate from 34.29% in FY 2020 to 34.51% in FY 2021. The increase in the employer contribution rate was the smallest since FY 2010.

Management's Discussion and Analysis (continued)

- PSERS' employers fully funded the actuarially required contributions from FY 2016 to FY 2021 and these contributions are making a positive difference in PSERS' funding.
- PSERS' total benefit expense increased from \$7.4 billion in FY 2020 to \$7.6 billion in FY 2021. The average monthly pension benefit and the number of members receiving benefits increased in FY 2021.

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 preserved the benefits of existing members and included a series of actuarial and funding changes to PSERS and benefit reductions for individuals who became 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 using rate collars. 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 34.51% rate in FY 2021. 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 marked a significant milestone in PSERS' contribution history and established a path to full funding. PSERS received the actuarially required contributions from FY 2016 to FY 2021, and the large annual employer contribution rate increases that occurred from FY 2012 to FY 2018 are now complete. Employer contribution rate increases in the future are expected to be in line with inflation.

Analysis of Fiduciary Net Position					
(Dollar Amounts in Thousands)					
Summary of Fiduciary Net Position	FY 2021	Increase (Decrease)	FY 2020	Increase (Decrease)	FY 2019
Assets:					
Receivables	\$ 2,545,918	\$ (48,628)	\$ 2,594,546	\$ 22,808	\$ 2,571,738
Investments	72,160,784	14,387,083	57,773,701	45,144	57,728,557
Securities lending collateral pool	7,862,287	3,371,050	4,491,237	(27,135)	4,518,372
Capital assets	17,021	(2,162)	19,183	(2,162)	21,345
Miscellaneous	36,715	13,719	22,996	(2,382)	25,378
Total Assets	\$ 82,622,725	\$ 17,721,062	\$ 64,901,663	\$ 36,273	\$ 64,865,390
Liabilities:					
Payables and other liabilities	2,227,619	846,979	1,380,640	168,839	1,211,801
Obligations under securities lending	7,862,287	3,371,050	4,491,237	(27,135)	4,518,372
Total Liabilities	\$ 10,089,906	\$ 4,218,029	\$ 5,871,877	\$ 141,704	\$ 5,730,173
Net Position	\$ 72,532,819	\$ 13,503,033	\$ 59,029,786	\$ (105,431)	\$ 59,135,217
Summary of Changes in Fiduciary Net Position					
Additions:					
Contributions	\$ 5,990,637	\$ 113,431	\$ 5,877,206	\$ 210,814	\$ 5,666,392
Commonwealth of Pennsylvania	—	—	—	(5,200)	5,200
Participant premiums and CMS	470,757	(1,374)	472,131	35,303	436,828
Net investment income	14,764,412	13,757,695	1,006,717	(2,628,233)	3,634,950
Total Additions	\$ 21,225,806	\$ 13,869,752	\$ 7,356,054	\$ (2,387,316)	\$ 9,743,370
Deductions:					
Benefit expense	7,631,376	260,034	7,371,342	126,460	7,244,882
Administrative expenses	91,397	1,254	90,143	(1,855)	91,998
Total Deductions	\$ 7,722,773	\$ 261,288	\$ 7,461,485	\$ 124,605	\$ 7,336,880
Changes in Net Position	\$ 13,503,033	\$ 13,608,464	\$ (105,431)	\$ (2,511,922)	\$ 2,406,490

Management’s Discussion and Analysis (continued)

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 six-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 58.1% at June 30, 2019 to 59.2% as of June 30, 2020, the most recent actuarial valuation, due to fully funded employer contributions, favorable demographic experience, and positive investment returns. The actuarial funded ratio improved to 59.2% as of June 30, 2020 after reaching a significant turning point at June 30, 2017 when it fell to 56.3%. After years of decline since the 123.8% peak at June 30, 2000, the funded ratio is now improving and is projected to continue to rise in the future.

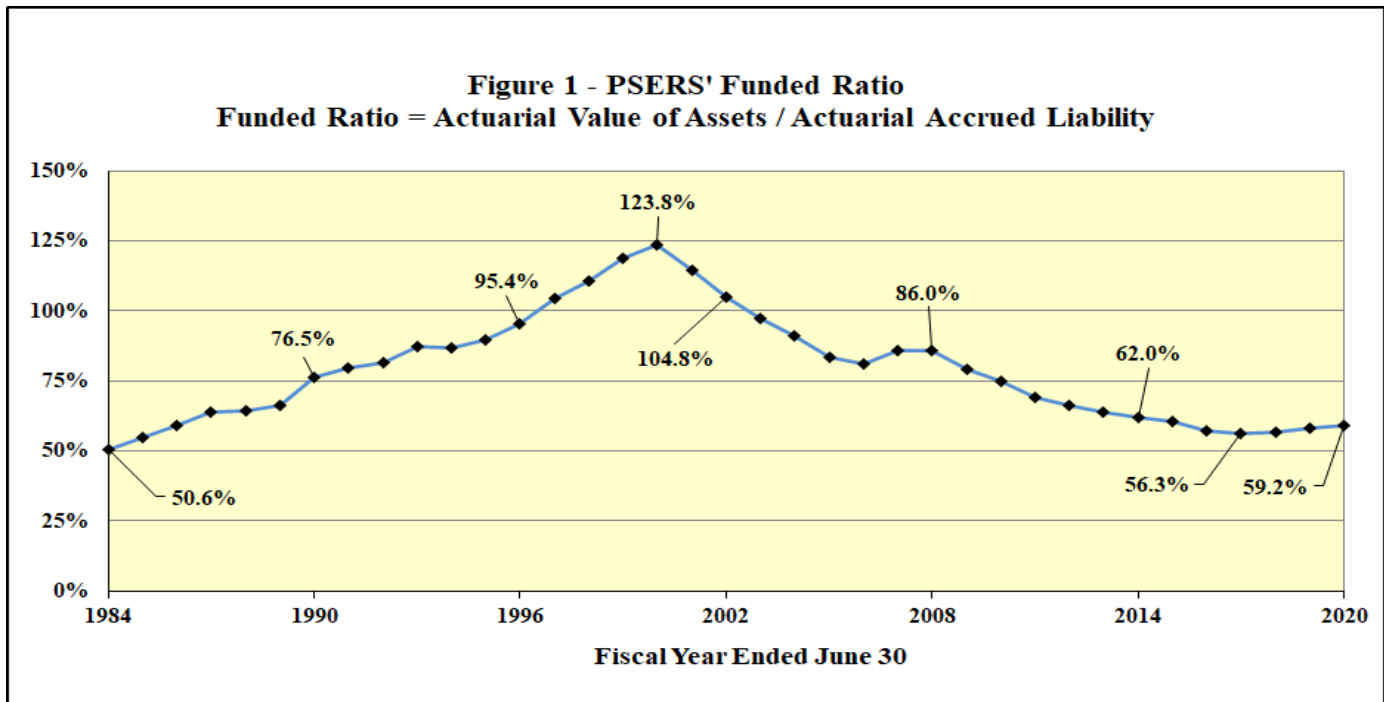
The results of operations for FY 2021 will be reflected in the actuarial valuation for the year ended June 30, 2021. Due to the normal lag time for completion of the actuarial valuation, the resulting funded status will be available at the end of the 2021 calendar year and will be reported in the financial statements for the fiscal year ending June 30, 2022 (FY 22). Based on the investment performance for the ten-year period ended June 30, 2021, which is above the investment rate of return assumption during that time period, due to receiving the full actuarially required contributions and due to PSERS Board adopting new actuarial assumptions for the June 30, 2021 actuarial valuation. The funded ratio at June 30, 2021

is expected to remain flat. 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 54.32% at June 30, 2020 to 63.67% at June 30, 2021 due to investment returns above the actuarial investment return assumption. Unlike the actuarial funded ratio which recognizes the investment performance over 10 years, the market value funded ratio is expected to fluctuate more every year due to the immediate recognition of the fund’s fiscal year investment performance. Over the past five years, the longer term trend of the market value funded ratio increased from 50.14% at June 30, 2016 to 63.67% at June 30, 2021 due primarily to PSERS receiving the full actuarially required contributions for all five years and strong positive investment returns. All the ingredients remain in place and a path to full funding has been established.

PSERS’ State Accumulation Account improved from \$(16.9) billion at June 30, 2020 to \$(7.4) billion at June 30, 2021 due to employer contributions at the actuarially required level and investment performance 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 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.



Management's Discussion and Analysis (continued)

Fiscal year 2021 will be remembered for the COVID-19 pandemic which dominated the headlines and affected everyone globally. With the advent of vaccines which received emergency approval, the economy transitioned from rolling lockdowns to being close to fully reopened in the U.S. Other headlines during the fiscal year included geo-political tensions between the U.S. and China, and a Brexit deal between the United Kingdom and European Union in the last few days before the New Year 2021 deadline. As a result of easing monetary policies, stimulative fiscal policies, and re-opening of global economies, global equities and global risk markets continued their upward march since the beginning of the fiscal year. With all of the liquidity injected into the markets, especially in the U.S., inflation significantly increased, with the U.S. Core Consumer Price Index (CPI) increasing to 4.5% year-over-year as of June 2021 from 1.2% one year ago. Housing inflation also picked up with the S&P CoreLogic Case-Shiller U.S. National Home Price Index showing home prices increased by 18.5% over the past 12 months ended June 30, 2021, the largest year-over-year increase since the index was created in 1990.

The U.S. economy had some very significant tail winds during the past fiscal year. First, the Federal Reserve continued to run very easy monetary conditions with very low interest rates and continued quantitative easing programs. The Federal Funds target rate range remained unchanged during the fiscal year at 0.00% - 0.25% with a commitment from the Federal Reserve to keep rates at rock bottom until at least 2022. In addition, the Federal Reserve continued to pump liquidity into the economy through its Treasury and MBS Asset Purchase program, injecting \$120 billion a month through asset purchases. Second, the federal government approved a \$1.9 trillion COVID-19 support package and is considering other fiscal programs, including an infrastructure bill. Finally, as COVID-19 cases moderated and with the deployment of a vaccine, the economy started to re-open and economic activity picked up significantly from being essentially shut down at the onset of the pandemic.

The U.S. economy strongly expanded during the fiscal year as measured by U.S. real Gross Domestic Product (GDP) and the manufacturing Institute of Supply Management (ISM) Purchasing Managers Index (PMI). The U.S. real GDP increased by 12.2% over the course of the past year, and the ISM PMI remained in expansionary territory from 52.6 at June 30, 2020 to a high of 64.7 on March 30, 2021 before falling back to a still strong 60.6 on June 30, 2021. With the economy re-opening, the official unemployment rate fell during the fiscal year from 11.1% at June 30, 2020 to 5.9% at June 30, 2021.

The Euro Area benefited from similar but weaker tail winds as the U.S. during the past fiscal year. Europe's economy did not open as quickly due to stricter lock downs and a slower pace of COVID-19 vaccination rollout. The European Central

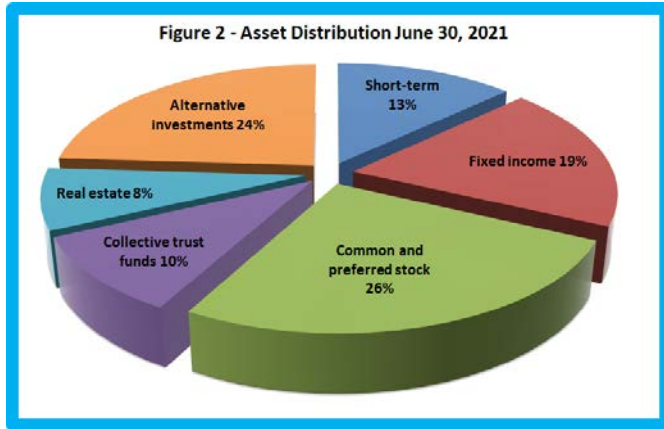
Bank increased its asset purchase program from €500 billion to €1.85 trillion to support the market and stimulate growth. On the fiscal side, the European Union approved a €2.2 trillion budget and stimulus package which included a €750 billion pandemic relief package to be funded by joint debt. As of the second quarter 2021, the Euro Area had strong year-over-year growth of 13.7%, driven by a re-opening of the economy from COVID-19 restrictions, stimulative monetary policy, and strong fiscal support. The unemployment rate remained stable at 7.7%, the same as a year earlier due to companies receiving financial incentives to maintain employee payroll during the pandemic. Eurozone inflation trends remained stable during the past fiscal year, with Eurozone Core Inflation modestly increasing from 0.8% on an annualized basis in June 2020 to 0.9% in June 2021, continuing well below the European Central Bank (ECB) target of 2.0%. The Euro Area economy expanded this past fiscal year as evidenced by the Markit Eurozone Manufacturing PMI measurement of 63.4 in June 2021 and remained above the expansionary 50 level the entire fiscal year. The ECB continued its policy of very accommodative overnight interest rates.

Japan, and Asia in general, did not suffer from a health perspective as much as the western economies from COVID-19. As of the second quarter 2021, Japan's real GDP increased by 1.9% versus -10.1% as of June 2020. 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 as their aggressive actions fighting the COVID-19 virus allowed them to economically recover more quickly. China had strong real GDP growth of 7.9% over the past year, significantly faster than the 3.2% pace for the year ended June 2020.

For FY 2021, PSERS' time-weighted rate of return on investments was 24.58% which was above PSERS' total fund Policy Index of 20.58% 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 \$14.8 billion in FY 2021 increased from a net investment income of \$1.0 billion in FY 2020, as the FY 2021 return of 24.58% was substantially above the FY 2020 return of 1.12%. FY 2021 investment returns exceeded PSERS 7.00% long term actuarial return assumption. FY 2020 investment returns trailed PSERS 7.25% long term actuarial return assumption.

Management’s Discussion and Analysis (continued)



The time-weighted annualized rate of return over the past three- and five-year periods ended June 30, 2021 was 10.35% and 10.10%, respectively. The time-weighted return for the three-year period and five-year period exceeded the total fund Policy Index return by 25 basis points and 71 basis points, respectively. The annualized time-weighted rates of return for the ten- and twenty five-year periods ended June 30, 2021 were 8.04% and 7.70%, respectively.

The asset distribution of PSERS’ investment portfolio at June 30, 2021, 2020, and 2019, at fair value, including defined contribution and postemployment healthcare assets, is presented in Figure 2 and Table 1.

FY 2021

- **Short-term investments** (cash and cash equivalents) increased by \$3.3 billion from \$6.2 billion at June 30, 2020 to \$9.5 billion June 30, 2021 mainly due to a reallocation of exposure from other asset classes.
- **Fixed income investments** increased by \$1.6 billion from \$11.7 billion at June 30, 2020 to \$13.3 billion at June 30, 2021 mainly due to a reallocation of exposure from other asset classes and positive investment performance.

- **Common and preferred stock investments** increased by \$7.4 billion from \$11.0 billion at June 30, 2020 to \$18.4 billion at June 30, 2021. Due to a reallocation of exposure from other asset classes and strong investment performance, PSERS common and preferred stock investments significantly increased during FY 2021.
- **Collective trust funds** decreased by \$2.5 billion from \$9.9 billion at June 30, 2020 to \$7.4 billion at June 30, 2021 due to the elimination of the risk parity allocation program which was partially offset by positive investment performance.
- **Real estate investments** increased by \$0.5 billion from \$5.5 billion at June 30, 2020 to \$6.0 billion at June 30, 2021 due to contributions to new and existing partnerships combined with valuation increases in partnership portfolio holdings which exceeded significant distributions.
- **Alternative investments** increased by \$4.2 billion from \$13.4 billion at June 30, 2020 to \$17.6 billion at June 30, 2021 due to contributions to new and existing partnerships combined with valuation increases in partnership portfolio holdings which exceeded significant distributions.

FY 2020

- **Short-term investments** (cash and cash equivalents) increased from \$6.0 billion at June 30, 2019 to \$6.2 billion at June 30, 2020 mainly due to a reclassification of assets.
- **Fixed income investments** increased by \$3.0 billion from \$8.7 billion at June 30, 2019 to \$11.7 billion at June 30, 2020. Due to a reallocation of exposure from other asset classes, PSERS significantly increased its fixed income investments during FY 2020.
- **Common and preferred stock investments** increased by \$1.2 billion from \$9.8 billion at June 30, 2019 to \$11.0 billion at June 30, 2020. Due to a reallocation of exposure from other asset classes, PSERS increased its common and preferred stock investments during FY 2020.
- **Collective trust funds** decreased by \$4.4 billion from \$14.3 billion at June 30, 2019 to \$9.9 billion at June 30, 2020.

Table 1 - Investment Balances by Asset Class

Asset Class	(Dollar Amount in Thousands)					
	2021	%	2020	%	2019	%
Short-term	\$ 9,479,700	13.1	\$ 6,239,539	10.8	\$ 6,027,740	10.4
Fixed income	13,253,332	18.4	11,719,860	20.3	8,652,870	15.0
Common and preferred stock	18,437,873	25.6	11,024,133	19.1	9,813,146	17.0
Collective trust funds	7,377,281	10.2	9,863,496	17.0	14,305,045	24.8
Real estate	5,986,463	8.3	5,478,122	9.5	5,484,621	9.5
Alternative investments	17,626,135	24.4	13,448,551	23.3	13,445,135	23.3
Total	\$ 72,160,784	100.0	\$ 57,773,701	100.0	\$ 57,728,557	100.0

Management’s Discussion and Analysis (continued)

2020 mainly due to a reallocation of exposure to other asset classes.

- **Real estate investments** remained consistent at \$5.5 billion at June 30, 2019 and June 30, 2020 .
- **Alternative investments** remained consistent at \$13.4 billion at June 30, 2019 and June 30, 2020.

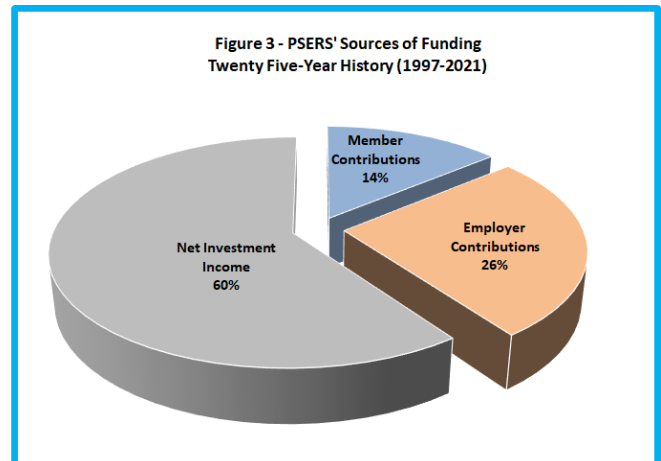
Securities Lending

The System’s net income from securities lending activities increased from \$15.3 million in FY 2020 to \$19.8 million in FY 2021. Lending income and expense both decreased significantly as the economy in general moved from a moderate to a lower interest rate environment. The spread increased from FY 2020 to FY 2021 as gross earnings on the borrowers’ collateral outpaced the amounts rebated to the borrowers.

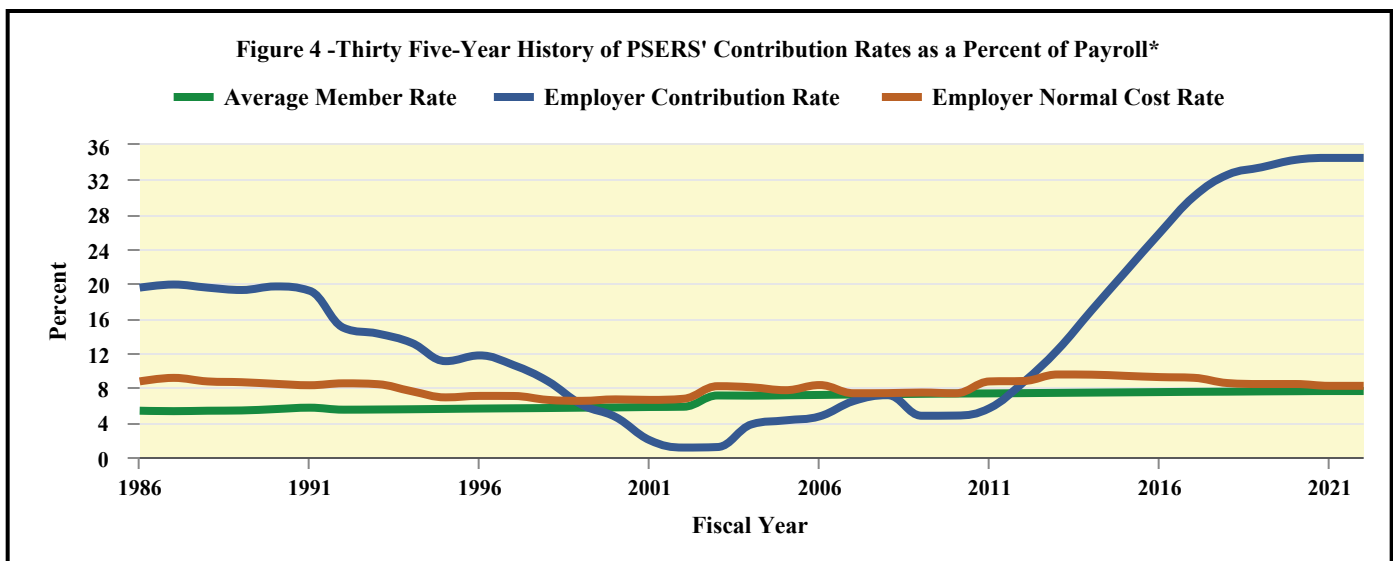
Contributions

Employer contributions increased from \$4.8 billion in FY 2020 to \$4.9 billion in FY 2021 due to a slight increase in the total employer contribution rate from 34.29% in FY 2020 to 34.51% in FY 2021 and growth in employer payroll. Total employer contributions increased from \$4.6 billion in FY 2019 to \$4.8 billion in FY 2020. This increase was primarily attributable to an increase in the total employer contribution rate from 33.43% in FY 2019 to 34.29% in FY 2020.

Total member contributions slightly increased from \$1.08 billion in FY 2020 to \$1.10 billion in FY 2021 and increased from \$1.06 billion in FY 2019 to \$1.08 billion in FY 2020. The increase in both years was mainly due to an increase in member contributions from active member payroll.



As a result of an increase in member purchase of service contributions, active member payroll, and the average member contribution rate from 7.59% in FY 2020 to 7.61% in FY 2021, member contribution receivables increased from \$356.4 million at June 30, 2020 to \$368.8 million at June 30, 2021. As a result of an increase in member purchase of service contributions, member contribution receivables increased from \$352.4 million at June 30, 2019 to \$356.4 million at June 30, 2020. The employer contribution receivables remained consistent at \$1.4 billion at June 30, 2020 and June 30, 2021. See Figure 4 for a thirty five-year history of PSERS contribution rates.



* Includes Premium Assistance & DC

Management’s Discussion and Analysis (continued)

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 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 2021 was \$2.7 billion and for FY 2020 was \$2.6 billion. The school and non-school entity share was \$2.2 billion in FY 2020 and FY 2021. For FY 2021 total employer contributions were \$4.9 billion and for FY 2020 were \$4.8 billion.

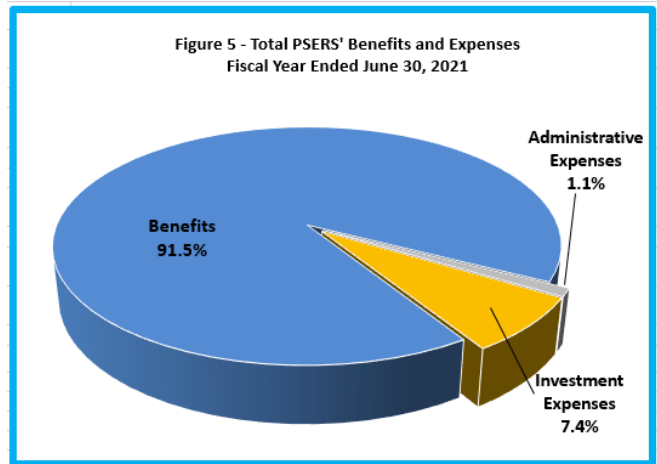
Investment Income

Net investment income increased from \$1.0 billion in FY 2020 to \$14.8 billion in FY 2021, which is consistent with the increase in the time-weighted investment rate of return from 1.12% for FY 2020 to 24.58% for FY 2021. Net investment income decreased from \$3.6 billion in FY 2019 to \$1.0 billion in FY 2020, which is consistent with the decrease in the time-weighted investment rate of return from 6.68% for FY 2019 to 1.12% for FY 2020. As depicted in Figure 3, investment earnings provided 60% of PSERS’ funding over the past 25 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.

Total PSERS’ Benefits and Expenses

The primary source of expense during FY 2021 was for the payment of pension and healthcare benefits approximating \$7.6 billion. The breakdown consisted of \$7.1 billion for Pension, \$1.0 million for Defined Contribution, \$113.5 million for Premium Assistance, and \$382.5 million for HOP benefits. Figure 5 illustrates the significant portion of expenses attributable to benefit payments.

Total PSERS’ benefit expense increased from \$7.4 billion in FY 2020 to \$7.6 billion in FY 2021. The increase is attributable to an ongoing increase to the average monthly benefit and an increase in pension lump sum rollover payments. Pension benefits payable decreased from \$590.8 million at June 30, 2020 to \$576.3 million at June 30, 2021. This decrease was mainly attributable to a decrease in pension payments payable. Total PSERS’ benefit expense slightly increased from \$7.2 billion in FY 2019 to \$7.4 billion in FY 2020. 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 \$585.0 million at June 30, 2019 compared to \$590.8 million at June 30, 2020. The increase is attributable to an increase in pension and death payments payable.



Investment expenses increased by \$102.8 million from \$515.3 million in FY 2020 to \$618.1 million in FY 2021 mainly due to an increase in management fees in collective trust funds of \$106 million. The increase in collective trust fund fees is mainly attributable to higher performance fees earned in FY 2021. As a percentage of total benefits and expenses, investment expense increased from 6.5% in FY 2020 to 7.4% in FY 2021.

Management's Discussion and Analysis (continued)

As a percentage of total benefits and expenses, investment expense has decreased from a high of 8.2% in FY 2013 to 7.4% in FY 2021. During this same period net assets increased \$23.8 billion from \$48.7 billion at June 30, 2012 to \$72.5 billion at June 30, 2021.

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 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 \$1.3 million from \$90.1 million during FY 2020 to \$91.4 million during FY 2021. This increase was mainly attributable to an increase in consultant and legal fees. As depicted in Figure 5, administrative expenses represent only 1.1% of total benefits and expenses.

Defined Contribution Plan (DC)

PSERS administers a defined contribution plan. The following paragraphs and summary financial data provide supplementary information to the financial statements which contain the financial position and activities for the defined contribution plan.

Financial Highlights

- Total net position increased by \$40.9 million from June 30, 2020 to June 30, 2021. This increase is primarily due to member and employer contributions and investments (additions) exceeding the benefits and administrative expenses (deductions).
- Investments increased from \$21.6 million at June 30, 2020 to \$62.6 million at June 30, 2021 as the defined contribution plan is relatively new and investments continue to grow at a rapid pace.

Contributions

Total contributions increased from \$14.9 million to \$34.2 million for the fiscal years ended June 30, 2020 and 2021, respectively. This is due to a significant increase in the number of participants from 16,900 to 29,300 for the fiscal years ended June 30, 2020 and 2021, respectively.

Investment Income

Investment income increased from \$655 thousand to \$9.3 million for the fiscal years ended June 30, 2020 and 2021, respectively. This is due to the increase in the asset base which results in an increase in investment income.

Benefits and Expenses

Overall deductions decreased from \$3.2 million to \$2.6 million for the fiscal years ended June 30, 2020 and 2021. The overall decrease is due to a decrease in administrative expenses offset by a significant increase in refunds disbursed in FY 2021. The decrease in administrative expenses is primarily due to less start-up costs as incurred in FY 2020 and a decrease in personnel cost in FY 2021.

Management's Discussion and Analysis (continued)

Defined Contribution Plan

Summary of Fiduciary Net Position

(Dollar Amounts in Thousands)

	FY 2021	Increase (Decrease)	FY 2020	Increase (Decrease)	FY 2019
Assets:					
Receivables	\$ 669	\$ 208	\$ 461	\$ 442	\$ 19
Investments	62,645	41,080	21,565	11,089	10,476
Total Assets	63,314	41,288	22,026	11,531	10,495
Liabilities:					
Payables and other liabilities	1,038	373	665	(874)	1,539
Total Liabilities	1,038	373	665	(874)	1,539
Net Position	\$ 62,276	\$ 40,915	\$ 21,361	\$ 12,405	\$ 8,956

Summary of Changes in Fiduciary Net Position

(Dollar Amounts in Thousands)

	FY 2021	Increase (Decrease)	FY 2020	Increase (Decrease)	FY 2019
Additions:					
Contributions	\$ 34,228	\$ 19,299	\$ 14,929	\$ 14,929	\$ —
Commonwealth of Pennsylvania	—	—	—	(5,200)	5,200
Net investment income	9,314	8,659	655	382	273
Total Additions	43,542	27,958	15,584	10,111	5,473
Deductions:					
Benefit expenses	1,040	1,028	12	12	—
Administrative expenses	1,587	(1,580)	3,167	(109)	3,276
Total Deductions	2,627	(552)	3,179	(97)	3,276
Changes in Net Position	\$ 40,915	\$ 28,510	\$ 12,405	\$ 10,208	\$ 2,197

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.

**Health Insurance Premium Assistance Program
(Premium Assistance)**

Financial Highlights

- Total net position increased by \$2.1 million in FY 2021 mainly due to net investment income and employer contributions exceeding benefit expense deductions while administrative expenses remained steady. The total net position continues to be sufficient to fund one full year of benefits. The change from June 30, 2019 to June 30, 2020 was an increase of \$5.2 million mainly due to net investment income and employer contributions exceeding benefit expense deductions and from a net decrease in administrative expenses. The contribution rate for FY 2021 was 0.82%, a reduction of 0.02% from the contribution rate of 0.84% for FY 2020.
- Investments, net of investment purchases payable, increased to \$99.0 million at June 30, 2021 from \$93.6 million at June 30, 2020 as Premium Assistance income exceeded expenses, producing more funds for investment.

Contributions

Total employer contributions for Premium Assistance decreased from \$117.9 million in FY 2020 to \$116.5 million in FY 2021 due to a 2.4% decline in contribution rate change from 0.84% to 0.82% offset by a 1.2% growth in employer payroll.

Investment Income

Total investment income for Premium Assistance decreased from \$1.8 million for FY 2020 to \$0.3 million for FY 2021 due to lower short-term interest rates.

Benefits and Expenses

Overall deductions for Premium Assistance increased slightly from \$114.4 million in FY 2020 to \$114.7 million in FY 2021. Administrative costs remained steady while there was a slight 0.23% increase in benefit cost due to the increase in the number of participants receiving benefits.

**Health Options Program
(HOP)**

Financial Highlights

- Total net position increased by \$49.5 million in FY 2021 primarily due to total additions exceeding benefits and administrative expenses. The change from June 30, 2020 to June 30, 2021 was a decrease of \$4.6 million due to a decrease in total additions and an increase in total benefits and administrative expenses.
- Total receivables decreased slightly from \$76.9 million at June 30, 2020 to \$76.1 million at June 30, 2021. This is due to a reduction in CMS reinsurance receivables offset by an increase in prescription drug rebates.
- Investments increased from \$317.8 million at June 30, 2020 to \$365.7 million at June 30, 2021 as HOP income exceeded expenses, producing more funds for investment.
- Total liabilities decreased 3.8% from \$74.1 million at June 30, 2020 to \$71.3 million at June 30, 2021. The decrease is due to timing of payments for prescription drug claims partially offset by an increase in medical claims payable.

Participant and CMS Premiums

Total Participant and CMS premiums for HOP decreased slightly from \$472.1 million for FY 2020 to \$470.8 million for FY 2021 from lower CMS reinsurance due to increased prescription drug rebates.

Investment Income

HOP Investment income decreased from \$2.5 million for FY 2020 to \$0.2 million for FY 2021 due to lower short-term interest rates.

Benefits and Expenses

HOP total deductions increased slightly 0.23% from \$420.6 million in FY 2020 to \$421.5 million in FY 2021. This is due to an increase in post lockdown medical claims along with dental and vision premium expense offset by an increase in prescription drug rebates. Administrative expenses remained steady.

Management's Discussion and Analysis (continued)

Premium Assistance**Summary of Fiduciary Net Position**

(Dollar Amounts in Thousands)

	FY 2021	Increase (Decrease)	FY 2020	Increase (Decrease)	FY 2019
Assets:					
Receivables	\$ 35,161	\$ (1,778)	\$ 36,939	\$ 1,125	\$ 35,814
Investments	106,181	12,565	93,616	(9)	93,625
Miscellaneous	400	98	302	(5)	307
Total Assets	141,742	10,885	130,857	1,111	129,746
Liabilities:					
Payables and other liabilities	9,227	8,787	440	(4,121)	4,561
Total Liabilities	9,227	8,787	440	(4,121)	4,561
Net Position	\$ 132,515	\$ 2,098	\$ 130,417	\$ 5,232	\$ 125,185

Summary of Changes in Fiduciary Net Position

(Dollar Amounts in Thousands)

	FY 2021	Increase (Decrease)	FY 2020	Increase (Decrease)	FY 2019
Additions:					
Contributions	\$ 116,519	\$ (1,388)	\$ 117,907	\$ 3,078	\$ 114,829
Net investment income	260	(1,492)	1,752	(561)	2,313
Total Additions	116,779	(2,880)	119,659	2,517	117,142
Deductions:					
Benefit expenses	113,538	259	113,279	502	112,777
Administrative expenses	1,143	(5)	1,148	(766)	1,914
Total Deductions	114,681	254	114,427	(264)	114,691
Changes in Net Position	\$ 2,098	\$ (3,134)	\$ 5,232	\$ 2,781	\$ 2,451

Health Options Program**Summary of Fiduciary Net Position**

(Dollar Amounts in Thousands)

	FY 2021	Increase (Decrease)	FY 2020	Increase (Decrease)	FY 2019
Assets:					
Receivables	\$ 76,118	\$ (828)	\$ 76,946	\$ 22,434	\$ 54,512
Investments	365,725	47,899	317,826	31,749	286,077
Miscellaneous	96	(418)	514	466	48
Total Assets	441,939	46,653	395,286	54,649	340,637
Liabilities:					
Payables and other liabilities	71,263	(2,802)	74,064	619	73,445
Total Liabilities	71,263	(2,802)	74,064	619	73,445
Net Position	\$ 370,676	\$ 49,454	\$ 321,222	\$ 54,030	\$ 267,192

Summary of Changes in Fiduciary Net Position

(Dollar Amounts in Thousands)

	FY 2021	Increase (Decrease)	FY 2020	Increase (Decrease)	FY 2019
Additions:					
Participant and CMS premiums	\$ 470,757	\$ (1,374)	\$ 472,131	\$ 35,303	\$ 436,828
Net investment income	214	(2,250)	2,464	(1,190)	3,654
Total Additions	470,971	(3,624)	474,595	34,113	440,482
Deductions:					
Benefit expenses	382,466	7,074	381,536	4,459	370,933
Administrative expenses	39,051	(6,122)	39,029	7,296	37,877
Total Deductions	421,517	952	420,565	11,755	408,810
Changes in Net Position	\$ 49,454	\$ (4,576)	\$ 54,030	\$ 22,358	\$ 31,672

Statements of Fiduciary Net Position
June 30, 2021 and 2020
(Dollar Amounts in Thousands)

	2021				
	Pension	Defined Contribution (DC)	Postemployment Healthcare		Totals
			Premium Assistance	Health Options Program	
Assets:					
Receivables:					
Members	\$ 366,165	\$ 382	\$ 2,013	\$ 195	\$ 368,755
Employers	1,331,419	284	33,111	—	1,364,814
Investment income	459,975	1	37	19	460,032
Investment proceeds	274,186	2	—	—	274,188
CMS Part D and prescriptions	—	—	—	75,904	75,904
Interfund receivable	2,225	—	—	—	2,225
Total Receivables	2,433,970	669	35,161	76,118	2,545,918
Investments, at fair value:					
Short-term	9,000,456	7,338	106,181	365,725	9,479,700
Fixed income	13,253,332	—	—	—	13,253,332
Common and preferred stock	18,437,873	—	—	—	18,437,873
Collective trust funds	7,321,974	55,307	—	—	7,377,281
Real estate	5,986,463	—	—	—	5,986,463
Alternative investments	17,626,135	—	—	—	17,626,135
Total Investments	71,626,233	62,645	106,181	365,725	72,160,784
Securities lending collateral pool	7,862,287	—	—	—	7,862,287
Capital assets (net of accumulated depreciation \$40,076)	17,021	—	—	—	17,021
Miscellaneous	36,219	—	400	96	36,715
Total Assets	81,975,730	63,314	141,742	441,939	82,622,725
Liabilities:					
Accounts payable and accrued expenses	188,188	75	339	5,884	194,486
Benefits payable	576,347	—	52	31,275	607,674
HOP participant premium advances	—	—	—	34,068	34,068
Investment purchases and other payables	1,214,614	418	7,192	—	1,222,224
Obligations under securities lending	7,862,287	—	—	—	7,862,287
Interfund payable	—	545	1,644	36	2,225
Other liabilities	166,942	—	—	—	166,942
Total Liabilities	10,008,378	1,038	9,227	71,263	10,089,906
Net position restricted for pension, DC and postemployment healthcare benefits	\$ 71,967,352	\$ 62,276	\$ 132,515	\$ 370,676	\$ 72,532,819

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

Statements of Fiduciary Net Position
June 30, 2021 and 2020
(Dollar Amounts in Thousands)

	2020				
	Pension	Defined Contribution (DC)	Postemployment Healthcare		Totals
			Premium Assistance	Health Options Program	
Assets:					
Receivables:					
Members	\$ 353,859	\$ 254	\$ 2,159	\$ 92	\$ 356,364
Employers	1,351,731	204	34,030	—	1,385,965
Investment income	479,075	3	59	47	479,184
Investment proceeds	295,153	—	—	—	295,153
CMS Part D and prescriptions	—	—	—	76,807	76,807
Interfund receivable	382	—	691	—	1,073
Total Receivables	2,480,200	461	36,939	76,946	2,594,546
Investments, at fair value:					
Short-term	5,821,164	6,933	93,616	317,826	6,239,539
Fixed income	11,719,860	—	—	—	11,719,860
Common and preferred stock	11,024,133	—	—	—	11,024,133
Collective trust funds	9,848,864	14,632	—	—	9,863,496
Real estate	5,478,122	—	—	—	5,478,122
Alternative investments	13,448,551	—	—	—	13,448,551
Total Investments	57,340,694	21,565	93,616	317,826	57,773,701
Securities lending collateral pool	4,491,237	—	—	—	4,491,237
Capital assets (net of accumulated depreciation \$34,515)	19,183	—	—	—	19,183
Miscellaneous	22,180	—	302	514	22,996
Total Assets	64,353,494	22,026	130,857	395,286	64,901,663
Liabilities:					
Accounts payable and accrued expenses	118,133	124	389	2,781	121,427
Benefits payable	590,838	—	51	38,334	629,223
HOP participant premium advances	—	—	—	32,913	32,913
Investment purchases and other payables	440,563	195	—	—	440,758
Obligations under securities lending	4,491,237	—	—	—	4,491,237
Interfund payable	691	346	—	36	1,073
Other liabilities	155,246	—	—	—	155,246
Total Liabilities	5,796,708	665	440	74,064	5,871,877
Net position restricted for pension, DC and postemployment healthcare benefits	\$ 58,556,786	\$ 21,361	\$ 130,417	\$ 321,222	\$ 59,029,786

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

Statements of Changes in Fiduciary Net Position
Years Ended June 30, 2021 and 2020
(Dollar Amounts in Thousands)

	2021				
	Pension	Defined Contribution (DC)	Postemployment Healthcare		Totals
			Premium Assistance	Health Options Program	
Additions:					
Contributions:					
Members	\$ 1,080,701	\$ 19,282	\$ —	\$ —	\$ 1,099,983
Employers	4,759,189	14,946	116,519	—	4,890,654
Total contributions	5,839,890	34,228	116,519	—	5,990,637
HOP Participant premiums	—	—	—	402,945	402,945
Centers for Medicare & Medicaid Services premiums	—	—	—	67,812	67,812
Investment income:					
From investing activities:					
Net appreciation (depreciation) in fair value of investments	13,940,110	9,394	(417)	—	13,949,087
Short-term	11,710	17	714	250	12,691
Fixed income	294,417	—	—	—	294,417
Common and preferred stock	272,651	—	—	—	272,651
Collective trust funds	913	—	—	—	913
Real estate	267,489	—	—	—	267,489
Alternative investments	565,392	—	—	—	565,392
Total investment activity income	15,352,682	9,411	297	250	15,362,640
Investment expenses	(617,882)	(97)	(37)	(36)	(618,052)
Net income from investing activities	14,734,800	9,314	260	214	14,744,588
From securities lending activities:					
Securities lending income	27,450	—	—	—	27,450
Securities lending expense	(7,626)	—	—	—	(7,626)
Net income from securities lending activities	19,824	—	—	—	19,824
Total net investment income	14,754,624	9,314	260	214	14,764,412
Total Additions	20,594,514	43,542	116,779	470,971	21,225,806
Deductions:					
Benefits	7,107,407	—	113,538	382,466	7,603,411
Refunds of contributions	26,925	1,040	—	—	27,965
Administrative expenses	49,616	1,587	1,143	39,051	91,397
Total Deductions	7,183,948	2,627	114,681	421,517	7,722,773
Net increase (decrease)	13,410,566	40,915	2,098	49,454	13,503,033
Net position restricted for pension, DC and postemployment healthcare benefits:					
Balance, beginning of year	58,556,786	21,361	130,417	321,222	59,029,786
Balance, end of year	\$ 71,967,352	\$ 62,276	\$ 132,515	\$ 370,676	\$ 72,532,819

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

Statements of Changes in Fiduciary Net Position
Years Ended June 30, 2021 and 2020
(Dollar Amounts in Thousands)

	2020				
	Pension	Defined Contribution (DC)	Postemployment Healthcare		Totals
			Premium Assistance	Health Options Program	
Additions:					
Contributions:					
Members	\$ 1,067,957	\$ 8,343	\$ —	\$ —	\$ 1,076,300
Employers	4,676,413	6,586	117,907	—	4,800,906
Total contributions	5,744,370	14,929	117,907	—	5,877,206
HOP Participant premiums	—	—	—	390,883	390,883
Centers for Medicare & Medicaid Services premiums	—	—	—	81,248	81,248
Investment income:					
From investing activities:					
Net appreciation in fair value of investments	261,316	541	7	—	261,864
Short-term	97,919	144	1,781	2,500	102,344
Fixed income	268,787	—	—	—	268,787
Common and preferred stock	277,635	—	—	—	277,635
Collective trust funds	4,633	—	—	—	4,633
Real estate	219,762	—	—	—	219,762
Alternative investments	371,652	—	—	—	371,652
Total investment activity income	1,501,704	685	1,788	2,500	1,506,677
Investment expenses	(515,160)	(30)	(36)	(36)	(515,262)
Net income from investing activities	986,544	655	1,752	2,464	991,415
From securities lending activities:					
Securities lending income	83,746	—	—	—	83,746
Securities lending expense	(68,444)	—	—	—	(68,444)
Net income from securities lending activities	15,302	—	—	—	15,302
Total net investment income	1,001,846	655	1,752	2,464	1,006,717
Total Additions	6,746,216	15,584	119,659	474,595	7,356,054
Deductions:					
Benefits	6,849,052	—	113,279	381,536	7,343,867
Refunds of contributions	27,463	12	—	—	27,475
Administrative expenses	46,799	3,167	1,148	39,029	90,143
Total Deductions	6,923,314	3,179	114,427	420,565	7,461,485
Net increase (decrease)	(177,098)	12,405	5,232	54,030	(105,431)
Net position restricted for pension, DC and postemployment healthcare benefits:					
Balance, beginning of year	58,733,884	8,956	125,185	267,192	59,135,217
Balance, end of year	\$ 58,556,786	\$ 21,361	\$ 130,417	\$ 321,222	\$ 59,029,786

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

Notes to Financial Statements
Years Ended June 30, 2021 and 2020

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, 2021, there were 769 participating employers, generally school districts. Membership at June 30, 2020, 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 Annual Comprehensive Financial Report of the Commonwealth of Pennsylvania.

(B) Pension Plan

i. Pension Benefits

(a) Traditional Defined Benefit (DB) Plan

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 \$230,000 for 2021 and 2020.

(b) Hybrid DB/DC Benefit

Act 5 of 2017 (Act 5) introduced a hybrid benefit with two membership classes and a separate defined contribution plan for individuals who become new members on or after July 1, 2019. Act 5 created two new hybrid membership classes, Membership Class T-G (Class T-G) and Membership Class T-H (Class T-H) and the separate defined contribution membership class, Membership Class DC (Class DC). To qualify for normal retirement, Class T-G and Class T-H members must work until age 67 with a minimum of 3 years of credited service. Class T-G may also qualify for normal retirement by attaining a total combination of age and service that is equal to or greater than 97 with a minimum of 35 years of credited service.

Table 2 - Membership as of June 30, 2021

Active members:	
Vested	150,586
Nonvested	97,505
Total active members	248,091
Inactive members:	
Retirees and beneficiaries currently receiving benefits	242,839
Inactive members and vestees entitled to but not receiving benefits	26,892
Total retirees and other members	269,731
Total number of members	517,822

Notes to Financial Statements (continued)

The normal retirement age, vesting period and final average salary for virtually all members are presented below:

Membership Class	Normal Retirement Age	Pension multiplier	Vesting	Final Average Salary
T-C	Age 62, or Age 60 with 30 years of service, or 35 years of service regardless of age.	2.00%	5 Years	For any 3 years of service
T-D		2.50%	5 Years	For any 3 years of service
T-E	Age 65 with a minimum of three years of service credit, or Any combination of age and service that totals 92 with at least 35 years of credited service.	2.00%	10 Years	For any 3 years of service
T-F		2.50%	10 Years	For any 3 years of service
T-G	Age 67 with a minimum of three years of service credit, or Any combination of age and service that totals 97 with at least 35 years of credited service.	1.25%	10 Years	For any 5 years of service
T-H	Age 67 with a minimum of three years of credited service.	1.00%	10 Years	For any 5 years of service

(c) Benefits Attributable to both the Traditional DB & Hybrid DB/DC

As summarized in the table above, benefits are generally between 1% to 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. A members' right to a defined benefit is vested in 5 to 10 years depending on membership class as summarized in the table above. 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, Class T-F, Class T-G and Class T-H members must purchase Non-Qualifying Part Time service and most other types of non-school or non-state service credit at full actuarial cost. Depending on membership class, members have 1 year or 3 years after enrollment in the system to purchase service for Non-Qualifying Part Time service.

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 between 2% to 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. Depending on membership class, certain minimum disability requirements apply. 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; age 67 with at least three years of credited services for Class T-G and Class T-H members) or who has at least five years of credited service (ten years for Class T-E, Class T-F, Class T-G, and Class T-H 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

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

Member Contribution Rates				
Membership Class	Continuous Employment Since	Defined Benefit (DB) Contribution Rate	DC Contribution Rate	Total Contribution Rate
T-C	Prior to July 22, 1983	5.25%	N/A	5.25%
				6.25%
T-C	On or after July 22, 1983	6.25%	N/A	6.25%
T-D	Prior to July 22, 1983	6.50%	N/A	6.50%
				7.50%
T-D	On or after July 22, 1983	7.50%	N/A	7.50%
T-E	On or after July 1, 2011	7.50% base rate with shared risk provision	N/A	7.50%
T-F	On or after July 1, 2011	10.30% base rate with shared risk provision	N/A	10.30%
T-G	On or after July 1, 2019	5.50% base rate with shared risk provision	2.75%	8.25%
T-H	On or after July 1, 2019	4.50% base rate with shared risk provision	3.00%	7.50%
DC	On or after July 1, 2019	N/A	7.50%	7.50%

Notes to Financial Statements (continued)

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 may elect to receive a return of their accumulated contributions and interest from the Members’ Savings Account upon their retirement which results in a reduced monthly annuity.

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, Act 120 and Act 5) and are dependent upon membership class. The IRC limitation on the annual compensation for a defined benefit plan was \$290,000 for 2021 and \$285,000 for 2020.

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 became Class T-E members. New members, however, had 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 made the member ineligible for Class T-F forever. For Act 5 members, all new members automatically become Class T-G members. New members, however, have a one-time opportunity to elect Class T-H or Class DC within 90 days of receiving written notification from PSERS. Failure to elect Class T-H or Class DC at time of original eligibility will make the member ineligible for Class T-H or Class DC forever. Act 120 introduced a shared risk program that could affect Class T-E and Class T-F members’ contribution rates in future fiscal years.

Act 5 enhanced the shared risk program for T-E and T-F members and added T-G and T-H members to the program. Under the shared risk program eligible 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 ranges specified in the Shared Risk Program Summary table but can fluctuate by the shared risk increment every three years depending on the investment performance of PSERS.

The investment performance calculations utilized for the member risk share assessment are performed by the System’s Investment Evaluator and, consistent with current investment policy, use quarter lagged values for private market investments. For example, for the nine-year measurement period ended June 30, 2020, the investment performance was determined using June 30th valuations for the System’s publicly traded investments and March 31st valuations, on a quarter-lag basis, for its private market investments. In the Statements of Fiduciary Net Position, however, all the System’s investments are presented at June 30th valuations.

Shared Risk Program Summary

Membership Class	Defined Benefit (DB) Base Rate	Shared Risk Increment	Minimum	Maximum
T-E	7.50%	+/- 0.50%	5.50%	9.50%
T-F	10.30%	+/-0.50%	8.30%	12.30%
T-G	5.50%	+/-0.75%	2.50%	8.50%
T-H	4.50%	+/-0.75%	1.50%	7.50%

Notes to Financial Statements (continued)

The member risk share measurement for the nine-year period ended June 30, 2020 determined that PSERS investment performance did not meet the shared risk target return threshold. Membership Class T-E, Class T-F, Class T-G and Class T-H member defined benefit contribution rates will increase starting on July 1, 2021. The next member risk share measurement is for the ten-year period ended June 30, 2023 and may affect the Class T-E, Class T-F, Class T-G and Class T-H member contributions starting on July 1, 2024.

The total contribution rate for the employers and the Commonwealth was 34.51% and 34.29% (33.51% and 33.36% for pension component) of qualified compensation for the years ended June 30, 2021 and 2020, 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 2021 was \$2.7 billion and for FY 2020 was \$2.6 billion. The school and non-school entity share of total employer contributions for FY 2021 was \$2.2 billion and for FY 2020 was \$2.2 billion. For FY 2021 total employer contributions were \$4.9 billion and for FY 2020 were \$4.8 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, 2021 there were no assumed future benefit increases to participating eligible annuitants in the Premium Assistance program. Membership at June 30, 2020, 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 0.82% for the year ended June 30, 2021 and 0.84% for the year ended June 30, 2020. Members do not contribute to Premium Assistance.

Table 3 - Premium Assistance Membership at June 30, 2021

Retirees and beneficiaries currently receiving benefits	94,003
Inactive members and vestees entitled to but not receiving benefits	672
Total retirees and other inactive members	94,675
Total active members	248,091
Total number of members	342,766

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.

The 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 program and effective, January 1, 2021 added a new vision plan benefit 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 approximately 96,000 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, 2021 and 2020 PSERS recorded \$19,347,000 and \$18,447,000, 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 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 benefits 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. The financial statements for FY 2021 and FY 2020 reflect the defined contribution plan activities for the first two years of operations. All new members starting on July 1, 2019 and thereafter participate in the DC plan.

Defined Contribution Plan Membership at June 30, 2021	
Active members	27,787
Inactive members entitled to but not receiving benefits	1,503
Total number of members	29,290

PSERS DC Plan is a defined contribution 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).

i. DC Benefits

Under PSERS DC Plan the retirement benefit is based on the amount of contributions in the account and any investment performance less expenses. DC member contributions and employer contributions, and any investment earnings are available for members to withdraw when a member terminates employment or retires. DC account balances can grow based on investment earnings, however DC account balances are not guaranteed against loss in declining investment markets.

Death benefits are payable upon death of an active member. Members who have at least three eligibility points in the DC plan receive participant and employer contributions with any investment gains, while participants with less than three eligibility points in the DC plan receive member contributions and any investment gains. There is no disability benefit with PSERS DC Plan. Each eligibility point is earned the first day a contribution is made to the plan on behalf of a participant in a school year (July 1 – June 30). Only one eligibility point may be credited in a school year.

Members are always 100% vested in their own mandatory before-tax, after-tax, and rollover contributions in the DC plan. Members who have at least three eligibility points become vested and eligible for employer DC contributions made on their behalf. Participants with fewer than three eligibility points are not eligible for the employer contributions.

Class DC participants with 24 1/2 or more eligibility points who have terminated school service, who are Medicare eligible, and who received all or a part of their distributions; and Class DC participants with 15 or more eligibility points who terminate school service on or after attaining age 67, and receive all or a part of their distributions are entitled to receive premium assistance benefits.

Notes to Financial Statements (continued)

ii. DC Contributions

Members hired after July 1, 2019 have a portion of each member and employer contribution to the system set aside for the DC plan. Member and employer rates are set by statute. A member may elect to make additional voluntary post-tax member contributions.

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.

(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 represents 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 the 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

Notes to Financial Statements (continued)

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 expenses and is detailed on the Schedule of 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, 2021 and 2020, \$6,736,000 and \$5,570,000 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, 2021 and 2020 are for HOP premiums related to health care coverage to be provided in July of 2021 and 2020, respectively.

(I) Federal Income Taxes

PSERS is exempt from federal income taxes under section 501 (a) of the Internal Revenue Code.

(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. In addition the DC plan has its own fiduciary insurance through a third party.

The Health Options Program maintains a reserve equal to approximately 8 to 9 months of self-funded benefits and expenses. Reserves are recommended for all self-insured group health plans to cover the potential for unexpected

claim volatility (high amount claim events) and unanticipated economic changes (excessive inflation). Further, The Health Options Program, as a Medicare Supplement Plan has limited exposure to high cost claims which reduces the potential for excess risk. Medicare is the primary payer for most medical claims in the HOP Medical and Value Medical plans, and the Medicare Prescription Drug Program is protected by Medicare Part D Catastrophic coverage. Benefits for members who are not eligible for Medicare are limited to \$300,000 per year in medical benefits, and \$1,000,000 over a member's lifetime. Medical and Prescription drug benefits provided by Managed Care Organizations are fully insured by those providers. For these reasons, the Health Options Program is sufficiently reserved and reinsurance (stop loss coverage) is not needed or recommended at this time.

(K) Reclassifications

Certain 2020 amounts have been reclassified in conformity with the 2021 presentation. These reclassifications had no effect on net position restricted for pension benefits or the change in fiduciary net position.

Certain collective trust funds, whose underlying holdings were composed primarily of fixed income or common and preferred stock instruments, have been reclassified accordingly on the Statement of Fiduciary Net Position at June 30, 2020 to conform with the June 30, 2021 presentation.

(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.

Financial Section

Notes to Financial Statements (continued)

The following is a summary of members receivables at June 30, 2021 and 2020:

	(Dollar Amounts in Thousands)	
	2021	2020
Pension:		
Member Contributions	\$ 77,278	\$ 75,827
Purchase of Service	282,668	272,643
Other	6,219	5,389
Total Member Receivables	\$ 366,165	\$ 353,859

(M) Interfund Transactions and Balances

Interfund transfers of assets take place on a regular recurring basis between Pension, Premium Assistance, HOP 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) Adoption of New Accounting Standards

PSERS reviews the requirements of all new GASB pronouncements and assesses the potential impact to the System. There were no new GASB standards that materially impacted PSERS' financial statements for the fiscal year ended June 30, 2021.

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.

Table 4 - Account Balance

	(Dollar Amounts in Thousands)	
	2021	2020
Pension:		
State Accumulation Account	\$ (7,398,176)	\$ (16,908,097)
Members' Savings Account	18,156,350	17,558,412
Annuity Reserve Account	61,209,178	57,906,471
	\$ 71,967,352	\$ 58,556,786
Defined Contribution Plan	\$ 62,276	\$ 21,361
Postemployment Healthcare:		
Health Insurance Account	\$ 132,515	\$ 130,417
Health Insurance Program Account	\$ 370,676	\$ 321,222

Notes to Financial Statements (continued)

(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.

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 Collective trust fund investments (CTF), management in consultation with investment advisors has determined the fair value based upon the reported share value of the respective fund. The reported share value of the fund is based upon each respective fund's administrator statement.

Alternative investments, which include private equity, equity real estate, private credit, and private infrastructure, are generally organized as limited partnerships. The fair value of investments that are

Notes to Financial Statements (continued)

organized as limited partnerships, and has no readily available daily fair value, has been determined by using the net asset value per share (or its equivalent) of PSERS' ownership interest in partners' capital. These net asset values are based on the individual investor's June 30, 2021 capital account balance reported at fair value by the general partner of the respective limited partnership, or the most recently available reporting period, adjusted for subsequent contributions, distributions, management fees, changes in values of foreign currency, and published market prices for certain securities.

The limited partnerships' annual financial statements are audited by independent auditors, which produce estimates of fair values. When estimating fair values, it is possible that these estimates could change in the near-term, or upon the sale of the assets, resulting in valuations that could differ from the June 30, 2021, reported net asset value.

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 June 30, 2021 and 2020, \$132,000,000 of open-ended repurchase agreements were netted against the related property valuation and classified as Level 1. The agreements were payable at an interest rate equivalent to one month LIBOR plus 40 basis points until February 2021 when the interest rate was changed to one month LIBOR plus 25 basis points. The agreements are collateralized by certain fixed income investments of the System. At June 30, 2021, \$136,235,000 of mortgage financings were netted against the related property valuations and classified as Level 1. Three mortgage loans totaling \$102,000,000 have monthly interest-only payments at a fixed interest rate of 1.70% with all principal due at March 1, 2026. A fourth mortgage loan at June 30, 2021 and 2020 of \$34,235,000 has monthly interest-only payments at a fixed interest rate of 3.97% with all principal due at March 1, 2026.

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.
- (b) Equity real estate generally consists of real estate limited partnerships. These investments are across multiple assets types such as industrial, multi-family, office, retail, hotels, agriculture (permanent crops), and other real estate related assets.
- The equity real estate investments utilize core, value-added, and opportunistic strategies. Core real estate strategies are expected to deliver a significant percentage of their return from income and should demonstrate lower volatility than opportunistic and value-added strategies due to lower leverage, higher levels of occupancy, and asset location in primary markets. Value-added real estate strategies typically have near-term leasing, repositioning, and /or renovation risk. Value-added strategies are expected to have modest initial operating revenues with potential for substantial income growth and will likely encounter greater volatility than core strategies, but lower volatility than opportunistic strategies. Opportunistic real estate strategies typically have significant development, lease-up, financial restructuring, and/or liquidity risk with little or no initial operating income. Opportunistic real estate strategies typically utilize higher levels of leverage, are expected to achieve most of its return from future capital gains, and are likely to encounter greater volatility than core and value-added strategies. The fair value of the equity real estate investments has 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 equity real estate investments will be liquidated over the next 7 to 12 years.
- (c) Private equity includes limited partnerships that investment in private companies and utilize buyout, growth equity, and venture capital strategies. Buyout funds acquire shares of a private company in an attempt to gain a controlling interest. Venture capital funds invest in young, relatively small, rapidly growing companies, typically in either the health care or

Notes to Financial Statements (continued)

information technology sectors. Growth equity funds are in between venture capital and buyouts in that they tend to have positive revenue growth and earnings at times, but don't have the leverage that is typical in a buyout investment. 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 private equity is that distributions are received through the orderly liquidation of the underlying assets of 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 10 years in a typical private equity fund.

- (d) Private credit includes limited partnerships and open-ended funds that invest in all types of credit which is not traditional investment grade government or corporate debt. Private credit strategies include direct lending, mezzanine lending, distressed and special situations, specialty finance, structured credit, real estate credit, and real assets credit. Direct lending is focused on providing senior secured loans to middle-market businesses. Mezzanine is primarily focused on providing subordinated debt capital to private businesses. Distressed and special situations is focused on issuing loans to companies undergoing financial or operational challenges or purchasing publicly listed, stressed securities. Specialty finance is a set of niche lending strategies that provide financing to consumers, small businesses, and other borrowers. Structured credit is a set of strategies that target investments in securitized debt obligations, such as collateralized loan obligations and collateralized debt obligations. Real estate credit is focused on commercial real estate collateral or residential mortgage origination. Real assets credit is focused on providing debt capital to companies operating within the real asset space with loans typically secured by real assets. 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 3 to 5 years.
- (e) Private infrastructure investments generally consist of limited partnership vehicles which invest in private companies and assets that provide essential services to the economy, including regulated assets, contracted energy assets, and transportation assets with high barriers to entry and stable and predictable long-term cash flows. Regulated assets generally include electricity transmission and distribution facilities, gas distribution systems, pipelines, water distribution, and wastewater collection and processing facilities. Contracted energy assets generally include renewable and conventional generation, pipelines, and storage. Transportation assets generally include toll roads, bridges and tunnels, airports, seaports, parking facilities, and rail lines. The fair value of the private infrastructure investments has 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 infrastructure investment 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 infrastructure investments will be liquidated over the next 7 to 12 years.
- (f) Absolute return includes investments that are private investment funds that seek to produce absolute returns generally using event-driven, tactical trading, and relative value strategies. Event-driven funds seeks to gain an advantage from pricing inefficiencies that may occur before or after a corporate action or related event, such as a merger, spinoff, earnings call, bankruptcy, or restructuring. Tactical trading funds invest their holdings in indexes, commodities, interest rate instruments, and currencies as a result of relative value or directional forecasts from a systematic or discretionary approach. Relative value strategies use a range of fixed income arbitrage, insurance linked, long-short credit, and/or quantitative strategies that seek to take advantage of price differentials. The fair values of the investments in this type have been determined using the NAV per share of the investments. Approximately 90% of these investments can be redeemed from one to 12 months as of June 30, 2021. The remaining investments include restrictions that do not allow redemption during the next 12 months and are expected take as long as 7 years to be liquidated.
- (g) DC Collective trust fund investments (DC-CTF) consist primarily of domestic and international institutional

Notes to Financial Statements (continued)

funds. The fair value of DC-CTF is based on the reported share value of the respective fund. DC-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.

(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 deposit and investment policies of the Treasury Department are governed by Sections 301, 301.1, and 505 of the Pennsylvania Fiscal Code (Act of 1929, P.L. 343), and Section 321.1 of the Pennsylvania Administrative Code (Act of 1929, P.L. 177, No. 175).

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 \$270,382,000 and \$222,761,000 at June 30, 2021 and 2020, respectively, and are under the custody of M&T Bank which has an A rating by Standard and Poor's (S&P) and an Aa3 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.

Notes to Financial Statements (continued)

At June 30, 2021, the System had the following recurring fair value measurements in the Pension Plan.

Pension Investments

Investments and Derivative Instruments Measured at Fair Value
(Dollar Amounts in Thousands)

	2021	Fair Value Measurements Using		
		Level 1	Level 2	Level 3
Investments by fair value level				
Short-term:				
PSERS Short-Term Investment Fund	\$ 8,548,497	\$ 7,216,976	\$ 1,331,521	\$ —
Other domestic short-term	421,723	409,030	12,693	—
International short-term	30,236	10,409	19,827	—
	<u>9,000,456</u>	<u>7,636,415</u>	<u>1,364,041</u>	<u>—</u>
Fixed income				
Domestic asset-backed and mortgage-backed securities	3,973,150	3,231,680	741,470	—
U.S. government and agency obligations	5,883,322	5,875,720	7,602	—
Domestic corporate and taxable municipal bonds	783,904	—	783,904	—
International fixed income	264,200	—	264,200	—
	<u>10,904,576</u>	<u>9,107,400</u>	<u>1,797,176</u>	<u>—</u>
Common and preferred stock:				
Domestic common and preferred stock	9,350,519	9,336,155	14,364	—
International common and preferred stock	7,239,623	7,239,618	—	5
	<u>16,590,142</u>	<u>16,575,773</u>	<u>14,364</u>	<u>498,179</u>
Directly-owned real estate	<u>1,224,906</u>	<u>(232,000)</u>	<u>—</u>	<u>1,456,906</u>
Total investments by fair value level	<u>37,720,080</u>	<u>\$ 32,681,059</u>	<u>\$ 3,184,973</u>	<u>\$ 1,741,164</u>
Investments measured at the net asset value (NAV)				
Collective trust funds - Fixed Income	2,348,756			
Collective trust funds Common and preferred stock	1,847,731			
Collective trust funds	<u>7,321,974</u>			
Equity real estate	<u>4,229,593</u>			
Infrastructure	<u>531,964</u>			
Alternative investments:				
Private equity	12,206,056			
Private credit	5,285,350			
Absolute return	134,729			
	<u>17,626,135</u>			
Total investments measured at the NAV	<u>33,906,153</u>			
Total investments measured at fair value	<u>\$ 71,626,233</u>			
Investment derivative instruments				
Futures	\$ 75,247	\$ 75,247	\$ —	\$ —
Total return type swaps	(65,756)	(65,756)	—	—
Foreign exchange contracts	45,319	45,319	—	—
Options	\$ 5,693	\$ 5,693	—	—
Total investment derivative instruments	<u>\$ 60,503</u>	<u>\$ 60,503</u>	<u>\$ —</u>	<u>\$ —</u>

Notes to Financial Statements (continued)

At June 30, 2020, the System had the following recurring fair value measurements in the Pension Plan.

Pension Investments

Investments and Derivative Instruments Measured at Fair Value
(Dollar Amounts in Thousands)

	2020	Fair Value Measurements Using		
		Level 1	Level 2	Level 3
Investments by fair value level				
Short-term:				
PSERS Short-Term Investment Fund	\$ 5,713,063	\$ 4,053,978	\$ 1,659,085	\$ —
Other domestic short-term	96,239	58,851	37,388	—
International short-term	11,862	7,151	4,711	—
	<u>5,821,164</u>	<u>4,119,980</u>	<u>1,701,184</u>	<u>—</u>
Fixed income				
Domestic asset-backed and mortgage-backed securities	1,460,459	—	1,460,459	—
U.S. government and agency obligations	3,128,446	1,819,633	1,308,813	—
Domestic corporate and taxable municipal bonds	4,851,309	3,668,826	1,182,483	—
International fixed income	234,983	—	234,983	—
	<u>9,675,197</u>	<u>5,488,459</u>	<u>4,186,738</u>	<u>—</u>
Common and preferred stock:				
Domestic common and preferred stock	4,782,678	4,761,657	21,021	—
International common and preferred stock	4,974,091	4,974,091	—	—
	<u>9,756,769</u>	<u>9,735,748</u>	<u>21,021</u>	<u>—</u>
Directly-owned real estate	<u>1,110,985</u>	<u>(132,000)</u>	<u>—</u>	<u>1,242,985</u>
Total investments by fair value level	<u>26,364,115</u>	<u>\$ 19,212,187</u>	<u>\$ 5,908,943</u>	<u>\$ 1,242,985</u>
Investments measured at the net asset value (NAV)				
Collective trust funds - Fixed Income	2,044,663			
Collective trust funds Common and preferred stock	1,267,364			
Collective trust funds	<u>9,848,864</u>			
Equity real estate	3,967,139			
Infrastructure	<u>399,998</u>			
Alternative investments:				
Private equity	8,621,023			
Private credit	4,588,664			
Absolute return	238,864			
	<u>13,448,551</u>			
Total investments measured at the NAV	<u>30,976,579</u>			
Total investments measured at fair value	<u>\$ 57,340,694</u>			
Investment derivative instruments				
Futures	\$ 57,950	\$ 57,950	\$ —	\$ —
Total return type swaps	254,293	254,293	—	—
Foreign exchange contracts	(14,708)	(14,708)	—	—
Total investment derivative instruments	<u>\$ 297,535</u>	<u>\$ 297,535</u>	<u>\$ —</u>	<u>\$ —</u>

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, 2021 and 2020 are presented in the following tables.

Pension Investments				
Fair Value of Investments				
Investments measured at the NAV				
(Dollar Amounts in Thousands)				
	2021			
	<u>Fair Value</u>	<u>Unfunded Commitments</u>	<u>Redemption Frequency</u>	<u>Redemption Notice Period</u>
Collective trust funds - Fixed Income	\$ 2,348,756	\$ —	see note (a)	0-90 days
Collective trust funds Common and preferred stock	1,847,731	—	see note (a)	0-90 days
Collective trust funds	<u>7,321,974</u>	—	see note (a)	0-90 days
Equity real estate (b)	4,229,593	2,220,783	see note (b)	see note (b)
Infrastructure (e)	<u>531,964</u>	943,655	see note (e)	see note (e)
Alternative investments:				
Private equity (c)	12,206,056	5,552,444	see note (c)	see note (c)
Private credit (d)	5,285,350	2,902,087	see note (d)	see note (d)
Absolute return (f)	134,729	490,069	see note (f)	see note (f)
	<u>17,626,135</u>			
Total investments measured at the NAV	<u>\$ 33,906,153</u>			

Pension Investments				
Fair Value of Investments				
Investments measured at the NAV				
(Dollar Amounts in Thousands)				
	2020			
	<u>Fair Value</u>	<u>Unfunded Commitments</u>	<u>Redemption Frequency</u>	<u>Redemption Notice Period</u>
Collective trust funds - Fixed Income	\$ 2,044,663	\$ —	see note (a)	0-90 days
Collective trust funds Common and preferred stock	1,267,364	—	see note (a)	0-90 days
Collective trust funds	<u>9,848,864</u>	—	see note (a)	0-90 days
Equity real estate (b)	3,967,139	2,219,005	see note (b)	see note (b)
Infrastructure (e)	<u>399,998</u>	585,296		
Alternative investments:				
Private equity (c)	8,621,023	5,587,386	see note (c)	see note (c)
Private credit (d)	4,588,664	3,298,351	see note (d)	see note (d)
Absolute return (f)	238,864	446,499	see note (f)	see note (f)
	<u>13,448,551</u>			
Total investments measured at the NAV	<u>\$ 30,976,579</u>			

Notes to Financial Statements (continued)

At June 30, 2021, the System had the following recurring fair value measurements in the Premium Assistance Program.

Premium Assistance Investments

Investments Measured at Fair Value

(Dollar Amounts in Thousands)

	2021	Fair Value Measurements Using		
		Level 1	Level 2	Level 3
Investments by fair value level				
Short-term:				
PSERS Short-Term Investment Fund	\$ 84,064	\$ 70,970	\$ 13,094	\$ —
Other domestic short-term	22,117	—	22,117	—
Total investments measured at fair value	\$ 106,181	\$ 70,970	\$ 35,211	\$ —

At June 30, 2020, the System had the following recurring fair value measurements in the Premium Assistance Program.

Premium Assistance Investments

Investments Measured at Fair Value

(Dollar Amounts in Thousands)

	2020	Fair Value Measurements Using		
		Level 1	Level 2	Level 3
Investments by fair value level				
Short-term:				
PSERS Short-Term Investment Fund	\$ 46,133	\$ 32,736	\$ 13,397	\$ —
Other domestic short-term	47,483	—	47,483	—
Total investments measured at fair value	\$ 93,616	\$ 32,736	\$ 60,880	\$ —

Notes to Financial Statements (continued)

At June 30, 2021, the System had the following recurring fair value measurements in the Health Options Program.

Health Options Program Investments

Investments Measured at Fair Value

(Dollar Amounts in Thousands)

	2021	Fair Value Measurements Using		
		Level 1	Level 2	Level 3
Investments by fair value level				
Short-term:				
PSERS Short-Term Investment Fund	\$ 95,343	\$ 80,492	\$ 14,851	\$ —
Other domestic short-term	270,382	270,382	—	—
Total investments measured at fair value	\$ 365,725	\$ 350,874	\$ 14,851	\$ —

At June 30, 2020, the System had the following recurring fair value measurements in the Health Options Program.

Health Options Program Investments

Investments Measured at Fair Value

(Dollar Amounts in Thousands)

	2020	Fair Value Measurements Using		
		Level 1	Level 2	Level 3
Investments by fair value level				
Short-term:				
PSERS Short-Term Investment Fund	\$ 95,065	\$ 67,458	\$ 27,607	\$ —
Other domestic short-term	222,761	222,761	—	—
Total investments measured at fair value	\$ 317,826	\$ 290,219	\$ 27,607	\$ —

Notes to Financial Statements (continued)

At June 30, 2021, the System had the following recurring fair value measurements in the DC Plan.

Defined Contribution Plan Investments

Investments Measured at Fair Value
(Dollar Amounts in Thousands)

	2021	Fair Value Measurements Using		
		Level 1	Level 2	Level 3
Investments by fair value level				
Short-term:				
PSERS Short-Term Investment Fund	\$ 6,081	\$ 5,134	\$ 947	\$ —
Other domestic short-term	1,257	1,257	—	—
Total investments by fair value level	7,338	\$ 6,391	\$ 947	\$ —
Investments measured at the net asset value (NAV)				
Collective trust funds	55,307			
Total investments measured at the NAV	55,307			
Total investments measured at fair value	\$ 62,645			

At June 30, 2020, the System had the following recurring fair value measurements in the DC Plan.

Defined Contribution Plan Investments

Investments Measured at Fair Value
(Dollar Amounts in Thousands)

	2020	Fair Value Measurements Using		
		Level 1	Level 2	Level 3
Investments by fair value level				
PSERS Short-Term Investment Fund	\$ 6,716	\$ 4,766	\$ 1,950	\$ —
Other domestic short-term	217	217	—	—
Total investments by fair value level	6,933	\$ 4,983	\$ 1,950	\$ —
Investments measured at the net asset value (NAV)				
Collective trust funds	14,632			
Total investments measured at the NAV	14,632			
Total investments measured at fair value	\$ 21,565			

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, 2021 is presented in the following table.

Defined Contribution Plan Investments

Fair Value of Investments

Defined Contribution Plan investments measured at the NAV

(Dollar Amounts in Thousands)

	2021			
	Fair Value	Commitments	Redemption Frequency	Redemption Notice Period
Collective trust funds (f)	\$ 55,307	\$ —	see note (g)	0-90 days
Total investments measured at the NAV	\$ 55,307			

The valuation method for investments measured at the net asset value (NAV) per share (or its equivalent) at June 30, 2020 is presented in the following table.

Defined Contribution Plan Investments

Fair Value of Investments

Defined Contribution Plan investments measured at the NAV

(Dollar Amounts in Thousands)

	2020			
	Fair Value	Commitments	Redemption Frequency	Redemption Notice Period
Collective trust funds (f)	\$ 14,632	\$ —	see note (g)	0-90 days
Total investments measured at the NAV	\$ 14,632			

Notes to Financial Statements (continued)

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, 2021 and 2020.

Quality Rating	(Dollar Amounts in Thousands)	
	2021 Fair Value	2020 Fair Value
AAA	\$ 7,681,352	\$ 3,157,130
AA	716,912	2,033,336
A	172,808	694,795
BBB	283,592	737,629
BB and Below	125,558	494,959
NR*	4,405,935	4,334,326
Total Exposed to Credit Risk	13,386,157	11,452,175
US Government Guaranteed**	9,346,875	6,507,224
Total Fixed Income and Short-Term Investments	\$ 22,733,032	\$ 17,959,399

*Not Rated securities include \$2,351,042 and \$2,044,663 in collective trust funds and \$205,340 and \$1,102,725 in PSERS Short-Term Investment Fund assets at June 30, 2021 and 2020 respectively.

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

Notes to Financial Statements (continued)

(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, 2021 and 2020, 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 35.0% of the investment portfolio. The fixed income target allocation consists of:

- An allocation of 8.0% of the portfolio has been made to the investment grade segment of the fixed income asset class benchmarked to the Bloomberg Barclays U.S. Aggregate Bond TR Index (1%) and the Bloomberg Barclays U.S. Long Treasury TR Index (7%). Within this segment, the U.S. long treasury allocation (7.0%) is composed of primarily long duration U.S. Treasury securities issued by the U.S. government. The U.S. core fixed allocation (1.0%) is composed of primarily investment grade, relatively liquid, public domestic and government-related bonds with an overall weighted-average NRSRO credit rating of A or better.
- An allocation of 8.0% of the portfolio has been made to the private fixed income segment of the fixed income asset class benchmarked to the S&P LSTA Leveraged Loan Index plus 200 basis points. The private fixed income allocation is composed of primarily investments in limited partnerships focusing on direct lending, mezzanine, distressed and special situations, specialty finance and structured credit strategies.
- An allocation of 15.0% of the portfolio has been made to the inflation protected securities segment of the fixed income asset class benchmarked to the Bloomberg Barclays US Government Inflation-Linked Bond All Maturities Index and the Bloomberg Barclays World Government ex US Inflation-Linked Bond All Maturities TR Index (Hedged to USD). Within this segment, the US inflation protected allocation (12.0%) is composed of primarily government issued Treasury Inflation Protected Securities (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 2:1. The Non-US inflation protected allocation (3.0%) is composed primarily of non-US government related securities tied to inflationary measures.
- An allocation of 4.0% of the portfolio has been made to the credit related segment of the fixed income asset class with 2.0% benchmarked to the Bloomberg Barclays US Corporate High Yield Bond Index and 2.0% benchmarked to the JP Morgan GBI-EM Broad Diversified Index (34.0%), JP Morgan EMBI Global Diversified Index (33.0%), and the Intercontinental Exchange (ICE) Bank of America/Merrill Lynch EM Corporate Plus Index (Hedged to USD) (33.0%).

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, 2021 and 2020.

Quality Rating	(Dollar Amounts in Thousands)	
	2021 Fair Value	2020 Fair Value
A	\$ (72,139)	\$ 187,359
BBB	6,383	66,934
Total Swaps - Total Return	\$ (65,756)	\$ 254,293

Notes to Financial Statements (continued)

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 (13.0%); Leverage is netted against the System's Cash allocation of 3% for a Net Leverage Allocation of (10%).

- An allocation of 3.0% of the portfolio has been made to cash benchmarked to the ICE 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.

(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 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.

The System minimizes its credit risk exposure by requiring borrowers to provide collateralization in excess of 100% of the fair value of the securities loaned. 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, 2021 and 2020 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

At June 30, 2021 and 2020, the System's fixed income portfolio had the following option-adjusted durations by fixed income sector:

Investment Type	(Dollar Amounts in Thousands)			
	2021		2020	
	Option-Adjusted Duration	Fair Value	Option-Adjusted Duration	Fair Value
Domestic asset-backed and mortgage-backed securities	1.3	\$ 3,973,149	1.0	\$ 1,460,459
U.S. government and agency obligations	14.0	5,883,323	6.7	3,128,446
Domestic corporate and taxable municipal bonds	3.3	781,618	13.2	4,851,308
International fixed income	2.6	264,200	2.2	234,983
Collective trust funds*	3.6	2,351,042	3.1	2,044,663
PSERS Short-Term Investment Fund	0.1	8,733,986	0.1	5,860,977
Other Short-Term Assets	0.1	745,714	0.1	378,563
Total	4.4**	\$ 22,733,032	5.2**	\$ 17,959,399

* Represents funds holding fixed income assets.

** 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, 2021 and 2020. The total portfolio option adjusted duration is calculated by weighting each investment type by fair value.

Notes to Financial Statements (continued)

Non-U.S. currency exposures at June 30, 2021 and 2020:

2021						
(Dollar Amounts in Thousands)						
Currency	Equity	Fixed Income	Alternative Investments & Real Estate	Short-Term*	Currency Hedge	Total Fair Value
Euro	\$ 1,448,747	\$ 7,121	\$ 1,445,636	\$ 13,735	\$ (1,785,403)	\$ 1,129,836
British pound sterling	879,659	—	345,573	4,331	(423,288)	806,275
Japanese yen	1,159,064	10,306	27,258	7,681	(589,265)	615,044
Taiwan new dollar	307,935	—	—	1,763	—	309,698
Indian rupee	227,084	—	—	3,274	—	230,358
South Korean won	171,849	—	—	472	426	172,747
Hong Kong dollar	370,175	—	—	(1,738)	(209,740)	158,697
Danish krone	173,959	—	—	4,025	(28,670)	149,314
Swedish krona	209,181	—	—	355	(89,765)	119,771
Other non-U.S. currencies	1,532,182	89,793	7,430	25,019	(1,377,550)	276,874
Total	\$ 6,479,835	\$ 107,220	\$ 1,825,897	\$ 58,917	\$ (4,503,255)	\$ 3,968,614

2020						
(Dollar Amounts in Thousands)						
Currency	Equity	Fixed Income	Alternative Investments & Real Estate	Short-Term*	Currency Hedge	Total Fair Value
Euro	\$ 906,217	\$ 2,736	\$ 1,271,920	\$ 10,176	\$ (1,133,942)	\$ 1,057,107
British pound sterling	579,707	—	370,813	1,722	(482,623)	469,619
Taiwan new dollar	178,654	—	—	54	—	178,708
Hong Kong dollar	284,314	—	—	1,552	(145,464)	140,402
South Korean won	110,125	—	—	180	143	110,448
Indian rupee	109,836	—	—	178	—	110,014
Canadian dollar	472,314	—	—	2,431	(372,535)	102,210
Japanese yen	897,488	10,070	—	10,648	(816,316)	101,890
Danish krone	128,474	—	—	3,801	(56,188)	76,087
Other non-U.S. currencies	968,703	103,812	6,627	10,534	(814,011)	275,665
Total	\$ 4,635,832	\$ 116,618	\$ 1,649,360	\$ 41,276	\$ (3,820,936)	\$ 2,622,150

* Includes investment receivables and payables

At June 30, 2021 and 2020, the System had the following foreign currency exposures for its derivatives (except for foreign exchange contracts which are included in Note 5). All of the exposures at June 30, 2020 were associated with the System's risk parity allocation program which was eliminated in FY 2021.

(Dollar Amounts in Thousands)		
Currency	2021	2020
	Notional Value	Notional Value
Euro	\$ —	\$ 132,887
Japanese yen	—	98,521
British pound sterling	—	58,260
Canadian dollar	—	42,676
Australian dollar	—	32,453
Hong Kong dollar	—	—
Total Futures Contracts	\$ —	\$ 364,797

Notes to Financial Statements (continued)

The following table summarizes the System's foreign exchange contracts by currency at June 30, 2021 and 2020:

Currency	2021			
	(Dollar Amounts in Thousands)			
	Buys	Unrealized Gain/(Loss)	Sells	Unrealized Gain/(Loss)
Euro	\$ 49,100	\$ 3	\$ 1,834,502	\$ 28,998
Japanese yen	4,416	(19)	593,680	5,286
Swiss franc	6	—	166,931	1,362
Australian dollar	2,746	1	495,617	1,948
Swedish krona	133	—	89,898	1,119
Canadian dollar	236	—	536,711	1,227
Singapore dollar	315	(6)	59,328	377
Mexican peso	16,836	10	440,124	4,698
British pound sterling	109	(4)	93,081	36
New Zealand dollar	1,878	—	211,618	44
Other non-US currencies	1,044	—	58,165	239
Total	\$ 76,819	\$ (15)	\$ 4,579,655	\$ 45,334

Currency	2020			
	(Dollar Amounts in Thousands)			
	Buys	Unrealized Gain/(Loss)	Sells	Unrealized Gain/(Loss)
Euro	\$ 1,708	\$ —	\$ 1,135,651	\$ (8,823)
Japanese yen	36	—	816,351	6,854
Swiss franc	293	1	258,315	(863)
Australian dollar	446	2	326,408	(6,911)
Swedish krona	—	—	98,550	(1,362)
Canadian dollar	1,125	(3)	373,660	(1,941)
Singapore dollar	13	—	52,093	(247)
Mexican peso	38	—	32	—
British pound sterling	—	—	482,940	82
New Zealand dollar	—	—	37,291	(1,282)
Other non-U.S. currencies	785	(3)	244,090	(212)
Total	\$ 4,444	\$ (3)	\$ 3,825,381	\$ (14,705)

Notes to Financial Statements (continued)

the loan is one day. There were no term loans as of June 30, 2021 and 2020.

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 the earnings from the cash collateral provided by the borrower less a fee paid to the third party agent minus a negotiated rebate of a portion of the earnings on the cash collateral. The weighted-average maturity of the investments in the pool was one day at June 30, 2021 and 2020. During the fiscal years ended June 30, 2021 and 2020 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, 2021, the fair value of loaned securities was \$7,734,304,000. The fair value of the associated collateral was \$7,862,287,000, all of which was cash. As of June 30, 2020, the fair value of loaned securities was \$4,406,850,000. The fair value of the associated collateral was \$4,491,237,000, 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 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, 2021 and 2020 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 2021, the System purchased over-the-counter put options on the S&P 500 Index. The fair value of these option contracts, \$5,693,000 at June 30, 2021, is included in the Statement of Fiduciary Net Position. The System held no option positions at June 30, 2020.

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 \$4,656,474,000 of foreign currency contracts outstanding at June 30, 2021 consist of "buy" contracts, which represent the U.S. dollar equivalents of commitments to purchase foreign currencies of \$76,819,000 and "sell" contracts, which represent U.S. dollar equivalents of commitments to sell foreign currencies of \$4,579,655,000. The \$3,829,825,000 of foreign currency contracts outstanding at June 30, 2020 consist of "buy" contracts of \$4,444,000 and "sell" contracts of \$3,825,381,000. The unrealized gain (loss) on contracts of \$45,319,000 and \$(14,708,000) at June 30, 2021 and 2020, respectively, is

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, 2021 and 2020.

	(Dollar Amounts in Thousands)	
	2021	2020
Futures contracts - long:		
Treasury futures	\$ 320,823	\$ 665,985
U.S. equity futures	182,480	431,701
Non-U.S. equity futures	—	364,797
Commodity futures	400,014	271,210
Futures contracts - short:		
Treasury futures	37,271	88,272
Non-U.S. equity futures	—	32,989
U.S. equity futures	—	43,417
Foreign exchange forward and spot contracts, gross	4,656,474	3,829,825
Options - puts purchased	4,880,200	—
Swaps - total return type	15,432,197	10,631,655

The fair values of derivative instruments outstanding at June 30, 2021 and 2020 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 2021		Fair Value at June 30, 2021	
	Classification	Amount	Classification	Amount
Futures	Investment income	\$ 75,247	Receivable/(Payable)	\$ 75,247
Total return type swaps	Investment income	(65,756)	Receivable/(Payable)	(65,756)
Foreign exchange contracts	Investment income	45,319	Receivable/(Payable)	45,319
Options	Investment income	\$ (10,473)	Receivable/(Payable)	\$ 5,693
Total		\$ 44,337		\$ 60,503

Investment Derivative Type	Change in Fair Value Gain/(Loss) FY 2020			
	Change in Fair Value Gain/(Loss) FY 2020		Fair Value at June 30, 2020	
	Classification	Amount	Classification	Amount
Futures	Investment income	\$ 57,950	Receivable/(Payable)	\$ 57,950
Total return type swaps	Investment income	254,293	Receivable/(Payable)	254,293
Foreign exchange contracts	Investment income	(14,708)	Receivable/(Payable)	(14,708)
Options	Investment income	—	Investment	—
Total		\$ 297,535		\$ 297,535

Notes to Financial Statements (continued)

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 underlying securities, indexes, or interest rates. During the year ended June 30, 2021 and 2020, the System entered into total return type swaps. Under the total return type swap arrangements, the System receives the net return of certain securities or indexes in exchange for a short-term rate minus a spread or a predetermined fixed charge. The receivable (payable) on the total return type swap contracts of \$(65,756,000) and \$254,293,000 at June 30, 2021 and 2020, 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 July 30, 2021 to July 5, 2022.

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. The MBS forwards are subject to credit risk in the event of nonperformance by counterparties. The fair value of CMOs at June 30, 2021 and 2020 is \$172,285,000 and \$519,436,000, 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, 2021 were as follows:

(Dollar amounts in thousands)

Total pension liability	\$ 113,024,082
Less: Plan fiduciary net position	<u>71,967,352</u>
Employer net pension liability	<u>\$ 41,056,730</u>
Plan fiduciary net position as a percentage of the total pension liability	63.67%

Actuarial Assumptions

The total pension liability at June 30, 2021 was determined by rolling forward the System's total pension liability at June 30, 2020 to June 30, 2021 using the following actuarial assumptions, applied to all periods included in the measurement:

- Actuarial cost method - Entry Age Normal - level % of pay.
- Investment return - 7.00%, includes inflation at 2.75%.
- Salary growth - Effective average of 4.50%, comprised of inflation of 2.50% and 2.00% for real wage growth and for merit or seniority increases.
- Payroll growth assumption decreased from 3.50% to 3.25%.
- Mortality rates were modified from the RP-2014 Mortality Tables for Males and Females to a blended table based on 50% PubT-2010 Employee (Total Teacher dataset) and 50% PubG-2010 (Total General Employees data), adjusted to reflect PSERS' experience and projected using a modified version MP-2020.
- PSERS Board approved new actuarial assumptions effective for the June 30, 2021 actuarial valuation. The new assumptions were used to calculate the net pension liability at June 30, 2021 and are reflected above.

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, 2021, the annual money-weighted rate of return on pension plan investments, net of pension plan investment expense, was 24.57%. 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, 2021.

Notes to Financial Statements (continued)

Discount Rate

The discount rate used to measure the total pension liability was 7.00%. 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 the projected future benefit payments of current plan members to determine the total pension liability. 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	27.0%	5.2%
Private equity	12.0%	7.3%
Fixed income	35.0%	1.8%
Commodities	10.0%	2.0%
Absolute return	8.0%	3.1%
Infrastructure/MLPs	8.0%	5.1%
Real estate	10.0%	4.7%
Cash	3.0%	0.1%
Leverage	-13.0%	0.1%
	<u>100.0%</u>	

Sensitivity of the Net Pension Liability

Table 7 presents the net pension liability, calculated using the discount rate of 7.00%, as well as what the net pension liability would be if it were calculated using a discount rate that is 1-percentage point lower (6.00%) or 1-percentage point higher (8.00%) than the current rate:

Table 7 - Sensitivity of the Net Pension Liability

(Dollar amounts in thousands)

	1% Decrease	Current Discount Rate	1% Increase
	6.00%	7.00%	8.00%
Net pension liability	\$53,888,457	\$41,056,730	\$30,232,534

For additional information on the total pension liability, net pension liability, plan fiduciary net position as a percentage of the total pension liability, actuarial assumptions, and money weighted returns please refer to the multiple year Required Supplementary Information Schedule 1, Schedule 2, Schedule 3, Schedule 7 and Notes to Required Supplementary Information.

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

The components of the net OPEB liability of the participating employers at June 30, 2021 were as follows:

(Dollar amounts in thousands)

Total OPEB liability	\$2,502,598
Less: Plan fiduciary net position	132,515
Employer net OPEB liability	<u>\$2,370,083</u>
Plan fiduciary net position as a percentage of the total OPEB liability	5.30%

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, 2021. The Investment Rate of Return was adjusted from 2.66% to 2.18% which represents the S&P 20 Year Municipal Bond Rate.

Actuarial Assumptions

The total OPEB liability at June 30, 2021 was determined by rolling forward the System's total OPEB liability at June 30, 2020 to June 30, 2021 using the following actuarial assumptions, applied to all periods included in the measurement:

- Actuarial cost method - Entry Age Normal - level % of pay.
- Investment return - 2.18% - S&P 20 Year Municipal Bond Rate.
- Salary growth - Effective average of 4.50%, comprised of inflation of 2.50% and 2.00% for real wage growth and for merit or seniority increases.
- Payroll growth assumption decreased from 3.50% to 3.25%.
- 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.

Notes to Financial Statements (continued)

- Mortality rates were modified from the RP-2014 Mortality Tables for Males and Females to a blended table based on 50% PubT-2010 Employee (Total Teacher dataset) and 50% PubG-2010 (Total General Employees data), adjusted to reflect PSERS' experience and projected using a modified version MP-2020.
- PSERS Board approved new actuarial assumptions effective for the June 30, 2021 actuarial valuation. The new assumptions were used to calculate the net pension liability at June 30, 2021 and are reflected above.

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, 2021.

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, 2021, the annual money-weighted rate of return on OPEB plan investments, net of OPEB plan investment expense, was 0.31%. The money-weighted rate of return expresses investment performance, net of investment expense, adjusted for the changing amounts actually invested.

Discount Rate

The discount rate used to measure the total OPEB liability was 2.18%. 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 2.18%, which represents the S&P 20 year Municipal Bond Rate at June 30, 2021 was applied to all projected benefit payments to measure the total OPEB liability.

Table 8 - OPEB Asset Allocation

OPEB - Asset Class	Target Allocation	Long Term Expected Real Rate of Return
Cash	79.8%	0.1%
US Core Fixed Income	17.5%	0.7%
Non-U.S. Developed Fixed	2.7%	(0.3%)
	<u>100.0%</u>	

Sensitivity of the Net OPEB Liability

Table 9 presents the net OPEB liability, calculated using the discount rate of 2.18%, as well as what the net OPEB liability would be if it were calculated using a discount rate that is 1-percentage point lower (1.18%) or 1-percentage point higher (3.18%) than the current rate:

Table 9 - Sensitivity of the Net OPEB Liability
(Dollar amounts in thousands)

	1% Decrease	Current Discount Rate	1% Increase
	1.18%	2.18%	3.18%
Net OPEB liability	\$ 2,719,966	\$ 2,370,083	\$ 2,081,902

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, 2021, there were 93,392 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, 2021, there were 611 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.

Notes to Financial Statements (continued)

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

(Dollar amounts in thousands)

	1% Decrease	Current Discount Rate	1% Increase
Net OPEB liability	\$ 2,369,814	\$ 2,370,083	\$ 2,370,295

For additional information on the total OPEB liability, net OPEB liability, plan fiduciary net position as a percentage of the total OPEB liability, actuarial assumptions, and money weighted returns please refer to the multiple year Required Supplementary Information Schedule 4, Schedule 5, Schedule 6, Schedule 7 and Notes to Required Supplementary Information.

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, 2020 and 2019 the blended employer contribution rates were 27.03% and 25.01%, respectively. Contributions to SERS from PSERS were \$9.0 million for the year ended June 30, 2021.

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

At June 30, 2021, PSERS reported a liability of \$77.5 million and \$70.2 million at June 30, 2020, for its proportionate share of the net pension liability for the SERS plan in Other liabilities on the Statement of Fiduciary Net Position. The net pension liability was measured at December 31, 2020 and 2019, and the total pension liability used to calculate the net pension liability was determined by an actuarial valuation at December 31, 2020 and 2019. PSERS' proportion of the net pension liability was calculated utilizing a projected-contribution method. At December 31, 2020, PSERS' proportion was 0.42345499 percent and 0.38625897 percent at December 31, 2019.

PSERS recognized total pension expense of \$12.5 million in FY 2021 on the Statement of Changes in Fiduciary Net Position. Of the \$12.5 million of pension expense, \$7.5 million was reflected in administrative expenses, \$0.5 million in Postemployment Healthcare, \$0.2 million in defined contributions and \$4.3 million was reflected in investment expenses. Deferred inflows of resources of \$10.2 million and \$5.6 million at June 30, 2021, and June 30, 2020, respectively, are reported in Other liabilities on the Statement of Fiduciary Net Position. Deferred outflows of resources of \$22.9 million and \$14.6 million at June 30, 2021, and June 30, 2020, respectively, are reported in Miscellaneous assets. Of the \$22.9 million of deferred outflows of resources at June 30, 2021, PSERS recorded \$5.1 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, 2022. 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)
2022	3,849
2023	2,598
2024	3,758
2025	(47)
Thereafter	2,418

(E) SERS' Pension Plan Fiduciary Net Position

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

Notes to Financial Statements (continued)

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 \$230 per biweekly pay period until January 2021 and \$0 from January 2021 through June 2021, for each current REHP eligible active employee during fiscal year ended June 30, 2021 to the REHP Trust. PSERS' contributions to the REHP for FY 2021 were \$1.0 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, 2021, PSERS reported a liability of \$50.9 million and \$42.1 million at June 30, 2020 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 \$2.0 million. The net OPEB liability was measured at June 30, 2020, and the total OPEB liability used to calculate the net OPEB liability was determined by an actuarial valuation at June 30, 2020.

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 2.21% on June 30, 2021. PSERS' proportion of the net OPEB liability was calculated utilizing a contribution method. At June 30, 2020, PSERS' proportion was 0.41302 percent and at June 30, 2019 PSERS' proportion was 0.404694 percent.

REHP had a increase in Total OPEB Liability of approximately \$2.0 billion. The primary cause was due to changes in actuarial assumptions driven by a decrease in the discount rate from 3.50% to 2.21%.

PSERS recognized total OPEB expense of \$(3.9) million in FY 2021 on the Statement of Changes in Fiduciary Net Position. Of the \$(3.9) million of OPEB expense, \$(3.2) million was reflected in administrative expenses, \$(0.2) million in Postemployment Healthcare, \$0.2 million in defined contributions and \$(0.7) million was reflected in investment expenses. Deferred outflows of resources of \$13.3 million and \$4.8 million at June 30, 2021 and June 30, 2020, respectively are reported in Miscellaneous assets. Of the \$13.3 million of deferred outflows at June 30, 2021, PSERS recorded \$2.0 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, 2022. Deferred inflows of resources of \$28.4 million and \$37.2 million at June 30, 2021 and June 30, 2020, respectively are reported in Other liabilities on the Statement of Fiduciary Net Position and will be recognized in OPEB expense as follows:

Year Ending June 30:	(Dollar amounts in thousands)
2022	(6,938)
2023	(6,465)
2024	(4,251)
2025	(479)
Thereafter	1,067

(E) REHP Plan Fiduciary Net Position

Detailed information about the REHP fiduciary net position is available in the Commonwealth's Annual Comprehensive Financial Report which can be found at 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. The System is also exposed to various other liabilities and risks related to fiduciary responsibilities of directors and officers.

Notes to Financial Statements (continued)

In 2021, the System received subpoenas from various federal agencies regarding the certification of the shared risk member contribution rate in December 2020, as well as the purchase and valuation of certain directly held properties. PSERS is cooperating fully with the federal investigations and the PSERS Board has retained outside counsel to conduct an independent internal investigation of the shared risk calculation and the purchase and valuation of certain directly held properties. PSERS expects to incur legal costs and other expenses in connection with responding to the federal investigations and from conducting its own internal investigation.

It is the opinion of management that the ultimate liability arising from such threatened, pending litigation and investigations will not have a material effect on the financial position of the System.

Required Supplementary Information

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

	2021	2020	2019	2018	2017	2016	2015	2014
Total pension liability								
Service cost	\$ 1,963,645	\$ 1,949,427	\$ 1,921,417	\$ 1,890,906	\$ 1,873,844	\$ 1,932,401	\$ 1,926,539	\$ 2,139,037
Interest	7,703,465	7,546,367	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	40,322	(339,969)	(1,477,660)	(745,306)	644,051	(348,429)	(223,437)	—
Changes of assumptions	2,655,180	—	—	—	—	2,236,118	—	—
Benefit payments	(7,134,332)	(6,876,515)	(6,761,172)	(6,655,146)	(6,473,579)	(6,360,325)	(6,220,601)	(6,053,505)
Net change in total pension liability	5,228,280	2,279,310	1,147,813	1,824,938	3,154,854	4,488,057	2,339,998	2,609,016
Total pension liability - beginning	107,795,802	105,516,492	104,368,679	102,543,741	99,388,887	94,900,830	92,560,832	89,951,816
Total pension liability - ending (a)	\$113,024,082	\$107,795,802	\$105,516,492	\$104,368,679	\$102,543,741	\$99,388,887	\$94,900,830	\$92,560,832
Plan fiduciary net position								
Contributions - employer	4,759,189	4,676,413	4,487,520	4,249,611	3,832,773	3,189,510	2,596,731	1,992,084
Contributions - member	1,080,701	1,067,957	1,064,043	1,026,375	1,013,847	989,266	984,634	966,926
Net investment income	14,754,624	1,001,846	3,628,710	4,714,158	4,995,362	473,206	1,328,516	7,097,761
Benefit payments	(7,134,332)	(6,876,515)	(6,761,172)	(6,655,146)	(6,473,579)	(6,360,325)	(6,220,601)	(6,053,505)
Administrative expense	(49,616)	(46,799)	(48,931)	(46,544)	(45,127)	(45,118)	(42,331)	(38,712)
Net Change in plan fiduciary net position	13,410,566	(177,098)	2,370,170	3,288,454	3,323,276	(1,753,461)	(1,353,051)	3,964,554
Plan fiduciary net position - beginning	58,556,786	58,733,884	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	58,556,786	58,733,884	56,363,714	53,075,260	49,832,060	51,585,521	52,938,572	49,015,561
Plan fiduciary net position - ending (b)	\$ 71,967,352	\$58,556,786	\$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)	\$ 41,056,730	\$49,239,016	\$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)

	<u>2021</u>	<u>2020</u>	<u>2019</u>	<u>2018</u>	<u>2017</u>	<u>2016</u>	<u>2015</u>	<u>2014</u>
Total pension liability	\$113,024,082	\$107,795,802	\$105,516,492	\$104,368,679	\$102,543,741	\$ 99,388,887	\$ 94,900,830	\$ 92,560,832
Less: Plan fiduciary net position	71,967,352	58,556,786	58,733,884	56,363,714	53,155,336	49,832,060	51,585,521	52,980,115
Employer Net Pension liability	\$ 41,056,730	\$ 49,239,016	\$ 46,782,608	\$ 48,004,965	\$ 49,388,405	\$ 49,556,827	\$ 43,315,309	\$ 39,580,717
Plan fiduciary net position as a percentage of the total pension liability	63.67%	54.32%	55.66%	54.00%	51.84%	50.14%	54.36%	57.24%
Covered Payroll	\$ 14,176,097	\$ 14,036,006	\$ 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	289.62%	350.81%	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)

	<u>2021</u>	<u>2020</u>	<u>2019</u>	<u>2018</u>	<u>2017</u>	<u>2016</u>	<u>2015</u>	<u>2014</u>
Actuarially determined contribution	\$ 4,752,338	\$ 4,671,931	\$ 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(1) (2)	4,752,338	4,671,931	4,478,236	4,243,328	3,824,908	3,181,438	2,582,114	1,992,084
Contribution deficiency	—	—	—	—	—	358,866	707,501	973,631
Covered payroll	\$14,176,097	\$14,036,006	\$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	33.52%	33.29%	32.47%	31.51%	28.73%	24.57%	20.07%	15.61%

(1) Amounts for 2015-2021 exclude purchase of service contributions.

(2) 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)

Total OPEB liability	2021	2020	2019	2018	2017
Service cost	\$ 44,699	\$ 42,643	\$ 40,201	\$ 37,809	\$ 42,038
Interest	60,632	62,452	65,319	67,091	61,404
Differences between expected and actual experience	7,272	11,987	1,435	15,019	—
Changes of assumptions	212,419	35,284	50,166	38,456	(110,610)
Benefit payments	(113,538)	(113,279)	(112,777)	(111,847)	(110,229)
Net change in total OPEB liability	<u>211,484</u>	<u>39,087</u>	<u>44,344</u>	<u>46,528</u>	<u>(117,397)</u>
Total OPEB liability - beginning	<u>2,291,114</u>	<u>2,252,027</u>	<u>2,207,683</u>	<u>2,161,155</u>	<u>2,278,552</u>
Total OPEB liability - ending (a)	<u>\$ 2,502,598</u>	<u>\$ 2,291,114</u>	<u>\$ 2,252,027</u>	<u>\$ 2,207,683</u>	<u>\$ 2,161,155</u>
Plan fiduciary net position					
Contributions - employer	\$ 116,519	\$ 117,907	\$ 114,829	\$ 111,986	\$ 110,985
Net investment income	260	1,752	2,313	1,455	663
Benefit payments	(113,538)	(113,279)	(112,777)	(111,847)	(110,229)
Administrative expense	(1,143)	(1,148)	(1,914)	(2,602)	(2,239)
Net Change in plan fiduciary net position	<u>2,098</u>	<u>5,232</u>	<u>2,451</u>	<u>(1,008)</u>	<u>(820)</u>
Plan fiduciary net position - beginning	<u>130,417</u>	<u>125,185</u>	<u>122,734</u>	<u>123,743</u>	<u>124,563</u>
Plan fiduciary net position - ending (b)	<u>\$ 132,515</u>	<u>\$ 130,417</u>	<u>\$ 125,185</u>	<u>\$ 122,735</u>	<u>\$ 123,743</u>
Employer net OPEB liability - ending (a) - (b)	<u>\$ 2,370,083</u>	<u>\$ 2,160,697</u>	<u>\$ 2,126,842</u>	<u>\$ 2,084,948</u>	<u>\$ 2,037,412</u>

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)

	2021	2020	2019	2018	2017	2016
Total OPEB Liability	\$ 2,502,598	\$ 2,291,114	\$ 2,252,027	\$ 2,207,683	\$ 2,161,155	\$ 2,278,552
Less: Plan fiduciary net position	132,515	130,417	125,185	122,734	123,743	124,563
Employer Net OPEB Liability	<u>\$ 2,370,083</u>	<u>\$ 2,160,697</u>	<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	5.30%	5.69%	5.56%	5.56%	5.73%	5.47%
Covered Payroll	\$ 14,176,097	\$ 14,036,006	\$ 13,791,197	\$ 13,466,526	\$ 13,313,900	\$ 12,951,077
Employer net OPEB liability as a percentage of covered payroll	16.72%	15.39%	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)

	2021	2020	2019	2018	2017	2016
Actuarially determined contribution	\$ 133,971	\$ 138,776	\$ 139,484	\$ 134,607	\$ 125,694	\$ 129,494
Contributions in relation to the actuarially determined contribution(1)(2)	116,365	117,723	114,571	111,724	110,558	112,557
Contribution deficiency	<u>\$ 17,606</u>	<u>\$ 21,053</u>	<u>\$ 24,913</u>	<u>\$ 22,883</u>	<u>\$ 15,136</u>	<u>\$ 16,937</u>
Covered payroll	\$ 14,176,097	\$ 14,036,006	\$ 13,791,197	\$ 13,466,526	\$ 13,313,900	\$ 12,951,077
Contributions as a percentage of covered payroll	0.82%	0.84%	0.83%	0.83%	0.83%	0.87%

(1) Amounts exclude purchase of service contributions.

(2) 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)**

	2021	2020	2019	2018	2017	2016	2015	2014
Annual money-weighted rate of return, net of investment expense- Pension	24.57%	1.14%	6.58%	9.30%	10.15%	1.11%	3.08%	14.98%
Annual money-weighted rate of return, net of investment expense- OPEB	0.31%	1.97%	2.68%	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, 2021**

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, 2021

The Discount Rate decreased from 7.25% to 7.00%. The inflation assumption was decreased from 2.75% to 2.50%. Payroll growth assumption decreased from 3.50% to 3.25%.

Salary growth changed from an effective average of 5.00%, which was comprised of inflation of 2.75%, real wage growth and for merit or seniority increases of 2.25%, to an effective average of 4.50%, comprised of inflation of 2.50% and 2.00% for real wage growth and for merit or seniority increases.

Mortality rates were modified from the RP-2014 Mortality Tables for Males and Females to a blended table based on 50% PubT-2010 Employee (Total Teacher dataset) and 50% PubG-2010 (Total General Employees data), adjusted to reflect PSERS' experience and projected using a modified version MP-2020.

For disabled annuitants the rates were modified from the RP-2014 Mortality Tables for Males and Females to Pub-2010 Disability Mortality Non-Safety Headcount Weighted table, adjusted to reflect PSERS' experience and projected using a modified version of the MP-2020.

Changes in assumptions used in measurement of the Total Pension Liability beginning June 30, 2017, beginning June 30, 2018, beginning June 30, 2019 & beginning June 30, 2020

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, 2020 actuarial valuation will be made during the fiscal year ending June 30, 2022. The following actuarial methods and assumptions were used to determine contribution rates reported in that schedule:

- Investment return - 7.25%, includes inflation at 2.50% 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.

**Notes to Required Supplementary Information
for the Years Ended June 30, 2014 thru June 30, 2021 (continued)**

Pension

- 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.

**Notes to Required Supplementary Information
for the Years Ended June 30, 2014 thru June 30, 2021**

OPEB

Changes in benefit terms

None.

Changes in assumptions used in measurement of the Total OPEB Liability beginning June 30, 2021

The Discount Rate decreased from 2.66% to 2.18%. The inflation assumption was decreased from 2.75% to 2.50%. Payroll growth assumption decrease from 3.50% to 3.25%.

Salary growth changed from an effective average of 5.00%, which was comprised of inflation of 2.75%, real wage growth and for merit or seniority increases of 2.25%, to an effective average of 4.50%, comprised of inflation of 2.50% and 2.00% for real wage growth and for merit or seniority increases.

Mortality rates were modified from the RP-2014 Mortality Tables for Males and Females to a blended table based on 50% PubT-2010 Employee (Total Teacher dataset) and 50% PubG-2010 (Total General Employees data), adjusted to reflect PSERS' experience and projected using a modified version MP-2020.

For disabled annuitants the rates were modified from the RP-2014 Mortality Tables for Males and Females to Pub-2010 Disability Mortality Non-Safety Headcount Weighted table, adjusted to reflect PSERS' experience and projected using a modified version of the MP-2020.

Changes in assumptions used in measurement of the Total OPEB Liability beginning June 30, 2020

The Discount Rate decreased from 2.79% to 2.66%.

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, 2020 actuarial valuation will be made during the fiscal year ending June 30, 2022. The following actuarial methods and assumptions were used to determine contribution rates reported in that schedule:

**Notes to Required Supplementary Information
for the Years Ended June 30, 2014 thru June 30, 2021 (continued)**

OPEB

- Investment return - 2.18% - 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.

Supplementary Schedule 1
Schedule of Administrative and Investment Expenses
Year Ended June 30, 2021
(Dollar Amounts in Thousands)

	Administrative Expenses			Investment Expenses (2)	Total
	Pension	Defined Contributions	Postemployment Healthcare (1)		
Personnel costs:					
Salaries and wages	\$ 17,466	\$ 285	\$ 1,196	\$ 10,184	\$ 29,131
Employee benefits	12,173	178	765	4,721	17,837
Total personnel costs	29,639	463	1,961	14,905	46,968
Operating costs:					
Investment managers' fees	—	—	—	584,523	584,523
Custodian fees	—	—	—	2,496	2,496
Specialized services	76	782	—	1,400	2,258
Investment Systems	—	—	—	5,344	5,344
Investment Services	—	—	—	2,280	2,280
Third party administrator	—	—	32,288	—	32,288
Fitness program administrator	—	—	834	—	834
Healthcare project management	—	—	3,543	—	3,543
Real estate rental, electricity	2,003	—	242	256	2,501
Consultant and legal fees	4,213	122	1,079	4,626	10,040
Treasury and other Commonwealth services	1,700	—	—	175	1,875
Postage	629	—	113	—	742
Contracted maintenance and repair services	3,690	—	—	187	3,877
Printing and office supplies	233	—	19	1	253
Equipment and software rental	4,846	—	—	—	4,846
Travel and training	63	—	122	8	193
Telecommunications	401	—	29	93	523
Equipment (non-capital assets)	358	—	—	19	377
Subscriptions	315	—	—	1,649	1,964
Miscellaneous	939	19	149	157	1,264
Total operating costs	19,466	923	38,418	603,214	662,021
Other charges:					
Depreciation	2,812	—	—	—	2,812
Total Administrative and Investment Expenses Before Pension & OPEB Expense	51,917	1,386	40,379	618,119	711,801
Pension expense (3)	2,390	55	110	1,006	3,561
OPEB expense (4)	(4,691)	146	(295)	(1,073)	(5,913)
Total Administrative and Investment Expenses	\$ 49,616	\$ 1,587	\$ 40,194	\$ 618,052	\$ 709,449

- (1) Administrative expenses for Postemployment Healthcare includes \$1,143 related to Premium Assistance and \$39,050 related to Health Options Program for the fiscal year ended June 30, 2021.
- (2) Includes investment expenses of \$37 related to Postemployment Healthcare Premium Assistance, \$36 related to Health Options Program and \$97 for DC for the fiscal year ended June 30, 2021 and does not include \$4,632 in capitalized broker commissions for the fiscal year ended June 30, 2021.
- (3) Total GASB 68 pension expense is \$12.5 million and is reflected under Employee benefits and Pension expense. Employer contributions of \$9.0 million are included as Employee benefits under Personnel costs and \$3.5 million is reflected as Pension expense.
- (4) Total GASB 75 OPEB expense is \$(3.9) million and is reflected under Employee benefits and OPEB expense. Employer contributions of \$2.0 million are included as Employee benefits under Personnel costs and \$(5.9) million is reflected as OPEB expense.

Supplementary Schedule 2
Summary of Investment Expenses*
Year Ended June 30, 2021
(Dollar Amounts in Thousands)

	<u>Investment Management</u>		<u>Other Expenses</u>	<u>Total</u>
	<u>Base</u>	<u>Performance</u>		
External management:				
Domestic equity	\$ 558	\$ 2,500	\$ —	\$ 3,058
International equity	26,486	66,575	—	93,061
Fixed income	35,364	27,304	—	62,668
Real estate	51,618	—	—	51,618
Alternative investments	101,569	—	—	101,569
Absolute return	88,798	91,523	—	180,321
Commodities	11,534	11,062	—	22,596
Infrastructure	5,052	—	—	5,052
Master limited partnership	786	1,686	—	2,472
Risk parity	4,021	—	—	4,021
Private credit	57,990	—	—	57,990
Defined Contribution	97	—	—	97
Total external management	<u>383,873</u>	<u>200,650</u>	<u>—</u>	<u>584,523</u>
Total internal management	<u>—</u>	<u>—</u>	<u>26,407</u>	<u>26,407</u>
Total investment management	<u>383,873</u>	<u>200,650</u>	<u>26,407</u>	<u>610,930</u>
Custodian fees	—	—	2,496	2,496
Consultant and legal fees	—	—	4,626	4,626
Total investment expenses	<u>\$ 383,873</u>	<u>\$ 200,650</u>	<u>\$ 33,529</u>	<u>\$ 618,052</u>

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

Supplementary Schedule 3
Schedule of Payments to Non-Investment Consultants
Year Ended June 30, 2021
(Dollar Amounts Greater than \$100,000)

Non-Investment Consultants	Fees	Services Provided
Trustmark Health Benefits	\$ 32,810,296	Postemployment Healthcare benefits administration and claims adjudication
Optum RX, Inc	6,146,201	Administration of post employment healthcare benefits and prescription drug plan
Vitech Systems Group, Inc.	5,300,000	Pension administration system services
The Segal Company, Inc.	3,543,649	Actuarial services and consulting for HOP and prescription drug plan
Gallagher Benefit Services, Inc.	1,079,577	Pharmacy benefit consulting services
Tivity Health	833,901	Administration of the Silver Sneakers Fitness program
OST Inc.	594,119	Information technology, training, testing and consulting services
Funston Advisory Services LLC	400,000	Board governance consulting services
Buck Global, LLC	318,983	Pension benefit actuarial services



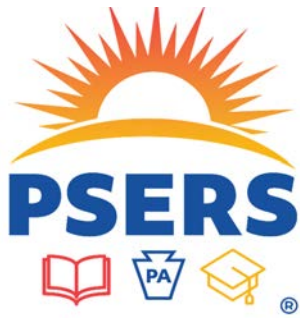
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COMMONWEALTH OF PENNSYLVANIA
PUBLIC SCHOOL EMPLOYEES' RETIREMENT SYSTEM

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

November 5, 2021

Dear PSERS Board of Trustees:

It is a privilege to present to you the Investment Section of the Annual Comprehensive Financial Report for the fiscal year ended June 30, 2021.

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. Pursuant to the Board's enabling legislation, the members of the Board, employees of the Board, and their agents are fiduciaries to the System's members and beneficiaries and must invest and manage the fund for exclusive benefit of the System's members and beneficiaries (24 Pa. C. S. §8521(e)). As such, they must act consistent with the duty of prudence as well as the duty of loyalty.

In performance of their duties, the trustees shall exercise "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." (24 Pa. C.S. §8521(a)).

The System shall at all times be managed in accordance with all applicable state and federal laws, rules, and regulations, as well as this Investment Policy Statement and other applicable policies of the Board.

Policies and Objectives and Investment Philosophy

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:

- to generate returns to support the System's actuarial soundness so it may provide its members with benefits as required by law;
- to earn a long-term total return, net of fees, and investment and administrative expenses, that equals or exceeds the actuarial assumed rate approved by the Board (currently 7.00%);
- to earn a long-term total return, net of fees and investment expenses, that equals or exceeds the Policy Index approved by the Board; and
- to prudently manage investment risks that are related to the achievement of investment goals.

The PSERS Board of Trustees believes the System's assets should be managed in accordance with the System's unique liability stream, funding sources, cash flows, and portfolio size, focusing on the prudent accumulation of wealth over the long term to meet the retirement benefit obligations established by the plan sponsor to its members. The System's assets should be managed based on the following beliefs:

1. Uncertainty - The future is difficult to forecast with any accuracy or certainty, particularly changes in the economic and market environment.
2. Asset Allocation - The strategic asset allocation mix, more than implementation or any other factor or decision, largely determines the portfolio's overall risk and return.
3. Diversification - Diversification is the best approach to addressing future uncertainty and therefore meeting PSERS' long-term investment objectives.

4. Risk - For an underfunded plan or for a plan with negative external cash flow (benefits paid exceed contributions received), the path of compounding of investment returns – from month to month, quarter to quarter, and year to year matters more than for a plan that is fully funded or has positive external cash flow; for the former type of plan, peak- to-trough declines transform unrealized losses into permanent ones. Drawdown risk should be mitigated, especially since the environment in which drawdowns occur is likely to take place when the plan sponsor’s willingness and ability to make contributions to the plan may be less than in normal times. Liquidity should be managed to reasonably ensure that the fund can meet its obligations during periods of market dislocations.
5. Leverage - Leverage at the total fund level can be an effective tool to enhance diversification, since asset classes, over the long-term, have similar risk-adjusted returns, different correlations to each other, and different responses to changes in the economic and market environment. Leverage can be a vital tool to increase or decrease total fund risk in a diversified manner.
6. Rebalancing - Disciplined rebalancing enhances long-term returns as it is an inherently contrarian process. Rebalancing restores strategic asset allocation as the primary driver of return and risk.
7. Portfolio Size - Managing a large pool of assets provides investors unique access to investment opportunities not available to smaller institutional investors or individual investors. PSERS should use its size to its advantage to enhance its net-of-fees return and diversification opportunities.
8. Private Investments - Allocations to Private Equity, Private Credit, Private Real Estate, Private Infrastructure, and other illiquid asset classes may be justified by the illiquidity risk premium available to investors. Allocations to these asset classes may also be justified by the diversification benefit they provide, through exposure to sectors, businesses, and mode of corporate governance not obtainable through public markets.
9. Active Management - Passive investing, rather than active management, is the default choice to be used for any asset class that is highly efficient or where skilled active managers are less likely to be identified. Certain asset classes continue to exhibit information inefficiency, where skilled active management and well-resourced investors such as PSERS can potentially persistently outperform peers and the benchmark for that asset class. There will be short- term periods when a skilled active manager may underperform peers and the benchmark; that is to be expected and accepted; therefore a long-term perspective will be employed.
10. Internal Management - PSERS has developed skilled internal investment managers; as such internal investment management is preferred over external investment management in cases where internal management most likely can match or exceed the long-term, net of fees, risk-adjusted returns provided by external managers, provided the internal investment and operational resources are available to do so.
11. Investment Fees - Investment management fees for external management are one of the few aspects of investment management that are certain and over which the investor has control. Investment management and performance fees should be managed to (i) maximize long-term, net of fees, risk-adjusted returns, (ii) split the value added fairly between the investment manager and PSERS, and (iii) align the interests of the investment manager with PSERS.

To achieve the System’s 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, 2021, Verus Advisory, Inc. is the Board’s investment consultant to provide the Board with investment oversight consulting services. Aon Investment Consulting, Inc. (Aon) 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. The Board retained Aksia, LLC as an absolute return and private credit consultant and Hamilton Lane Advisors, L.L.C. as an alternative, private credit, private infrastructure, and private real estate investment consultant. In addition, Constellation Advisers LLC was retained by the Board and Professional Staff to provide various investment compliance services to the System. 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, 22 external public market investment management firms were managing \$11.7 billion in assets of the System, \$33.4 billion in assets were managed by the System’s internal investment managers, and the

Investment Section

remaining \$26.5 billion in assets were managed by numerous absolute return, private equity, private credit, private infrastructure, and private 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, 2021, included an equity target allocation of 39.0% consisting of public equity (27.0%) and private equity (12.0%). Specific public equity targets have been established for U.S. equity (11.0%) and non-U.S. equity (16.0%). Within the U.S. equity target, the portfolios are diversified between domestically traded small, mid, and large capitalization equity. The non-U.S. equity exposure includes international developed markets and emerging markets small, mid, and large capitalization equity. The non-U.S. developed markets equity exposure is 25% 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.

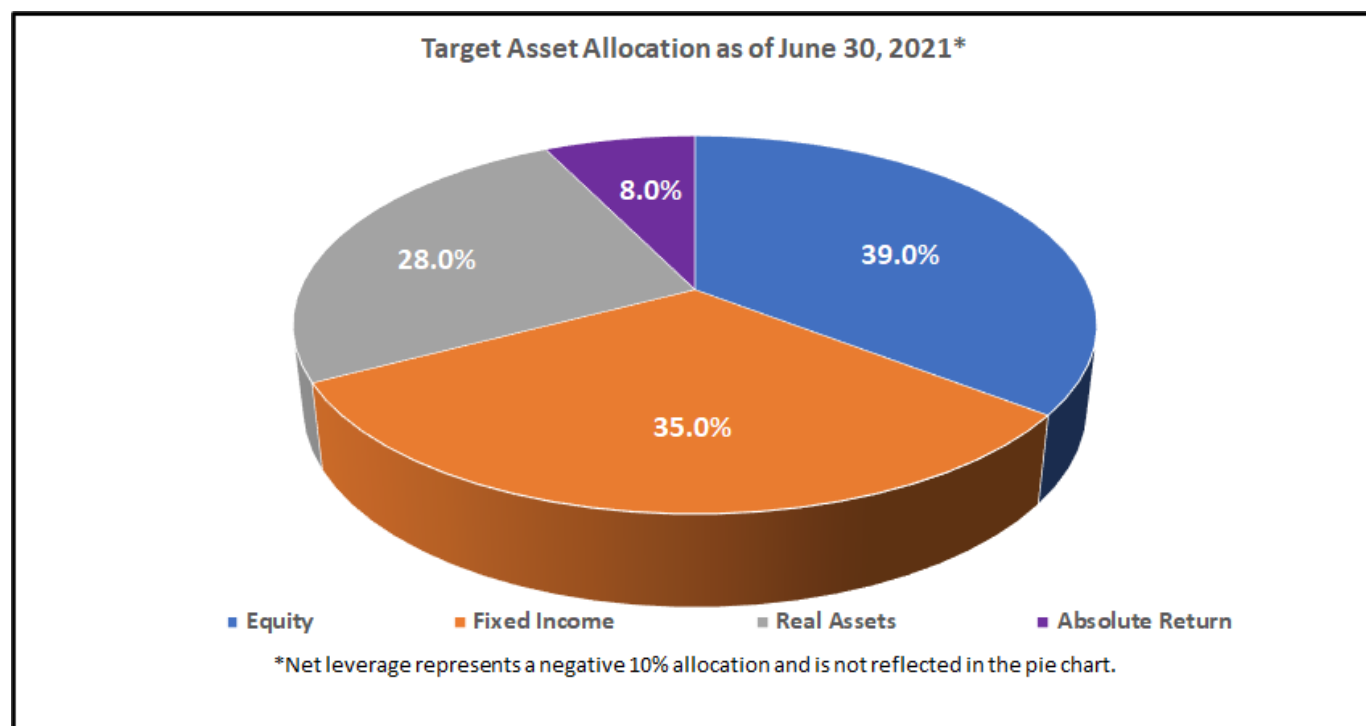
The fixed income target allocation of 35.0% consisted of investment grade exposure (8.0%), public credit-related exposure (4.0%), private credit exposure (8.0%) and inflation-protected exposure (15.0%). Investment grade exposure consisted of U.S. core fixed income (1.0%) and U.S. Long-term Treasuries (7.0%). 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 real asset exposure of 28.0% consisted of public and private real estate (10.0%), public and private infrastructure (8.0%) and commodities (10.0%, including 7% 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, agriculture value-added, and opportunistic real estate limited partnership. 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 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 8.0% 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, event-driven, relative value, tactical trading and long/short equity. The absolute return program is included in the allocation to generate positive, absolute returns with low volatility and low correlation to the public financial markets to diversify the System's total portfolio risk.

Leverage was utilized at the asset allocation level to provide additional exposure to diversifying asset classes. The System utilized 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 and real asset allocations. 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 (13.0%); Leverage is netted against the System's Cash allocation of 3% for a Net Leverage Allocation of (10%). The cash allocation consisted of short-duration, high quality government and investment grade securities. The Board, Investment Office professionals, and Aon Investment Consulting deemed it prudent to have an allocation to cash given the known and potential cash flow requirements of the System.

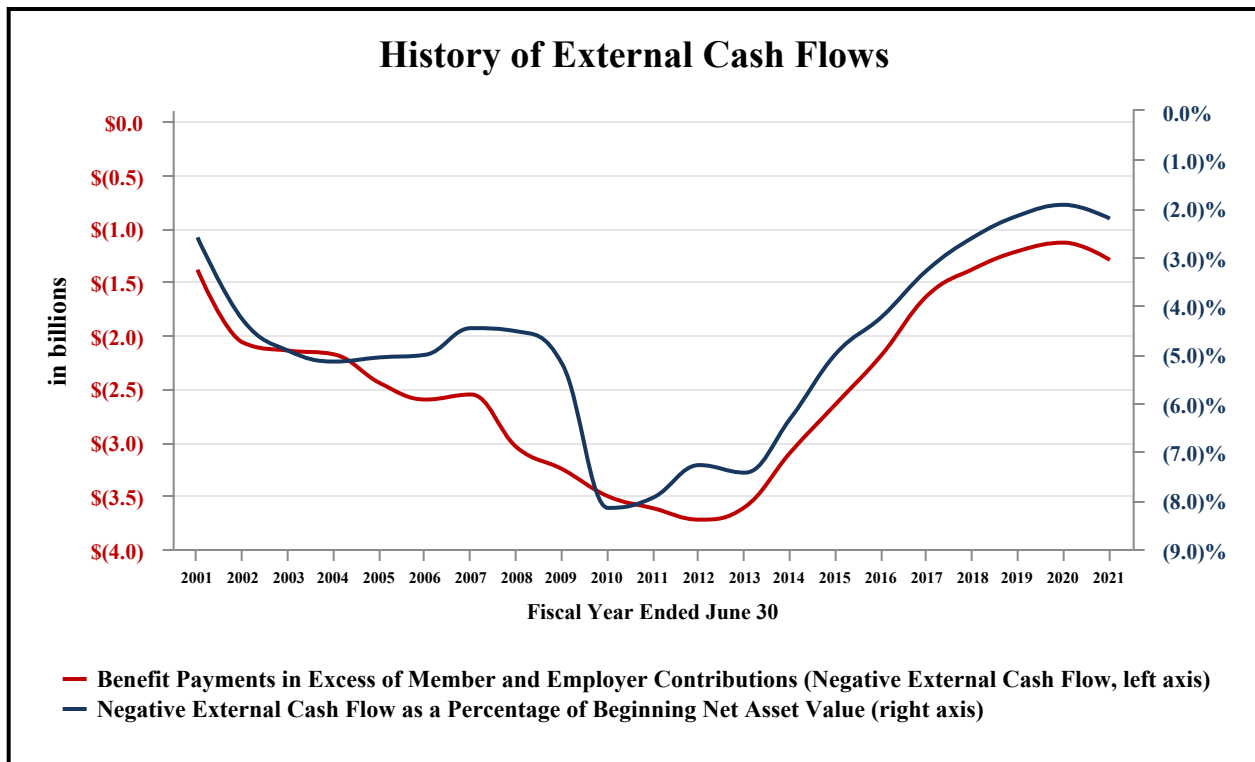


The System also participates in a securities lending program administered by Deutsche Bank AG. This program is designed to provide incremental income to the System by lending publicly-traded securities in the System's portfolio held by the System's custodial bank, The Bank of New York Mellon, to securities dealers in exchange for cash collateral, which can be reinvested to generate income. This program generated \$19.8 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 \$50.7 billion more in benefits than it has received in member and employer contributions (i.e., the System has experienced negative external cash flow). The average negative external cash flow was approximately \$2.4 billion per year during this period. This annual funding deficiency has amounted to 2.2% 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% external cash flow shortfall, then the net assets of the System will be unchanged). The negative annual external 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 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. 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 Year in Review

COVID-19 dominated the headlines for the past fiscal year. It started with a lull in the virus during the first quarter, increasing cases in the second quarter, emergency approval of vaccines in the U.S. and ended with an almost fully reopened U.S. economy by the fiscal 4th quarter. The COVID-19 vaccination campaign is the largest in history and will be ongoing for the foreseeable future. However, as the fiscal year closed out, there continued to be concerns surrounding COVID-19, including new mutations of the virus, specifically the Delta variant which is more contagious than previous strains. Other headlines during the fiscal year included the U.S. presidential election, geo-political tensions between the U.S. and China, a Brexit deal between the United Kingdom and European Union, continued easy monetary policies, and ongoing fiscal support in the U.S. (\$1.9 trillion COVID support package in March), Europe (€750 billion pandemic relief package), and elsewhere. As a result of easy monetary policies, loose fiscal policies, and re-opening of global economies, global equities and global risk markets, especially in the U.S., there is a growing concern that inflation will significantly increase. The biggest question about inflation is not if it will increase, but whether it will be on-going or transitory.

The U.S. Economy

The U.S. economy had some very significant tail winds during the past fiscal year. First, the Federal Reserve continued to run expansionary monetary conditions. The Federal Funds target rate range remained unchanged during the fiscal year at 0.00% - 0.25% with a commitment from the Federal Reserve to keep rates at rock bottom until at least 2022. In addition, the Federal Reserve continued to pump liquidity into the economy through its Treasury and MBS Asset Purchase program, injecting \$120 billion a month through asset purchases. Second, the Federal Government approved a \$1.9 trillion COVID-19 support package and is considering other fiscal programs, including an infrastructure bill. Finally, as COVID-19 cases moderated and with the deployment of a vaccine, the economy started to re-open and economic activity picked up significantly from being essentially shut down at the onset of the pandemic. The U.S. real Gross Domestic Product (GDP) increased by 12.2% over the course of the past year, with an unprecedented 33.8% quarter over quarter increase in the September 2020 quarter. With the economy re-opening, the official unemployment rate (U3 unemployment rate) fell during the fiscal year from 11.1% in June 2020 to 5.9% in June 2021. 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 9.8% as of fiscal year end, down significantly from 18.0% at the end of the last fiscal year.

The U.S. economy was strongly expanding for 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 remained in expansionary territory from 52.6 at June 30, 2020 to a high of 64.7 on March 30, 2021 before falling back to a still strong 60.6 on June 30, 2021 (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, strengthened from 98.3 at June 2020 to 128.9 at June 2021.

With the economy re-opening and consumers having significant savings from fiscal benefits such as one-time checks and enhanced unemployment benefits, inflation increased above the Fed's target inflation rate of 2.0%. Inflation significantly increased, with the U.S. Core Consumer Price Index (CPI) increasing to 4.5% year-over-year as of June 2021 from 1.2% one year ago. During the fiscal year, the Federal Reserve changed its inflation targeting approach and is now looking to achieve inflation moderately above 2% for some time so that inflation averages 2% over time and longer-term inflation expectations remain well anchored at 2%. This will potentially have the impact of inflation running higher for a period of time before the Federal Reserve reacts by increasing interest rates.

One area where significant inflation is showing up is housing. According to the S&P CoreLogic Case-Shiller U.S. National Home Price Index, home prices have increased by 18.5% over the past 12 months ended June 30, 2021, the largest year-over-year increase since the index was created in 1990. Increases in home prices are being driven by a number of factors, including record low interest rates, record low inventory of homes, and the desire for more space during the COVID-19 work-from-home environment.

Select Non-U.S. Economies

The Euro Area benefited from similar but weaker tail winds as the U.S. during the past fiscal year. Europe's economy did not open as quickly due to stricter lock downs and a slower pace of COVID-19 vaccination rollout. The European Central Bank increased its asset purchase program from €500 billion to €1.85 trillion to support the market and stimulate growth. On the fiscal side, the European Union approved a €2.2 trillion budget and stimulus package which included a €750 billion pandemic relief package to be funded by joint debt. Also, a Brexit deal between the European Union and the United Kingdom was reached in late December 2020, just days before the Brexit Deadline. The EU-UK Trade and Cooperation Agreement sets out arrangements in areas such as trade in goods and services, digital trade, and other provisions which endeavor to ensure a level playing field and respect for fundamental rights between the two parties. As of the second quarter 2021, the Euro Area had strong year-over-year growth of 13.7%, driven by a re-opening of the economy from COVID-19 restrictions, loose monetary policy, and strong fiscal support. The unemployment rate remained stable at 7.7%, the same as a year earlier. It is important to note that fiscal stimulus in Eurozone countries is focused on getting money to companies who are encouraged to keep people on payroll; while in the U.S. fiscal stimulus is focused on individuals, not companies so there is more volatility in unemployment. Eurozone inflation trends remained stable during the past fiscal year, with Eurozone Core Inflation modestly increasing from 0.8% on an annualized basis in June 2020 to 0.9% in June 2021, continuing well below the European Central Bank (ECB) target of 2.0%. The Euro Area economy expanded this past fiscal year as evidenced by the Markit Eurozone Manufacturing PMI measurement of 63.4% in June 2021 and above 50 the entire fiscal year (a contraction/expansion is indicated whenever the index is below 50/above 50). Aggressive fiscal and monetary actions have generated improvements in growth but have failed to increase inflation to the ECB's target. The ECB continued its policy of very accommodative overnight interest rates (negative 0.5% since September 2019).

Japan, and Asia in general, did not suffer from a health perspective as much as the western economies from COVID-19 due to cultural differences related to mask wearing from prior pandemics such as SARS. However, Japan did have its share of economic lockdowns which impacted the economy and has also been slower in vaccinating its population which could lead to the impact of more rolling lockdowns to control communal spread of the virus. The significant event for Japan this past fiscal year was the resignation of Prime Minister Shinzo Abe who was replaced by Yoshihide Suga. Prime Minister Abe had been aggressive in trying to revive Japan's economy and escape deflation using an economic policy referred to as Abenomics. While Abe's policy goals were not fully accomplished, they did help put Japan on better economic footing. As of the second quarter 2021, Japan's real GDP increased by a rate of 1.9% versus a -10.1% as of June 2020. 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 compared to the U.S. and Europe and was 2.9% in June 2021, up from 2.8% last fiscal year. The inflation rate in Japan was negative 0.5% over the past year, down from 0.1% one year earlier. 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

Investment Section

encourage liquidity to move into riskier assets. Economic conditions improved as the Japanese manufacturing sector followed Europe into expansion territory as evidenced by the Jibun Bank Japan Manufacturing PMI which increased by 12.3 points from 40.1 at June 2020 to 52.4 at June 2021 (a contraction/expansion is indicated whenever the index is below 50/above 50).

China had robust growth compared to the other developed regions of the world and their aggressive actions fighting the COVID-19 virus allowed them to economically recover more quickly. China had strong real GDP growth of 7.9% over the past year, significantly faster than the 3.2% pace for the year ended June 2020 due to a reopening of the economy from COVID-19 shutdowns last fiscal year. Inflation in China remained well contained and relatively low over the past year at 1.1% compared to 2.5% last year. Economic conditions remained stable over the past year as evidenced by the China Manufacturing PMI at 50.9, unchanged from last year (a contraction/expansion is indicated whenever the index is below 50/above 50).

Investment Results

Aon Investment Consulting 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, 2021, the System generated a total net of fee return of 24.58%. This return exceeded the total fund Policy Index return of 20.58% by 400 basis points. Annualized total net of fee returns for the three-, five- and ten-year periods ended June 30, 2021 were 10.35%, 10.10% and 8.04%, respectively. The three-, five- and ten-year returns ended June 30, 2020 exceeded the total fund Policy Index returns by 25, 71 and 44 basis points, respectively.

PSERS' asset classes that were significant positive contributors to performance this past fiscal year included:

- Private Equity was up 57.0% from the post-COVID bounce in equity markets
- MLPs were up 53.5% due to the economy re-opening creating increased demand for energy
- Emerging Market Equity was up 52.2%
- U.S. Equities were up 46.7%
- Non-U.S. Equities were up 40.4%

PSERS' asset classes that were significant detractors from performance this past fiscal year included:

- U.S. Treasuries were down 10.4% due to rising interest rates
- Gold was down 3.9% as capital moved from diversifying assets to risk-on assets like equities
- Cash & Cash Equivalents were up 0.9%
- U.S. Core Fixed Income was up 3.9% as tightening credit spreads offset increasing interest rates

Given the strong tail winds for the global economy this past year, equity markets around the world were generally very strong. The strength in these markets stemmed from very easy monetary conditions around the world, strong fiscal support from the U.S. and European Union, and moderating COVID-19 cases leading economies to start re-opening with a commensurate pickup of economic activity. Equity markets were also strongly supported by TINA: There Is No Alternative, meaning that with interest rates globally at rock-bottom levels, capital flowed towards riskier, higher returning equities from lower returning safe assets such as U.S. Treasuries to meet investment return objectives.

Diversification is Undeniably Effective

Diversification into asset classes such as U.S. treasuries, gold, cash & cash equivalents, and U.S. core fixed income 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 has exceeded the Board's stated investment objectives over the past 10 years. During this time, PSERS return has been more than sufficient to support the System's actuarial soundness and provide all required benefits to its members, exceeded the actuarial assumed rate of return, exceeded the Board's Policy Index, and was accomplished while prudently managing the investment risks required to achieve those goals. In fact, the returns generated over the past 10 years were done so with one of the lowest risk profiles, as measured by standard deviation of investment returns, among public pension funds in the country as well as one of the highest investment return to risk ratios. This accomplishment shows the power of a diversified investment program.

The Investment Office continued to successfully work from home during the fiscal year as a result of the COVID-19 pandemic. The investment team had the necessary equipment to make remote work productive. The team has access to all necessary service providers and tools necessary to manage the portfolio as well as communicate with our external service providers and each other through tools such as Microsoft Teams.

The Operations team in the Investment Office successfully completed phase one of the migration to SimCorp, PSERS' Investment Book of Record (IBOR). The IBOR project started in December 2017 and is slated to be completed in 2022. The IBOR is a technological solution designed to deliver the current best available view of investment data suitable for investment decision-making, incorporating the current status and forward projections of portfolio investment holdings and cash position, as well as reference data and derived analytics supporting the investment decision-making process. Benefits sought from the IBOR include, among other things, modernization of processes, increased transparency, and increased functionality.

Summary

This past fiscal year was very rewarding for taking investment risk, especially equity risk, with strong tailwinds from monetary policy, fiscal policy, and a relaxation of COVID-19 restrictions leading to increased mobility and economic activity. Returns this past fiscal year were stellar, up 24.58%. Years like the past fiscal year should not be expected often, but are enjoyed nonetheless. PSERS is built to generate long-term returns, so one good or bad year is not going to make or break the Fund. The System is proud to report that its annualized, net of fee return for the past 10 years is 8.04%, comfortably above our actuarial assumed rate of return of 7.00%. This return was accomplished in a very risk-controlled fashion, generating one of the highest investment risk to return ratios in the country and achieving all of the Board's stated investment goals. Looking forward, with cash rates of around 0.00%, the System still needs to take prudent risks to achieve its long-term goal of 7.00%. 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 7.00%, 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, and real assets. In any given year, the System expects some assets to perform well, such as U.S. equities did this past fiscal year, and some to not do as well, such as core fixed income 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

Annualized Time-Weighted Returns (%) Net of Fees (1)

Periods Ended June 30, 2021

	1 Year	3 Years	5 Years	10 Years
PSERS Total Portfolio	24.58	10.35	10.10	8.04
Total Fund Policy Index	20.58	10.10	9.39	7.60
Median Public Defined Benefit Plan (DBP) Fund Universe (Aon Investment Consulting Database)	26.98	10.86	10.55	8.22
PSERS U.S. Equity Portfolios	46.73	17.77	17.32	14.54
U.S. Equity Policy Index	45.60	17.88	17.39	14.47
PSERS Non-U.S. Equity Portfolios	40.41	13.69	14.78	9.01
Non-U.S. Equity Policy Index	35.56	10.51	12.36	7.32
PSERS Fixed Income Portfolios (4)	6.16	7.07	6.60	6.36
Fixed Income Policy Index	3.77	6.93	5.19	4.39
PSERS Commodity Portfolios (4)	14.36	9.11	5.73	-0.66
Commodity Policy Index	14.65	3.78	1.83	-3.28
PSERS Absolute Return Portfolios	12.72	4.73	5.60	4.23
Absolute Return Policy Index	16.16	7.86	6.68	6.36
PSERS Master Limited Partnership (MLP) Portfolios	53.52	0.22	1.01	4.99
Standard & Poor's MLP Index	53.15	2.96	2.05	2.70
PSERS Real Estate (2) (4)	14.72	8.18	9.29	10.18
Blended Real Estate Index	12.17	5.63	7.39	9.34
PSERS Alternative Investments (3)	57.14	18.75	17.35	12.56
Burgiss Median, Vintage Year Weighted Index	42.48	16.46	15.93	13.12

1. For more specific details on policy indices, refer to PSERS Investment Policy Statement at www.psers.pa.gov.
2. Returns reported on a one-quarter lag, except for publicly traded real estate security investments.
3. Returns reported on a one-quarter lag.
4. Returns are presented on an unleveraged basis for comparability purposes to the Policy Index.

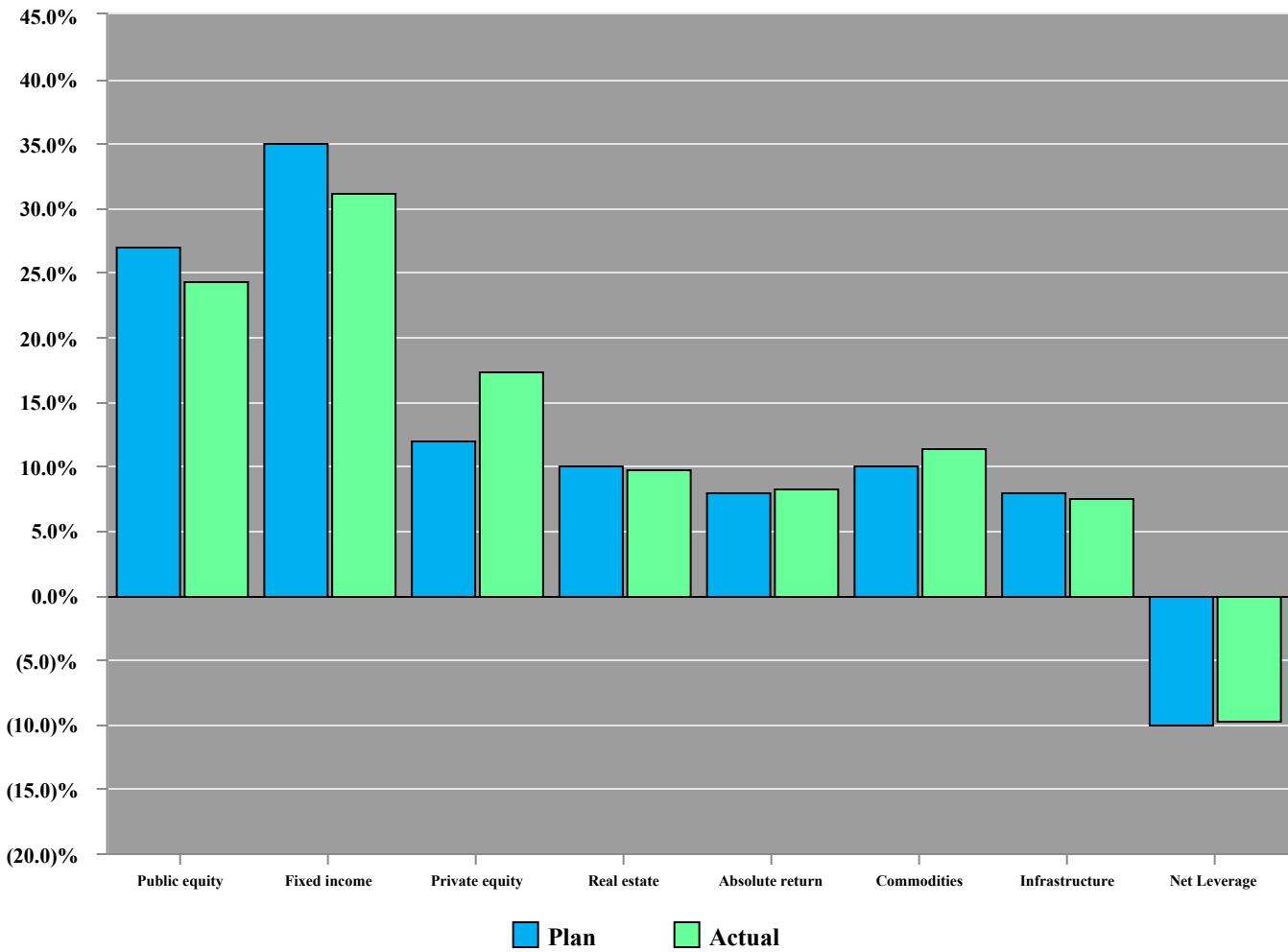
Portfolio Summary Statistics
Asset Allocation Basis
As of June 30, 2021
(Dollar Amounts in Thousands)

Pension investments	Fair Value	% Fair Value
Common and preferred stock (Public equity):		
Large and mid cap stocks	\$ 7,590,762	10.6
Small cap stocks	730,387	1.0
Emerging markets stocks	2,581,506	3.6
Total Non-U.S. equity	10,902,655	15.2
Large cap stocks	4,793,059	6.7
Mid and small stocks	1,744,565	2.4
Total U.S. equity	6,537,624	9.1
Total Common and preferred stock	17,440,279	24.3
Fixed income:		
Investment grade fixed income	12,456,523	17.4
Private credit	7,485,220	10.5
Total U.S. Fixed income	19,941,743	27.9
Non-U.S. developed markets fixed income	1,914,720	2.7
Emerging markets fixed income	391,848	0.5
Total Non-U.S. Fixed income	2,306,568	3.2
Total Fixed income	22,248,311	31.1
Real estate	6,979,375	9.7
Private equity	12,405,306	17.3
Absolute return	5,919,848	8.3
Commodities	8,199,903	11.5
Infrastructure	5,429,476	7.6
Tail Risk Mitigation	36,589	—
Leverage:		
Leverage	(10,299,847)	(14.4)
Cash and cash equivalents	3,275,291	4.6
Total Net Leverage	(7,024,556)	(9.8)
Total Pension investments	71,634,531	100.0
Net Asset Allocation Adjustment*	(8,298)	
Pension investments per Statement of Fiduciary Net Position	71,626,233	
Postemployment Healthcare investments	\$ 471,906	100.0
Defined Contribution plan investments	\$ 63,314	100.0

* 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.

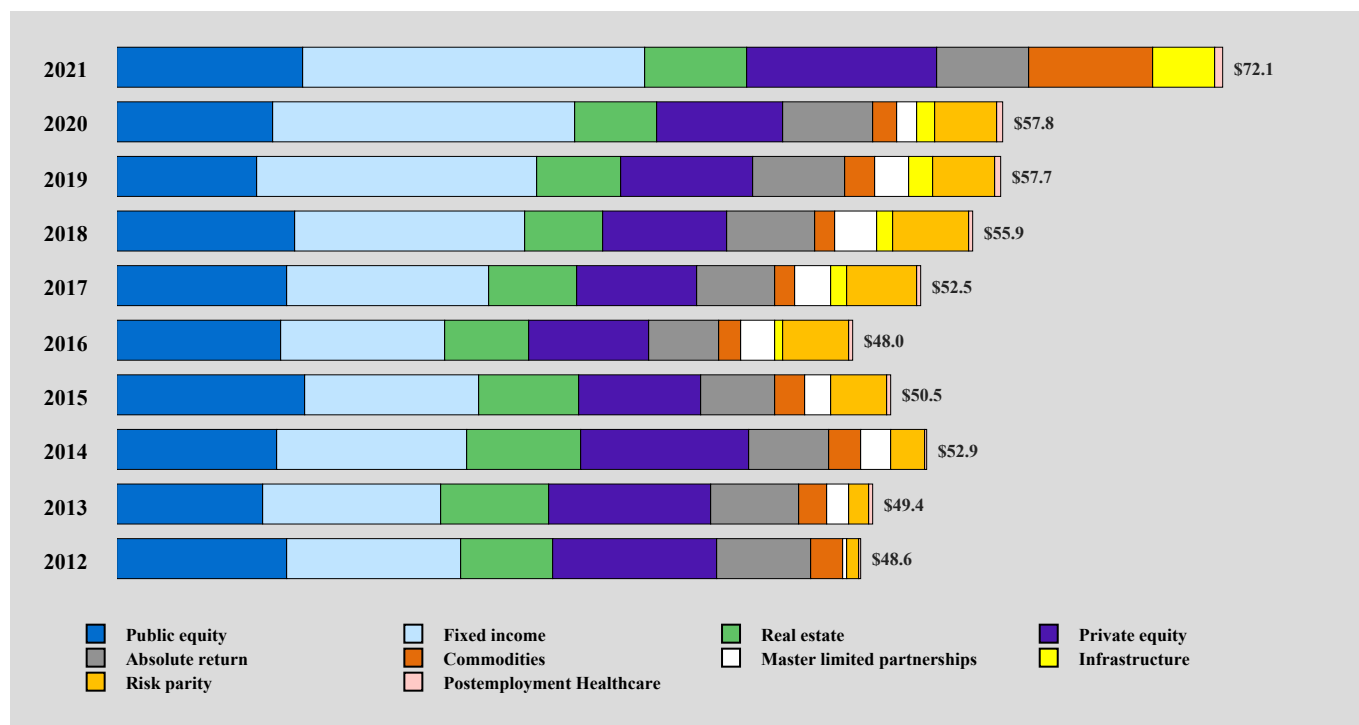
Comparison of Actual Portfolio Distribution to Asset Allocation Plan As of June 30, 2021

Asset Category	Plan	Actual
Common and preferred stock (Public equity)	27.0%	24.3%
Fixed income	35.0	31.1
Private equity	12.0	17.3
Real estate	10.0	9.7
Absolute return	8.0	8.3
Commodities	10.0	11.5
Infrastructure	8.0	7.6
Net Leverage	(10.0)	(9.8)
Total	100.0%	100.0%



Portfolio Capital Distribution 10 Year Trend*

(Fair Value - Dollar Amounts in Billions)



*Defined Contribution Plan and Tail Risk Mitigation are not included in the above chart.

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.pfers.pa.gov.

Common and Preferred Stock (Public Equity)

10 Largest Holdings in Descending Order by Fair Value

As of June 30, 2021

(Dollar Amounts and Shares in Thousands)

Description	No. of Shares	Fair Value
The Children's Investment Fund LP	710,300	\$ 713,770
BlackRock Emerging Markets Alpha Advantage Fund Ltd.- Class D	319	677,007
FIGS, Inc.	9,944	498,174
Cederberg Greater China Equity Fund	1,973	340,035
Steadview Capital Partners LP	309,935	330,876
Effissimo Capital Management Feeder Fund 2	729	280,603
Apple Inc.	1,965	269,172
Microsoft Corporation	944	255,691
Alphabet Inc.	93	230,356
Wellington Management Company LLP	30,474	221,543
Total of 10 Largest Holdings		\$ 3,817,227

Fixed Income
10 Largest Holdings in Descending Order by Fair Value
As of June 30, 2021
(Dollar Amounts and Shares in Thousands)

Description	No. of Shares	Fair Value
BlackRock US Extended Core Global Alpha Bond Fund Ltd.	365	\$ 992,899
Bridgewater International Inflation-Linked Bond Fund	130	633,388
Garda Fixed Income Relative Value Opportunity Fund Ltd.	319	632,520
Bridgewater Pure Alpha Fund II, Ltd.	138	598,316
PSERS TAO Partners Parallel Fund, LP	N/A	517,651
Cerberus PSERS Levered Loan Opportunities Fund, LP	N/A	359,034
Brigade Structured Credit Offshore Fund	200	350,042
LBC-P Credit Fund, LP	N/A	315,539
Bain Capital Credit Managed Account, LP	N/A	313,001
Park Square - PSERS Credit Opportunities Fund, LP	N/A	296,057
Total of 10 Largest Holdings		\$ 5,008,447

Absolute Return
10 Largest Holdings in Descending Order by Fair Value
As of June 30, 2021
(Dollar Amounts and Shares in Thousands)

Description	No. of Shares	Fair Value
Bridgewater Pure Alpha Fund II, Ltd.	240	\$ 953,220
Capula Global Relative Value Fund, Ltd.	4,020	466,624
OWS Credit Opportunity Offshore Fund III, Ltd.	275	424,373
PIMCO Commodity Alpha Fund, Ltd.	256	402,424
Brigade Leveraged Capital Structures Offshore Ltd.	153	363,787
Aeolus Property Catastrophe Keystone PF Fund, LP	364	350,346
PIMCO Global Credit Opportunity Offshore Fund Ltd.	280	342,481
Caspian Select Credit International, Ltd.	153	310,188
AKAZ Offshore Fund Ltd.	200	246,144
Capula Tail Risk Fund Ltd.	2,983	234,802
Total of 10 Largest Holdings		\$ 4,094,389

Postemployment Healthcare Investments
10 Largest Holdings in Descending Order by Fair Value
As of June 30, 2021
(Dollar Amounts in Thousands)

Description	Maturity Date	Interest Rate (%)	Par Value	Fair Value
Wilmington US Government MM	N/A	Various	\$ 206,727	\$ 206,727
PSERS Short-Term Investment Fund	Various	Various	179,407	179,407
Verizon Owner Trust	09/20/2022	Various	6,715	6,715
Carvana Auto Receivables LLC	Various	Various	2,925	2,923
Master Credit Card	01/23/2023	0.51%	2,712	2,710
World Financial Network	08/15/2025	3.55%	2,207	2,206
Santander Drive Auto Receivables Trust	03/21/2022	0.15%	1,143	1,143
Westlake Services, LLC	03/15/2022	0.16%	970	970
Tesla, Inc.	N/A	N/A	916	916
Deere & Company	01/15/2025	2.91%	881	881
Total of 10 Largest Holdings				\$ 404,598

Defined Contribution Plan Investments
10 Largest Holdings in Descending Order by Fair Value
As of June 30, 2021
(Dollar Amounts and Shares in Thousands)

Description	No. of Shares	Fair Value
T Rowe Price Target Date 2060	1,515	\$ 23,666
T Rowe Price Target Date 2055	542	8,036
PSERS Short-Term Investment Fund	N/A	6,081
T Rowe Price Target Date 2050	382	5,663
T Rowe Price Target Date 2045	312	4,616
T Rowe Price Target Date 2040	255	3,742
T Rowe Price Target Date 2035	220	3,180
T Rowe Price Target Date 2030	168	2,369
T Rowe Price Target Date 2065	106	1,350
T Rowe Price Target Date 2025	89	1,234
Total of 10 Largest Holdings		\$ 59,937

Comparison of Investment Activity Income
Fiscal Years Ended June 30, 2021 and 2020
(Dollar Amounts in Thousands)

Investment Activity	2021	2020
Net appreciation in fair value of investments	\$ 13,949,087	\$ 261,864
Short-term	12,691	102,344
Fixed income	294,417	268,787
Common and preferred stock	272,651	277,635
Collective trust funds	913	4,633
Real estate	267,489	219,762
Alternative investments	565,392	371,652
Total investment activity income	\$ 15,362,640	\$ 1,506,677

Brokers' fees on equity investment transactions for the fiscal year ended June 30, 2021 were \$4.6 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, 2021, the System earned \$14,000 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, 2021
(Shares in Thousands)

Broker Name	Fees Paid	Shares	Broker Name	Fees Paid	Shares
Instinet LLC	\$ 523,143	146,671	Citigroup Inc.	\$ 164,424	34,625
Morgan Stanley & Company	268,619	87,507	UBS	153,052	36,908
Canaccord Genuity Inc.	211,598	38,618	Bank Of America Merrill Lynch	139,993	28,356
Fimat USA	200,523	82	Macquarie Bank Ltd	129,544	31,302
Liquidnet Inc.	185,914	18,850	J P Morgan Chase & Co.	129,071	50,257
Goldman Sachs & Company	174,980	41,934	Jefferies & Company Inc.	107,413	15,471
Credit Suisse	180,658	30,503	Barclays Capital	105,460	13,297

Professional Consultants
External Investment Advisors
As of June 30, 2021

Absolute Return Managers

- ◆ Aeolus Capital Management, Ltd.
- ◆ AKAZ Investment Partners, LP
- ◆ Bridgewater Associates, LP
- ◆ Brigade Capital Management
- ◆ Capula Investment Management, LLP
- ◆ Carlyle Aviation Management Limited
- ◆ Caspian Capital, LP
- ◆ Falko Regional Aircraft Limited
- ◆ 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
- ◆ Venor Capital Management, LP

Non-U.S. Equity Managers

- ◆ Acadian Asset Management, LLC
- ◆ Baillie Gifford Overseas, Ltd.
- ◆ BlackRock Institutional Trust Company, N.A
- ◆ 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.

Fixed Income Managers**U.S. High Yield Fixed Income Manager**

- ◆ BlackRock Institutional Trust Company, N.A.

Private Credit Managers

- ◆ Apollo Global Management, LLC
- ◆ Ares SSG Capital Management Limited
- ◆ Avenue Capital Group
- ◆ Bain Capital Credit, LP
- ◆ Brigade Capital Management

- ◆ Carlyle Group, The
- ◆ Cerberus Business Finance, LLC
- ◆ Clearlake Capital Group, LP
- ◆ Galton Capital Group, LLC
- ◆ Hayfin Capital Management LLP
- ◆ Intermediate Capital Group PLC
- ◆ LBC Credit Management, LP
- ◆ Newmarket Global Management, LP
- ◆ Pacific Investment Management Company, LLC
- ◆ Park Square Capital, LLC
- ◆ Sixth Street Partners, LLC
- ◆ Summit Partners
- ◆ TCI Fund Management Limited
- ◆ Varde Partners, Inc.
- ◆ Whitehorse Liquidity Partners, Inc.

Emerging Markets Debt Manager

- ◆ Franklin Templeton Investments

Non-U.S. Inflation-Linked Securities Manager

- ◆ Bridgewater Associates, LP

LIBOR-Plus Short-Term Investment Pool Manager

- ◆ Radcliffe Capital Management

Real Assets**Commodity Managers**

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

Farmland Advisor

- ◆ Prudential Agricultural Group

Master Limited Partnership Managers

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

Professional Consultants (Continued)

Private Infrastructure Managers

- ◆ Blackstone Group, The
- ◆ GCM Grosvenor
- ◆ I Squared Capital
- ◆ Newmarket Global Management, LP

Publicly Traded Real Estate Securities Manager

- ◆ Security Capital Research & Management, Inc.

Real Estate Advisors

- ◆ Bell Partners, Inc.
- ◆ GF Management, Inc.
- ◆ L&B Realty Advisors
- ◆ O'Connor Real Estate Advisors, LLC.
- ◆ 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
- ◆ 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

Currency Hedging Manager

- ◆ Insight Investment International Limited

Private Equity Fund Managers

Buyouts Fund Managers

- ◆ Actis LLP
- ◆ APAX Partners, LLP
- ◆ Apollo Global Management, LLC
- ◆ Arrowhead Mezzanine
- ◆ Avenue Capital Group
- ◆ Bain Capital Partners, LLC
- ◆ Baring Private Equity Asia Limited
- ◆ Black Diamond Capital Management, LLC
- ◆ Blue Point Capital Partners LLC
- ◆ Bridgepoint Capital Ltd.
- ◆ Capital Group
- ◆ L Catterton Management Company LLC
- ◆ Cerberus Capital Management, LP
- ◆ Cinven
- ◆ Clearlake Capital Group, LP
- ◆ Coller Investment Management LTD
- ◆ Crestview Advisors LLC
- ◆ CVC Capital Partners Group
- ◆ Denham Capital
- ◆ The Energy & Minerals Group
- ◆ Equistone Partners Europe Limited
- ◆ Evergreen Pacific Partners GP LLC
- ◆ First Reserve Corporation
- ◆ Gold Hill Venture Lending 03, LLC
- ◆ GoldPoint Partners LLC
- ◆ Hahn & Company
- ◆ HgCapital
- ◆ Huntsman Gay Global Capital LLC
- ◆ Incline Management Corp.
- ◆ IPC Advisors
- ◆ K4 Capital Advisors
- ◆ Landmark Partners
- ◆ Lindsay Goldberg & Bessemer
- ◆ Milestone Partners
- ◆ Morgan Stanley
- ◆ New Mountain Investments
- ◆ NGP Energy Capital Management
- ◆ Oaktree Capital Management, LP
- ◆ Odyssey Investment Partners LLC
- ◆ Orchid Asia

Professional Consultants (Continued)

- ◆ PAI Europe
- ◆ Palladium Equity Partners
- ◆ Partners Group Mgt VI LTD
- ◆ Platinum Equity Capital Partners
- ◆ Polaris Capital Group, Ltd.
- ◆ Portfolio Advisors, LLC
- ◆ Searchlight Capital Partners, LP
- ◆ StepStone Group
- ◆ Sterling Partners
- ◆ Strategic Partners
- ◆ Trilantic Capital Management, LLC
- ◆ Tulco Management, LLC.
- ◆ Venor Capital Management, LP
- ◆ Versa Capital Management, LLC
- ◆ Webster Capital Management, LLC

Growth Equity Fund Managers

- ◆ Green Oaks Capital
- ◆ Insight Venture Management, LLC
- ◆ LLR Partners
- ◆ Oak HC/FT Management Company, LLC
- ◆ Summit Partners

Venture Capital Fund Managers

- ◆ Adams Capital Management, Inc.
- ◆ Aisling Capital, LLC
- ◆ Cross-Atlantic Capital Partners
- ◆ Insight Venture Management, LLC
- ◆ Mid-Atlantic Venture Funds
- ◆ Psilos Group Investors
- ◆ Sante Ventures
- ◆ SCP Private Equity Partners
- ◆ StarVest Associates
- ◆ Sterling Partners
- ◆ Strategic Partners
- ◆ Tenaya Capital
- ◆ Valar Ventures, LLC

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

Board Investment Consultant

- ◆ Verus Advisory, Inc.

General Investment Consultant

- ◆ Aon Investments USA Inc.

Private Equity, Private Real Estate, Private Credit, and Private Infrastructure Investment Consultant

- ◆ Hamilton Lane Advisors, LLC

Absolute Return & Private Credit Consultant

- ◆ Aksia, LLC

Risk Management System Provider

- ◆ BlackRock Solutions

Defined Contribution Investment Consultant

- ◆ CAPTRUST Financial Advisors

PA State
Bird:
Ruffed
Grouse



ACTUARIAL SECTION

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PA State
Insect:
Firefly



September 24, 2021

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, 2020. 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 2010-120, 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 2017-05, 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, 2020 actuarial valuation, a total contribution rate of 34.94% (33.99% Pension plus 0.80% Premium Assistance and 0.15% for Act 5 DC contributions) of payroll payable by employers for FY2021/2022, 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 7.20%.

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, 2020, including pension and survivor benefits, as the basis for the pension contribution rate for fiscal year 2021/2022.

There were no 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 (Buck):

- Summary of Results of Actuarial Valuation as of June 30, 2020
- History of Contribution Rates and Funded Ratios
- Description of Actuarial Assumptions and Methods
- Schedule of Active Member 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 A. 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, 2020
(\$ Amounts in Thousands)

Item	June 30, 2020	June 30, 2019
Member Data		
1. Number of Members		
a) Active Members	256,246	255,749
b) Vestees ¹	25,903	25,514
c) Annuitants, Beneficiaries and Survivor Annuitants ²	239,614	237,339
d) Total	521,763	518,602
2. Annualized Salaries ³	\$ 13,974,295	\$ 13,671,927
3. Annual Annuities	\$ 6,170,896	\$ 6,051,632
Valuation Results		
4. Present Value of Future Pension Benefits		
a) Active Members	\$ 66,004,231	\$ 64,673,835
b) Inactive Members and Vestees	2,444,758	2,258,815
c) Annuitants, Beneficiaries and Survivor Annuitants	58,415,383	57,413,088
d) Total	\$ 126,864,372	\$ 124,345,738
5. Present Value of Future Pension Normal Cost		
a) Active Members	\$ 10,044,827	\$ 10,182,324
b) Employer	8,986,146	8,963,909
c) Total	\$ 19,030,973	\$ 19,146,233
6. Pension Accrued Liability		
a) Active Members (4a) - (5c)	\$ 46,973,258	\$ 45,527,602
b) Inactive Members and Vestees	2,444,758	2,258,815
c) Annuitants, Beneficiaries and Survivor Annuitants	58,415,383	57,413,088
d) Total	\$ 107,833,399	\$ 105,199,505
7. Health Insurance Assets for Premium Assistance	\$ 130,417	\$ 125,185
8. Total Accrued Liability for Funding (6) + (7)	\$ 107,963,816	\$ 105,324,690
9. Actuarial Value of Assets	\$ 63,929,354	\$ 61,190,489
10. Funded Status (9) / (8)	59.2%	58.1%
11. Unfunded Accrued Liability (8) - (9)	\$ 44,034,462	\$ 44,134,201
12. Total Normal Cost Rate	14.76%	14.98%
13. Member Contribution Rate	7.56%	7.61%
14. Employer Normal Cost Rate (12) - (13)	7.20%	7.37%
Employer Annual Funding Requirement		
15. Employer Contribution Rate Calculated by Actuary	Fiscal 2021/2022	Fiscal 2020/2021
a) Normal Cost	7.20%	7.37%
b) Unfunded Accrued Liability	26.79	26.14
c) Preliminary Pension Rate	33.99%	33.51%
d) Health Insurance Premium Assistance	0.80	0.82
e) Act 5 DC ⁴	0.15	0.18
f) Total Rate ⁵ = (15c) + (15d) + (15e)	34.94%	34.51%

- Excludes 135,613 and 132,854 inactive members and non-members as of June 30, 2020 and June 30, 2019, respectively, who are no longer participating and are valued for their accumulated deductions only.
- Excludes 1,281 and 1,595 beneficiaries as of June 30, 2020 and June 30, 2019, 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 based on Class T-G, Class T-H, and Class DC only memberships.
- The Act 120 minimum pension rate for the June 30, 2020 valuation is 7.20% and for the June 30, 2019 valuation is 7.37%.

HISTORY OF CONTRIBUTION RATES AND FUNDED RATIOS

Fiscal Year Ending June	Budgeted Total Employer Payroll (thousands)	Contribution Rates ¹								Funded Ratio
		Employee	Employer Normal Cost	Employer Unfunded Liability	Preliminary Employer Pension	Final Employer Pension ²	Act 5 Employer DC ⁷	Employer Health Insurance	Total Employer	
2011 ^{3,4}	\$ 13,510,000	7.34%	8.08%	(0.50)%	7.58%	5.00%	N/A	0.64%	5.64%	69.1%
2012	14,112,000	7.37	8.12	10.15	18.27	8.00	N/A	0.65	8.65	66.4
2013 ⁵	14,297,000	7.40	8.66	12.99	21.65	11.50	N/A	0.86	12.36	63.8
2014	13,720,000	7.43	8.57	15.25	23.82	16.00	N/A	0.93	16.93	62.0
2015	13,482,000	7.46	8.46	17.51	25.97	20.50	N/A	0.90	21.40	60.6
2016	13,375,000	7.49	8.38	19.44	27.82	25.00	N/A	0.84	25.84	57.3
2017	13,549,000	7.52	8.31	20.89	29.20	29.20	N/A	0.83	30.03	56.3
2018 ⁶	13,449,000	7.54	7.70	24.04	31.74	31.74	N/A	0.83	32.57	56.5
2019	13,775,000	7.57	7.59	25.01	32.60	32.60	N/A	0.83	33.43	58.1
2020	13,880,000	7.59	7.49	25.87	33.36	33.36	0.09%	0.84	34.29	59.2
2021	14,078,000	7.61	7.37	26.14	33.51	33.51	0.18	0.82	34.51	*
2022	14,289,000	7.56	7.20	26.79	33.99	33.99	0.15	0.80	34.94	*

- 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 Premium Assistance Rate.
- The Final Employer Pension rate is limited by the Act 2010-120 pension rate collars for fiscal years 2012 through 2016.
- 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.
- Act 2010-46 recertified the fiscal year ended June 30, 2011 pension rate from 7.58% to 5.00%.
- 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%.
- 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%.
- Act 5 new member assumptions:

<u>Valuation</u>	Class T-G	Class T-H	DC Only
2018	65%	30%	5%
2019	65%	30%	5%
2020	98%	1%	1%

* Not Available

DESCRIPTION OF ACTUARIAL ASSUMPTIONS AND METHODS

ASSUMPTIONS

Interest Rate: 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 5-2017, an interest rate of 7.25% per year is used for Class T-E, Class T-F, Class T-G and Class T-H members' Option 4 partial withdrawal of accumulated member contributions.

Discount Rate for GASB 67 Accounting: 7.25% as of June 30, 2018 and June 30, 2019. Rates were determined in accordance with the methods prescribed in GASB Statement No. 67.

Discount Rate for GASB 74 Accounting: 2.98% as of June 30, 2018 and 2.79% as of June 30, 2019. 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 ¹	Disability	Early Retirement ²	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%		
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		19.16%
50	14.31	4.45	1.92	0.138	0.284		19.16
55	12.17	4.43	3.38	0.233	0.442	18.57%	26.59
60	12.43	5.58	5.57	0.379	0.582	14.42	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%		
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		15.00%
50	11.66	4.43	2.06	0.088	0.229		15.00
55	11.75	4.38	3.11	0.133	0.368	18.59%	10.02
60	12.25	5.97	6.40	0.196	0.360	17.05	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 2010-120 and Act 2017-5, 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 for fiscal years 2020/2021 and 2021/2022. Beginning in fiscal year 2022/2023, 62% of eligible retirees are assumed to elect premium assistance.

Administrative Expenses: Assumed equal to \$2,001,000 for fiscal year 2020/2021, \$1,901,000 for fiscal year 2021/2022 and \$1,996,000 for fiscal year 2022/2023.

Summary of Changes since the June 30, 2019 Valuation: Beginning in fiscal year 2022/2023, 62% of eligible retirees are assumed to elect premium assistance.

Assumed administrative expenses for the Health Insurance Premium Assistance Plan changed from \$2,101,000 for fiscal year 2021/2022 to \$1,901,000, and the amount of \$1,996,000 was added for the fiscal year 2022/2023.

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.

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,

DESCRIPTION OF ACTUARIAL ASSUMPTIONS AND METHODS

(Continued)

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, 2019 Valuation: None.

DATA

Census and Assets: The valuation was based on members of the Retirement System as of June 30, 2020 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.

For employer DC contributions, it is assumed among new employees hired on or after July 1, 2020 that 98% will become Class T-G members, 1% will become Class T-H members and 1% will become Class DC only participants. This assumption has been modified to reflect the actual Class T-G, Class T-H and Class DC only elections as of June 30, 2020. The prior valuation assumed that among new employees hired on or after July 1, 2019: 65% would become Class T-G members, 30% would become Class T-H members and 5% would become Class DC only participants. This assumption may be updated for the June 30, 2021 valuation of the System after the actual Class T-G, Class T-H and Class DC only elections is accumulated through June 30, 2021.

**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
2020	775	256,246	\$ 13,974,295	\$ 54,535	2.01%
2019	774	255,749	13,671,927	53,458	2.43
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

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

Valuation Date as of June 30	Added to Rolls		Removed from Rolls		Rolls at End of Year		% Increase in Annual Allowance	Average Annual Allowance
	Number	Annual Allowance (Millions)	Number	Annual Allowance (Millions)	Number	Annual Allowance ¹ (Millions)		
2020	9,708	\$ 256.1	7,433	\$ 115.6	239,614	\$ 6,170.9	1.97%	\$ 25,753
2019	10,553	246.6	6,502	107.0	237,339	6,051.6	2.11	25,498
2018	11,806	235.3	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

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 Rolls		Removed from Rolls		Rolls at End of Year		% Increase in Annual Premium Assistance	Average Annual Premium Assistance
	Number ²	Annual Premium Assistance (Millions)	Number ²	Annual Premium Assistance (Millions)	Number ²	Annual Premium Assistance (Millions)		
2020	5,979	\$ 4.5	4,230	\$ 3.2	152,665	\$ 115.4	1.14%	\$ 1,200
2019	5,673	4.3	3,999	3.0	150,916	114.1	1.15	1,200
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

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, 2020; 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 ¹
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)
2020	\$ 17,558,412	\$ 58,415,383	\$ 31,859,604	\$ 63,798,937	100%	79%	0%
2019	16,839,956	57,413,088	30,946,461	61,065,304	100	77	0
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	7	0
2015	14,079,658	52,739,489	27,757,563	57,240,946	100	2	0
2014	13,554,229	51,425,295	27,373,459	57,231,799	100	5	0
2013	13,089,342	49,979,444	26,883,030	57,353,262	100	9	0
2012	12,535,442	47,511,912	27,713,306	58,227,622	100	6	0
2011	12,242,308	45,648,780	27,749,295	59,141,131	100	100	5

SCHEDULE OF FUNDING PROGRESS FOR PENSIONS ¹
(\$ Amounts in Thousands)

Valuation as of June 30	Actuarial Value of Assets	Actuarial Accrued Liability	Unfunded Actuarial Accrued Liability	Funded Ratio	Covered Payroll ²	Unfunded Accrued Liability as a Percentage of Covered Payroll
2020	\$ 63,798,937	\$ 107,833,399	\$ 44,034,462	59.2%	\$ 13,974,295	315.1%
2019	61,065,304	105,199,505	44,134,201	58.0	13,671,927	322.8
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

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

2. The salaries shown represent an annual rate of pay for the year ended June 30th for members who were in active service on June 30th.

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

Fiscal Year Ending June 30	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
Effective Prior Year Contribution Rate	34.51%	34.29%	33.43%	32.57%	30.03%	25.84%	21.40%	16.93%	12.36%	8.65%
Prior Year Adjustment for Legislation	N/A	N/A	N/A	N/A	N/A	2.82	5.47	7.82	10.15	10.27
Net Change Due to:										
Change in Normal Rate	(0.17)	(0.12)	(0.10)	(0.11)	(0.23)	(0.07)	(0.08)	(0.11)	(0.09)	(0.22)
Payroll Growth and Liability Experience	0.39	0.25	(0.12)	(0.17)	0.96	0.14	0.58	0.68	0.72	(0.21)
Investment Loss/(Gain)	0.26	0.02	0.98	1.22	1.08	0.83	0.66	0.81	0.78	0.59
Health Insurance Contribution Change	(0.02)	(0.02)	0.01	0.00	0.01	(0.01)	(0.06)	(0.03)	0.07	0.21
Assumption/Method Change	N/A	N/A	N/A	(0.08)	0.44	N/A	N/A	N/A	N/A	3.04
Act 5 Benefit and Funding Reforms ²	(0.03)	0.09	0.09	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Amortization of Prior Legislation Deferrals	0.00	0.00	0.00	0.00	0.28	0.48	0.69	0.77	0.76	0.18
Legislation Deferrals:										
Act 120 Collar ¹	N/A	N/A	N/A	N/A	N/A	N/A	(2.82)	(5.47)	(7.82)	(10.15)
Actual Contribution Rate:	34.94%	34.51%	34.29%	33.43%	32.57%	30.03%	25.84%	21.40%	16.93%	12.36%

1. The Final Employer Pension rate is limited by the Act 2010-120 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.

2. Act 5 Defined Contribution rate. The above rate is an average DC contribution rate. Actual rate will vary by employer.

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PA State
Tree:
Eastern
Hemlock



Statistical Section Narrative

To assist readers in the assessment of the System's economic condition, the Statistical Section of this Annual Comprehensive 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, 2020, 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	2021	2020	2019	2018	2017
Contribution Rates:					
Total Pension	33.51%	33.36%	32.60%	31.74%	29.20%
Health Care Insurance Premium Assistance	0.82%	0.84%	0.83%	0.83%	0.83%
Defined Contribution	0.18%	0.09%	N/A	N/A	N/A
Total Employer	34.51%	34.29%	33.43%	32.57%	30.03%
Average Member	7.61%	7.59%	7.57%	7.54%	7.52%
Total Employer Contributions ***	\$ 4,875,708	\$ 4,794,320	\$ 4,602,349	\$ 4,361,597	\$ 3,943,758
Market Value of Assets ***	\$ 72,100,000	\$ 58,687,000	\$ 58,859,000	\$ 56,486,000	\$ 53,279,000
Actuarial Value of Assets	**	\$ 63,929,354	\$ 61,190,000	\$ 58,258,000	\$ 57,461,000
Accrued Actuarial Liability	**	\$ 107,963,816	\$ 105,325,000	\$ 103,114,000	\$ 101,973,000
Actuarial Funded Ratio	**	59.2%	58.1%	56.5%	56.3%
Total Benefits & Refunds	\$ 7,631,376	\$ 7,365,198	\$ 7,237,244	\$ 7,143,341	\$ 6,923,904
Average Pension *	\$ 25,992	\$ 25,753	\$ 25,498	\$ 25,405	\$ 25,287
Annuitants & Beneficiaries	242,829	239,614	237,339	233,288	230,014
Average Annual Member Compensation *	\$ 56,663	\$ 54,535	\$ 53,458	\$ 52,188	\$ 50,925
Active Members	248,091	256,246	255,749	256,362	255,945
Retirements	9,411	8,290	8,746	9,840	9,479

For years ended June 30	2016	2015	2014	2013	2012
Contribution Rates:					
Total Pension	25.00%	20.50%	16.00%	11.50%	8.00%
Health Care Insurance Premium Assistance	0.84%	0.90%	0.93%	0.86%	0.65%
Total Employer	25.84%	21.40%	16.93%	12.36%	8.65%
Average Member	7.49%	7.46%	7.43%	7.40%	7.37%
Total Employer Contributions ***	\$ 3,302,817	\$ 2,713,539	\$ 2,109,952	\$ 1,555,078	\$ 1,085,927
Market Value of Assets ***	\$ 49,957,000	\$ 51,706,000	\$ 53,092,000	\$ 49,116,000	\$ 48,628,000
Actuarial Value of Assets	\$ 57,390,000	\$ 57,362,000	\$ 57,344,000	\$ 57,454,000	\$ 58,321,000
Accrued Actuarial Liability	\$ 100,114,000	\$ 95,945,000	\$ 92,465,000	\$ 90,052,000	\$ 87,854,000
Actuarial Funded Ratio	57.3%	60.6%	62.0%	63.8%	66.4%
Total Benefits & Refunds	\$ 6,779,577	\$ 6,614,154	\$ 6,417,455	\$ 6,373,363	\$ 5,992,979
Average Pension *	\$ 25,203	\$ 25,119	\$ 24,962	\$ 24,799	\$ 24,122
Annuitants & Beneficiaries	224,828	219,775	213,900	207,553	202,015
Average Annual Member Compensation *	\$ 49,989	\$ 48,787	\$ 47,931	\$ 47,030	\$ 46,487
Active Members	257,080	259,868	263,312	267,428	273,504
Retirements	10,135	10,813	9,888	12,468	12,228

* 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, 2021. 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)

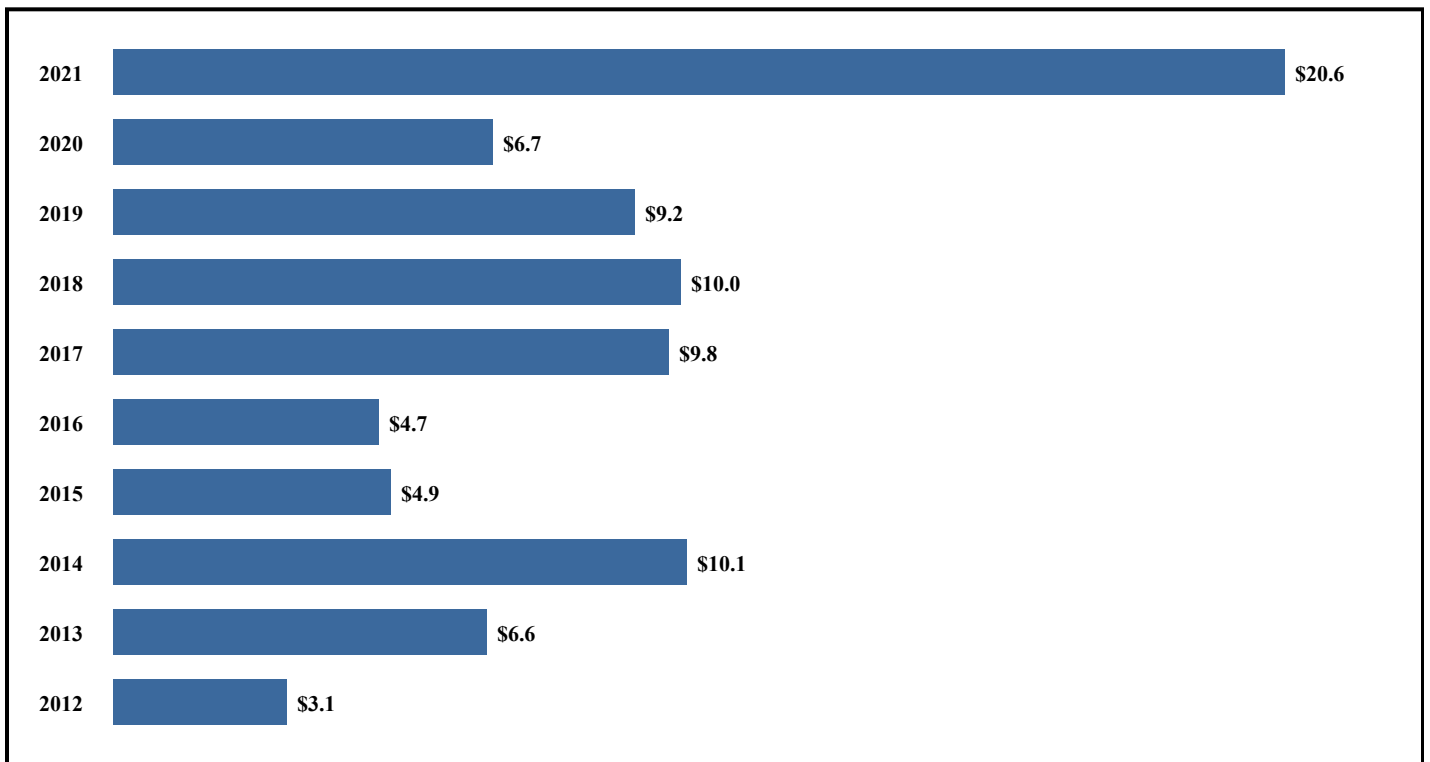
Additions to Fiduciary Net Position				
Year Ended June 30	Member Contributions	Employer Contributions	Net Investment Income	Total Additions
2021	\$ 1,080,701	\$ 4,759,189	\$ 14,754,624	\$ 20,594,514
2020	1,067,957	4,676,413	1,001,846	6,746,216
2019	1,064,043	4,487,520	3,628,710	9,180,273
2018	1,026,375	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

Deductions from Fiduciary Net Position								
Year Ended June 30	Benefit Payments			Refunds of Contributions	Administrative	Net Transfers*	Total Deductions	Net Increase / (Decrease)
	Annuities	Lump-Sums**	Contributions					
2021	\$ 6,181,330	\$ 917,539	\$ 26,925	\$ 49,616	\$ 8,538	\$ 7,183,948	13,410,566	
2020	6,051,233	794,675	27,463	46,799	3,144	6,923,314	(177,098)	
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)	

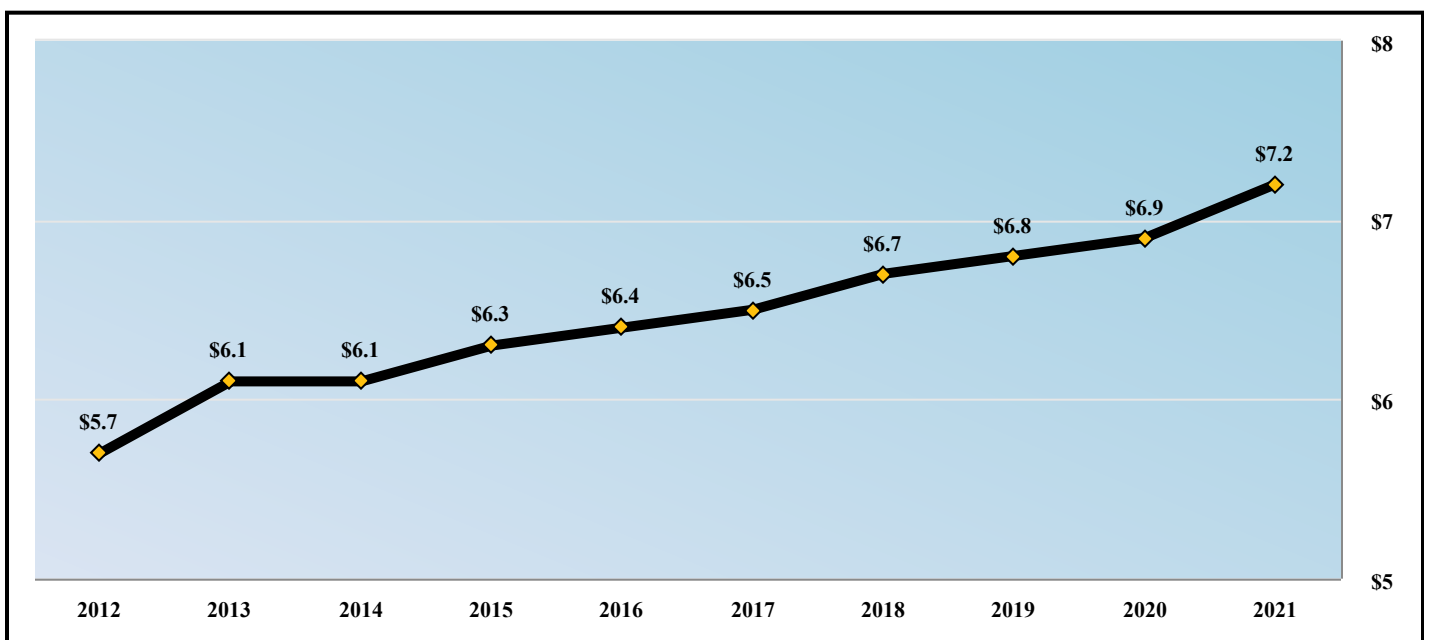
* Net transfers to the Commonwealth of Pennsylvania State Employees' Retirement System.

** Lump-Sums includes both pension and death lump sums.

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

Additions to Fiduciary Net Position				
Year Ended June 30	Employer Contributions	Net Investment Income	Total Additions	
2021	\$ 116,519	\$ 260	\$ 116,779	
2020	117,907	1,752	119,659	
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	

Deductions from Fiduciary Net Position				
Year Ended June 30	Benefits	Administrative	Total Deductions	Net Increase / (Decrease)
2021	\$ 113,538	\$ 1,143	\$ 114,681	\$ 2,098
2020	113,279	1,148	114,427	5,232
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)

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

(Dollar Amounts in Thousands)

Health Options Program

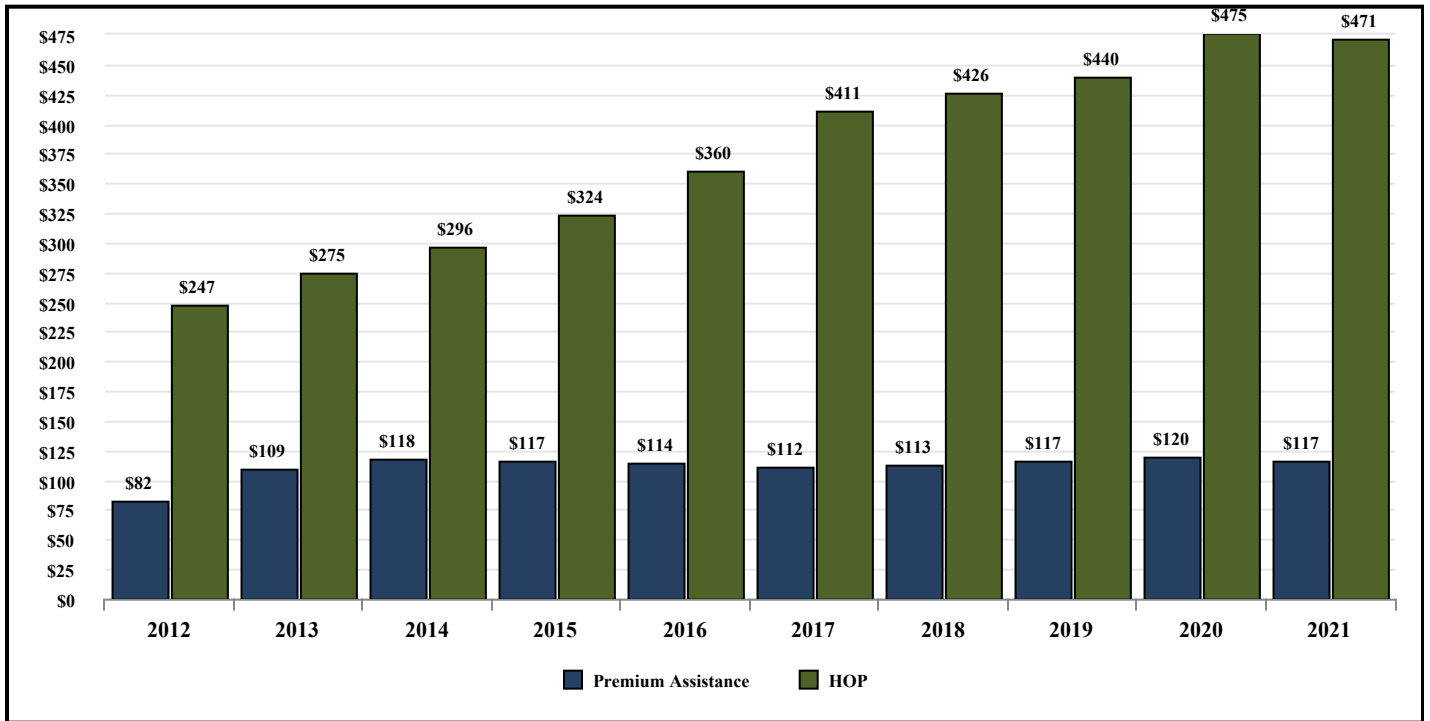
Additions to Fiduciary Net Position				
Year Ended June 30	Participant Premiums	CMS Contributions	Net Investment Income	Total Additions
2021	\$ 402,945	\$ 67,812	\$ 214	\$ 470,971
2020	390,883	81,248	2,464	474,595
2019	376,449	60,379	3,654	440,482
2018	359,896	63,998	1,960	425,854
2017	336,646	73,771	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

Deductions from Fiduciary Net Position				
Year Ended June 30	Benefits	Administrative	Total Deductions	Net Increase / (Decrease)
2021	\$ 382,466	\$ 39,051	\$ 421,517	\$ 49,454
2020	381,536	39,029	420,565	54,030
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

Additions to Fiduciary Net Position - Postemployment Healthcare Plans

10 Year Trend

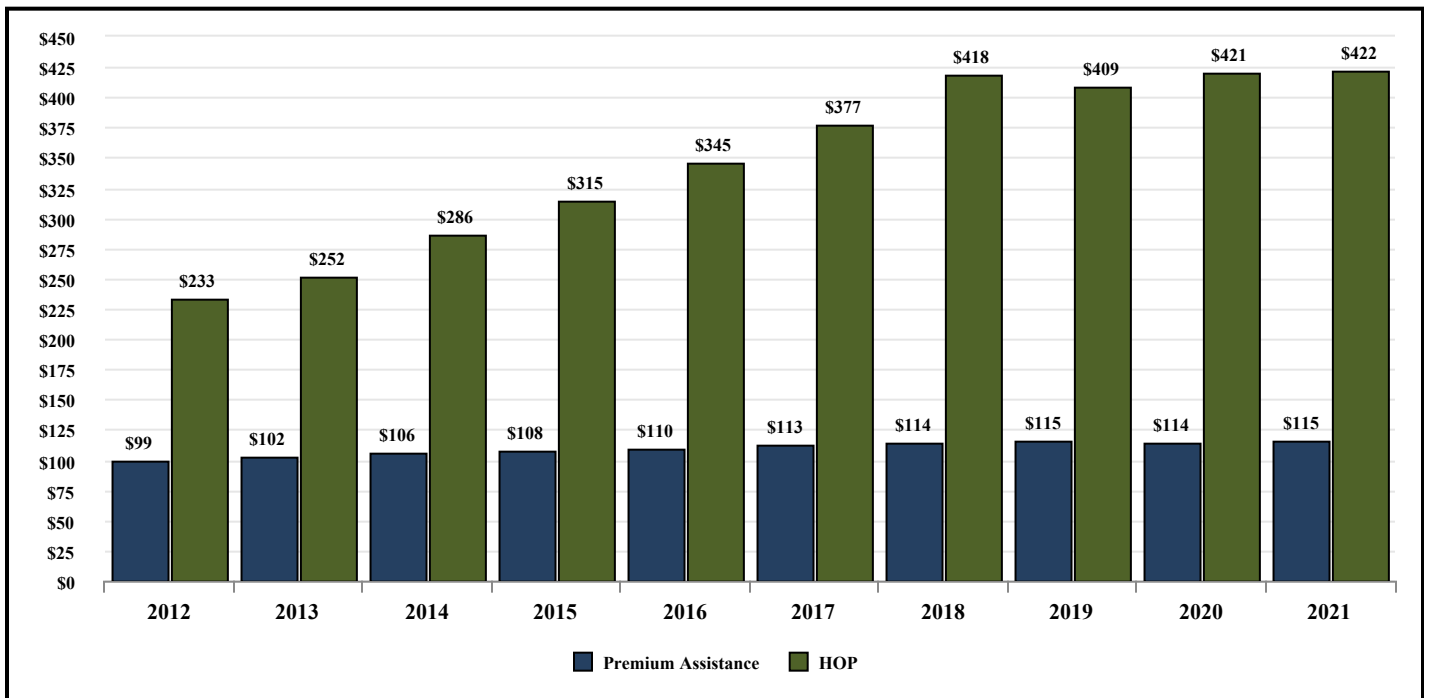
(Dollar Amounts in Millions)



Deductions from Fiduciary Net Position - Postemployment Healthcare Plans

10 Year Trend

(Dollar Amounts in Millions)



Total Changes in Fiduciary Net Position -Defined Contribution (DC) Plan
10 Year Trend
(Dollar Amounts in Thousands)

Year Ended June 30	Additions to Fiduciary Net Position			
	Member Contributions	Employer Contributions	Net Investment Income	Total Additions
2021	\$ 19,282	\$ 14,946	\$ 9,314	\$ 43,542
2020	8,343	6,586	655	15,584

Year Ended June 30	Deductions from Fiduciary Net Position			
	Benefits	Administrative	Total Deductions	Net Increase / (Decrease)
2021	\$ 1,040	\$ 1,587	\$ 2,627	\$ 40,915
2020	12	3,167	3,179	12,405

Defined Contribution table is intended to show information for 10 years. Additional years will be displayed as they become available.

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	
2021	45.6	12.4	\$ 61,388	45.5	12.0	\$ 54,874	248,091
2020	45.6	12.1	59,699	45.5	11.7	52,599	256,246
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

Summary Annuity Data 10 Year Trend

For year ended June 30	Number of Annuitants & Beneficiaries	Total Annual Annuities (In Thousands)	Average Annual Annuity
2021	242,839	\$ 6,311,758	\$ 25,992
2020	239,614	6,170,896	25,753
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

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**
2021	\$ 3,725,656	\$ 2,187,995	\$ 175,004	\$ 821,512	\$ 188,702
2020	3,621,470	2,171,691	182,731	702,122	167,894
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

For year ended June 30	Net Transfers*	Total Pension Benefits Deductions	Refunds	Total Pension Benefits and Refund Deductions
	2021	\$ 8,538	\$ 7,107,407	\$ 26,925
2020	3,144	6,849,052	27,463	6,876,515
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

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

** Survivor and Beneficiary includes both death lump sums and survivor annuities.

Average Monthly Pension Benefit Payments Total 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+	Total

Fiscal year ended June 30, 2021										
Normal and Early	4,468	19,690	26,884	22,719	23,313	27,320	48,496	36,849	9,502	219,241
	\$ 88	\$ 206	\$ 390	\$ 853	\$ 1,475	\$ 2,265	\$ 3,265	\$ 4,235	\$ 4,592	\$ 1,930
Disability	16	1,842	2,057	1,698	1,659	1,363	380	17	1	9,033
	\$ 2,318	\$ 813	\$ 1,135	\$ 1,534	\$ 2,283	\$ 3,062	\$ 3,966	\$ 3,559	\$ 4,550	\$ 2,580
Beneficiary and Survivor	749	596	1,219	1,114	1,192	1,251	2,155	2,051	734	11,061
	\$ 907	\$ 209	\$ 325	\$ 579	\$ 875	\$ 1,252	\$ 1,757	\$ 2,167	\$ 2,310	\$ 1,153

Fiscal year ended June 30, 2020										
Normal and Early	4,498	19,335	26,748	22,391	22,666	26,725	48,227	36,688	9,153	216,431
	\$ 86	\$ 206	\$ 393	\$ 835	\$ 1,444	\$ 2,229	\$ 3,240	\$ 4,209	\$ 4,591	\$ 1,915
Disability	17	1,937	2,159	1,830	1,776	1,425	390	17	1	9,552
	\$ 2,197	\$ 746	\$ 972	\$ 1,593	\$ 2,311	\$ 3,062	\$ 3,960	\$ 3,559	\$ 4,550	\$ 2,550
Beneficiary and Survivor	783	571	1,180	1,102	1,148	1,191	2,031	1,972	717	10,695
	\$ 927	\$ 203	\$ 322	\$ 562	\$ 856	\$ 1,219	\$ 1,717	\$ 2,101	\$ 2,206	\$ 1,124

Fiscal year ended June 30, 2019										
Normal and Early	4,504	18,870	26,468	22,032	22,088	26,182	47,919	36,550	8,757	213,370
	\$ 85	\$ 216	\$ 385	\$ 817	\$ 1,413	\$ 2,200	\$ 3,226	\$ 4,194	\$ 4,604	\$ 1,905
Disability	17	1,885	2,095	1,741	1,716	1,398	361	17	1	9,231
	\$ 2,197	\$ 750	\$ 965	\$ 1,628	\$ 2,265	\$ 3,017	\$ 3,475	\$ 3,559	\$ 4,550	\$ 2,490
Beneficiary and Survivor	786	545	1,143	1,084	1,123	1,150	1,963	1,901	700	10,395
	\$ 933	\$ 198	\$ 315	\$ 551	\$ 836	\$ 1,199	\$ 1,680	\$ 2,019	\$ 2,128	\$ 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

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

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

Fiscal year ended June 30, 2016										
Normal and Early	4,437	19,030	25,603	21,411	21,273	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	\$ 2,353	\$ 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

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	194,886
	\$ 94	\$ 183	\$ 346	\$ 743	\$ 1,292	\$ 2,097	\$ 3,186	\$ 3,186	\$ 4,181	\$ 2,146
Disability	—	1,812	2,038	1,624	1,495	1,316	557	20	8	8,870
	\$ —	\$ 752	\$ 954	\$ 1,266	\$ 1,888	\$ 2,712	\$ 3,598	\$ 3,216	\$ 2,240	\$ 1,532
Beneficiary and Survivor	—	4,733	672	674	678	697	1,124	1,100	466	10,144
	\$ —	\$ 1,192	\$ 256	\$ 397	\$ 606	\$ 875	\$ 1,213	\$ 1,392	\$ 1,455	\$ 866

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	189,170
	\$ 93	\$ 179	\$ 331	\$ 708	\$ 1,243	\$ 2,041	\$ 3,151	\$ 4,142	\$ 4,354	\$ 2,110
Disability	—	1,749	1,950	1,554	1,455	1,283	547	17	10	8,565
	\$ —	\$ 729	\$ 925	\$ 1,249	\$ 1,843	\$ 2,654	\$ 3,546	\$ 3,163	\$ 2,311	\$ 1,467
Beneficiary and Survivor	—	5,659	724	729	728	745	1,191	1,190	503	11,469
	\$ —	\$ 814	\$ 254	\$ 387	\$ 620	\$ 854	\$ 1,195	\$ 1,368	\$ 1,442	\$ 811

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	182,254
	\$ 111	\$ 176	\$ 317	\$ 680	\$ 1,202	\$ 1,972	\$ 3,105	\$ 4,078	\$ 4,196	\$ 2,091
Disability	—	1,698	1,882	1,517	1,397	1,257	531	15	9	8,306
	\$ —	\$ 694	\$ 875	\$ 1,166	\$ 1,748	\$ 2,583	\$ 3,465	\$ 2,917	\$ 2,147	\$ 1,441
Beneficiary and Survivor	—	5,234	772	784	780	797	1,261	1,281	546	11,455
	\$ —	\$ 702	\$ 245	\$ 390	\$ 603	\$ 850	\$ 1,175	\$ 1,341	\$ 1,412	\$ 796

**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, 2021									
Number of retired members	194	939	1,077	1,023	1,037	753	734	299	84
Final Average Salary	\$ 18,606	\$ 27,782	\$ 37,252	\$ 46,464	\$ 54,096	\$ 68,005	\$ 78,032	\$ 78,324	\$ 75,778
Monthly Benefit	\$ 105	\$ 262	\$ 654	\$ 1,228	\$ 1,875	\$ 2,892	\$ 3,887	\$ 4,612	\$ 5,192

Fiscal year ended June 30, 2020									
Number of retired members	172	850	821	711	641	471	405	181	70
Final Average Salary	\$ 21,714	\$ 30,682	\$ 37,547	\$ 46,199	\$ 54,113	\$ 64,876	\$ 71,857	\$ 76,131	\$ 79,480
Monthly Benefit	\$ 124	\$ 291	\$ 620	\$ 1,202	\$ 1,858	\$ 2,721	\$ 3,613	\$ 4,438	\$ 5,331

Fiscal year ended June 30, 2019									
Number of retired members	212	1,322	1,329	1,439	1,321	1,201	1,212	517	169
Final Average Salary	\$ 19,164	\$ 29,025	\$ 36,844	\$ 47,538	\$ 57,936	\$ 67,160	\$ 79,421	\$ 82,570	\$ 82,190
Monthly Benefit	\$ 104	\$ 272	\$ 648	\$ 1,258	\$ 2,017	\$ 2,822	\$ 3,967	\$ 4,910	\$ 5,510

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

**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, 2021									
Number of retired members		1	—	186	270	278	261	107	43
Final Average Salary	\$	49,634	\$ —	\$ 52,262	\$ 55,535	\$ 69,202	\$ 78,565	\$ 80,486	\$ 75,087
Monthly Benefit	\$	100	\$ —	\$ 100	\$ 99	\$ 99	\$ 99	\$ 100	\$ 100

Fiscal year ended June 30, 2020									
Number of retired members		2	5	124	161	172	167	82	30
Final Average Salary	\$	34,396	\$ 45,093	\$ 48,660	\$ 55,672	\$ 67,434	\$ 72,738	\$ 79,472	\$ 82,504
Monthly Benefit	\$	100	\$ 100	\$ 100	\$ 99	\$ 96	\$ 99	\$ 99	\$ 100

Fiscal year ended June 30, 2019									
Number of retired members		3	7	323	457	578	618	283	100
Final Average Salary	\$	41,862	\$ 59,557	\$ 53,896	\$ 63,581	\$ 70,831	\$ 80,662	\$ 81,735	\$ 80,136
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	\$	38,956	\$ 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

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

As of June 30, 2021

Employer	Number of Reported Members	Percentage of Total
1. Philadelphia City School District	18,291	7.37%
2. Pittsburgh School District	3,998	1.61%
3. Central Bucks School District	2,845	1.15%
4. Allentown City School District	2,109	0.85%
5. North Penn School District	2,070	0.83%
6. Bethlehem Area School District	1,895	0.76%
7. Reading School District	1,892	0.76%
8. Downingtown Area School District	1,723	0.69%
9. Lower Merion School District	1,683	0.68%
10. Pennsbury School District	1,576	0.64%

As of June 30, 2012

Employer	Number of Reported Members	Percentage of Total
1. Philadelphia City School District	20,539	7.26%
2. Pittsburgh School District	4,478	1.58%
3. Central Bucks School District	2,776	0.98%
4. Allentown City School District	2,617	0.93%
5. North Penn School District	2,177	0.77%
6. Reading School District	2,174	0.77%
7. Bethlehem Area School District	2,121	0.75%
8. Council Rock School District	1,900	0.67%
9. Pocono Mountain School District	1,868	0.66%
10. Pennsbury School District	1,718	0.61%

Schedule of Employers for FY 2021

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

Schedule of Employers (Continued)

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
 Lehigh 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
 Mid-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 S
 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

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 S
 West Perry
 West Shore
 West York Area
 Western Beaver County
 Western Wayne
 Westmont Hilltop
 Whitehall-Coplay

Wilkes Barre Area
 Wilkesburg 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
 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 CTC
 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 Centers
 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
 Carbon-Lehigh #21
 Central #10

Capital Area #15
 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
 Ad Prima C S
 Agora Cyber C S
 Alliance For Progress C S
 Antonia Pantoja C S
 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
 Pennsylvania
 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 CS
 Commonwealth Connections Academy C S
 Community Academy of Philadelphia C S
 Crispus Attucks Youthbuild C S
 Discovery C S
 Dr. Robert Ketterer C S
 Environmental Charter School at Frick Park
 Erie Rise Leadership Academy C S
 Esperanza Academy C S
 Esperanza Cyber C S
 Eugenio Maria de Hostos Community
 Bilingual C S
 Evergreen Community C S

Fell C S	Mastery Charter School - Smedley Elementary	SusQ - Cyber C S
First Philadelphia Charter School for Literacy	Mastery Charter School - Thomas Campus	Sylvan Heights Science C S
Folk Arts - Cultural Treasures C S	Math Civics and Sciences C S	Tacony Academy C S
Franklin Towne Charter Elementary School	Mathematics, Science & Technology Community C S	Tidioute Community C S
Franklin Towne Charter High School	Memphis Street Academy C S - J.P. Jones	Universal Alcorn C S
Frederick Douglas Mastery C S	Montessori Regional C S	Universal Audenried C S
Freire C S	Multi-Cultural Academy C S	Universal Bluford C S
Gettysburg Montessori C S	New Day C S	Universal Creighton C S
Gillingham C S	New Foundations C S	Universal Daroff C S
Global Leadership Academy C S	Nittany Valley C S	Universal Institute C S
Global Leadership Academy C S- Huey	Northwood Academy C S	Universal Vare C S
Green Woods C S	Olney Charter High School	Urban Academy Greater Pittsburgh C S
Hardy Williams Academy C S	Pan American Academy C S	Urban Pathways 6-12 C S
Hope for Hyndman C S	Passport Academy C S	Urban Pathways K - 5 College C S
Howard Gardner Multiple Intelligence C S	Penn Hills C S for Entrepreneurship	Vida C S
IMHOTEP Institute C S	Pennsylvania Cyber C S	West Oak Lane C S
Independence C S Infinity C S	Pennsylvania Distance Learning C S	West Philadelphia Achievement Charter Elementary School
Infinity CS	Pennsylvania Leadership C S	Wissahickon C S
Inquiry CS	Pennsylvania Virtual C S	York Academy Regional C S
Insight PA Cyber CS	People for People C S	Young Scholars C S
John B Stetson C S	Perseus House Charter School of Excellence	Young Scholars of Central Pennsylvania C S
Keystone Academy C S	Philadelphia Academy C S	Young Scholars of Western Pennsylvania C S
Keystone Education Center C S	Philadelphia Charter School for Arts & Sciences at H.R. Edmunds	
Kipp Academy C S	Philadelphia Electrical & Technology Charter High School	
La Academia: The Partnership C S	Philadelphia Harambee Institute of Science and Technology C S	
Laboratory C S	Philadelphia Montessori C S	
Lehigh Valley Academy Regional C S	Philadelphia Performing Arts C S	
Lehigh Valley Charter School for the Performing Arts	Premier Arts & Science C S	
Lehigh Valley Dual Language C S	Preparatory Charter School of Mathematics, Science, Technology & Careers	
Lincoln C S	Propel Charter School - Braddock Hills	
Lincoln Leadership Academy C S	Propel Charter School - East C S	
Lincoln Park Performing Arts C S	Propel Charter School - Hazelwood	
Lindley Academy CS	Propel Charter School - Homestead	
Manchester Academic C S	Propel Charter School - McKeesport	
Mariana Bracetti Academy C S	Propel Charter School - Montour	
Maritime Academy C S	Propel Charter School- Northside	
Mastery Charter High School	Propel Charter School - Pitcairn	
Mastery Charter School - Cleveland Elementary	Renaissance Academy - Edison C S	
Mastery Charter School - Clymer Elementary	Richard Allen Preparatory C S	
Mastery Charter School - Francis D Pastorius Elementary	Robert Benjamin Wiley Community C S	
Mastery Charter School - Harrity Elementary	Roberto Clemente C S	
Mastery Charter School - John Wister Elementary	Russell Byers C S	
Mastery Charter School - Mann Elementary	Sankofa Freedom Academy C S	
Mastery Charter School - Pickett Campus	School Lane C S	
Mastery Charter School - Prep Elementary	Seven Generations C S	
Mastery Charter School - Shoemaker Campus	Souderton Charter School Collaborative	
Mastery Charter School - Simon Gratz	Spectrum C S	
	Stone Valley Community C S	
	Sugar Valley Rural C S	

