

2016

Comprehensive Annual Financial Report

With Independent Auditors' Report for Fiscal Years Ended
December 31, 2016 and 2015

Commonwealth of Pennsylvania
State Employees' Retirement System

A Component Unit of the Commonwealth of Pennsylvania



2016

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State Employees' Retirement System

A Component Unit of the Commonwealth of Pennsylvania

Prepared by the staff of the
Pennsylvania State Employees' Retirement System

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Executive Director

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Chief Financial Officer

State Employees' Retirement System

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**Commonwealth of Pennsylvania
State Employees' Retirement System**

For its Comprehensive Annual
Financial Report
for the Fiscal Year Ended

December 31, 2015

A handwritten signature in black ink, reading "Jeffrey R. Egan". The signature is written in a cursive, flowing style.

Executive Director/CEO



Public Pension Coordinating Council

***Public Pension Standards Award
For Funding and Administration
2016***

Presented to

Pennsylvania State Employees' Retirement System

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

Presented by the Public Pension Coordinating Council, a confederation of

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

A handwritten signature in black ink that reads "Alan H. Winkle".

Alan H. Winkle
Program Administrator

July 28, 2017

Mr. David R. Fillman
Chairman, State Employees' Retirement Board
Commonwealth of Pennsylvania
30 North Third Street, Suite 150
Harrisburg, PA 17101

Dear Chairman Fillman,

The Pennsylvania State Employees' Retirement System (SERS) is pleased to present you with the 2016 calendar year Comprehensive Annual Financial Report (CAFR). The purpose of this report is to provide the governor, legislature, system members and annuitants, as well as the public with a clear accounting of SERS operations and financial position. We hope you will find this financial, investment, actuarial, and statistical material produced by SERS management to be both interesting and useful.

SERS remains committed to delivering accurate, meaningful information to policymakers and SERS members, as well as to provide context for our independently audited financial statements.

For 2016, KPMG has conducted an independent audit of SERS financial statements, which are prepared in accordance with U.S. generally accepted accounting principles. Because the cost of a control should not exceed the benefits to be derived, the objective is to provide reasonable, rather than absolute, assurance that SERS financial statements are free of any material misstatements and fairly presented. As is our standard practice, independent auditors have full and unrestricted access to you and the board to discuss their findings regarding the adequacy of SERS internal controls and the integrity of SERS financial reporting.

SERS has again received an unmodified opinion in 2016.

As of December 31, 2016, SERS had approximately \$26.4 billion after paying out \$3.2 billion in retirement benefits to more than 127,000 retirees and beneficiaries; \$2.9 billion – more than 90% – was paid to people living in Pennsylvania, stimulating local economies.

In 2016, SERS served 103 agencies/employers and approximately 240,000 total members. Last year, SERS welcomed nearly 6,700 new retirees whose average annual benefit was about \$28,700. It is important to note that as is the case with mature pension plans, newly welcomed retirees tend to have higher benefits than those leaving the rolls. In 2016, approximately 4,000 retirees with average annual benefits of about \$15,000 were removed from the rolls.

Last year, SERS earned nearly \$1.6 billion through investment earnings net of all fees and expenses, falling slightly short of meeting the 7.5% assumed long-term rate of return that was in place during the year. In April 2017, SERS Board lowered the assumed long-term rate of return to 7.25% for the 2016 actuarial valuation. With the positive trend to higher returns, taxpayers and policy makers can remain confident that rigorous control and oversight are exercised in the administration of these public funds. Our earnings have been positive for 17 of the last 20 years, and actual earnings have exceeded the assumed long-term rate of return for 12 of them.

Based on the actuarial methods used for financial reporting purposes as of December 31, 2016, the resulting net pension liability was \$19.3 billion. SERS plan fiduciary net position as a percentage of the total pension liability was 57.8%. Based on the actuarial methods used for funding purposes as of December 31, 2016, the unfunded actuarial accrued liability was \$19.9 billion. SERS funded ratio was 58.1%. Additional details, as well as a discussion of the continuing impact of Governmental Accounting Standards Board (GASB) Statement No. 67,

Financial Reporting for Pension Plans – an amendment of GASB Statement No. 25 (GASB 67), which was implemented in 2014, are discussed in greater detail in Management's Discussion and Analysis.

Fiscal year 2017-18 will mark the first time since legislatively-mandated contribution rates were enacted that Pennsylvania will be paying uncollared contributions to the system. In absolute contribution dollars, this represents approximately \$2.1 billion of which approximately 45% originates from the general fund from employers under the Governor's jurisdiction.

SERS continues major initiatives to improve services to our stakeholders, as well as improving efficiencies in the delivery of benefits and reducing cost in the administration of the system to our employers. Reducing investment fees has been an ongoing goal for SERS. Since 2010, we have reduced fees and expenses for our investment program by more than \$68 million. Investment strategies seek the highest-conviction vehicles within an acceptable level of risk. To be more responsive to our members and reduce transaction costs, we continue to increase the volume of electronic funds transfers for benefit payments. This initiative also has reduced waiting periods for benefit payments and increased the security of delivery of our members' money. Improving customer service to our members remains a top priority for the plan. We have enhanced our member materials, making the information contained within more understandable and accessible to a range of employees. We have increasingly leveraged technology to deliver many of these materials electronically, allowing the plan to reduce administrative costs and employ data-driven results to help guide future communications initiatives. SERS also continues its multi-year benefits processing system upgrade that is expected to further improve how we interact with our members, their account-related transactions, and payment processing.

Members can be assured that their retirement system is administered well, and that staff carefully manages the funds entrusted to the Board.

It should be noted that on June 12, 2017, Governor Wolf signed Act 2017-5 into law. This law fundamentally changes retirement options for most new hires beginning January 1, 2019. For most new members, this legislation establishes two hybrid defined benefit/defined contribution tiers and a straight defined contribution plan. In addition to new hires, current members will have the opportunity to opt-in between January 1, 2019, and March 31, 2019. This legislation had no impact on these basic financial statements. Additional information on Act 2017-5 will be provided in future years as it becomes required.

We are solely responsible for the contents of this report, however we do wish to acknowledge the significant contributions of many SERS professionals whose work to compile, quality assure, and produce it is essential.

The commitment of SERS nearly 200 employees ensures that we maintain effective internal controls to assure that assets are safeguarded, transactions are properly executed, and financial statements conform to U.S. generally accepted accounting principles – all while providing effective, high-quality member services. SERS remains dedicated to providing the highest level of service to commonwealth employers, policymakers, employees and retirees, the SERS Board, and you. Staff at all levels strive to provide exceptional service to those who have dedicated their careers to the citizens of Pennsylvania and maintain careful stewardship of public dollars.

Respectfully submitted,



David E. Durbin
Executive Director



Anthony J. Faiola, CPA
Chief Financial Officer

INTRODUCTORY SECTION

SERS Board

December 31, 2016

Mr. David R. Fillman
Chairman
Executive Director, AFSCME Council 13



Mr. Stephen S. Aichele
Attorney



Mr. Glenn E. Becker
President, The Swarthmore Group



Honorable Dan B. Frankel
State Representative



Honorable Robert W. Godshall
State Representative



INTRODUCTORY SECTION

SERS Board

December 31, 2016

Honorable Vincent J. Hughes
State Senator



Honorable Charles T. McIlhinney, Jr.
State Senator



Mr. Michael V. Puppio, Jr.
Attorney



Honorable Timothy A. Reese
State Treasurer



Mr. T. Terrance Reese
President, Overly Manufacturing



Honorable Mary A. Soderberg
Retired Member and Former State Budget Secretary



INTRODUCTORY SECTION

SERS Mission, Vision, and Organizational Chart

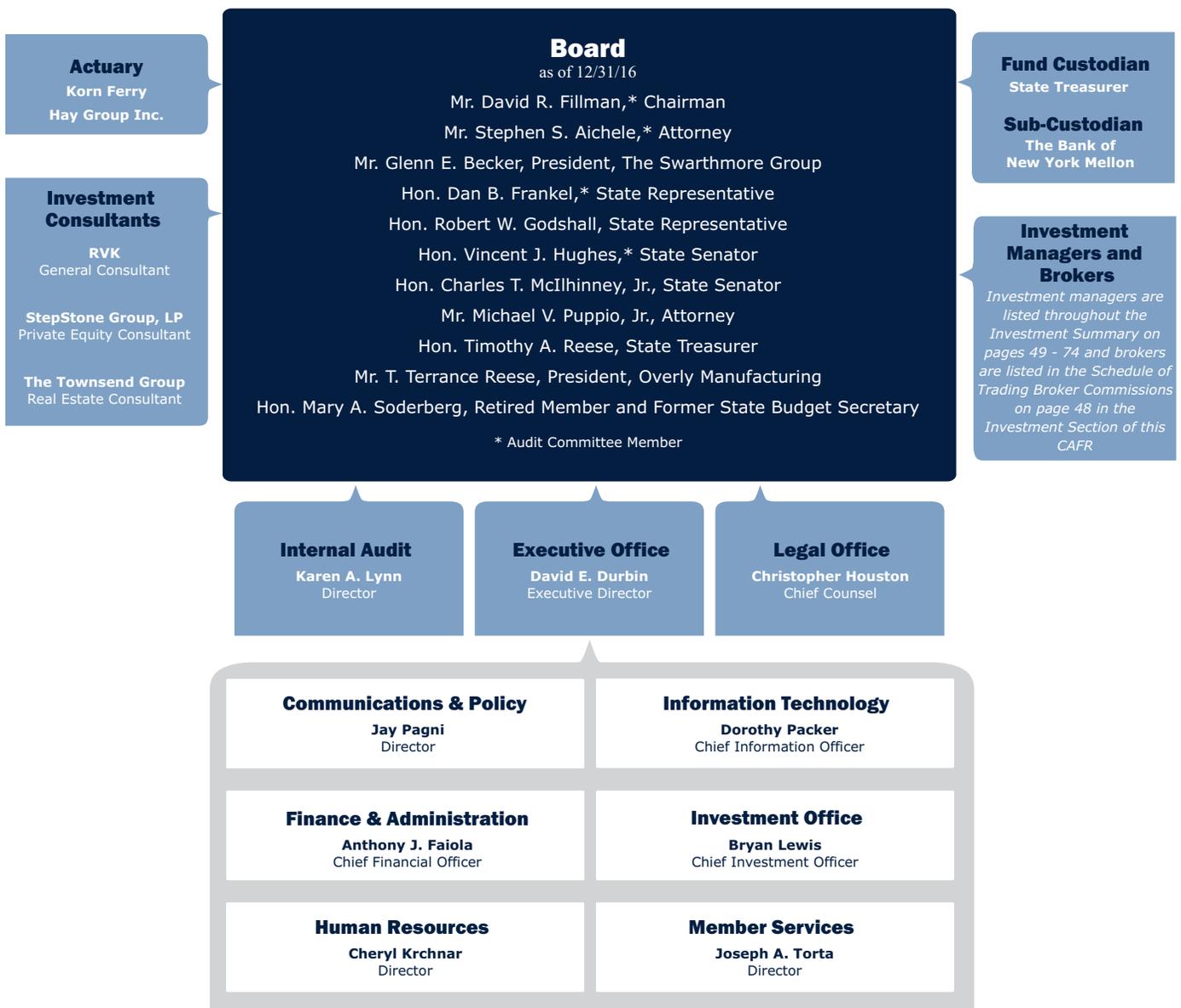
Mission

To provide retirement benefits and services to our members through sound administration and prudent investments.

Vision

To navigate organizational, fiscal, and legislative challenges so that SERS continues to progress toward fully-funded status while enhancing and sustaining effective and responsive member services.

Organizational Chart



2016

Financial Section



KPMG LLP
Suite 1000
30 North Third Street
PO Box 1190
Harrisburg, PA 17108-1190

Independent Auditors' Report

The Members of the Board
Commonwealth of Pennsylvania
State Employees' Retirement System:

We have audited the accompanying financial statements of the Commonwealth of Pennsylvania State Employees' Retirement System (SERS), a component unit of the Commonwealth of Pennsylvania, as of and for the years ended December 31, 2016 and 2015, and the related notes to the financial statements, which collectively comprise the SERS' basic 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 U.S. generally accepted accounting principles; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditors' Responsibility

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

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

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

Opinion

In our opinion, the financial statements referred to above present fairly, in all material respects, the fiduciary net position of the Commonwealth of Pennsylvania State Employees' Retirement System as of December 31, 2016 and 2015, and the changes in its fiduciary net position for the years then ended in accordance with U.S. generally accepted accounting principles.

KPMG LLP is a Delaware limited liability partnership and the U.S. member firm of the KPMG network of independent member firms affiliated with KPMG International Cooperative ("KPMG International"), a Swiss entity.



Emphasis of Matter

As discussed in Note 2 to the financial statements, SERS adopted the provisions of Governmental Accounting Standards Board (GASB) Statement No. 72, *Fair Value Measurement and Application*. Our opinion is not modified with respect to this matter.

Other Matters

Required Supplementary Information

U.S. generally accepted accounting principles require that the management's discussion and analysis on pages 3-11 and the required supplementary information in schedules 1 through 3 on pages 36-37 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 audit 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.

Supplementary and Other Information

Our audits were conducted for the purpose of forming an opinion on the financial statements that collectively comprise SERS' basic financial statements. The supplementary information in schedules 4 and 5 on pages 38-39, and the other information in the introductory section, investment section, actuarial section, and statistical section as listed in the table of contents, are presented for purposes of additional analysis and are not a required part of the basic financial statements.

The supplementary information in schedules 4 and 5 is the responsibility of management and was derived from and relates directly to the underlying accounting and other records used to prepare the basic financial statements for the year ended December 31, 2016. Such information has been subjected to the auditing procedures applied in the audit of the basic financial statements 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 financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the supplementary information in schedules 4 and 5 is fairly stated in all material respects in relation to the basic financial statements as a whole.

The introductory, investment, actuarial and statistical sections have not been subject to the auditing procedures applied in the audit of the basic financial statements and, accordingly, we do not express an opinion or provide any assurance on them.

KPMG LLP

Harrisburg, Pennsylvania
July 28, 2017

Management's Discussion and Analysis

December 31, 2016 and 2015 (unaudited)

This section presents Management's Discussion and Analysis of the Pennsylvania State Employees' Retirement System's (SERS) financial statements as well as the significant events and conditions that affected the operations and performance of SERS during the years ended December 31, 2016, 2015, and 2014.

This discussion and analysis includes forward looking statements that involve certain risks and uncertainties. Actual results and performance may differ materially from those expressed or implied in the forward looking statements due to a wide range of factors including but not limited to: changes in securities markets, general economic conditions, interest rates, energy policies, legislation, and global conflicts.

Overview of the Basic Financial Statements and Accompanying Information

- (1) **Basic Financial Statements.** SERS presents Statements of Fiduciary Net Position as of December 31, 2016 and 2015 as well as Statements of Changes in Fiduciary Net Position for the years then ended. These statements reflect resources available for the payment of benefits as of year end, and the sources and uses of those funds during the year.
- (2) **Notes to Basic Financial Statements.** The notes to basic financial statements are an integral part of the statements. SERS encourages readers to review them because the additional detail will provide a more complete understanding of the financial statements. The notes provide information about SERS organization, benefits, and contributions; determination of asset values; the limited use of derivatives; contingencies and commitments; actuarial methods; assumptions; and funding.

- (3) **Required Supplementary Information.** The Required Supplementary Information (RSI) consists of:
 - This Management's Discussion and Analysis (MD&A)
 - A schedule of changes in net pension liability and related ratios
 - A schedule of employer contributions
 - A schedule of investment returns
- (4) **Other Supplementary Information Schedules.** Other schedules provide details of SERS administrative, investment, and consultant expenses.

Adoption of Accounting Standard

The Governmental Accounting Standards Board (GASB) issued GASB Statement No. 72, *Fair Value Measurement and Application* (GASB 72), the provisions of which are reflected in these financial statements. Since the requirements of GASB 72 were effective for financial statements for fiscal years beginning after June 15, 2015, the first year that GASB 72 was applicable to SERS was 2016. The adoption of GASB 72 did not impact the fiduciary net position of SERS; however, certain changes to note disclosures for both years presented have been incorporated to comply with this new statement. Key changes in the notes to basic financial statements include additional information about the methods used to value investments. GASB 72 requires the use of valuation techniques, which are appropriate under the circumstances, and are either a market, cost, or income approach. For investments measured at fair value, GASB 72 establishes a hierarchy of inputs used to measure fair value consisting of three levels.

FINANCIAL SECTION

Management's Discussion and Analysis

December 31, 2016 and 2015 (unaudited)

Financial Analysis

SERS provides retirement benefits to the employees of the Commonwealth of Pennsylvania (commonwealth) and certain other public agencies. SERS benefits are funded through member and employer contributions as well as investment income.

SERS net position increased approximately \$0.3 billion for the year ended December 31, 2016 compared to a decrease of approximately \$1.3 billion for the year ended December 31, 2015, as reflected in the table on page 11.

Member Contributions

Member contributions were approximately \$375 million for the year ended December 31, 2016, \$372 million for the year ended December 31, 2015, and \$366 million for the year ended December 31, 2014. There was a slight decrease in gross salaries, which were approximately \$5.9 billion for 2016 and \$6.0 billion for 2015, and a decrease of 393 in active membership as of year-end 2016. However, there were approximately 900 more employees electing class A-4 that contribute 9.3% of gross salary, compared to the decrease of approximately 500 employees that were contributing 5.0% of gross salary. In addition, there were approximately 600 fewer employees contributing 6.25% of gross salary. The member contribution rate of 6.25% of gross salary for most members is set by statute and has remained unchanged for the years presented.

Employer Contributions

Employer contributions were approximately \$1.6 billion, \$1.4 billion, and \$1.1 billion for the years ended December 31, 2016, 2015, and 2014, respectively. The 2016 contributions represented an increase of \$262 million – or 19.2% – compared to 2015. The growth was due to an increase in the composite employer rate to 29.5% from 25.0% on July 1, 2016, (excluding the Benefits Completion Plan (BCP) as described in note 3 to the financial statements). The \$276 million – or 25.5% – growth

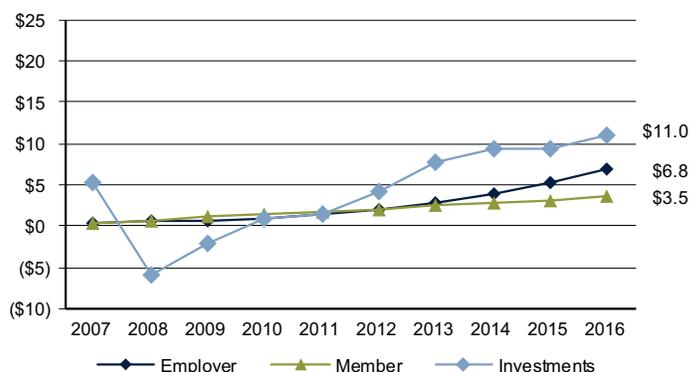
in 2015 from 2014 was due to an increase in the employer rate to 25.0% from 20.5% on July 1, 2015.

Since 2005, Pennsylvania law has statutorily suppressed employer contribution rates, primarily through Acts 2003-40 and 2010-120. Act 2010-120 limited the rate at which employer contributions increase in any given year after FY 11/12, up to a maximum of 4.5% each year, until no longer needed. According to this schedule, FY 17/18 will be the first year since legislatively mandated contribution rates were enacted through Act 2010-120 that collars are no longer needed and employers will be paying the uncollared actuarially required rate. The FY 17/18 composite employer contribution rate including the BCP is going to be 33.24% of payroll. Consequently as a result of the high employer contribution rates, SERS has been tasked with providing data and technical assistance to Pennsylvania policy makers as they explore possible changes to the State Employees' Retirement Code (SERC).

From 2007 through 2016, employer contributions totaled \$6.8 billion – or 32% – of total additions to fiduciary net position, compared to \$3.5 billion – or 17% – of total additions attributed to member contributions, and \$11.0 billion – or 51% – of total additions attributed to investment earnings as illustrated in the following charts.

10-Year Cumulative Additions to Fiduciary Net Position

(\$ billions)

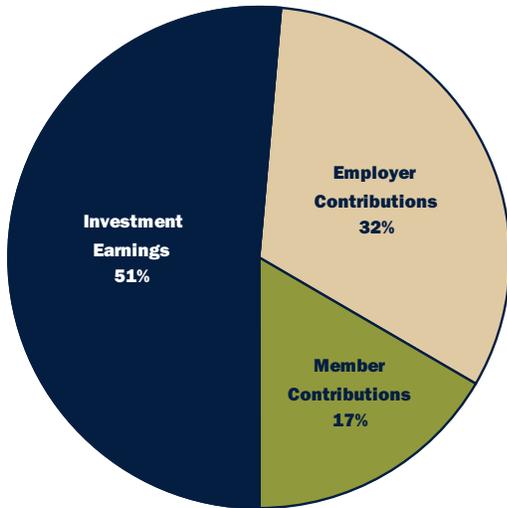


Management’s Discussion and Analysis

December 31, 2016 and 2015 (unaudited)

Additions by Component as a Percent of Total Additions

(10-Year History)



Suppressed employer contributions have provided budgetary relief to commonwealth agencies and the taxpayers of Pennsylvania. However, the short-term benefits result in employers contributing more over a 30-year period due to implied financing costs. Such financing costs are incurred because the monies are not presently available to invest and cannot compound.

Net Investment Income

SERS utilizes two methodologies when analyzing investment returns. The two approaches may vary from each other in any given period based on the underlying methodology used. For GASB 67 accounting valuation purposes, a money-weighted return is used. A money-weighted rate of return calculates the investment performance accounting for all cash flows (contributions and withdrawals) occurring during the performance measurement period. Conversely, for investment performance reporting purposes, SERS and its investment consultants rely on a time-weighted approach. A time-weighted rate of return minimizes the impact of cash flows occurring throughout the measurement period. SERS investment returns, net of manager fees,

on a money-weighted basis, were 6.4%, 0.4%, and 6.4% for the years 2016, 2015, and 2014, respectively. SERS investment returns, net of manager fees, on a time-weighted basis, were 6.5%, 0.4%, and 6.4% for the years 2016, 2015, and 2014, respectively.

Positive investment performance contributed approximately \$1.6 billion, \$88 million, and \$1.5 billion to net investment income for the years 2016, 2015, and 2014, respectively. Strong performance in the Global Public Equity asset class helped the overall SERS Fund performance for 2016.

Biennially, SERS reviews and modifies its strategic investment plan, as necessary. The ultimate objective of SERS *2016-2017 Strategic Investment Plan* and *2014-2015 Strategic Investment Plan* was to formulate an asset allocation policy that provides a high expected probability of achieving SERS long-term actuarially assumed rate of return. The plans emphasized liquidity, reduction of cash flow volatility, and pursuit of capital protection strategies to ensure that SERS assets are best positioned to meet the SERS Fund’s continuing obligations to its beneficiaries.

SERS assets are managed by external investment managers hired by the board. SERS strives to engage the highest quality investment managers for the most cost-effective price. Many of these managers are paid a fee based on the amount of assets under management. For private market investments, the industry practice is for the limited partners to pay fees to the general partner based on commitments to the partnership during the investment period.

SERS pays the majority of its fees to managers within its Private Equity and Real Estate asset classes due to the complex and time-consuming nature of the investments.

FINANCIAL SECTION

Management's Discussion and Analysis

December 31, 2016 and 2015 (unaudited)

Investment expenses, which include fees paid to managers, were \$168 million and \$167 million for the years ended December 31, 2016 and 2015, respectively.

Benefits, Refunds, and Expenses

Benefit payments to annuitants are the most significant recurring deductions from fiduciary net position. During 2016 and 2015, SERS paid out approximately \$3.2 billion and \$3.1 billion in benefits and refunds, respectively.

There were approximately 6,700 new retirees added to the annuity payroll in 2016, with an average annual benefit of \$28,700. There were approximately 6,700 new retirees added to the annuity payroll in 2015, with an average annual benefit of \$26,100. As is typical in mature retirement plans, new retirees in 2016 received a much higher annual benefit than those removed from the annuity payroll.

There were more than 4,000 and 4,300 retirees removed from the rolls with an average annual benefit of \$15,000 and \$14,600 in 2016 and 2015, respectively. The benefits expense on the financial statements consists of two primary components: monthly annuity payments and supplemental payments. Most of the supplemental payments are paid to retiring members who joined SERS before January 1, 2011, and choose to withdraw their contributions and interest at retirement. Such withdrawals reduce the retirees' payments over their remaining life. Supplemental payments were \$472 million and \$462 million for 2016 and 2015, respectively.

Act 2010-120 prohibits lump-sum withdrawals for new classes of employees (A-3 and A-4). This act also lowered the benefits earned by most employees who joined SERS on or after January 1, 2011, by reducing the retirement benefit accrual rate,

increasing normal retirement age, extending the vesting period from five years to 10 years, and other provisions. Two other important benefit-related aspects of Act 2010-120 are that retirement provisions for legislators elected after December 1, 2010, were reduced and made consistent with those of most rank-and-file employees. Despite the reduction in benefits, most employees continue to contribute 6.25% of their salary and fund a greater proportion of their own retirement benefit.

It will take considerable time to realize benefits from the lower costs that are part of Act 2010-120 as detailed above, and SERS expects benefit expenses to rise steadily because the number of retirees added to the rolls is projected to be about 70% higher than the number of retirees removed from the rolls. Additionally, despite the benefit reductions, new retirees' monthly annuities are projected to be approximately 90% higher than the annuities of those being removed.

SERS was established in 1923, but did not pay more than \$1 billion in annual benefits until 1997. SERS annual benefit payments reached \$2 billion in 2007 and \$3 billion in 2015. Based on recent actuarial projections, SERS annual benefit payments will reach \$4 billion by 2022.

Growth in Annuity Payroll

| | December | | |
|---------------------------------------|----------|---------|---------|
| | 2016 | 2015 | 2014 |
| Monthly annuity payroll (\$ millions) | \$233 | \$222 | \$213 |
| Retirees | 127,338 | 124,689 | 122,249 |

SERS administrative expenses represented 0.1% of fiduciary net position in 2016 and 2015. All expenses were within budget.

Management's Discussion and Analysis

December 31, 2016 and 2015 (unaudited)

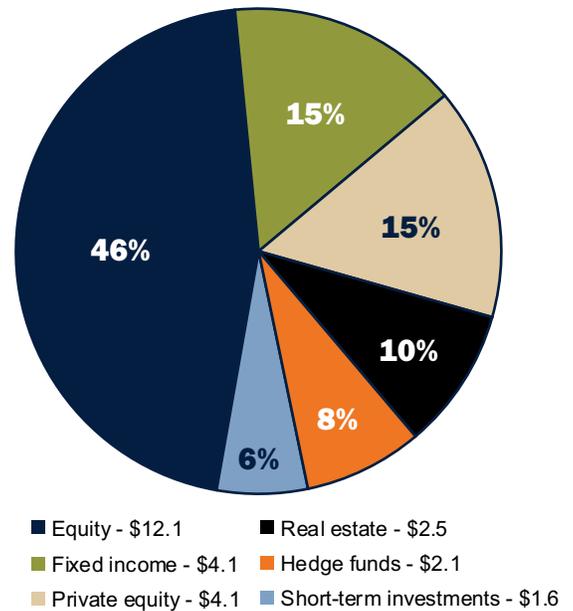
SERS Assets

Investments are the most significant component of SERS assets. The fair value of investments increased to \$26.5 billion in 2016 from \$26.1 billion in 2015. The increase is related to the fact that net investment income and contributions exceeded benefit payments for the year. SERS reports assets at fair value as discussed in accounting policies note 2(c) to the financial statements. Fair value is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date.

The total investment portfolio fair value was \$26.5 billion for 2016, as compared to \$26.1 billion for 2015. Equity values increased to \$12.1 billion in 2016, from \$10.0 billion in 2015. The increase in equity values is attributable to strong broad market returns and additional funding into new and existing index fund managers. Fixed income values decreased to \$4.1 billion in 2016, from \$4.6 billion in 2015. The decrease in fixed income values is primarily due to rebalancing according to the *2016-2017 Strategic Investment Plan*. Private equity values decreased to \$4.1 billion in 2016, from \$4.7 billion in 2015. Most of the decrease in private equity was due to distributions exceeding contributions. Real estate values decreased to \$2.5 billion in 2016, from \$3.4 billion in 2015. The decrease in real estate values was mostly attributable to the reclassification and movement of the commodities subclass to hedge funds, the elimination of the international portion of the REIT program, and distributions exceeding contributions. Hedge funds values increased to \$2.1 billion in 2016, from \$1.7 billion in 2015. The increase in hedge funds values is primarily due to the reclassification and movement of the commodities subclass from real estate. Short-term investments values decreased to \$1.6 billion in 2016, from \$1.7 billion in 2015. The total investment portfolio fair value of \$26.5 billion for 2016 was composed as shown by the following chart:

Investments at Fair Value (2016)

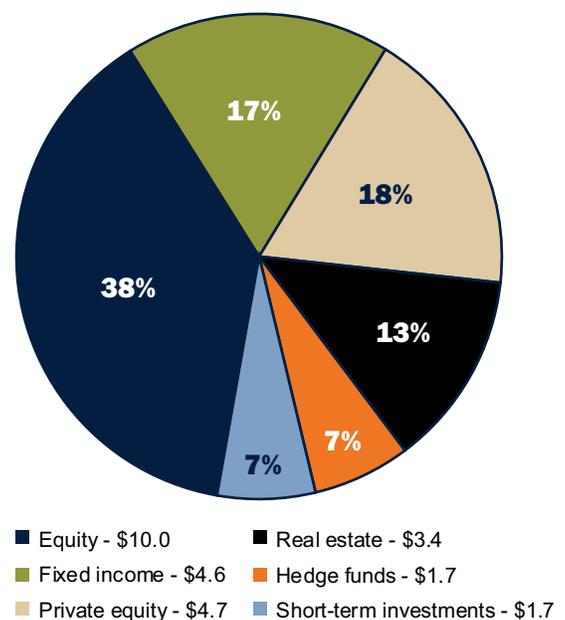
(\$ billions)



The total investment portfolio fair value of \$26.1 billion for 2015 was composed as shown by the chart below:

Investments at Fair Value (2015)

(\$ billions)



FINANCIAL SECTION

Management's Discussion and Analysis

December 31, 2016 and 2015 (unaudited)

SERS earns additional investment income by lending investment securities to brokers. The brokers provide collateral to SERS for borrowed securities generally equal to 102% – 105% of the borrowed securities, and SERS invests the collateral to earn interest. Income, net of expenses, from securities lending is dependent on the volume of lending generated at the custodian bank and the spreads (profits) on loaned securities.

SERS earned more than \$43 million through securities lending over the last 10 years. SERS has scaled back its securities lending program since 2008 (in both the number of securities on loan and the market value of those securities for which cash collateral was provided) due to the increased risk associated with market uncertainty. The program's guidelines provide for investment of cash collateral in highly liquid, highly-rated securities.

As of December 31, 2016 and 2015, the fair value of loaned securities was \$429 million and \$628 million, respectively. The fair value of the associated collateral was \$458 million and \$652 million, of which \$274 million and \$371 million was cash, respectively.

Derivatives

SERS permits investment managers to use derivatives to provide market exposure to various asset classes within narrowly prescribed policy guidelines. Used properly, such derivatives cost-efficiently deliver returns similar to indexed returns in the respective asset classes without disrupting SERS liquidity needs. SERS investment managers manage counterparty credit risk by entering into contracts with parties with strong credit ratings and by establishing collateral requirements. SERS monitors derivative levels and types to ensure that portfolio derivatives are consistent with their intended purpose and at the appropriate level.

Liquidity

In the past, SERS liquidity needs were met through member and employer contributions, investment earnings, and portfolio diversification. However, increasing liquidity requirements necessitated a change in the role and strategy of SERS investment program.

SERS 2016-2017 Strategic Investment Plan uses Cash as an asset class, while SERS 2014-2015 Strategic Investment Plan used Liquidity Reserve as an asset class that serves as the primary source of short-term liquidity for the SERS Fund. In periods of market distress, liquid reserves reduce capital impairment risk (i.e., selling assets below intrinsic value) and enhance fund returns by enabling the purchase of mispriced securities from distressed sellers. At December 31, 2016, the SERS Fund held approximately \$1.3 billion in Cash.

Actuarial Valuations

Annually, SERS obtains two actuarial valuations, one for financial reporting purposes under GASB 67 and one that is statutorily required for funding purposes. The funding valuation is used to set the employer contribution rate for the plan.

It is important to note differences in actuarial methods for financial reporting under GASB 67 (accounting valuation) compared to those used for funding purposes (funding valuation). Key differences are shown in the following table:

| | GASB 67 - Accounting Valuation | Funding Valuation |
|------------------------|--------------------------------------|---------------------------------|
| Actuarial cost method | Entry age | Variation of entry age |
| Asset valuation method | Fair (market) value | Five-year smoothed market value |

Management's Discussion and Analysis

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Key valuation results for the accounting valuation compared to the funding valuation for the years ended December 31, 2016 and 2015 are as shown in the following tables:

As of December 31, 2016

(\$ millions)

| GASB 67 - Accounting Valuation | | Funding Valuation | |
|------------------------------------|-----------------|-----------------------------------|-----------------|
| Total Pension Liability (TPL) | \$45,648 | Actuarial Accrued Liability (AAL) | \$47,519 |
| Fiduciary Net Position | 26,388 | Actuarial Value of Assets | 27,596 |
| Net Pension Liability (NPL) | \$19,260 | Unfunded AAL | \$19,923 |
| Ratio - Fiduciary Net Position/TPL | 57.8% | Funded Ratio | 58.1% |

As of December 31, 2015

(\$ millions)

| GASB 67 - Accounting Valuation | | Funding Valuation | |
|------------------------------------|-----------------|-----------------------------------|-----------------|
| Total Pension Liability (TPL) | \$44,239 | Actuarial Accrued Liability (AAL) | \$46,329 |
| Fiduciary Net Position | 26,055 | Actuarial Value of Assets | 26,877 |
| Net Pension Liability (NPL) | \$18,184 | Unfunded AAL | \$19,452 |
| Ratio - Fiduciary Net Position/TPL | 58.9% | Funded Ratio | 58.0% |

Under the accounting valuation, the net pension liability increased to \$19.3 billion in 2016 from \$18.2 billion in 2015. There was a \$1.4 billion increase in the total pension liability mostly due to benefits earned, differences between expected and actual experience, and the adoption of assumption changes by SERS Board at its April 2017 meeting differing from those of the *18th Investigation of Actuarial Experience* study (as discussed below). To offset this increase, the total pension liability increase was reduced by a \$0.3 billion increase in the fiduciary net position. The increase in fiduciary net position was mainly the result of investment income and contributions exceeding benefit payments. There was still an increase in fiduciary net position although employer contributions were collared under Act 2010-120 and investment income fell slightly short of the actuarial assumed rate of return. Under the funding valuation, the unfunded actuarial accrued liability increased to \$19.9 billion in 2016 from \$19.5 billion in 2015 due mostly to the same factors as discussed above.

The unfunded actuarial accrued liability under the funding valuation was \$0.6 billion and \$1.3 billion higher than the net pension liability under the accounting valuation in 2016 and 2015, respectively. The more favorable result under the accounting valuation can be specifically attributed to the actuarial cost method required under GASB 67. The entry age actuarial cost method apportioned more of the pension costs of certain members to the normal cost and therefore lowered the amount apportioned to the unfunded liability. In 2016 and 2015, the benefit from using the actuarial cost method was offset by the fact that current year returns, which fell below the assumed rate, were recognized immediately in the fiduciary net position balance as opposed to being deferred and smoothed into assets over five years under the funding valuation.

Every five years, SERS is required to conduct an actuarial experience study to determine whether the assumptions used in its annual actuarial valuations remain accurate based on current and anticipated

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Management's Discussion and Analysis

December 31, 2016 and 2015 (unaudited)

demographic trends and economic conditions. The *18th Investigation of Actuarial Experience* study for the period 2011 – 2015 was released in March 2016. The actuary, under oversight of the SERS Board, reviewed economic assumptions (such as the assumed future investment returns and salary increases) as well as demographic assumptions (such as employee turnover, retirement, disability, and death rates). Some assumption adjustments increased projected cost and some decreased projected cost, but the overall result was a slight increase to the net pension liability.

Most demographic assumptions remained the same as, or similar to, experience over the last five years. However, the experience study did recommend changing some assumptions, which are enumerated as follows. The study recommended decreasing disability retirement rates for all active members. Additionally, it recommended adjusting superannuation separation rates, early retirement separation rates, and withdrawal rates for certain active member groupings (gender, age, years of service) in both the general and special membership classes. Furthermore, it recommended decreasing most annuitant and survivor mortality rates.

For the 2015 valuation, economic assumption recommendations resulting from the experience study included: keeping the targeted investment return rate assumption at 7.5%; keeping the inflation rate at 2.75%; keeping the general salary growth rate at 3.05%; and decreasing career salary growth rates, by varying amounts depending upon the employee's length of service at all service levels.

The board adopted the actuarial assumptions set forth in the *18th Investigation of Actuarial Experience* at its March 2016 meeting. The study can be viewed at www.SERS.pa.gov.

In addition to the five year experience study, SERS reviews its investment return assumption in light

of economic conditions every year as part of its annual valuation. Based on this work, SERS actuary recommended, and SERS Board adopted, a reduction in the targeted investment return rate assumption to 7.25% for the 2016 actuarial valuation from 7.5% used for the 2015 actuarial valuation based on the experience study. In addition, SERS actuary recommended, and SERS Board adopted, a reduction in the inflation rate to 2.6% for the 2016 valuation from 2.75% used for the 2015 actuarial valuation based on the experience study. The change in inflation rate also impacted the general salary growth rate, which was lowered to 2.9% for the 2016 valuation from 3.05% used for the 2015 valuation based on the experience study.

Pennsylvania Act 2010-120

On November 23, 2010, the Governor signed HB 2497 into law as Act 2010-120. This legislation preserved the benefits in place for the current members at that time but mandated a number of benefit reductions for new members by reducing the retirement benefit accrual rate, increasing the normal retirement age, eliminating the lump-sum withdrawal option, extending the vesting period from five years to 10 years, and other provisions for employees hired on or after January 1, 2011. One aspect of Act 2010-120 is that retirement provisions for legislators elected after December 1, 2010, were reduced and made consistent with those of most rank-and-file employees. Additionally, Act 2010-120 limited the rate at which employer contributions can increase in any given year to 3% in commonwealth FY 11/12, 3.5% in commonwealth FY 12/13, and 4.5% each year thereafter until no longer needed. Act 2010-120 also prohibits the use of pension obligation bonds, which are issued by a state or local government in order to meet their obligations to their pension fund. It will take considerable time to realize benefits from the lower costs of Act 2010-120.

Management's Discussion and Analysis

December 31, 2016 and 2015 (unaudited)

Condensed Financial Information

(\$ millions)

Fiduciary Net Position

| Assets | 2016 | Increase (Decrease) | 2015 | Increase (Decrease) | 2014 |
|---|-----------------|------------------------|-----------------|------------------------|-----------------|
| Total receivables | \$390 | \$119 | \$271 | \$52 | \$219 |
| Total investments | 26,455 | 326 | 26,129 | (1,315) | 27,444 |
| Securities lending collateral pool | 274 | (97) | 371 | 9 | 362 |
| Total assets | 27,119 | 348 | 26,771 | (1,254) | 28,025 |
| Liabilities | | | | | |
| Accounts payable and accrued expenses | 68 | 16 | 52 | (4) | 56 |
| Investment purchases and other liabilities | 389 | 96 | 293 | 24 | 269 |
| Obligations under securities lending | 274 | (97) | 371 | 9 | 362 |
| Total liabilities | 731 | 15 | 716 | 29 | 687 |
| Net position restricted for pensions | \$26,388 | \$333 | \$26,055 | \$(1,283) | \$27,338 |

Changes in Fiduciary Net Position

| Additions | 2016 | Increase (Decrease) | 2015 | Increase (Decrease) | 2014 |
|--|--------------|------------------------|------------------|------------------------|---------------|
| Member contributions | \$375 | \$3 | \$372 | \$6 | \$366 |
| Employer contributions | 1,622 | 262 | 1,360 | 276 | 1,084 |
| Net investment income | 1,587 | 1,499 | 88 | (1,374) | 1,462 |
| Total additions | 3,584 | 1,764 | 1,820 | (1,092) | 2,912 |
| Deductions | | | | | |
| Benefits and refunds | 3,228 | 147 | 3,081 | 135 | 2,946 |
| Administrative expenses | 23 | 1 | 22 | - | 22 |
| Total deductions | 3,251 | 148 | 3,103 | 135 | 2,968 |
| Increase/(decrease) in net position restricted for pensions | \$333 | \$1,616 | \$(1,283) | \$(1,227) | \$(56) |

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Statements of Fiduciary Net Position

Statements of Fiduciary Net Position

December 31, 2016 and 2015

(\$ thousands)

| | 2016 | 2015 |
|---|---------------------|---------------------|
| Assets | | |
| Receivables | | |
| Plan members | \$1,034 | \$3,136 |
| Employers | 117,072 | 103,415 |
| Investment income | 60,600 | 61,664 |
| Investment proceeds and other receivables | 207,428 | 98,239 |
| Miscellaneous | 4,276 | 4,717 |
| Total receivables | 390,410 | 271,171 |
| Investments | | |
| Short-term investments | 1,591,176 | 1,711,654 |
| U.S. government securities | 2,091,890 | 2,531,112 |
| Corporate and foreign bonds and notes | 1,963,883 | 2,058,179 |
| Common and preferred stocks | 12,133,806 | 9,984,352 |
| Hedge funds | 2,057,398 | 1,673,295 |
| Real estate | 2,491,314 | 3,419,045 |
| Private equity | 4,125,468 | 4,751,827 |
| Total investments | 26,454,935 | 26,129,464 |
| Securities lending collateral pool | 273,603 | 370,517 |
| Total assets | 27,118,948 | 26,771,152 |
| Liabilities | | |
| Account payable and accrued expenses | 68,236 | 51,995 |
| Investment purchases and other liabilities | 389,220 | 293,750 |
| Obligations under securities lending | 273,603 | 370,517 |
| Total liabilities | 731,059 | 716,262 |
| Net position restricted for pensions | \$26,387,889 | \$26,054,890 |

See accompanying notes to basic financial statements.

Statements of Changes in Fiduciary Net Position

Statements of Changes in Fiduciary Net Position

Years Ended December 31, 2016 and 2015

(\$ thousands)

| | 2016 | 2015 |
|--|---------------------|---------------------|
| Additions | | |
| Contributions | | |
| Plan members | \$374,570 | \$371,624 |
| Employers | 1,622,123 | 1,360,431 |
| Total contributions | 1,996,693 | 1,732,055 |
| Investment income | | |
| From investing activities | | |
| Net appreciation/(depreciation) in fair value of investments | 1,233,501 | (216,817) |
| Interest | 126,219 | 130,616 |
| Dividends | 273,733 | 223,927 |
| Real estate income | 89,327 | 108,844 |
| Miscellaneous income | 27,381 | 3,426 |
| Total investing activities income | 1,750,161 | 249,996 |
| Investment expenses | (167,712) | (166,610) |
| Net income from investing activities | 1,582,449 | 83,386 |
| From securities lending activities | | |
| Securities lending income | 4,893 | 5,105 |
| Securities lending expenses | (489) | (501) |
| Net income from securities lending activities | 4,404 | 4,604 |
| Net investment income | 1,586,853 | 87,990 |
| Total additions | 3,583,546 | 1,820,045 |
| Deductions | | |
| Benefits | 3,214,440 | 3,069,328 |
| Refund of contributions | 13,108 | 11,533 |
| Administrative expenses | 22,999 | 22,072 |
| Total deductions | 3,250,547 | 3,102,933 |
| Net increase/(decrease) | 332,999 | (1,282,888) |
| Net position restricted for pensions | | |
| Balance, beginning of year | 26,054,890 | 27,337,778 |
| Balance, end of year | \$26,387,889 | \$26,054,890 |

See accompanying notes to basic financial statements.

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Notes to Basic Financial Statements

December 31, 2016 and 2015

(1) Organization and Description of SERS

(a) Organization

SERS was established as of June 27, 1923, under the provisions of Public Law 858, No. 331. SERS was developed as an independent administrative agency of the board, which exercises control and management of SERS, including the investment of its assets. The State Employees' Retirement Board has 11 members including the State Treasurer (ex officio), two members from the Senate, two members of the House of Representatives, and six members appointed by the Governor, one of whom is an annuitant of SERS. At least five board members must be active members of SERS and at least two must have 10 or more years of credited service.

SERS is the administrator of a cost-sharing multiple-employer defined benefit pension plan established by the Commonwealth of Pennsylvania (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. Administration costs are financed through contributions and investment earnings.

Membership in SERS is mandatory for most state employees. Members and employees of the General Assembly, certain elected or appointed officials in the executive branch, department heads, and certain employees in the field of education are not required, but are given the option to participate. The membership includes 38 employers and the commonwealth is classified as its largest employer. The commonwealth comprises 66 agencies and when everything is evaluated separately, SERS has a total of 103 participating employers/agencies.

At December 31, 2016 and 2015, SERS membership consisted of the following:

SERS Membership

| | 2016 | 2015 |
|---|----------------|----------------|
| Inactive plan members or beneficiaries currently receiving benefits | 127,338 | 124,689 |
| Inactive plan members entitled to but not yet receiving benefits | 7,134 | 6,918 |
| Active plan members | 104,632 | 105,025 |
| Total members | 239,104 | 236,632 |

(b) Pension Benefits

SERS provides retirement, death, and disability benefits. Cost of Living Adjustments (COLA) are provided ad hoc at the discretion of the General Assembly. Article II of the Commonwealth of Pennsylvania's Constitution assigns the authority to establish and amend the benefit provision of the plan to the General Assembly. Member retirement benefits are determined by taking years of credited service multiplied by final average salary multiplied by 2% multiplied by class of service multiplier.

Prior to Act 2010-120, employees who retire at age 60 with three years of service, or with 35 years of service if under age 60, are entitled to a normal annual retirement benefit. Members of the General Assembly and certain employees classified in hazardous duty positions can retire with full benefits at age 50, with at least three years of service. Act 2010-120 preserved all benefits in place for members, but mandated a number of benefit reductions for new members effective January 1, 2011. The benefit reduction included a new class of membership that accrues benefits at 2% of their final average salary instead of the previous 2.5%. The new vesting period

changed from five to 10 years of credited service, and the option to withdraw lump-sum accumulated deductions was eliminated. The new normal retirement age is 65 for most employees and age 55 for members of the General Assembly and certain employees classified in hazardous duty positions.

Most members of SERS, and all state employees hired after June 30, 2001, and prior to January 1, 2011 (except state police officers and certain members of the judiciary and legislators), are Class AA members. Each class of benefits is based on a multiple of the base accrual rate of 2%, which is called the multiplier. The multiplier for Class AA is 1.25, which translates into an annual benefit of 2.5% of the member's highest three-year average salary multiplied by years of service and became effective for members July 1, 2001. The general annual benefit for Class A members is 2% of the member's highest three-year average salary multiplied by years of service.

State police are entitled to a benefit equal to a percentage of their highest annual salary, excluding their year of retirement. The benefit is 75% of salary for 25 or more years of service and 50% of salary for 20 – 24.99 years of service. Judges are entitled to a benefit of 4% of final average salary for each of the first 10 years of service and 3% for subsequent years. Magisterial District Judges are entitled to a benefit of 3% of final average salary for each year of service. Legislators taking office before December 1, 2010, are Class D-4. The multiplier for Class D-4 is 1.5, which translates into an annual benefit of 3% of the final average salary for each year of service.

Act 2010-120 created a new A-3 class of service and an optional A-4 class for most employees that entered SERS membership for the first time on or after January 1, 2011, and December 1, 2010, for legislators newly elected in November 2010. Employees who enter SERS membership

after the effective date of Act 2010-120 enter as members of the A-3 class with a 45-day window to elect membership in the optional A-4 class. The general annual benefit for Class A-3 members is 2% of the member's highest three-year average salary multiplied by years of service, while the Class A-4 benefit accrual rate is 2.5%.

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

(c) Contributions

Section 5507 of the SERC (71 Pa. C.S. §5507) requires the commonwealth and other employers whose employees are SERS members to make contributions to the fund on behalf of all active members and annuitants necessary to fund the liabilities and provide the annuity reserves required to pay benefits. SERS funding policy, as set by the board, provides for periodic active member contributions at statutory rates. The SERS funding policy also provides for periodic employer contributions at actuarially determined rates based on SERS funding valuation, expressed as a percentage of annual retirement covered payroll, such that they, along with employee contributions and an actuarially determined rate of investment return, are adequate to accumulate assets to pay benefits when due. However, Act 2010-120 imposes rate increase collars (limits on annual rate increases) on employer contributions that keep the employer contribution rate below the rates established in accordance with actuarial parameters. The collar for commonwealth FY 11/12 was 3%. The commonwealth FY 12/13 collar was 3.5%. The collar for commonwealth FY 13/14 was 4.5% and will remain at that rate until no longer needed. At December 31, 2016, the statutorily required composite contribution rate as collared by Act 2010-120 including the Benefits Completion Plan (BCP) was 29.51% while the actuarially determined rate would have been 32.15%. At December 31, 2015,

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Notes to Basic Financial Statements

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the statutorily required composite contribution rate as collared by Act 2010-120 including the BCP was 25.01% while the actuarially determined rate would have been 31.52%.

Employer rates are computed based on SERS fiscal year end of December 31 and applied to the commonwealth based on its fiscal year end of June 30; therefore, the employer contribution rates, in effect for SERS full year ended December 31, reflect a blended average of calculated rates. As of December 31, 2016 and 2015, the blended contribution rates, which include the BCP, were 27.26% and 22.77%, respectively.

The general membership contribution rate for all Class A and Class AA members is 5% and 6.25% of salary, respectively. The general membership contribution rate under Act 2010-120 for A-3 and A-4 members is 6.25% and 9.3% of salary, respectively. The contribution rate for Class D-4 Members of the General Assembly is 7.5%. Judges and Magisterial District Judges have the option of electing special membership classes requiring a contribution of 10% and 7.5%, respectively. All employee contributions are recorded in individually identified accounts that are credited with interest, calculated at 4% per annum, as mandated by statute. Accumulated employee contributions and credited interest vest immediately and are returned to the employee upon termination of service if the employee is not eligible for other benefits.

(2) Summary of Significant Accounting Policies

(a) Basis of Accounting

The financial statements of SERS are prepared using the accrual basis of accounting and economic resources measurement focus. Plan member contributions are recognized in the period in which the contributions are due. Employer contributions are recognized when due and the employer has a legal requirement to provide the contributions. Benefits

and refunds are recognized when due and payable in accordance with the terms of the plan. Investment purchases and sales are recorded on a trade-date basis.

(b) Use of Estimates

Management of SERS has made certain estimates and assumptions relating to the reporting of assets and liabilities and the disclosure of contingent assets and liabilities to prepare these financial statements in conformity with U.S. generally accepted accounting principles. Actual results could differ from those estimates.

(c) Valuation of Investments

SERS investments are reported at fair value. Fair value is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. U.S. government securities and corporate and foreign bonds and notes are valued based on matrix pricing. Commingled equity funds and common and preferred stocks are generally valued based on published market prices and quotations at the close of business from national security exchanges and securities pricing services. Private equity, real estate, hedge funds, and commingled fixed income funds are reported at fair value as estimated and reported by general partners, based upon the underlying net asset value (NAV) of the fund or partnership as a practical expedient. Adjustments from NAV are required when SERS expects to sell the investment at a value other than NAV.

The investments in short-term investment funds, including those managed by the treasurer of the commonwealth, are reported at cost plus allocated interest, which approximates fair value. The securities lending collateral pool, which is a fund operated by the securities lending agent, also is accounted for at cost plus accrued interest, which approximates fair value.

Unsettled investment sales are reported as investment proceeds receivable and unsettled investment purchases are reported as investment purchases payable. Investment expenses consist of investment managers' fees and those expenses directly related to SERS investment operations.

(d) Commitments

As of December 31, 2016 and 2015, SERS had contractual commitments totaling approximately \$1.9 billion and \$1.8 billion, respectively, to fund future private equity and real estate investments over the next several years.

(e) Federal Income Taxes

The Internal Revenue Service (IRS) issued a favorable tax determination letter on September 30, 2013, qualifying SERS as a Governmental Plan under the Internal Revenue Code (IRC). Therefore, SERS is exempt from federal income taxes. This tax determination was conditioned on the General Assembly enacting certain corrective amendments to the SERC to satisfy the qualification requirements. That legislation was enacted December 28, 2015. SERS submitted a request to the IRS for an updated favorable tax determination letter on January 29, 2016. That request is pending.

(f) Risk Management

SERS is exposed to various liabilities and risks of loss related to theft or destruction of assets, injuries to employees, and court challenges to fiduciary decisions. SERS is accorded sovereign immunity as an administrative agency of the commonwealth. SERS participates in certain commonwealth pooled insurance programs and requires asset managers to carry certain insurance coverage. SERS is self-insured for fiduciary and director and officer liability. During the past two fiscal years, SERS insurance settlements did not exceed insurance coverage.

(g) Adopted Accounting Pronouncement

SERS has adopted Governmental Accounting Standards Board (GASB) Statement No. 72, *Fair Value Measurement and Application* (GASB 72), which addresses accounting and financial reporting issues related to fair value measurements. GASB 72 requires funds to use valuation techniques, which are appropriate under the circumstances, and are either a market; cost; or income approach. GASB 72 establishes a hierarchy of inputs used to measure fair value consisting of three levels. Level 1 inputs are investments reflecting prices quoted in active markets. Level 2 inputs are investments reflecting prices that are based on a similar observable asset either directly or indirectly, which may include inputs in markets that are not considered to be active. Level 3 inputs are investments with unobservable inputs, and typically reflect management's estimates of assumptions that market participants would use in pricing the assets or liability. Adoption of GASB 72 did not impact the fiduciary net position of SERS; however, there were changes to disclosures in note 4 regarding the hierarchy of valuation inputs and valuation techniques that were used for fair value measurements. The requirements of GASB 72 were effective for financial statements for fiscal years beginning after June 15, 2015 and have been applied to all periods presented.

(3) Legally Required Reserves

The SERC requires SERS to maintain the following accounts representing the net position held for future and current benefit payments:

The **Member Savings Account** accumulates contributions and interest earnings of active employees. Member balances are transferred to the Annuity Reserve Accounts as members retire.

The **State Accumulation Account** accumulates contributions of the employer and the net earnings of the SERS Fund. Funds are transferred to the Annuity Reserve Accounts as members retire. The amount

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December 31, 2016 and 2015

transferred is actuarially determined. Negative balances represent the amounts transferred to other reserve account balances in excess of accumulated employer contributions and net earnings.

The **Directed Commissions Reserve Account** accumulates the income from the commission recapture program less any administrative expenses. SERS has commission recapture contracts with several brokers. These contracts generally stipulate that the brokers rebate a percentage of commissions earned on investments directly to SERS. During the years ended December 31, 2016 and 2015, SERS earned approximately \$122 thousand and \$136 thousand of income resulting from a commission recapture program, respectively. As of December 31, 2016 and 2015, SERS used the program to pay approximately \$463 thousand and \$308 thousand of administrative expenses, respectively. At December 31, 2016 and 2015, SERS had accumulated commission reserves of \$3.3 million and \$3.6 million, respectively. These commission reserves can be used to pay for future expenditures.

The **Annuity Reserve Accounts** are the accounts from which all death and retirement benefits and supplemental annuities are paid. The balances in these accounts are actuarially determined.

The **Interest Reserve Account** accumulates all income earned by the SERS Fund. In addition, all administrative and investment expenses incurred by the SERS Fund and the board necessary for the operation of SERS are paid from this account. Any balance in this reserve is transferred to the State Accumulation Account at year end.

The **Benefits Completion Plan (BCP) Reserve Account** accumulates all BCP employer contributions and net earnings of the SERS Fund less any benefits paid out of the SERS Fund. Act 2002-234 amended

the SERC by adding Section 5941 to the SERC. Section 5941 directs the board to establish and serve as trustee of a retirement benefit plan that is in conformity with IRC Section 415(m), the BCP. The BCP is a separate trust fund established to provide benefits to all annuitants of SERS defined benefit plan and their survivor annuitants and beneficiaries whose retirement benefit exceeds the IRC Section 415(b) limits. A monthly annuity or death benefit is paid under the BCP only if a corresponding monthly annuity or death benefit is paid from the defined benefit plan to the extent permitted by IRC Section 415(b) and the SERC. There were 30 and 26 individuals receiving benefits from the BCP at December 31, 2016 and 2015, respectively.

Account balances at December 31, 2016 and 2015 are as follows:

Account Balances

(\$ thousands)

| | 2016 | 2015 |
|--|---------------------|---------------------|
| Member savings account | \$4,869,229 | \$4,816,121 |
| State accumulation account | (5,312,560) | (3,925,580) |
| Directed commissions reserve account | 3,320 | 3,661 |
| Annuity reserve accounts | | |
| Annuitants and beneficiaries | 24,096,866 | 22,800,203 |
| State police | 2,682,415 | 2,310,957 |
| Enforcement officers | 45,025 | 44,965 |
| Benefits completion plan reserve account | 3,594 | 4,563 |
| Total | \$26,387,889 | \$26,054,890 |

(4) Investments

As provided by statute, the board has exclusive control and management responsibility of SERS funds and full power to invest the funds. In exercising its fiduciary responsibility to SERS membership, the board is governed by the prudent investor rule

Notes to Basic Financial Statements

December 31, 2016 and 2015

in establishing investment policy. The prudent investor rule requires the exercise of that degree of judgment, skill, and care under the circumstances then prevailing which investors of prudence, discretion, and intelligence, who are familiar with such matters, exercise in the management of their own affairs, not in regard to speculation, but in regard to permanent disposition of the funds, considering the probable income to be derived there from, as well as the probable safety of their capital. The board has adopted its *Statement of Investment Policy* to formally document investment objectives and responsibilities. This policy, as well as applicable state law, establishes guidelines for permissible investments of SERS.

Fair Value Hierarchy

The fair value hierarchy is broken down into three levels based on inputs that market participants would use in valuing assets and liabilities derived from market data as follows:

- **Level 1 inputs:** are quoted prices in active markets for identical assets or liabilities.
- **Level 2 inputs:** are quoted prices for similar assets or liabilities in active markets, quoted prices for identical or similar assets or liabilities in markets that are not active, or other than quoted prices that are observable.

- **Level 3 inputs:** are unobservable inputs used to measure fair value if relevant observable inputs are not available for the asset or liability at the reporting date.

Common and preferred stocks, commingled equity funds, master limited partnerships (MLPs), real estate investment trusts (REITs), and foreign exchange contracts are valued using prices quoted in active markets for those securities and are categorized as Level 1. They are marked to market daily with changes in fair value recognized as part of investments and investment income. Fixed income securities are valued using a matrix pricing technique and are categorized as Level 2. Matrix pricing is used to value securities based on the securities' relationship to benchmark quoted prices and recently printed security-specific trading levels. Real estate separate accounts and other securities classified in Level 3 reflect prices, which may use several unobservable inputs using assumptions based on market methodologies to determine the fair value of investments.

Derivative instruments, which include foreign exchange contracts, interest rate swaps, and credit default swaps, are included in other investments in the fair value tables.

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Notes to Basic Financial Statements

December 31, 2016 and 2015

At December 31, 2016 and 2015, SERS investments measured at fair value are shown in the following tables:

Investments Measured at Fair Value (2016)

(\$ thousands)

| | Fair Value | Level 1 | Level 2 | Level 3 |
|---------------------------------------|---------------------|---------------------|--------------------|--------------------|
| Fixed income | | | | |
| Government | \$1,632,961 | \$ - | \$1,632,961 | \$ - |
| Corporates | 747,509 | - | 725,878 | 21,631 |
| Asset- and mortgage-backed securities | 554,952 | - | 548,438 | 6,514 |
| Private placements | 511,178 | - | 452,196 | 58,982 |
| Sovereign debt | 249,606 | - | 249,606 | - |
| Agencies | 80,429 | - | 80,429 | - |
| Equity | | | | |
| Domestic common and preferred stocks | 6,562,205 | 6,552,295 | 9,910 | - |
| Foreign common and preferred stocks | 5,414,830 | 5,406,965 | - | 7,865 |
| Commingled equity funds | 155,951 | 155,951 | - | - |
| Real estate | | | | |
| Real estate separate accounts | 1,032,233 | - | - | 1,032,233 |
| REITs | 221,501 | 221,501 | - | - |
| MLPs | 245,009 | 245,009 | - | - |
| Other | | | | |
| Other investments ^{1/} | 197 | 396 | (199) | - |
| Total | \$17,408,561 | \$12,582,117 | \$3,699,219 | \$1,127,225 |

^{1/}Represents derivative instruments and other securities where portions of which are reported in various captions on the Statements of Fiduciary Net Position including short-term investments, U.S. government securities, corporate and foreign bonds and notes, common and preferred stocks, real estate, and private equity.

Notes to Basic Financial Statements

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Investments Measured at Fair Value (2015)

(\$ thousands)

| | Fair Value | Level 1 | Level 2 | Level 3 |
|---------------------------------------|---------------------|---------------------|--------------------|--------------------|
| Fixed income | | | | |
| Government | \$1,875,233 | \$ - | \$1,875,233 | \$ - |
| Corporates | 894,929 | - | 874,160 | 20,769 |
| Asset- and mortgage-backed securities | 721,908 | - | 713,034 | 8,874 |
| Private placements | 500,770 | - | 405,603 | 95,167 |
| Sovereign debt | 245,552 | - | 243,697 | 1,855 |
| Agencies | 111,702 | - | 111,702 | - |
| Equity | | | | |
| Domestic common and preferred stocks | 5,253,949 | 5,242,078 | 11,871 | - |
| Foreign common and preferred stocks | 4,587,171 | 4,578,405 | - | 8,766 |
| Commingled equity funds | 142,623 | 142,623 | - | - |
| Real estate | | | | |
| Real estate separate accounts | 1,244,449 | - | - | 1,244,449 |
| REITs | 340,060 | 340,060 | - | - |
| MLPs | 211,818 | 211,818 | - | - |
| Other | | | | |
| Other investments ^{1/} | 1,259 | 536 | 609 | 114 |
| Total | \$16,131,423 | \$10,515,520 | \$4,235,909 | \$1,379,994 |

^{1/}Represents derivative instruments and other securities where portions of which are reported in various captions on the Statements of Fiduciary Net Position including short-term investments, U.S. government securities, corporate and foreign bonds and notes, common and preferred stocks, real estate, and private equity.

Private equity limited partnerships are valued at the NAV of SERS ownership interest in partners' capital, which approximates fair value. NAV is determined by the general partners using assumptions and estimates that have been reviewed and approved by valuation committees. Since private equity investments in such partnerships are generally illiquid with holding periods lasting seven to 10 years, the value realized by SERS upon disposition may differ from estimated values reflected in the financial statements. SERS Private Equity program is categorized into the following strategies:

- **Buyouts** is characterized chiefly by investments in established private or

publicly listed firms that are undergoing a fundamental change in operations or strategy.

- **Special Situations** is characterized chiefly by investments in funds that acquire distressed companies or companies in need of restructuring, funds from the secondary market, and funds providing mezzanine financing.
- **Venture Capital** is characterized chiefly by high-risk investments in new or young companies following a growth path (early, late, and balanced stage funds) in technology and other value-added sectors.

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Real estate limited partnerships are valued at the NAV of SERS ownership percentage in partners' capital. The investment managers use third-party appraisals based on discounted cash flows, recent comparable sales, and current market conditions to arrive at NAV.

For SERS Non-Core Real Estate (closed-end funds) and open-end Core Real Estate funds, NAV is updated by independent appraisals typically at least every three years by appraisers who meet specific professional qualifications. The appraisal process involves significant judgment and estimating; thus, the value upon sale of an asset may differ from its appraised value.

The real estate partnerships' investments are valued at NAV, which approximates fair value. Any assumptions and estimates used in developing the NAV have been reviewed and approved by valuation committees. Because the investments in such partnerships are generally illiquid with holding periods lasting seven to 10 years, the value realized by SERS upon disposition may differ materially from estimated values reflected in the financial statements. The following portions of SERS Real Estate program are valued at NAV:

- **Non-Core Real Estate** utilizes greater leverage and development strategies relative to core strategies, thereby taking higher risks but demand higher returns. Returns are primarily generated from capital appreciation from opportunistic investments. Strategies for this category of investing can include niche opportunities that are typically not available in core-style investing.
- **Core Real Estate** is a long-term investment in high-quality real estate that generates returns primarily from stable income producing properties.

- **Timberland** is renewable and derives its return from the biological growth of trees and sale of timber.

Hedge funds are valued on a monthly basis by general partners based on information provided by underlying hedge fund investments (if a fund-of-hedge fund structure), third-party administrators, and brokers. Hedge fund investments in limited partnerships are valued using NAV of units held at the end of the period based on the fair value of underlying investments. SERS Hedge Funds program includes investments designed to provide total returns comparable to the total fund return but with lower volatility and correlation to other asset classes. The Hedge Funds program is designed to provide attractive long-term, risk-adjusted returns, diversification from equity markets, low beta to equity markets, and downside protection during prolonged periods of equity market decline. Most investments within this strategy are generally liquid. In general and under normal market conditions, 80% of most strategies should be able to be liquidated within one year of the withdrawal date. SERS Hedge Funds program is categorized into the following specific strategies:

- **Funds-of-Hedge Funds** are investments in funds with investment managers who invest in hedge funds. Funds-of-Hedge Funds provide an additional layer of fiduciary oversight (investment, legal, compliance, and monitoring) with similar all-in fees as direct investments in hedge funds. SERS is the only limited partner and is able to make larger allocations, which lowers fees and improves liquidity terms.
- **Commodities** include investments in funds with investment managers who invest in commodity hedge funds. SERS is one of several investors in the fund.

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- **Direct Investments** are investments where SERS and other institutional investors pool their funds with a manager tasked with incorporating hedge strategies.
- **Absolute Return Strategies** are a legacy Hedge Funds program currently in liquidation. The remaining assets were rebalanced by board-approved mandates to transition the assets into other strategies within the Hedge Funds program or to SERS cash account.

Commingled fixed income funds are pooled investments in multiple debt-type securities, which are valued at NAV. Commingled fixed income funds are calculated using the closing price of the underlying investments and apportioned to SERS based on units of ownership.

At December 31, 2016 and 2015, SERS investments measured at NAV are shown in the following tables:

Investments Measured at NAV (2016)

(\$ thousands)

| | NAV | Unfunded Commitments | Redemption Frequency | Redemption Notice Period |
|-------------------------------|--------------------|----------------------|----------------------------------|--------------------------|
| Private equity | | | | |
| Buyouts | \$2,438,702 | \$1,285,052 | NA | NA |
| Venture capital | 1,000,861 | 107,708 | NA | NA |
| Special situations | 685,982 | 379,882 | NA | NA |
| Real estate | | | | |
| Non-core real estate | 514,811 | 156,699 | See note (1) | See note (1) |
| Core real estate | 328,697 | - | Quarterly | 60 - 90 days |
| Timberland | 149,186 | - | Daily | None |
| Hedge funds | | | | |
| Funds-of-hedge funds | 1,506,618 | - | Quarterly | 60 -95 days |
| Commodities | 368,199 | - | Daily, monthly | 30 days |
| Direct investments | 105,138 | - | Monthly, quarterly, semiannually | 11 - 90 days |
| Absolute return strategies | 39,546 | - | See note (2) | See note (2) |
| Commingled funds | | | | |
| Commingled fixed income funds | 275,206 | - | Quarterly | 30 days |
| Total | \$7,412,946 | \$1,929,341 | | |

¹All funds have no redemption terms except for one requiring 30-days notice, which will be followed by quarterly redemptions.

²The assets are to be sold in an orderly fashion as market conditions dictate.

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Investments Measured at NAV (2015)

(\$ thousands)

| | NAV | Unfunded Commitments | Redemption Frequency | Redemption Notice Period |
|-------------------------------|--------------------|----------------------|----------------------------------|--------------------------|
| Private equity | | | | |
| Buyouts | \$2,836,541 | \$1,145,649 | NA | NA |
| Venture capital | 1,164,453 | 147,864 | NA | NA |
| Special situations | 750,832 | 300,894 | NA | NA |
| Real estate | | | | |
| Non-core real estate | 583,472 | 212,898 | See note (1) | See note (1) |
| Core real estate | 306,842 | - | Quarterly | 60 - 90 days |
| Timberland | 153,680 | - | Daily | None |
| Hedge funds | | | | |
| Funds-of-hedge funds | 1,464,793 | - | Quarterly | 60 - 95 days |
| Commodities | 578,758 | - | Daily, monthly | 30 days |
| Direct investments | 103,158 | - | Monthly, quarterly, semiannually | 11 - 90 days |
| Absolute return strategies | 46,217 | - | See note (2) | See note (2) |
| Commingled funds | | | | |
| Commingled fixed income funds | 237,423 | - | Quarterly | 30 days |
| Total | \$8,226,169 | \$1,807,305 | | |

¹All funds have no redemption terms except for one requiring 30-days notice, which will be followed by quarterly redemptions.

²The assets are to be sold in an orderly fashion as market conditions dictate.

SERS also has investments that are not measured at fair value or NAV, which were excluded from the previous tables. SERS owns a portion of the Pennsylvania Treasury Department's (Treasury Department) short-term investment fund (STIF). SERS portion of STIF is valued at cost plus accrued interest, which approximates fair value. The value of SERS portion of the STIF was \$1.6 billion and \$1.7 billion as of December 31, 2016 and 2015, respectively. Additionally, SERS had cash, foreign currencies, and other investments that are carried at either cost or liquidation basis values. These other investments totaled \$94 million and \$87 million as of December 31, 2016 and 2015, respectively and portions of which are reported in various captions on the Statements of Fiduciary Net Position including

short-term investments, U.S. government securities, corporate and foreign bonds and notes, common and preferred stocks, hedge funds, and real estate.

For the years ended December 31, 2016 and 2015, the money-weighted rate of return for SERS, net of manager fees, was 6.4% and 0.4%, respectively. A money-weighted rate of return expresses investment performance, net of manager fees, adjusted for the changing amounts actually invested.

SERS investment office, in consultation with the board and its investment consultants, update the SERS strategic investment plan every two years. In December 2016, the board approved the SERS 2016-2017 Strategic Investment Plan. SERS assets

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are managed according to this plan with a long-term objective of achieving and maintaining a fully funded status for the benefits provided by SERS.

Under this plan, the following table shows the target asset allocation as of December 31, 2016:

Target Asset Allocations (2016)

| Asset Class | Long-Term 10-Year Strategic Target |
|----------------------|---------------------------------------|
| Private Equity | 16% |
| Global Public Equity | 43 |
| Real Estate | 12 |
| Hedge Funds | 12 |
| Fixed Income | 14 |
| Cash | 3 |
| Total | 100% |

In April 2014, the board approved the SERS 2014-2015 Strategic Investment Plan. Under that plan, the following table shows the target asset allocation as of December 31, 2015:

Target Asset Allocations (2015)

| Asset Class | Long-Term 10-Year Strategic Target |
|-------------------------|---------------------------------------|
| Alternative Investments | 15% |
| Global Public Equity | 40 |
| Real Assets | 17 |
| Diversifying Assets | 10 |
| Fixed Income | 15 |
| Liquidity Reserve | 3 |
| Total | 100% |

The target asset allocations in the two prior tables were based on a 7.5% assumed investment rate of return. At its April 2017 meeting, SERS Board approved a reduction in the assumed investment rate of return to 7.25% for the 2016 actuarial valuation. Targets may be updated to reflect the new assumed investment rate of return in the upcoming year.

Under the SERS 2016-2017 Strategic Investment Plan, Fixed Income is structured to generate income

to pay benefits; provide liquidity to minimize capital impairment risk; reduce volatility in the total fund; protect the fund against deflation (and inflation via inflation protection securities); and contribute to total fund return when market conditions permit. This plan established a long-term 10-year strategic target allocation to the Fixed Income asset class of 14%. This allocation is divided among distinct segments, each of which fulfills a specific role within the scope of the Fixed Income structure. The segments are as follows:

- **Core Plus and Core Fixed Income** provides excess return when performance conditions are favorable, provides capital protection in difficult market conditions, and may offer risk mitigation due to the low correlation with equities.
- **Global Treasury Inflation Protected Securities (TIPS)** protects SERS Fund against inflation.
- **Nominal U.S. Treasuries** protects SERS Fund against deflation and provides liquidity.
- **Short-Term Notes** provides an additional source of liquidity to pay benefits.

SERS investments are subject to various risks. Among these risks are concentration of credit risk, custodial credit risk, credit risk, interest rate risk, and foreign currency risk.

Concentration of credit risk is the risk of loss attributed to the magnitude of investment in a single issuer. As of December 31, 2016 and 2015, SERS 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.

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Custodial credit risk for investments is the risk that, in the event of the failure of the counterparty to a transaction, SERS would be unable to recover the value of investment or collateral securities that are in the possession of an outside party. Pursuant to Title 71, Pennsylvania Consolidated Statutes Section 5931(c), the State Treasurer serves as custodian of SERS Fund. 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 SERS name. Those investments are defined as insured or registered investments for which the securities are held by SERS or its agent and, therefore, have a very minimal level of custodial credit risk losses. All remaining investments do not have securities that are used as evidence of

the investments. These investments are primarily in commingled funds, hedge funds, and limited partnerships, which include real estate and alternative investments.

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 agencies such as Moody's Investors Services (Moody's), Standard and Poor's (S&P), and Fitch Ratings (Fitch).

For securities exposed to credit risk in the Fixed Income portfolio, the following tables disclose aggregate fair value, by the least favorable credit rating issued using Moody's, S&P, and Fitch credit ratings at December 31, 2016 and 2015 by debt sector:

Debt Securities Exposed to Credit Risk (2016)

(\$ thousands)

| | AAA | AA | A | BAA | BA and below | NA ^{1/} | Short-Term Investments ^{2/} | Total Exposed to Credit Risk ^{3/} |
|---------------------------------------|------------------|------------------|------------------|------------------|------------------|------------------|--------------------------------------|--|
| Short-term investments ^{2/} | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$1,577,941 | \$1,577,941 |
| Asset- and mortgage-backed securities | 204,548 | 214,269 | 25,213 | 4,258 | 338,578 | 4,467 | - | 791,333 |
| Corporates | 8,506 | 42,676 | 196,958 | 357,961 | 138,326 | 4,245 | - | 748,672 |
| Private placements ^{4/} | 14,197 | 32,202 | 48,237 | 166,897 | 226,311 | 27,175 | - | 515,019 |
| Sovereign debt | 19,143 | 61,634 | 14,028 | 94,880 | 59,921 | - | - | 249,606 |
| Agencies | 13,829 | 66,600 | - | - | - | - | - | 80,429 |
| Government | 168 | 14,497 | 11,121 | 1,844 | 134 | - | - | 27,764 |
| Other investments | - | - | - | - | - | 5,706 | - | 5,706 |
| Total | \$260,391 | \$431,878 | \$295,557 | \$625,840 | \$763,270 | \$41,593 | \$1,577,941 | \$3,996,470 |

^{1/}Represents other securities that were either not rated or had a withdrawn rating.

^{2/}Represents short-term investments mostly in the PA Treasury Department's STIF, which is not rated. This category comprises short-term, investment grade securities, which are mainly U.S. treasuries, agencies, or repurchase agreements.

^{3/}Debt securities exposed to credit risk and U.S. government guaranteed securities, as noted in the subsequent paragraph, comprised short-term investments, U.S. government securities, and corporate and foreign bonds and notes from the Statements of Fiduciary Net Position.

^{4/}Private placements raise capital via offerings directly to qualified investors rather than through public offerings. Private placements do not have to register with the Securities and Exchange Commission if the securities are purchased for investment as opposed to resale. These private placements have exposure to various fixed income securities.

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Debt Securities Exposed to Credit Risk (2015)

(\$ thousands)

| | AAA | AA | A | BAA | BA and below | NA ^{1/} | Short-term investments ^{2/} | Total exposed to credit risk ^{3/} |
|---------------------------------------|------------------|------------------|------------------|------------------|------------------|------------------|--------------------------------------|--|
| Short-term investments ^{2/} | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$1,711,312 | \$1,711,312 |
| Corporates | 19,831 | 42,946 | 243,336 | 439,428 | 143,481 | 6,600 | - | 895,622 |
| Asset- and mortgage-backed securities | 222,543 | 326,024 | 29,227 | 8,160 | 280,113 | 4,862 | - | 870,929 |
| Private placements ^{4/} | 12,020 | 31,271 | 42,944 | 156,107 | 228,846 | 31,406 | - | 502,594 |
| Sovereign debt | 19,923 | 56,440 | 38,986 | 83,273 | 45,244 | 1,686 | - | 245,552 |
| Agencies | 9,707 | 101,996 | - | - | - | - | - | 111,703 |
| Government | 336 | 15,954 | 18,350 | 1,663 | 189 | - | - | 36,492 |
| Other investments | - | - | - | - | - | 10,382 | - | 10,382 |
| Total | \$284,360 | \$574,631 | \$372,843 | \$688,631 | \$697,873 | \$54,936 | \$1,711,312 | \$4,384,586 |

^{1/}Represents other securities that were either not rated or had a withdrawn rating.

^{2/}Represents short-term investments mostly in the PA Treasury Department's STIF, which is not rated. This category comprises short-term, investment grade securities, which are mainly U.S. treasuries, agencies, or repurchase agreements.

^{3/}Debt securities exposed to credit risk and U.S. government guaranteed securities, as noted in the subsequent paragraph, comprised short-term investments, U.S. government securities, and corporate and foreign bonds and notes from the Statements of Fiduciary Net Position.

^{4/}Private placements raise capital via offerings directly to qualified investors rather than through public offerings. Private placements do not have to register with the Securities and Exchange Commission if the securities are purchased for investment as opposed to resale. These private placements have exposure to various fixed income securities.

SERS held U.S. government guaranteed securities with a fair value of \$1.7 billion and \$1.9 billion as of December 31, 2016 and 2015, respectively, which were not included in the previous tables because they are not subject to credit risk.

Interest rate risk is the risk that changes in interest rates will adversely affect the fair value of an investment. As a means for limiting SERS exposure to fair value losses arising from rising interest rates,

SERS long-term asset allocation policy diversifies its fixed income core segment between intermediate duration and longer duration strategies based on the Bloomberg U.S. Aggregate Bond Index. Duration is a measure of an investment's sensitivity to changes in interest rates. The higher the duration, the greater the changes in fair value when interest rates change. SERS measures interest rate risk using option adjusted duration, which considers the effect of a security's embedded options on cash flows.

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At December 31, 2016 and 2015, SERS Fixed Income portfolio had the following option-adjusted durations by debt sector:

Debt Option-Adjusted Durations

(\$ thousands)

| | 2016 | | 2015 | |
|---------------------------------------|--------------------|--------------------------|--------------------|--------------------------|
| | Fair Value | Option-Adjusted Duration | Fair Value | Option-Adjusted Duration |
| Sovereign debt | \$249,606 | 7.6 | \$245,552 | 8.3 |
| Government | 1,645,854 | 6.3 | 1,875,233 | 6.5 |
| Corporates | 748,672 | 5.4 | 895,622 | 5.4 |
| Agencies | 80,429 | 4.5 | 111,703 | 4.2 |
| Commingled investment funds | 275,206 | 3.7 | 237,423 | 3.4 |
| Asset- and mortgage-backed securities | 554,952 | 2.7 | 721,908 | 2.7 |
| Private placements ^{1/} | 515,019 | 2.7 | 502,594 | 3.1 |
| Short-term investments - (STIF) | 1,539,304 | 0.1 | 1,684,770 | 0.1 |
| Short-term investments | 38,637 | 0.1 | 26,541 | 0.2 |
| Other investments ^{2/} | (730) | NA | (401) | NA |
| Total^{3/} | \$5,646,949 | | \$6,300,945 | |

^{1/}Private placements raise capital via offerings directly to qualified investors rather than through public offerings. Private placements do not have to register with the Securities and Exchange Commission if the securities are purchased for investment as opposed to resale. These private placements have exposure to various fixed income securities.

^{2/}Represents derivative instruments and other securities for which durations are not available.

^{3/}Total fair values exposed to interest rate risk comprised short-term investments, U.S. government securities, and corporate and foreign bonds and notes from the Statements of Fiduciary Net Position.

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Foreign currency risk is the risk that changes in exchange rates will adversely affect the fair value of an investment. As part of SERS program to manage risk and enhance returns, SERS invests in global markets. At December 31, 2016 and 2015, SERS had the following currency exposures:

Foreign Currency Exposures (2016)

(\$ thousands)

| Currency | Short-Term Investments ^{1/} | Fixed Income | Equity | Real Estate | Private Equity | Total |
|------------------------|--------------------------------------|------------------|--------------------|-------------------|------------------|--------------------|
| European Euro | \$4,411 | \$19,025 | \$1,305,642 | \$(164) | \$313,416 | \$1,642,330 |
| Japanese Yen | 12,525 | 1,860 | 850,071 | (10,607) | - | 853,849 |
| British Pound Sterling | 5,535 | 57,845 | 783,413 | (3,063) | 8,300 | 852,030 |
| Swiss Franc | 4,050 | - | 383,347 | - | - | 387,397 |
| Hong Kong Dollar | 108 | - | 318,230 | - | - | 318,338 |
| Canadian Dollar | 3,678 | 8,577 | 290,139 | - | - | 302,394 |
| Australian Dollar | 1,223 | 17,406 | 226,657 | - | - | 245,286 |
| South Korean Won | 1,552 | - | 142,467 | - | - | 144,019 |
| Swedish Krona | 314 | 12,987 | 87,130 | - | 43,118 | 143,549 |
| New Taiwan Dollar | 20 | - | 76,608 | - | - | 76,628 |
| Danish Krone | 575 | 251 | 56,012 | - | - | 56,838 |
| Norwegian Krone | 639 | 9,192 | 41,664 | - | - | 51,495 |
| Mexican Peso | 106 | 22,095 | 26,106 | 552 | - | 48,859 |
| Singapore Dollar | 223 | - | 45,715 | - | - | 45,938 |
| South African Rand | 272 | 9,313 | 33,102 | - | - | 42,687 |
| Brazilian Real | 920 | 9,523 | 31,150 | - | - | 41,593 |
| Indonesian Rupiah | (900) | 8,858 | 19,084 | - | - | 27,042 |
| New Zealand Dollar | 98 | 458 | 18,040 | - | - | 18,596 |
| Thai Baht | 13 | - | 16,279 | - | - | 16,292 |
| Malaysian Ringgit | 64 | 7,272 | 5,637 | - | - | 12,973 |
| Chilean Peso | 5 | 9,153 | 3,137 | - | - | 12,295 |
| Hungarian Forint | 108 | 7,308 | 4,790 | - | - | 12,206 |
| Other currencies (9) | 1,018 | 14,849 | 25,787 | - | - | 41,654 |
| Total | \$36,557 | \$215,972 | \$4,790,207 | \$(13,282) | \$364,834 | \$5,394,288 |

^{1/}Includes receivables and payables as of December 31 for securities sold and purchased.

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Foreign Currency Exposures (2015)

(\$ thousands)

| Currency | Short-Term Investments ^{1/} | Fixed Income | Equity | Real Estate | Private Equity | Total |
|------------------------|--------------------------------------|------------------|--------------------|------------------|------------------|--------------------|
| European Euro | \$1,880 | \$21,206 | \$1,008,401 | \$31,191 | \$504,255 | \$1,566,933 |
| British Pound Sterling | 2,396 | 28,377 | 730,571 | 17,190 | 13,262 | 791,796 |
| Japanese Yen | 5,037 | 10,919 | 651,795 | 39,893 | - | 707,644 |
| Swiss Franc | 2,586 | - | 412,539 | - | - | 415,125 |
| Hong Kong Dollar | 558 | - | 300,638 | 14,219 | - | 315,415 |
| Australian Dollar | 877 | 14,837 | 171,031 | 17,585 | - | 204,330 |
| Canadian Dollar | 131 | 10,437 | 165,488 | - | - | 176,056 |
| South Korean Won | 1,408 | - | 118,597 | - | - | 120,005 |
| Swedish Krona | 52 | 10,418 | 77,525 | 1,255 | 29,618 | 118,868 |
| New Taiwan Dollar | (82) | - | 79,443 | - | - | 79,361 |
| Mexican Peso | 191 | 23,787 | 27,250 | 853 | - | 52,081 |
| Danish Krone | 287 | 246 | 51,378 | - | - | 51,911 |
| Singapore Dollar | 270 | - | 46,180 | 1,827 | - | 48,277 |
| Brazilian Real | 409 | 7,130 | 34,206 | - | - | 41,745 |
| Norwegian Krone | 30 | 5,128 | 32,677 | - | - | 37,835 |
| South African Rand | 164 | 5,480 | 31,680 | - | - | 37,324 |
| New Zealand Dollar | 113 | 6,589 | 12,138 | - | - | 18,840 |
| Indonesian Rupiah | 182 | 7,788 | 9,577 | - | - | 17,547 |
| Thai Baht | 38 | - | 17,245 | - | - | 17,283 |
| Indian Rupee | - | 8,657 | 5,690 | - | - | 14,347 |
| Turkish Lira | - | - | 13,585 | - | - | 13,585 |
| Chilean Peso | - | 11,859 | 576 | - | - | 12,435 |
| Malaysian Ringgit | (10) | 6,284 | 6,069 | - | - | 12,343 |
| Hungarian Forint | 108 | 7,106 | 4,308 | - | - | 11,522 |
| New Israeli Sheqel | 11 | - | 11,057 | - | - | 11,068 |
| Other currencies (6) | 1,016 | 4,072 | 7,721 | - | - | 12,809 |
| Total | \$17,652 | \$190,320 | \$4,027,365 | \$124,013 | \$547,135 | \$4,906,485 |

^{1/}Includes receivables and payables as of December 31 for securities sold and purchased.

(5) Securities Lending

In accordance with a contract between the commonwealth's treasurer and its custodian, SERS participates in a securities lending program.

The custodian, acting as lending agent, lends SERS equity, debt, and money market securities for cash, securities, or letter of credit collateral. Collateral is required at 102% of the fair value of the securities

loaned except for the equity securities of non-U.S. corporations, for which collateral of 105% is required. Collateral is marked to market daily. If the collateral falls below guidelines for the fair value of the securities loaned, additional collateral is obtained. Cash collateral is invested by the lending agent in accordance with investment guidelines approved by the board. The lending agent cannot pledge or sell securities collateral unless the borrower defaults.

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As of December 31, 2016 and 2015, SERS credit exposure to individual borrowers was limited because the amounts SERS owed the borrowers exceeded the amounts the borrowers owed SERS. The treasurer's contract with the lending agent requires the agent to indemnify SERS if the borrowers fail to return the underlying securities and the collateral is inadequate to replace the loaned securities or if the borrowers fail to pay income distributions on the loaned securities.

All loaned securities at December 31, 2016 and 2015 could be terminated on demand by either the lending agent or the borrower. Cash collateral is invested in a short-term collective investment pool. The duration of the investments in the pool at December 31, 2016 and 2015 was three days and one day, respectively. Interest rate risk may be posed by mismatched maturities and could be affected by other program features, such as the lending agent's ability to reallocate loaned securities among all of its lending customers.

As of December 31, 2016 and 2015, the fair value of loaned securities was \$429 million and \$628 million, respectively; the fair value of the associated collateral was \$458 million and \$652 million, of which \$274 million and \$371 million was cash, respectively. As of December 31, 2016 and 2015, noncash collateral of \$184 million and \$281 million, respectively, was invested in U.S. government guaranteed securities, which are not subject to credit risk.

(6) Derivative and Structured Financial Instruments and Restricted Assets

Within narrowly prescribed guidelines, SERS permits investment managers to enter into certain derivative and structured financial instruments primarily to hedge risk and reduce the volatility of its portfolio. Typically, investment managers enter into foreign exchange contracts to make payment for international investments and to hedge currency risk, futures contracts to manage interest rate risk, and swaps to

more efficiently gain investment exposure in the equity and credit markets.

SERS is exposed to counterparty credit risk on all open derivative positions. Counterparty credit risk is the risk that a derivative counterparty may fail to meet its payment obligation under the derivative contract. As of December 31, 2016 and 2015, SERS counterparty credit risk was not significant. SERS mitigates its legal risk on investment holdings including derivatives by ensuring that all of our legal requirements (indemnification, sovereign immunity, jurisdiction, etc.) are acknowledged and agreed to in all of the derivatives agreements to which they are subject.

SERS managers also indirectly hold foreign exchange contracts, futures contracts, and certain swap contracts through its investments in commingled funds and hedge funds. These funds invest in instruments directly and indirectly to gain foreign exchange exposure, to synthetically create equity-like returns, and to manage interest rate risk by altering the average life of the portfolio.

Foreign exchange contracts are agreements to exchange the currency of one country for the currency of another country at an agreed-upon price and settlement date. The investment manager uses these contracts primarily for its international investments to settle pending trades that occur more than two business days after trade date. The contracts are used by the investment manager for the purpose of eliminating foreign exchange risk. As a matter of policy, the investment managers enter into these contracts at their full discretion to protect currency fluctuations. To reduce the risk of counterparty nonperformance, the investment managers generally enter into these contracts with institutions regarded as meeting high standards of creditworthiness. The unrealized gain/loss on contracts is included in SERS net position and represents the fair value of the contracts on December 31.

FINANCIAL SECTION

Notes to Basic Financial Statements

December 31, 2016 and 2015

At December 31, 2016 and 2015, SERS contracts to purchase and sell by foreign currencies are shown in the following tables:

Foreign Exchange Contracts (2016)

(\$ thousands)

| Currency | Purchases | Unrealized Gain/(Loss) | Sales | Unrealized Gain/(Loss) |
|------------------------|-----------------|------------------------|-----------------|------------------------|
| Swedish Krona | \$17,995 | \$(130) | \$268 | \$ - |
| British Pound Sterling | 17,071 | (454) | 3,638 | (35) |
| European Euro | 10,508 | (2) | 34,467 | 237 |
| Norwegian Krone | 9,200 | (445) | - | - |
| Chilean Peso | 9,153 | 94 | - | - |
| Indian Rupee | 8,359 | 10 | - | - |
| Australian Dollar | 3,663 | (111) | 4,401 | 54 |
| Japanese Yen | 1,402 | (73) | 10,857 | (78) |
| Brazilian Real | 1,261 | 68 | 13 | - |
| Indonesian Rupiah | 855 | (3) | - | - |
| Canadian Dollar | 623 | (14) | 3,681 | (6) |
| New Zealand Dollar | 425 | 5 | 3,931 | 130 |
| Swiss Franc | - | - | 14,148 | 688 |
| Colombian Peso | - | - | 671 | (33) |
| Hong Kong Dollar | - | - | 24 | - |
| Total | \$80,515 | \$(1,055) | \$76,099 | \$957 |

Foreign Exchange Contracts (2015)

(\$ thousands)

| Currency | Purchases | Unrealized Gain/(Loss) | Sales | Unrealized Gain/(Loss) |
|------------------------|-----------------|------------------------|-----------------|------------------------|
| Chilean Peso | \$11,859 | \$(127) | \$ - | \$ - |
| Japanese Yen | 10,831 | 199 | 817 | (1) |
| Swedish Krona | 9,477 | (228) | 1,412 | (38) |
| Indian Rupee | 8,657 | 98 | - | - |
| Australian Dollar | 7,960 | 64 | 10,948 | 355 |
| Norwegian Krone | 5,128 | (464) | - | - |
| European Euro | 2,837 | (15) | 20,343 | (235) |
| Canadian Dollar | 2,343 | (22) | 1,537 | 69 |
| British Pound Sterling | 1,441 | (16) | 3,419 | 70 |
| Swiss Franc | 237 | (3) | 15,414 | 577 |
| New Zealand Dollar | - | - | 1,180 | (36) |
| Mexican Peso | - | - | 963 | 20 |
| Colombian Peso | - | - | 817 | (38) |
| Russian Ruble | - | - | 789 | 33 |
| Other (6) | 475 | (2) | 595 | (1) |
| Total | \$61,245 | \$(516) | \$58,234 | \$775 |

Notes to Basic Financial Statements

December 31, 2016 and 2015

Swap agreements provide for periodic payments between parties based on the change in value of underlying assets, indexes, rates, and creditworthiness. SERS uses contracts with multiple counterparties as well as collateral posting requirements to manage its counterparty credit risk. Credit default swaps are agreements with counterparties to either purchase or sell credit protection. SERS managers use credit default swaps to either increase or decrease credit exposure to certain credit markets. Interest rate swaps are over-the-counter contracts that allow counterparties to exchange a fixed rate liability for a floating rate liability or vice versa. SERS managers use interest rate swaps as a cost-effective way of gaining exposure to certain sectors of the fixed income market. SERS exposure to swap agreements was not significant at December 31, 2016 and 2015.

(7) Other Post-Employment Benefits (OPEB) for Employees of SERS

SERS makes employer contributions to the pension plan. SERS employees’ contribution requirements and benefits are described in note 1. SERS contributions for the years ended December 31, 2016, 2015, and 2014 were \$2.6 million, \$2.3 million, and \$1.9 million, respectively. The contributions were equal to the statutorily required contributions each year.

SERS also participates in the Commonwealth of Pennsylvania Office of Administration’s (OA) Retired Employees Health Program (REHP). The REHP is a single employer plan and provides certain healthcare benefits to qualifying individuals meeting specified age and/or service requirements. The OA, in its sole discretion, determines available REHP benefits on an ongoing basis.

The REHP is administered through the Pennsylvania Employees’ Benefit Trust Fund (PEBTF) as a third-party administrator for the commonwealth. Employer costs for retiree healthcare benefits are charged as a

component of payroll expenditures on a “pay as you go” basis. During 2016, SERS funded REHP benefits by paying \$418 (actual dollars) per pay period from January 1 to June 30, 2016, and \$362 (actual dollars) per pay period from July 1 to December 31, 2016 for each active SERS employee.

For REHP, the following table details the commonwealth’s annual OPEB cost or Annual Required Contribution (ARC), SERS allocated portion of the ARC, and SERS allocated portion of the OPEB liability based on aggregate REHP qualifying contributions:

OPEB Liability

(\$ thousands)

| Commonwealth fiscal year ended June 30 | Commonwealth ARC | SERS ARC | SERS Net OPEB |
|--|------------------|----------|----------------|
| 2016 | \$1,169,885 | \$3,108 | \$941 |
| 2015 | 1,136,817 | 3,020 | 906 |
| 2014 | 898,330 | 2,315 | 536 |
| Three-year cumulative OPEB | | | \$2,383 |

In the previous table, the commonwealth’s 2015 biennial actuarial valuation was used for 2016 and 2015 while the commonwealth’s 2013 biennial actuarial valuation was used for 2014. Both valuation reports can be viewed in their entirety on the Office of the Budget’s website at: <http://www.budget.pa.gov/PublicationsAndReports/Pages/ActuarialReports.aspx>.

(8) Litigation and Contingencies

SERS is involved in various individual lawsuits, generally related to benefit payments, which, in the event of an adverse result, could increase estimated actuarial liabilities by approximately \$1 billion. Some of the cases involve legal issues that, if extended to the entire membership, may result in significant costs to SERS. If such an event were to occur, the additional costs would be recovered by SERS through adjustments to the employer contribution rate.

FINANCIAL SECTION

Notes to Basic Financial Statements

December 31, 2016 and 2015

(9) Net Pension Liability

The components of the net pension liability of participating employers at December 31, 2016 and 2015, were as follows:

Net Pension Liability

(\$ thousands)

| | 2016 | 2015 |
|--|---------------------|---------------------|
| Total pension liability | \$45,648,214 | \$44,238,721 |
| Plan fiduciary net position | 26,387,889 | 26,054,890 |
| Net pension liability | \$19,260,325 | \$18,183,831 |
| Plan fiduciary net position as a percentage of the total pension liability | 57.8% | 58.9% |

The total pension liability was determined by an actuarial valuation for financial reporting purposes as of December 31, 2016 and 2015, using some of the following actuarial methods and assumptions:

- Actuarial cost method: entry age
- Investment rate of return: 7.25% net of manager fees, including inflation for 2016, and 7.50% net of manager fees, including inflation for 2015
- Projected salary increases: average of 5.60% with range of 3.70% – 8.90%, including inflation for 2016, and an average of 5.70% with range of 3.85% – 9.05%, including inflation for 2015
- Asset valuation method: fair (market) value
- Inflation: 2.60% for 2016 and 2.75% for 2015
- Mortality rate: projected RP 2000 Mortality Tables adjusted for actual plan experience and future improvement

The assumptions mentioned above are based on the *18th Investigation of Actuarial Experience* study covering the periods 2011 – 2015, which was released in March 2016. The change in investment rate of

return of 7.25% and inflation of 2.60% for 2016 was approved by SERS Board at its April 2017 meeting.

The long-term expected real rate of return on pension plan investments are determined using a building block method in which best-estimate ranges of expected future real rates of return (expected returns, net of manager fees and inflation) are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation. Best-estimates of arithmetic real rates of return for each major asset class included in the pension plan's target asset allocation in note 4 as of December 31, 2016 and 2015 (see the discussion of the pension plan's investment policy) are summarized in the following table:

Long-Term Expected Real Rate of Return (2016)

| Asset Class | Long-Term Expected Real Rate of Return |
|----------------------|--|
| Private Equity | 8.00% |
| Global Public Equity | 5.30 |
| Real Estate | 5.44 |
| Hedge Funds | 4.75 |
| Fixed Income | 1.63 |
| Cash | -0.25 |

Long-Term Expected Real Rate of Return (2015)

| Asset Class | Long-Term Expected Real Rate of Return |
|-------------------------|--|
| Alternative Investments | 8.50% |
| Global Public Equity | 5.40 |
| Real Assets | 4.95 |
| Diversifying Assets | 5.00 |
| Fixed Income | 1.50 |
| Liquidity Reserve | 0.00 |

Notes to Basic Financial Statements

December 31, 2016 and 2015

The discount rate used to measure the total pension liability was 7.25% for 2016 and 7.50% for 2015. 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 participating employers will be made at actuarially determined rates as set by statute. Based on those assumptions, the pension plan’s fiduciary net position was projected to be available to make all projected future benefit payments of current plan members.

Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

The following presents the net pension liability calculated using the discount rate of 7.25% for 2016 and 7.50% for 2015, as well as what the net pension liability would be if it were calculated using a discount rate that is one percentage point lower or one percentage point higher than the current rate:

Sensitivity of the Net Pension Liability to Change in the Discount Rate (2016)

(\$ thousands)

| | 1% Decrease to 6.25% | Current Discount Rate of 7.25% | 1% Increase to 8.25% |
|-----------------------|----------------------|--------------------------------|----------------------|
| Net pension liability | \$23,835,549 | \$19,260,325 | \$15,342,306 |

Sensitivity of the Net Pension Liability to Change in the Discount Rate (2015)

(\$ thousands)

| | 1% Decrease to 6.50% | Current Discount Rate of 7.50% | 1% Increase to 8.50% |
|-----------------------|----------------------|--------------------------------|----------------------|
| Net pension liability | \$22,587,745 | \$18,183,831 | \$14,407,719 |

(10) Subsequent Event

On June 12, 2017, Governor Wolf signed Act 2017-5 into law. This law fundamentally changes retirement options for most new hires beginning January 1, 2019. For most new members, this legislation establishes two hybrid defined benefit/defined contribution tiers and a straight defined contribution plan. In addition to new hires, current

members will have the opportunity to opt-in between January 1, 2019, and March 31, 2019. This legislation had no impact on the basic financial statements as of and for the years ended December 31, 2016 or 2015. SERS does not expect Act 2017-5 to have an impact on its basic financial statements prior to the effective date of the new retirement options and opt-in period in 2019.

FINANCIAL SECTION

Required Supplementary Information

December 31, 2016 (unaudited)

Schedule 1 Schedule of Changes in Net Pension Liability and Related Ratios (\$ millions)

| | 2016 | 2015 | 2014 | 2013 |
|--|-----------------|-----------------|-----------------|-----------------|
| Total pension liability | | | | |
| Service cost | \$953 | \$955 | \$944 | \$943 |
| Interest | 3,271 | 3,123 | 3,042 | 2,975 |
| Changes of benefit terms | - | - | - | - |
| Differences between expected and actual experience | (534) | 378 | 98 | (143) |
| Changes of assumptions | 947 | 669 | - | - |
| Benefit payments, including refunds of member contributions | (3,228) | (3,081) | (2,946) | (2,844) |
| Net change in total pension liability | 1,409 | 2,044 | 1,138 | 931 |
| Total pension liability - beginning | 44,239 | 42,195 | 41,057 | 40,126 |
| Total pension liability - ending (a) | 45,648 | 44,239 | 42,195 | 41,057 |
| Plan fiduciary net position | | | | |
| Contributions - employer | 1,622 | 1,360 | 1,084 | 795 |
| Contributions - member | 375 | 372 | 366 | 352 |
| Net investment income | 1,587 | 88 | 1,462 | 3,724 |
| Benefit payments, including refunds of member contributions | (3,228) | (3,081) | (2,946) | (2,844) |
| Administrative expense | (23) | (22) | (22) | (22) |
| Net change in plan fiduciary net position | 333 | (1,283) | (56) | 2,005 |
| Plan fiduciary net position - beginning | 26,055 | 27,338 | 27,394 | 25,389 |
| Plan fiduciary net position - ending (b) | 26,388 | 26,055 | 27,338 | 27,394 |
| Net pension liability (asset) - ending (a) - (b) | \$19,260 | \$18,184 | \$14,857 | \$13,663 |
| Plan fiduciary net position as a percentage of the total pension liability | 57.8% | 58.9% | 64.8% | 66.7% |
| Covered-employee payroll | \$5,912 | \$5,972 | \$5,720 | \$5,598 |
| Net pension liability (asset) as percentage of covered-employee payroll | 325.8% | 304.5% | 259.7% | 244.1% |

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

See accompanying independent auditors' report.

Required Supplementary Information

December 31, 2016 (unaudited)

**Schedule 2
Schedule of Employer Contributions**

(\$ millions)

| Year ^{1/} | Actuarially Determined Contribution (ADC) ^{2/} | Contributions in Relation to the ADC | Contribution Deficiency (Excess) | Covered-Employee Payroll | Contributions as a Percentage of Covered-Employee Payroll |
|--------------------|---|--------------------------------------|----------------------------------|--------------------------|---|
| 2016 ^{3/} | \$1,614 | \$1,614 | \$ - | \$5,912 | 27.30% |
| 2015 | 1,360 | 1,360 | - | 5,972 | 22.78 |
| 2014 | 1,084 | 1,084 | - | 5,720 | 18.95 |
| 2013 | 795 | 795 | - | 5,598 | 14.20 |
| 2012 | 566 | 566 | - | 5,539 | 10.22 |
| 2011 | 392 | 392 | - | 5,582 | 7.02 |
| 2010 | 273 | 273 | - | 5,597 | 4.88 |
| 2009 | 253 | 253 | - | 5,595 | 4.52 |
| 2008 | 235 | 235 | - | 5,428 | 4.33 |
| 2007 | 244 | 244 | - | 5,299 | 4.60 |

^{1/}The rates used in developing the ADC in the above schedule of contributions are calculated as of December 31, two years prior to the first half, January 1 – June 30, of the year in which contributions are reported and one year prior to the second half, July 1 – December 31, of the year in which contributions are reported. The following funding valuation actuarial methods and assumptions were used to determine contribution rates reported in this schedule as of the December 31 annual funding valuations:

- Actuarial cost method: variation of entry age cost method (all years)
- Asset valuation method: five-year smoothing (all years)
- Inflation: 3.0% from valuation years 2007 – 2009, 2.75% from valuation years 2010 – 2015, and 2.6% for valuation year 2016
- Projected average salary increases: 7.1% from valuation years 2007 – 2009, 6.2% from valuation years 2010 – 2012, 6.1% from valuation years 2013 – 2014, 5.7% for valuation year 2015, and 5.6% for valuation year 2016
- Investment rate of return (net of manager fees including inflation): 8.50% for valuation year 2007, 8.0% from valuation years 2008 – 2010, 7.50% from valuation years 2011 – 2015, and 7.25% for valuation year 2016

^{2/}The ADC disclosed above is based on minimum floor rates or suppressed rates resulting from collars that are required based on statutory law. These rates are determined by SERS actuary during the annual funding valuation and include an adjustment to the “preliminary employer contribution rate” calculated before the minimum floor or collars are applied. These “final employer contribution rates” fall within the realm of an appropriate ADC calculation under actuarial standards of practice and temporarily defer a portion of the payments that work towards fully funding the plan.

^{3/}ADC excludes multiple service transfers made to SERS. These transfers are included as contributions on the Statements of Changes in Fiduciary Net Position.

**Schedule 3
Schedule of Investment Returns**

| | 2016 | 2015 | 2014 | 2013 |
|---|------|------|------|-------|
| Annual money-weighted rate of return, net of investment expense | 6.4% | 0.4% | 6.4% | 13.6% |

Schedule 3 is intended to show information for 10 years. Additional years will be displayed as they become available.

See accompanying independent auditors’ report.

FINANCIAL SECTION

Supplementary Information

December 31, 2016

Schedule 4 Schedule of Administrative Expenses

(\$ thousands)

| | |
|---|-----------------|
| Personnel services | |
| Salaries | \$8,729 |
| Benefits | 5,921 |
| Temporary personnel wages, overtime, and out-service training | 45 |
| Total personnel services | 14,695 |
| Professional services | |
| Information technology services | 1,731 |
| Treasury department services | 1,464 |
| Consultant fees | 671 |
| Other commonwealth services | 591 |
| Legal fees | 31 |
| Total professional services | 4,488 |
| Rentals | |
| Real estate rent | 1,707 |
| Other equipment rental | 115 |
| Total rentals | 1,822 |
| Communication | |
| Postage | 372 |
| Telephone | 325 |
| Printing and advertising | 184 |
| Total communication | 881 |
| Other expenses | |
| Maintenance | 675 |
| EDP and office equipment | 183 |
| Supplies | 165 |
| Subscriptions and memberships | 62 |
| Travel and conferences | 28 |
| Total other expenses | 1,113 |
| Total administrative expenses | \$22,999 |

See accompanying independent auditors' report.

**Schedule 5
Summary of Investment and Consultant Expenses**

(\$ thousands)

Investment Expenses

| Expense Category | Expenses |
|-----------------------------------|------------------|
| Manager investment expenses | |
| Private Equity | \$69,667 |
| Real Estate | 33,889 |
| Global Public Equity | 29,221 |
| Fixed Income | 13,512 |
| Hedge Funds | 13,158 |
| Total manager investment expenses | 159,447 |
| Investment consultants | 3,629 |
| Investment professional personnel | 2,565 |
| Custodian | 1,326 |
| Subscription and membership | 706 |
| Operational | 39 |
| Total investment expenses | \$167,712 |

Consultant Expenses

| Firm | Service Type | Expenses |
|--|---------------------------------|----------------|
| Investment consultant expenses | | |
| StepStone Group | Private equity investments | \$1,975 |
| The Townsend Group | Real estate investments | 728 |
| RVK | General investments | 576 |
| GCM Customized Investment Group | Investment portfolio management | 210 |
| Institutional Shareholder Services | Proxy services | 93 |
| Abel/Noser | Transaction cost analysis | 47 |
| Total investment consultant expenses | | 3,629 |
| Administrative consultant expenses | | |
| Korn Ferry Hay Group | Actuary | 383 |
| Funston Advisory Services | Governance consultant | 256 |
| Other | Miscellaneous | 32 |
| Total administrative consultant expenses | | 671 |
| Total consultant expenses | | \$4,300 |

See accompanying independent auditors' report.

2016

Investment Section

June 5, 2017

State Employees' Retirement Board and Executive Director
State Employees' Retirement System
30 North Third Street, Suite 150
Harrisburg, Pennsylvania 17101

On behalf of SERS' investment office, I am pleased to present the investment section of the State Employees' Retirement System (SERS) Comprehensive Annual Financial Report (CAFR) for calendar year 2016. SERS administers and advises a large public defined benefit investment program with over \$26 billion in assets and a voluntary Deferred Compensation Plan (DCP) which has grown to over \$3 billion in assets.

SERS' investment performance for calendar year ended December 31, 2016 was 6.5%, net of investment management fees. This compares to a 2015 calendar year return of 0.4%. While year-to-year returns are important, as long-term investors a longer time horizon is a more appropriate view of SERS' returns. 2016 marks the eighth consecutive year of positive returns for SERS and returning 9.1% since the economic crisis of 2008^{1/}. Over a 20-, 25-, and 30-year period, SERS has returned 7.2%, 8.1%, and 8.6%, respectively.

SERS' funded status as a percentage of total pension liability is approximately 58% or \$19.3 billion of net pension liability as of December 31, 2016. Based on this data, SERS prioritizes an asset allocation and efficient deployment of investments to meet the long-term actuarial assumed rate of return and the shorter-term liquidity needs of its members.

A number of key accomplishments were achieved in 2016, several of which are documented below. The investment section of this report provides further information regarding the investment program.

- Updated the *Statement of Investment Policy*; Private Equity Statement of Investment Policy; Real Estate Statement of Investment Policy; Investment Manager Monitoring Policy; and the U.S. and International Proxy Voting Policy, in accordance with industry best practices.
- Completed the asset class restructure changes for reporting asset allocation and performance as defined in SERS' *2016-2017 Strategic Investment Plan*.
- Recommended nine best-in-class Private Equity funds (approximately \$750 million in total commitments).
- Executed a \$1.1 billion reallocation from active public equity investment portfolios to index strategies.
- Recommended that the Board execute a thematic asset class change from Hedge Funds to Multi-Strategy to generate total returns through a combination of high conviction, opportunistic, and less liquid investment strategies that will aim to improve the risk-adjusted profile of the total fund.
- Recommended emerging manager program criteria and merits of using a manager-of-manager model to implement a successful program.

^{1/}April 1, 2009 to December 31, 2016

SERS' investment office continues to operate efficiently and effectively during the current challenging and changing global economic conditions. The organization has been fortunate to capture strong long-term positive investment returns, but recognizes that investment returns are only part of the continued success of SERS. I remain confident that with a focus on the SERS mission, thoughtful leadership from the board, and a disciplined investment process aligned with the Strategic Investment Plan objectives, SERS and its members will continue on the path of financial security.

Sincerely,



Bryan Lewis
Chief Investment Officer

The data contained in the Investment Section that follows was compiled by SERS investment, accounting, and auditing professionals; SERS consultants, RVK, Inc., StepStone Group, LP, and the Townsend Group; and SERS sub-custodian, BNY Mellon. Performance was calculated using the Modified Dietz day-weighted return methodology.

Investment Policy and Objectives

December 31, 2016 (unaudited)

Investment Policy

The SERS Board originally adopted a formal *Statement of Investment Policy* (policy) in 1979. It has been revised periodically to reflect and incorporate legislative changes governing investments and amendments to policies and procedures guiding the investment of the defined benefit portfolio. The policy was last amended in March 2017.

The purpose of the policy is to formalize the board's investment objectives and policies, and to define the duties and responsibilities of the various individuals and entities involved in the investment process.

The major elements of the policy are:

- The assets of the SERS Fund will be managed with the primary objectives of the payment of benefit obligations to participants in the plans as well as to maximize return with acceptable risk considerations and sufficient liquidity so that employer contributions can be minimized.
- The SERS Fund's overall investment objective is to provide a total rate of return, over full economic cycles, which achieves SERS long-term actuarially assumed rate of return consistent with the board's tolerance for risk.
- The board's investment authority is governed by the prudent investor standard as set forth in Title 71, Pennsylvania Consolidated Statutes, Section 5931(a).
- The members of the board, employees of the board, and agents thereof shall stand in a fiduciary relationship to the members of the system regarding the investments and disbursements of any of the monies of the fund and shall not profit either directly or indirectly with respect thereto.
- The board employs an investment staff which is responsible to the board to review and analyze the current investment climate, and to recommend adjustments with respect to the policy that are appropriate to take optimum advantage of new conditions and strategies as they arise in the market place. The staff also reviews and analyzes the philosophies, policies, and strategies employed by the investment managers, evaluating the appropriateness of their decision-making processes and their investment styles in relation to present and projected investment horizons.
- The board continually seeks to employ investment managers that possess superior capabilities in the management of assets of public retirement systems. Each manager has full discretion to carry out its investment mandate subject to the investment strategy statement contained in the investment management agreement and will be expected to conduct business on behalf of SERS in accordance with the mandate for which they were retained.

INVESTMENT SECTION

Investment Policy and Objectives

December 31, 2016 (unaudited)

- SERS will employ investment consultants, who act as fiduciaries to the fund, and who will provide investment consulting services in their respective areas of expertise.
- Where investment characteristics are equivalent, the policy will favor investments that will have a positive impact on the economy of the Commonwealth of Pennsylvania.

Investment Objectives

As indicated in SERS *Statement of Investment Policy*, the objectives of the SERS Fund are to provide benefit payments to participants and beneficiaries at the lowest cost to the commonwealth and to fund the program through a carefully planned and executed investment program.

Consistent with achieving these objectives, the board has established the following goals relative to investment performance:

- Achieve a net total return equivalent to the actuarial assumed rate of return, or preferably, in excess of this rate in order to improve the funded ratio of the SERS Fund through investment earnings and favorably impact future employer and employee contribution rates.
- Achieve a net, total long-term return that meets or exceeds an appropriate, composite plan benchmark index on a five- to 10-year rolling time horizon. The composite benchmark index will be based on the asset allocation set forth in the investment plan approved by the board.

Investment Returns

December 31, 2016 (unaudited)

Calendar Year, Net-of-Fees Returns^{1/}

| Asset Class | 1-Year Total Return | 3-Year Total Return | 5-Year Total Return | 10-Year Total Return |
|--|------------------------|------------------------|------------------------|-------------------------|
| Private Equity ^{2/,5/} | 6.8% | 8.7% | 10.0% | 9.5% |
| <i>Burgiss All Private Equity Custom Index^{3/,5/}</i> | 7.5 | 11.1 | 12.2 | 10.0 |
| <i>Russell 3000 Index+3%^{4/,5/}</i> | 18.4 | 13.8 | 19.8 | 10.6 |
| Global Public Equity | 8.4 | 3.2 | 10.3 | 3.3 |
| <i>MSCI ACWIM Index (Net)</i> | 8.4 | 3.2 | 9.6 | 3.8 |
| Real Estate ^{5/} | 3.2 | 8.0 | 9.5 | 3.2 |
| <i>Real Estate Custom Benchmark^{5/,6/}</i> | 9.9 | 11.4 | 11.9 | 5.2 |
| <i>Consumer Price Index+3%^{5/}</i> | 4.5 | 4.1 | 4.3 | 4.8 |
| Hedge Funds | 4.2 | 0.1 | 2.6 | NA |
| <i>HF Custom Index^{7/}</i> | -0.1 | 1.1 | 6.2 | 5.1 |
| Fixed Income | 5.6 | 3.0 | 3.4 | 5.0 |
| <i>Bloomberg Barclays U.S. Aggregate Bond Index</i> | 2.6 | 3.0 | 2.2 | 4.3 |
| Cash | 0.6 | 0.6 | 0.5 | 1.2 |
| <i>BofA ML 3 Month U.S. T-Bill Index</i> | 0.3 | 0.1 | 0.1 | 0.8 |
| Total Fund | 6.5% | 4.4% | 7.7% | 4.3% |
| <i>Total Fund Custom Benchmark</i> | <i>7.3%</i> | <i>4.9%</i> | <i>7.9%</i> | <i>5.5%</i> |
| <i>Total Fund Custom Public Market Equivalent Benchmark</i> | <i>8.4%</i> | <i>5.5%</i> | <i>9.4%</i> | <i>6.0%</i> |

^{1/}Returns for periods greater than one year are annualized. Performance was calculated using the Modified Dietz day-weighted return methodology.

^{2/}Historical Private Equity performance includes Buyouts, Special Situations, and Venture Capital.

^{3/}Intended to compare the program's performance to its peers.

^{4/}Long-term benchmark by which SERS measures its private market performance. Shorter term variances (1-year and 3-year) can be pronounced due to the nature of private assets and are not as relevant for benchmark purposes.

^{5/}Private Equity, Real Estate, and their corresponding benchmarks are reported on a quarter lagged basis.

^{6/}Calculated monthly using beginning of the month asset class weights applied to each corresponding primary benchmark return. The custom benchmark currently consists of the NCREIF ODCE Index (AWA) (Net) (Qtr Lag), the S&P Developed Market Property Index (Qtr Lag), and the Consumer Price Index+3% (Qtr Lag).

^{7/}Beginning April 2014, the HF Custom Index is comprised of the HFRI Fund-of-Funds Strategic Index consistent with board approval of the 2014-2015 *Strategic Investment Plan*, which establishes this index as the appropriate benchmark for Hedge Funds with regard to its composition and objectives.

INVESTMENT SECTION

Fund Values and Annual Returns

December 31, 2016 (unaudited)

Fund Values and Annual Returns

(\$ millions)

| Year Ended | SERS Fund Fair Value | Annual Total Fund Rate of Return ^{1/} |
|------------|----------------------|--|
| 1987 | \$7,367 | 3.3% |
| 1988 | 8,312 | 12.8 |
| 1989 | 9,785 | 17.8 |
| 1990 | 9,886 | 1.0 |
| 1991 | 11,940 | 22.6 |
| 1992 | 12,453 | 7.4 |
| 1993 | 13,701 | 13.2 |
| 1994 | 13,330 | -1.1 |
| 1995 | 16,343 | 25.2 |
| 1996 | 18,492 | 15.4 |
| 1997 | 21,312 | 18.5 |
| 1998 | 24,123 | 16.3 |
| 1999 | 28,093 | 19.9 |
| 2000 | 27,880 | 2.2 |
| 2001 | 24,706 | -7.9 |
| 2002 | 20,880 | -10.9 |
| 2003 | 24,536 | 24.3 |
| 2004 | 26,641 | 15.1 |
| 2005 | 28,752 | 14.5 |
| 2006 | 32,053 | 16.4 |
| 2007 | 35,516 | 17.2 |
| 2008 | 22,796 | -28.7 |
| 2009 | 24,662 | 9.1 |
| 2010 | 25,886 | 11.9 |
| 2011 | 24,377 | 2.7 |
| 2012 | 25,389 | 12.0 |
| 2013 | 27,394 | 13.6 |
| 2014 | 27,338 | 6.4 |
| 2015 | 26,055 | 0.4 |
| 2016 | 26,388 | 6.5 |

^{1/}Returns were calculated using the Modified Dietz day-weighted return methodology.

INVESTMENT SECTION

Largest Assets Held December 31, 2016 (unaudited)

U.S. Equity

Non-U.S. Equity

| Holding | Fair Value |
|------------------------|---------------|
| Apple Inc | \$135,211,627 |
| Microsoft Corp | 114,043,056 |
| Johnson and Johnson | 82,232,059 |
| Exxon Mobil Corp | 80,168,842 |
| Facebook Inc | 77,377,683 |
| JPMorgan Chase and Co | 66,899,774 |
| Amazon.com Inc | 66,493,972 |
| Berkshire Hathaway Inc | 65,639,380 |
| General Electric Co | 61,939,413 |
| Alphabet Inc Class C | 61,315,696 |

| Holding | Fair Value |
|------------------------------|--------------|
| Nestle SA | \$79,114,656 |
| Roche Holdings AG | 63,054,087 |
| Novartis AG | 62,607,665 |
| AIA Group Ltd | 49,967,594 |
| Reckitt Benckiser Group PLC | 42,462,001 |
| British American Tobacco PLC | 40,863,486 |
| Toyota Motor Corp | 39,751,875 |
| GlaxoSmithKline PLC | 39,736,172 |
| BP PLC | 39,325,895 |
| Samsung Electronics Co Ltd | 38,137,724 |

Non-U.S. Fixed Income

| Holding | Fair Value |
|---|--------------|
| United Kingdom Gilt, 1.250% July 22, 2018 | \$11,068,787 |
| United Mexican States, 7.750% November 13, 2042 | 8,027,464 |
| United Mexican States, 8.500% November 18, 2038 | 6,444,780 |
| United Mexican States, 8.500% May 31, 2029 | 5,421,997 |
| Republic of Argentina, 7.820% December 31, 2033 | 5,178,976 |
| Republic of Slovenia, 5.850% May 10, 2023 | 5,068,917 |
| Italy Government International Bond, 5.375% June 12, 2017 | 4,774,918 |
| New South Wales Treasury Corp, 5.000% August 20, 2024 | 4,673,135 |
| Dexia Credit Local SA, Variable Rate January 11, 2017 | 4,120,247 |
| Swedish Export Credit, Variable Rate November 9, 2017 | 4,109,147 |

Note: A detailed list of SERS investment holdings at December 31, 2016, may be viewed at www.SERS.pa.gov.

INVESTMENT SECTION

Largest Assets Held

December 31, 2016 (unaudited)

U.S. Government and Government Related Fixed Income

| Holding | Fair Value |
|--|---------------|
| U.S. Treasury Note, 2.000% November 15, 2026 | \$237,633,731 |
| U.S. Treasury Note, 1.500% August 15, 2026 | 166,195,211 |
| U.S. Treasury Inflation Index Note, 0.125% April 15, 2018 | 47,362,336 |
| U.S. Treasury Inflation Index Note, 0.125% April 15, 2019 | 45,339,753 |
| U.S. Treasury Inflation Index Note, 2.375% January 15, 2025 | 43,678,956 |
| U.S. Treasury Inflation Index Note, 0.625% January 15, 2024 | 43,654,110 |
| U.S. Treasury Inflation Index Note, 1.375% February 15, 2044 | 39,411,526 |
| U.S. Treasury Inflation Index Note, 0.125% July 15, 2024 | 37,423,113 |
| U.S. Treasury Inflation Index Note, 0.375% July 15, 2023 | 37,219,243 |
| U.S. Treasury Inflation Index Note, 0.125% July 15, 2022 | 35,080,314 |

U.S. Corporate Fixed Income

| Holding | Fair Value |
|--|-------------|
| Credit Suisse Mortgage Trust, Variable Rate January 15, 2049 | \$7,667,208 |
| Goldman Sachs Group Inc, 5.750% January 24, 2022 | 7,566,001 |
| Cobalt CMBS Commercial Mortgage Trust, Variable Rate May 15, 2046 | 7,198,932 |
| Goldman Sachs Group Inc, Variable Rate November 15, 2018 | 6,016,680 |
| Wachovia Bank Commercial Mortgage Trust, Variable Rate December 15, 2043 | 5,397,148 |
| Credit Suisse Mortgage Trust, 5.416% February 15, 2040 | 5,371,055 |
| Morgan Stanley, 5.750% January 25, 2021 | 4,882,152 |
| Verizon Communications Inc, 5.150% September 15, 2023 | 4,682,809 |
| Morgan Stanley, 4.750% March 22, 2017 | 4,533,885 |
| Bank of America Corp, 5.000% May 13, 2021 | 4,356,160 |

Note: A detailed list of SERS investment holdings at December 31, 2016, may be viewed at www.SERS.pa.gov.

Schedule of Trading Broker Commissions

December 31, 2016 (unaudited)

Broker commissions on equity and fixed income investment transactions for the year ended December 31, 2016, were \$5.1 million. Below is a list of brokers receiving commissions in excess of \$20,000 during the year.

| Broker | Commissions | Broker | Commissions |
|-----------------------------|-------------|-------------------------------|-------------|
| Fidelity | \$831,888 | Jefferies and Company | \$65,976 |
| Merrill Lynch | 476,943 | Wells Fargo and Company | 59,622 |
| Citigroup | 327,305 | Societe Generale | 51,485 |
| UBS | 277,581 | CL King & Associates | 48,900 |
| JP Morgan Chase | 268,625 | Wedbush Securities | 48,397 |
| Goldman Sachs | 230,305 | Sanford C Bernstein & Company | 39,936 |
| Credit Suisse First Boston | 220,683 | Raymond James & Associates | 39,067 |
| Morgan Stanley Smith Barney | 181,187 | BNP Paribas | 38,877 |
| CITIC | 121,772 | Knight Capital Group | 32,876 |
| Liquidnet | 119,878 | Sturdivant and Company | 31,847 |
| HSBC Securities | 114,211 | Stifel Nicolaus | 28,827 |
| Bloomberg Tradebook | 110,691 | Dexia | 28,647 |
| Nomura Group | 110,270 | Mizuho | 26,878 |
| ISI | 99,170 | Boenning & Scattergood | 25,091 |
| Barclays | 92,212 | Exane | 23,645 |
| Investment Technology Group | 88,121 | Greentree Brokerage Services | 23,570 |
| Deutsche Bank | 80,711 | Daiwa Bank | 22,109 |
| Pershing | 73,276 | Island Trader Securities | 21,849 |
| Macquarie Bank | 72,123 | | |

INVESTMENT SECTION

Investment Summary

December 31, 2016 (unaudited)

The assets of SERS are administered by the board. The board adopted an investment policy that incorporates the provisions of the Retirement Code, which governs the investment of SERS assets. SERS investment plan is reviewed and updated biennially for strategic asset allocation purposes, as well as for diversification needs within each asset class.

Investments on the Statements of Fiduciary Net Position for financial reporting purposes are not based on the below asset allocation. The asset allocation is for investment reporting purposes only. As such, there may be differences between the Financial Section and the Investment Section.

Asset Allocation

(\$ millions)

| Asset Class | Market Exposure ^{1/} | % of Total Fund | Long-Term 10-Year Strategic Target |
|----------------------|-------------------------------|-----------------|------------------------------------|
| Private Equity | \$4,183.6 | 15.9% | 16.0% |
| Global Public Equity | 12,188.9 | 46.3 | 43.0 |
| Real Estate | 2,264.4 | 8.6 | 12.0 |
| Hedge Funds | 2,057.4 | 7.8 | 12.0 |
| Fixed Income | 4,311.2 | 16.4 | 14.0 |
| Cash | 1,316.0 | 5.0 | 3.0 |
| Total Fund | \$26,321.5 | 100.0% | 100.0% |

^{1/}Includes securities, cash, and accruals.

Number of Investment Managers

| Asset Class | Investment Managers |
|-----------------------|---------------------|
| Private Equity | 147 |
| Global Public Equity | 14 |
| Real Estate | 25 |
| Hedge Funds | 14 |
| Fixed Income | 19 |
| Cash | 1 |
| Total Managers | 220 |

Number of Investment Portfolios

| Asset Class | Investment Portfolios |
|-------------------------|-----------------------|
| Private Equity | 351 |
| Global Public Equity | 17 |
| Real Estate | 56 |
| Hedge Funds | 17 |
| Fixed Income | 22 |
| Cash | 1 |
| Total Portfolios | 464 |

Investment Summary - Private Equity

December 31, 2016 (unaudited)

Role in the SERS Fund

SERS Private Equity program seeks the highest return and growth opportunities, which capture market inefficiencies through active management in the private markets.

Program Structure

Investments in Private Equity are in the form of closed-end limited partnership interests. As an investor, SERS is a limited partner and does not have control of distributions in Private Equity investments. The investment horizon is typically seven or more years. SERS Private Equity program endeavors to continue to build long-term strategic partnerships by investing in world class top-quartile funds. Private equity investments require commitments greater than seven years and therefore, must offer premium returns to compensate for illiquidity and risks.

Objective

The objective of the Private Equity program is to generate annualized net-of-fee returns that exceed the total return of public equity markets by at least 3% (illiquidity premium) and exceed the mean return for the asset class over a seven- to 10-year period.

Performance is measured relative to the following benchmarks:

- Public Market Benchmark – Russell 3000 + 300 basis points (illiquidity premium)
- Private Market Benchmark – Burgiss All Private Equity Custom Index

Private Equity

(\$ millions)

| Sub-Asset Class | Unfunded Commitments | Fair Value | % of Total Fund |
|-----------------------------|----------------------|------------------|-----------------|
| Buyouts | \$1,285.0 | \$2,438.6 | 9.3% |
| Special Situations | 379.9 | 686.0 | 2.6 |
| Venture Capital | 107.7 | 1,059.0 | 4.0 |
| Total Private Equity | \$1,772.6 | \$4,183.6 | 15.9% |

INVESTMENT SECTION

Investment Summary - Private Equity

December 31, 2016 (unaudited)

Portfolio Exposure

The Private Equity program is well diversified by sub-sector, geography, and industry focus. As of September 30, 2016, based on fair value, the program's exposure was:

| By Fund Sub-Sector | | By Geography^{2/} | | By Industry^{2/} | |
|---------------------------|-------|----------------------------------|-------|---------------------------------|-------|
| U.S. Private Equity | 35.5% | United States | 70.5% | Financials | 26.7% |
| U.S. Venture Capital | 23.3 | China | 5.2 | Information Technology | 20.5 |
| Non-U.S. ^{1/} | 23.1 | United Kingdom | 3.3 | Consumer Discretionary | 15.5 |
| Distressed/Oppportunistic | 11.9 | Canada | 1.7 | Health Care | 15.1 |
| Pennsylvania-Related | 6.2 | Germany | 1.3 | Industrials | 9.3 |
| | | Italy | 1.2 | Energy | 5.5 |
| | | France | 0.7 | Materials | 3.0 |
| | | Rest of World | 16.1 | Consumer Staples | 2.4 |
| | | | | Telecommunication Services | 1.1 |
| | | | | Utilities | 0.9 |

^{1/}Some managers with a domestic investment focus may invest globally. Thus, non-U.S. exposure measured on a portfolio company basis will be greater.

^{2/}Geography and industry are determined by the portfolio company.

INVESTMENT SECTION

Investment Summary - Private Equity

December 31, 2016 (unaudited)

The capital committed column represents total dollars allocated from SERS to each limited partnership. Accumulated capital drawn is the portion of SERS capital commitments drawn by the general partner to be invested with underlying portfolio companies along with any reinvested capital. The accumulated distributions column shows the value of capital and profits returned to SERS.

Buyouts Committed, Drawn, and Distributed

| Active Buyouts Funds Limited Partnership | Strategy/Stage | SERS Initial Funding | Capital Committed ^{1/} | Accumulated Capital Drawn | Accumulated Distributions ^{2/} |
|--|----------------|----------------------|---------------------------------|---------------------------|---|
| 1. ABRY Partners IV | Middle | 3/30/2001 | \$35,000,000 | \$25,444,662 | \$52,812,428 |
| ABRY Partners V | Middle | 7/29/2005 | 45,000,000 | 41,670,955 | 81,798,412 |
| ABRY Partners VI | Middle | 3/26/2008 | 50,000,000 | 59,696,320 | 87,237,589 |
| ABRY Partners VII | Middle | 8/10/2011 | 30,000,000 | 36,469,526 | 21,141,049 |
| ABRY Partners VIII | Middle | 5/5/2015 | 25,000,000 | 17,608,802 | 1,599,680 |
| 2. ABS Capital Partners IV | Growth Equity | 10/13/2000 | 35,000,000 | 30,984,280 | 66,247,486 |
| ABS Capital Partners V | Growth Equity | 11/14/2005 | 20,000,000 | 19,704,037 | 34,309,702 |
| ABS Capital Partners VI | Growth Equity | 3/13/2009 | 40,000,000 | 38,672,783 | 16,671,863 |
| 3. Advent Latin American Private Equity Fund IV | Middle | 8/2/2007 | 30,000,000 | 30,797,073 | 32,090,921 |
| Advent International GPE VI-A | Large | 7/7/2008 | 35,000,000 | 34,446,330 | 46,367,504 |
| Advent Latin American Private Equity Fund V | Middle | 5/17/2010 | 15,000,000 | 13,342,500 | 2,520,000 |
| Advent International GPE VII-B | Large | 12/6/2012 | 40,000,000 | 34,140,000 | 5,299,752 |
| Advent Latin American Private Equity Fund VI | Middle | 5/11/2015 | 25,000,000 | 4,662,500 | 375,000 |
| Advent International GPE VIII-B | Large | 9/26/2016 | 50,000,000 | 1,050,000 | 0 |
| 4. Alpha Private Equity Fund 4 | Small | 5/15/2002 | 26,508,000 | 35,605,050 | 77,986,040 |
| Alpha Private Equity Fund 5 | Small | 4/1/2006 | 57,796,800 | 65,860,056 | 82,402,625 |
| 5. APAX Excelsior VI | Small | 7/3/2000 | 35,000,000 | 34,151,324 | 56,527,379 |
| APAX Europe V | Mega | 4/27/2001 | 53,262,000 | 70,406,088 | 150,017,403 |
| APAX Europe VI | Mega | 5/19/2005 | 76,349,190 | 76,478,697 | 132,091,952 |
| APAX Europe VII | Mega | 6/27/2007 | 132,170,235 | 138,620,555 | 133,692,573 |
| 6. Apollo Investment Fund IV | Mega | 9/30/1998 | 75,000,000 | 74,838,620 | 124,814,033 |
| Apollo Investment Fund V | Mega | 8/23/2001 | 50,000,000 | 44,948,713 | 122,053,240 |
| Apollo Investment Fund VI | Mega | 7/19/2006 | 40,000,000 | 38,908,796 | 52,007,933 |
| 7. Asia Alternatives Capital Partners | Fund of Funds | 6/26/2007 | 50,000,000 | 24,938,888 | 30,097,366 |
| Asia Alternatives Capital Partners II | Fund of Funds | 3/7/2008 | 50,000,000 | 27,986,027 | 17,447,596 |
| Asia Alternatives Korea Buyout Investors (Hahn & Co) | Small | 7/22/2011 | 7,000,000 | 8,177,183 | 3,409,593 |
| Asia Alternatives Capital Partners III | Fund of Funds | 8/3/2012 | 50,000,000 | 44,722,762 | 14,097,110 |
| Penn Asia Investors | Fund of Funds | 9/28/2012 | 83,000,000 | 57,303,328 | 9,049,076 |
| 8. Asia Pacific Growth Fund III | Growth Equity | 9/28/1999 | 15,000,000 | 15,337,963 | 16,708,736 |
| 9. Audax Private Equity Fund | Middle | 5/25/2000 | 35,000,000 | 36,839,098 | 55,479,437 |
| Audax Private Equity Fund II | Middle | 6/17/2005 | 25,000,000 | 25,517,169 | 45,110,929 |
| Audax Private Equity Fund III | Middle | 11/7/2007 | 37,000,000 | 42,168,137 | 67,213,704 |
| Audax Private Equity Fund V | Middle | 1/25/2016 | 50,000,000 | 4,979,503 | 0 |

INVESTMENT SECTION

Investment Summary - Private Equity

December 31, 2016 (unaudited)

Buyouts Committed, Drawn, and Distributed (continued)

| | Active Buyouts Funds Limited Partnership | Strategy/Stage | SERS Initial Funding | Capital Committed ^{1/} | Accumulated Capital Drawn | Accumulated Distributions ^{2/} |
|-----|--|----------------|-------------------------|------------------------------------|---------------------------------|--|
| 10. | Bain Capital Fund VII | Mega | 7/6/2000 | \$25,000,000 | \$25,000,000 | \$47,998,008 |
| | Bain Capital Fund VIII-E | Mega | 12/15/2004 | 12,144,000 | 13,502,825 | 19,631,405 |
| | Bain Capital Fund IX | Mega | 4/10/2006 | 75,000,000 | 75,863,618 | 107,099,750 |
| | Bain Capital IX Coinvestment Fund | Mega | 4/20/2006 | 15,000,000 | 15,618,923 | 21,797,333 |
| | Bain Capital Asia Fund | Middle | 10/18/2007 | 12,000,000 | 11,544,001 | 10,908,405 |
| | Bain Capital Fund X | Mega | 1/15/2008 | 90,000,000 | 88,333,867 | 77,349,313 |
| | Bain Capital Europe III | Mega | 7/10/2008 | 72,432,276 | 66,079,936 | 86,318,731 |
| | Bain Capital X Coinvestment Fund | Mega | 7/28/2008 | 5,000,000 | 1,225,000 | 708,402 |
| 11. | Baring India Private Equity Fund III Limited | Small | 10/10/2008 | 5,000,000 | 5,058,949 | 2,333,969 |
| 12. | Baring Vostok Private Equity Fund IV | Middle | 3/10/2008 | 30,000,000 | 30,694,840 | 12,752,395 |
| 13. | BC European Capital VII | Large | 7/28/2000 | 32,658,500 | 37,921,760 | 96,576,440 |
| | BC European Capital VII Top Up | Large | 7/2/2001 | 10,046,300 | 12,351,504 | 32,386,202 |
| | BC European Capital VIII | Large | 12/13/2005 | 98,107,500 | 97,538,004 | 104,856,917 |
| | BC European Capital IX | Large | 9/16/2011 | 26,472,535 | 22,363,035 | 9,207,653 |
| 14. | Berkshire Fund VI | Middle | 7/11/2002 | 20,000,000 | 18,828,770 | 40,470,269 |
| | Berkshire Fund VII | Middle | 11/15/2006 | 32,000,000 | 32,118,432 | 40,109,246 |
| | Berkshire Fund VIII | Middle | 8/25/2011 | 30,000,000 | 25,983,772 | 3,946,324 |
| 15. | Blackstone Communications Partners I | Mega | 8/29/2000 | 25,000,000 | 25,114,042 | 30,981,079 |
| | Blackstone Capital IV | Mega | 2/26/2003 | 75,000,000 | 68,934,327 | 173,015,491 |
| | Blackstone Capital Partners V | Mega | 5/30/2006 | 150,000,000 | 149,729,848 | 198,822,317 |
| | Blackstone Capital Partners VII | Mega | * | 50,000,000 | 0 | 0 |
| 16. | Brait IV | Small | 12/11/2006 | 25,000,000 | 22,188,592 | 2,873,282 |
| 17. | Brynwood Partners V | Small | 7/31/2005 | 10,000,000 | 10,491,974 | 18,886,569 |
| | Brynwood Partners VI | Small | 10/13/2009 | 10,000,000 | 11,062,989 | 17,388,065 |
| 18. | Capvis Equity IV | Middle | 1/30/2014 | 49,855,591 | 16,324,648 | 5,742,363 |
| 19. | Carlyle Energy Mezzanine Opportunities Fund | Small | 9/5/2012 | 50,000,000 | 48,569,692 | 19,509,985 |
| | Horizon Strategic Fund - Carlyle Group | Small | 1/23/2014 | 100,000,000 | 59,479,896 | 8,230,928 |
| 20. | Charterhouse Capital Partners VII | Middle | 1/17/2003 | 55,482,500 | 54,972,470 | 109,645,407 |
| | Charterhouse Capital Partners VIII | Middle | 4/19/2006 | 66,563,400 | 72,831,664 | 69,466,398 |
| | Charterhouse Capital Partners IX | Middle | 4/28/2009 | 66,385,000 | 58,665,385 | 65,564,824 |
| 21. | Chequers Capital XV | Middle | 7/5/2006 | 31,133,996 | 33,048,083 | 43,079,896 |
| 22. | Clayton Dubilier & Rice VI | Middle | 12/31/1998 | 50,000,000 | 36,437,713 | 57,754,625 |
| 23. | Clessidra Capital Partners II | Middle | 11/5/2008 | 25,631,168 | 17,687,616 | 20,490,598 |
| 24. | Code Hennessy & Simmons IV | Middle | 9/16/1999 | 100,000,000 | 100,000,000 | 156,498,466 |
| | Code Hennessy & Simmons V | Middle | 11/10/2005 | 50,000,000 | 53,837,905 | 73,697,969 |
| 25. | Denham Commodity VI | Large | 4/20/2012 | 50,000,000 | 33,175,107 | 14,218,001 |
| 26. | Elevation Partners | Middle | 11/10/2005 | 35,000,000 | 31,212,376 | 49,520,850 |

Investment Summary - Private Equity

December 31, 2016 (unaudited)

Buyouts Committed, Drawn, and Distributed (continued)

| | Active Buyouts Funds Limited Partnership | Strategy/Stage | SERS Initial Funding | Capital Committed ^{1/} | Accumulated Capital Drawn | Accumulated Distributions ^{2/} |
|-----|---|----------------|-------------------------|------------------------------------|---------------------------------|--|
| 27. | Energy Spectrum Partners V | Small | 7/9/2007 | \$30,000,000 | \$27,492,413 | \$51,462,955 |
| 28. | Eureka II | Growth Equity | 1/30/2006 | 20,000,000 | 19,322,987 | 16,811,369 |
| | Eureka Growth Capital III | Growth Equity | 10/21/2013 | 20,000,000 | 8,236,154 | 8,188,885 |
| 29. | Excelsior Capital Asia Partners III | Small | 8/17/2006 | 25,000,000 | 24,958,791 | 12,595,490 |
| 30. | First Reserve Fund X | Large | 10/28/2004 | 30,000,000 | 30,000,000 | 54,728,700 |
| | First Reserve Fund XI | Large | 12/14/2006 | 60,000,000 | 63,939,423 | 37,332,704 |
| | First Reserve Fund XII | Mega | 11/19/2008 | 50,000,000 | 54,635,687 | 23,916,611 |
| 31. | Francisco Partners | Middle | 7/27/2000 | 50,000,000 | 47,828,275 | 59,477,043 |
| | Francisco Partners II | Middle | 7/10/2006 | 30,000,000 | 28,504,996 | 35,672,218 |
| | Francisco Partners III | Middle | 10/17/2011 | 20,000,000 | 18,270,000 | 3,799,238 |
| | Francisco Partners IV | Middle | 4/15/2015 | 25,000,000 | 8,500,000 | 0 |
| 32. | FSN Capital IV | Middle | 12/19/2013 | 46,049,703 | 30,655,921 | 5,672,225 |
| | FSN Capital V | Middle | * | 77,189,328 | 0 | 0 |
| 33. | Great Hill Equity Partners II | Middle | 3/28/2001 | 35,000,000 | 35,063,336 | 77,605,735 |
| | Great Hill Equity Partners III | Middle | 3/7/2006 | 35,000,000 | 35,000,000 | 40,355,000 |
| | Great Hill Equity Partners IV | Middle | 9/8/2008 | 25,000,000 | 24,606,912 | 25,925,662 |
| 34. | Gryphon Partners II | Small | 11/3/1999 | 35,000,000 | 34,700,788 | 41,953,023 |
| | Gryphon Partners III | Small | 9/8/2004 | 30,000,000 | 37,599,444 | 51,691,321 |
| 35. | GTCR VI | Middle | 9/30/1998 | 50,000,000 | 50,000,000 | 43,229,799 |
| | GTCR VIII | Middle | 7/7/2003 | 75,000,000 | 69,393,599 | 114,671,436 |
| | GTCR IX | Middle | 12/1/2006 | 50,000,000 | 46,666,718 | 79,736,269 |
| | GTCR XI | Middle | 9/2/2014 | 25,000,000 | 11,187,500 | 337,977 |
| 36. | H.I.G. Growth Buyouts & Equity Fund II | Growth Equity | 7/20/2011 | 15,000,000 | 5,584,431 | 2,654,945 |
| | H.I.G. Europe Capital Partners II | Small | 1/10/2014 | 27,544,596 | 345,686 | 0 |
| | H.I.G. Brazil and Latin America Partners | Middle | 8/12/2015 | 50,000,000 | 1,256,862 | 0 |
| 37. | Hahn & Company II | Middle | 5/29/2015 | 50,000,000 | 21,037,815 | 129 |
| 38. | Halpern Denny Fund III | Growth Equity | 4/26/2000 | 25,000,000 | 24,886,871 | 28,106,844 |
| 39. | HarbourVest IPEP III | Fund of Funds | 6/30/1998 | 40,000,000 | 39,400,000 | 60,470,425 |
| | HarbourVest Partners VI | Fund of Funds | 5/7/1999 | 200,000,000 | 196,586,055 | 227,369,078 |
| | Harbourvest IPEP IV | Fund of Funds | 4/9/2001 | 40,000,000 | 39,000,000 | 64,628,560 |
| | HarbourVest Partners VII | Fund of Funds | 3/24/2003 | 75,000,000 | 73,687,500 | 82,621,687 |
| | HIPEP V-Asia Pacific & Rest of World | Fund of Funds | 5/9/2006 | 30,000,000 | 28,245,316 | 27,027,474 |
| | HarbourVest Partners VIII | Fund of Funds | 10/5/2006 | 100,000,000 | 97,500,000 | 82,364,086 |
| | Horizon Impact Fund - Harbourvest | Small | 10/24/2014 | 50,000,000 | 20,799,406 | 1,874,983 |
| 40. | Hellman & Friedman Capital Partners V | Large | 12/20/2004 | 80,000,000 | 71,563,406 | 191,684,081 |
| | Hellman & Friedman Capital Partners VI | Large | 6/5/2007 | 125,000,000 | 119,499,471 | 187,436,259 |
| | Hellman & Friedman Capital Partners VIII | Large | 9/1/2016 | 50,000,000 | 1,024,742 | 0 |
| 41. | InterMedia Partners VII | Small | 1/5/2007 | 15,000,000 | 17,745,011 | 10,807,978 |
| 42. | Invemed Catalyst Fund | Small | 10/19/1999 | 25,000,000 | 14,761,445 | 11,020,751 |

INVESTMENT SECTION

Investment Summary - Private Equity

December 31, 2016 (unaudited)

Buyouts Committed, Drawn, and Distributed (continued)

| | Active Buyouts Funds Limited Partnership | Strategy/Stage | SERS Initial Funding | Capital Committed ^{1/} | Accumulated Capital Drawn | Accumulated Distributions ^{2/} |
|-----|---|----------------|-------------------------|------------------------------------|---------------------------------|--|
| 43. | J.H. Whitney IV | Small | 2/1/2000 | \$20,000,000 | \$17,964,926 | \$7,529,485 |
| | J.H. Whitney VI | Small | 1/5/2006 | 50,000,000 | 49,616,832 | 40,539,938 |
| | J.H. Whitney VII | Small | 10/12/2010 | 25,000,000 | 25,181,826 | 8,890,170 |
| 44. | J.W. Childs Equity Partners III | Middle | 8/20/2002 | 40,000,000 | 41,966,505 | 76,553,620 |
| 45. | JMI Equity Fund V | Growth Equity | 6/7/2005 | 24,000,000 | 24,009,205 | 121,989,437 |
| | JMI Equity Fund VI | Growth Equity | 6/27/2007 | 40,000,000 | 40,000,246 | 65,090,573 |
| | JMI Equity Fund VII | Growth Equity | 2/14/2011 | 10,000,000 | 9,780,000 | 4,631,456 |
| | JMI Equity Fund VIII | Growth Equity | 10/1/2015 | 25,000,000 | 5,450,000 | 0 |
| 46. | Kelso VII | Middle | 10/18/2004 | 40,000,000 | 41,169,937 | 65,656,477 |
| | Kelso VIII | Middle | 11/29/2007 | 150,000,000 | 143,867,689 | 88,400,663 |
| 47. | Leeds Equity Partners IV | Small | 11/12/2004 | 20,000,000 | 20,396,199 | 22,913,831 |
| 48. | Lime Rock Partners III | Middle | 3/7/2005 | 15,000,000 | 15,346,695 | 7,129,953 |
| | Lime Rock Resources | Middle | 12/28/2005 | 20,000,000 | 19,290,189 | 25,249,364 |
| | Lime Rock Partners IV | Middle | 11/16/2006 | 25,000,000 | 27,545,641 | 15,449,510 |
| | Lime Rock Partners V | Middle | 10/2/2008 | 42,500,000 | 44,999,890 | 22,768,943 |
| 49. | LLR Equity Partners | Middle | 2/4/2000 | 25,000,000 | 24,576,062 | 52,558,191 |
| | LLR Equity Partners II | Middle | 1/29/2004 | 25,000,000 | 25,000,000 | 40,501,146 |
| | LLR Equity Partners III | Middle | 7/24/2008 | 30,000,000 | 29,108,722 | 26,263,623 |
| | LLR Equity Partners IV | Middle | 3/14/2014 | 50,000,000 | 30,542,708 | 3,157,895 |
| 50. | Madison Dearborn Capital Partners IV | Middle | 4/2/2001 | 90,000,000 | 90,365,390 | 167,519,294 |
| | Madison Dearborn Capital Partners V | Middle | 10/20/2006 | 75,000,000 | 71,527,448 | 93,994,766 |
| | Madison Dearborn Capital Partners VI | Middle | 5/27/2008 | 50,000,000 | 49,693,369 | 62,832,669 |
| 51. | Meridian Venture Partners II | Small | 2/11/2005 | 10,000,000 | 10,000,000 | 12,456,671 |
| 52. | Motion II B | Middle | 11/2/2005 | 48,204,998 | 47,639,871 | 35,073,212 |
| 53. | New York Life Capital Partners III | Fund of Funds | 6/30/2006 | 50,000,000 | 54,801,227 | 35,204,198 |
| | New York Life Capital Partners IV | Fund of Funds | 4/4/2008 | 50,000,000 | 54,230,796 | 58,558,140 |
| 54. | NewSpring Growth Capital II | Growth Equity | 12/5/2006 | 10,000,000 | 9,850,000 | 13,815,193 |
| | NewSpring Growth Capital III | Growth Equity | 7/27/2012 | 25,000,000 | 20,468,750 | 2,218,985 |
| 55. | Nordic Capital V | Middle | 5/7/2004 | 34,996,500 | 46,006,701 | 131,273,683 |
| | Nordic Capital VI | Middle | 7/25/2006 | 54,369,000 | 64,472,507 | 66,224,992 |
| | Nordic Capital VII | Middle | 5/2/2008 | 92,519,165 | 97,955,973 | 33,021,166 |
| 56. | Oakhill Capital Partners | Middle | 5/17/1999 | 50,000,000 | 53,718,802 | 93,999,577 |
| 57. | OCM/GFI Power Opportunities Fund II | Small | 5/9/2005 | 25,000,000 | 13,470,852 | 41,644,215 |
| | Oaktree Power Opportunities Fund III | Middle | 10/18/2010 | 25,000,000 | 16,537,030 | 13,173,469 |
| 58. | Parthenon Investors II | Small | 8/9/2001 | 20,000,000 | 22,177,965 | 35,780,448 |
| 59. | Patriot Financial Partners | Small | 6/12/2008 | 25,000,000 | 25,017,767 | 25,688,334 |
| 60. | Permira European Fund | Large | 9/30/1997 | 33,494,536 | 32,159,947 | 84,005,717 |
| | Permira European Fund II | Large | 6/7/2000 | 48,000,000 | 45,672,612 | 91,464,087 |
| | Permira European Fund III | Large | 1/12/2004 | 115,960,000 | 127,340,454 | 213,883,495 |

Investment Summary - Private Equity

December 31, 2016 (unaudited)

Buyouts Committed, Drawn, and Distributed (continued)

| Active Buyouts Funds Limited Partnership | Strategy/Stage | SERS Initial Funding | Capital Committed ^{1/} | Accumulated Capital Drawn | Accumulated Distributions ^{2/} |
|--|----------------|----------------------|---------------------------------|---------------------------|---|
| Permira IV | Large | 12/14/2006 | \$127,779,198 | \$136,060,572 | \$172,856,829 |
| Permira VI | Large | * | 56,202,000 | 0 | 0 |
| 61. PNC Equity Partners II | Small | 8/30/2007 | 15,000,000 | 13,422,972 | 17,117,700 |
| Incline Equity Partners III | Small | 1/14/2013 | 15,000,000 | 10,516,535 | 7,592,775 |
| 62. Primavera Capital Fund II | Large | 11/17/2015 | 50,000,000 | 10,700,437 | 36,336 |
| 63. Providence Equity Partners IV | Large | 11/27/2000 | 25,000,000 | 23,439,922 | 55,913,545 |
| Providence Equity Partners V | Large | 4/4/2005 | 45,000,000 | 42,681,604 | 48,063,726 |
| Providence Equity Partners VI | Large | 3/16/2007 | 50,000,000 | 53,171,865 | 46,191,104 |
| Providence Strategic Growth II | Small | * | 60,000,000 | 0 | 0 |
| 64. Ridgemont Equity Partners II | Small | 11/30/2015 | 50,000,000 | 7,991,432 | 0 |
| 65. Segulah IV | Middle | 9/25/2008 | 16,705,647 | 16,759,289 | 9,664,250 |
| 66. Sentinel Capital Partners V | Middle | 7/15/2014 | 10,000,000 | 4,625,682 | 162,100 |
| 67. SFC Energy Partners I | Small | 7/27/2007 | 25,000,000 | 24,921,811 | 22,575,508 |
| SFC Energy Partners II | Small | 12/19/2011 | 25,000,000 | 16,576,240 | 2,222,349 |
| 68. ShoreView Capital Partners | Small | 6/16/2003 | 38,000,000 | 32,425,893 | 53,089,462 |
| ShoreView Capital Partners II | Small | 3/27/2008 | 40,000,000 | 38,472,684 | 50,894,320 |
| 69. Siguler Guff BRIC Opportunities Fund | Fund of Funds | 5/8/2006 | 10,000,000 | 9,558,299 | 7,019,332 |
| Siguler Guff BRIC Opportunities Fund II | Fund of Funds | 4/9/2008 | 25,000,000 | 24,373,443 | 9,529,179 |
| 70. Sterling Capital Partners I | Middle | 10/31/2002 | 15,000,000 | 14,979,168 | 30,587,922 |
| Sterling Capital Partners II | Middle | 8/18/2005 | 30,000,000 | 29,893,709 | 27,324,339 |
| Sterling Capital Partners III | Middle | 8/13/2007 | 32,000,000 | 31,610,435 | 30,703,208 |
| 71. Sterling Group Partners IV | Middle | 6/15/2016 | 20,000,000 | 2,508,651 | 249,324 |
| 72. Summit V | Growth Equity | 3/31/1998 | 37,500,000 | 36,187,500 | 49,997,247 |
| Summit Ventures VI | Growth Equity | 3/23/2001 | 62,000,000 | 63,914,751 | 124,366,643 |
| Summit Partners Private Equity Fund VII | Middle | 2/9/2006 | 97,134,500 | 97,134,505 | 116,319,485 |
| 73. TA X | Middle | 4/25/2006 | 70,000,000 | 69,732,009 | 84,082,009 |
| 74. Thomas H. Lee Equity Fund VI | Large | 11/14/2006 | 50,000,000 | 53,636,865 | 44,809,304 |
| 75. TPG Partners III | Mega | 1/13/2000 | 75,000,000 | 64,119,169 | 165,383,087 |
| TPG Partners IV | Mega | 12/29/2003 | 30,000,000 | 27,981,463 | 55,247,338 |
| Newbridge Asia IV | Middle | 9/27/2005 | 40,000,000 | 38,903,378 | 82,887,170 |
| TPG Partners V | Mega | 6/27/2006 | 95,756,241 | 92,531,812 | 92,327,963 |
| TPG Asia V | Large | 2/19/2008 | 22,500,000 | 21,885,033 | 17,857,487 |
| TPG Partners VI | Mega | 5/22/2008 | 45,000,000 | 48,349,980 | 40,585,817 |
| 76. Vestar Capital Partners III | Middle | 6/30/1997 | 25,000,000 | 24,362,534 | 27,746,687 |
| Vestar Capital Partners IV | Middle | 1/25/2000 | 100,000,000 | 97,632,498 | 171,785,140 |
| Vestar Capital Partners V | Middle | 1/25/2006 | 50,000,000 | 51,501,157 | 39,320,063 |

INVESTMENT SECTION

Investment Summary - Private Equity

December 31, 2016 (unaudited)

Buyouts Committed, Drawn, and Distributed (continued)

| Active Buyouts Funds Limited Partnership | Strategy/Stage | SERS Initial Funding | Capital Committed ^{1/} | Accumulated Capital Drawn | Accumulated Distributions ^{2/} |
|--|----------------|----------------------|---------------------------------|---------------------------|---|
| 77. Vista Equity Partners Fund VI | Large | * | \$150,000,000 | \$0 | \$0 |
| 78. Weston Presidio III | Growth Equity | 12/31/1998 | 35,000,000 | 31,989,586 | 30,705,066 |
| Weston Presidio IV | Growth Equity | 6/21/2000 | 35,000,000 | 34,451,015 | 39,417,544 |
| Weston Presidio V | Growth Equity | 12/8/2005 | 50,000,000 | 49,736,928 | 69,483,635 |
| 79. Yucaipa American Alliance Fund II | Middle | 1/13/2009 | 25,000,000 | 29,699,340 | 15,650,108 |
| Total Active Buyouts | | | \$8,414,404,403 | \$7,287,117,148 | \$9,118,618,613 |

Cash flows as of September 30, 2016.

*Not funded as of September 30, 2016.

^{1/}Commitments as of December 31, 2016.

^{2/}Distributions include stock distributions. Distributions may include fees that are recorded as negative distributions to be offset against future distributions of the underlying limited partnership investment.

Investment Summary - Private Equity

December 31, 2016 (unaudited)

The capital committed column represents total dollars allocated from SERS to each limited partnership. Accumulated capital drawn is the portion of SERS capital commitments drawn by the general partner to be invested with underlying portfolio companies along with any reinvested capital. The accumulated distributions column shows the value of capital and profits returned to SERS.

Special Situations Committed, Drawn, and Distributed

| Active Special Situations Funds Limited Partnership | Strategy/Stage | SERS Initial Funding | Capital Committed ^{1/} | Accumulated Capital Drawn | Accumulated Distributions ^{2/} |
|--|------------------------------|-------------------------|------------------------------------|---------------------------------|--|
| 1. ABRY Mezzanine Partners | Mezzanine | 3/15/2002 | \$30,000,000 | \$26,731,187 | \$47,390,286 |
| ABRY Senior Equity II | Mezzanine | 7/27/2006 | 30,000,000 | 28,019,267 | 43,788,432 |
| ABRY Advanced Securities Fund | Distressed/ Restructuring | 8/1/2008 | 25,000,000 | 23,430,048 | 38,682,209 |
| 2. ADV Opportunities Fund I | Distressed/ Restructuring | 10/5/2015 | 50,000,000 | 26,808,026 | (389,528) |
| 3. AG Capital Recovery Partners V | Distressed/ Restructuring | 4/17/2006 | 20,000,000 | 20,000,000 | 20,922,013 |
| 4. Avenue Special Situations Fund IV | Distressed/ Restructuring | 3/27/2006 | 50,000,000 | 50,000,000 | 68,816,017 |
| Avenue Asia Special Situations Fund IV | Distressed/ Restructuring | 6/30/2006 | 50,000,000 | 31,897,973 | 28,551,591 |
| Avenue Special Situations Fund V | Distressed/ Restructuring | 6/4/2007 | 70,000,000 | 70,004,050 | 92,444,416 |
| Avenue Europe Special Situations Fund | Distressed/ Restructuring | 7/30/2008 | 38,632,500 | 25,749,356 | 37,715,569 |
| Avenue Special Situations Fund VI | Distressed/ Restructuring | 11/2/2010 | 20,000,000 | 20,068,464 | 13,328,606 |
| 5. AXA Secondary Fund III | Secondaries | 11/19/2004 | 26,000,000 | 21,737,894 | 35,912,410 |
| AXA Secondary Fund III-2 | Secondaries | 11/24/2004 | 14,000,000 | 11,677,210 | 18,320,851 |
| AXA Secondary Fund IV | Secondaries | 2/26/2007 | 80,000,000 | 69,800,706 | 79,125,243 |
| AXA Secondary Fund V B | Secondaries | 6/19/2012 | 75,000,000 | 59,396,383 | 42,715,532 |
| ASF VII B | Secondaries | 2/19/2016 | 100,000,000 | 8,035,971 | (159,597) |
| ASF VII PA Co-Invest | Secondaries | 5/18/2016 | 50,000,000 | 5,000 | 0 |
| 6. Centerbridge Capital Partners I | Distressed/ Restructuring | 2/27/2007 | 50,000,000 | 56,623,951 | 94,381,249 |
| Centerbridge Capital Partners III | Distressed/ Restructuring | 5/21/2015 | 30,000,000 | 7,988,338 | 316,253 |
| 7. Cerberus Institutional Partners | Distressed/ Restructuring | 3/5/1999 | 35,000,000 | 35,000,000 | 79,906,454 |
| Cerberus Institutional Partners Series Two | Distressed/ Restructuring | 10/9/2001 | 35,000,000 | 30,100,793 | 93,674,154 |
| Cerberus Institutional Partners Series Three | Distressed/ Restructuring | 11/13/2003 | 35,000,000 | 22,321,354 | 46,873,421 |
| Cerberus Institutional Partners Series Four | Distressed/ Restructuring | 11/27/2006 | 75,000,000 | 69,258,215 | 83,183,729 |
| 8. Clearlake Capital Partners IV | Middle | 9/1/2015 | 15,000,000 | 7,987,561 | 179,402 |
| 9. CVI Global Value Fund | Distressed/ Restructuring | 2/23/2007 | 60,000,000 | 57,151,667 | 79,498,461 |

INVESTMENT SECTION

Investment Summary - Private Equity

December 31, 2016 (unaudited)

Special Situations Committed, Drawn, and Distributed (continued)

| | Active Special Situations Funds Limited Partnership | Strategy/Stage | SERS Initial Funding | Capital Committed ^{1/} | Accumulated Capital Drawn | Accumulated Distributions ^{2/} |
|-----|--|------------------------------|-------------------------|------------------------------------|---------------------------------|--|
| 10. | Dover Street VII | Secondaries | 7/2/2008 | \$30,000,000 | \$28,745,287 | \$32,097,671 |
| 11. | H.I.G. Bayside Debt & LBO Fund II | Distressed/ Restructuring | 6/17/2008 | 30,000,000 | 30,010,001 | 21,600,649 |
| | H.I.G. Bayside Loan Opp. Fund III | Distressed/ Restructuring | 6/12/2013 | 50,000,000 | 26,940,680 | 6,165,019 |
| | H.I.G. Bayside Loan Opp. Fund IV | Distressed/ Restructuring | 1/16/2015 | 25,000,000 | 5,698,483 | 2,760,382 |
| 12. | JP Morgan U.S. Corp Finance Investors II | Distressed/ Restructuring | 1/14/2003 | 50,000,000 | 53,232,339 | 77,920,802 |
| 13. | KPS Special Situations Fund IV | Distressed/ Restructuring | 5/8/2014 | 25,000,000 | 4,273,007 | 3,379,367 |
| 14. | Landmark Equity IV | Secondaries | 3/31/1995 | 14,923,291 | 12,495,850 | 18,728,790 |
| | Landmark Equity Partners V | Secondaries | 12/31/1995 | 19,624,113 | 19,434,947 | 23,521,627 |
| 15. | LBC Credit Partners III | Mezzanine | 3/4/2013 | 50,000,000 | 47,004,932 | 25,439,119 |
| 16. | Lexington Capital Partners II | Secondaries | 6/30/1998 | 40,000,000 | 39,538,000 | 52,511,592 |
| | Lexington Capital Partners III | Secondaries | 1/26/1999 | 35,000,000 | 34,516,449 | 43,363,378 |
| | Lexington Capital Partners V | Secondaries | 1/17/2002 | 75,000,000 | 74,623,418 | 121,050,013 |
| | Lexington Capital Partners VI | Secondaries | 10/21/2005 | 50,000,000 | 53,066,325 | 57,412,866 |
| 17. | Matlin Patterson Global Opportunities Partners II | Distressed/ Restructuring | 6/30/2004 | 30,000,000 | 30,410,597 | 10,578,309 |
| 18. | OCM Opportunities Fund III | Distressed/ Restructuring | 1/20/2000 | 60,000,000 | 60,007,890 | 89,378,449 |
| | OCM Principal Opportunities II | Distressed/ Restructuring | 4/24/2001 | 25,000,000 | 25,000,000 | 43,894,166 |
| | OCM Opportunities Fund IV | Distressed/ Restructuring | 9/26/2001 | 70,000,000 | 70,000,000 | 115,463,024 |
| | Oaktree Capital Management | Distressed/ Restructuring | 5/28/2004 | 40,000,000 | 40,581,778 | 110,121,820 |
| | OCM Opportunities Fund V | Distressed/ Restructuring | 8/12/2004 | 40,000,000 | 40,003,507 | 64,752,116 |
| | OCM Opportunities Fund VI | Distressed/ Restructuring | 9/28/2005 | 40,000,000 | 40,000,000 | 61,619,202 |
| | OCM Principal Opportunities Fund IV | Distressed/ Restructuring | 1/24/2007 | 20,000,000 | 20,400,000 | 24,556,516 |
| | OCM Opportunities Fund VII | Distressed/ Restructuring | 5/16/2007 | 40,000,000 | 40,000,000 | 50,516,068 |
| | OCM Opportunities Fund VIIb | Distressed/ Restructuring | 6/3/2008 | 40,000,000 | 36,000,000 | 57,846,712 |
| | OCM Opportunities Fund VIII | Distressed/ Restructuring | 9/20/2010 | 12,500,000 | 12,583,425 | 12,078,721 |
| | OCM Opportunities Fund VIIIb | Distressed/ Restructuring | 8/22/2011 | 12,500,000 | 12,500,000 | 4,953,369 |
| | Oaktree Opportunities Fund IX | Distressed/ Restructuring | 3/26/2013 | 50,000,000 | 50,000,000 | 0 |

Investment Summary - Private Equity

December 31, 2016 (unaudited)

Special Situations Committed, Drawn, and Distributed (continued)

| Active Special Situations Funds Limited Partnership | Strategy/Stage | SERS Initial Funding | Capital Committed ^{1/} | Accumulated Capital Drawn | Accumulated Distributions ^{2/} |
|--|------------------------------|-------------------------|------------------------------------|---------------------------------|--|
| 19. Platinum Equity Capital Partners III | Distressed/ Restructuring | 8/5/2013 | \$50,000,000 | \$40,327,571 | \$31,321,510 |
| Platinum Equity Capital Partners IV | Distressed/ Restructuring | * | 100,000,000 | 0 | 0 |
| 20. RRJ Capital Master Fund III | Growth Equity | 12/10/2015 | 50,000,000 | 3,688,889 | 0 |
| 21. Sankaty Credit Opportunities III | Distressed/ Restructuring | 3/8/2007 | 50,000,000 | 50,000,000 | 46,526,866 |
| Sankaty Credit Opportunities IV | Distressed/ Restructuring | 7/15/2008 | 40,000,000 | 38,000,000 | 48,313,505 |
| 22. Templeton Strategic Emerging Markets Fund III | Distressed/ Restructuring | 5/29/2009 | 100,000,000 | 95,482,762 | 38,536,354 |
| 23. Versa Capital Partners | Distressed/ Restructuring | 10/16/2005 | 20,000,000 | 23,611,753 | 15,988,714 |
| Versa Capital Partners II | Distressed/ Restructuring | 7/31/2008 | 15,000,000 | 15,754,364 | 5,867,313 |
| 24. W Capital Partners II | Secondaries | 8/8/2007 | 40,000,000 | 39,034,444 | 42,874,012 |
| Total Active Special Situations | | | \$2,503,179,904 | \$1,992,760,112 | \$2,406,315,194 |

Cash flows as of September 30, 2016.

*Not funded as of September 30, 2016.

^{1/}Commitments as of December 31, 2016.

^{2/}Distributions include stock distributions. Distributions may include fees that are recorded as negative distributions to be offset against future distributions of the underlying limited partnership investment.

INVESTMENT SECTION

Investment Summary - Private Equity

December 31, 2016 (unaudited)

The capital committed column represents total dollars allocated from SERS to each limited partnership. Accumulated capital drawn is the portion of SERS capital commitments drawn by the general partner to be invested with underlying portfolio companies along with any reinvested capital. The accumulated distributions column shows the value of capital and profits returned to SERS.

Venture Capital Committed, Drawn, and Distributed

| Active Venture Capital Funds Limited Partnership | Strategy/Stage | SERS Initial Funding | Capital Committed ^{1/} | Accumulated Capital Drawn | Accumulated Distributions ^{2/} |
|--|----------------|----------------------|---------------------------------|---------------------------|---|
| 1. Abingworth Bioventures IV | Balanced | 9/1/2003 | \$20,000,000 | \$19,858,273 | \$23,353,836 |
| Abingworth Bioventures V | Balanced | 1/23/2007 | 33,775,000 | 28,200,224 | 36,338,542 |
| 2. Accel Europe | Early Stage | 7/2/2001 | 15,000,000 | 11,350,000 | 13,250,330 |
| 3. Adams Capital Management III | Early Stage | 11/21/2000 | 30,000,000 | 30,000,000 | 7,011,905 |
| 4. Advanced Technology Ventures VI | Balanced | 3/9/2000 | 10,000,000 | 10,000,000 | 4,320,705 |
| Advanced Technology Ventures VII | Balanced | 7/11/2001 | 27,000,000 | 27,000,000 | 27,000,001 |
| 5. Alloy Ventures 2000 | Early Stage | 5/19/2000 | 20,000,000 | 20,000,000 | 5,125,846 |
| Alloy Ventures 2002 | Early Stage | 7/22/2002 | 25,000,000 | 25,000,000 | 15,448,474 |
| Alloy Annex I | Early Stage | 10/31/2003 | 5,000,000 | 5,000,000 | 1,271,247 |
| Alloy Ventures 2005 | Early Stage | 8/11/2005 | 25,000,000 | 25,000,000 | 8,492,217 |
| 6. APEX Investment Fund V | Early Stage | 4/19/2002 | 20,000,000 | 20,651,307 | 7,429,304 |
| 7. Artiman Ventures II | Early Stage | 10/27/2006 | 25,000,000 | 25,000,000 | 13,141,575 |
| Artiman Ventures III | Early Stage | 8/9/2010 | 20,000,000 | 17,810,000 | 0 |
| 8. Atlas Venture Fund VI | Early Stage | 8/1/2001 | 24,800,000 | 24,800,000 | 12,864,773 |
| 9. Austin Ventures VIII | Balanced | 7/26/2001 | 20,932,140 | 21,100,362 | 33,669,094 |
| Austin Ventures IX | Balanced | 1/9/2006 | 15,000,000 | 15,127,754 | 16,396,495 |
| 10. Battery Ventures VIII | Balanced | 8/13/2007 | 25,000,000 | 24,748,251 | 44,383,691 |
| Battery Ventures VIII Side Car Fund | Balanced | 8/29/2008 | 9,000,000 | 6,690,210 | 17,412,210 |
| 11. Birchmere Ventures III | Early Stage | 5/5/2005 | 10,000,000 | 10,407,708 | 8,692,184 |
| 12. Care Capital Investments III | Balanced | 2/8/2006 | 25,000,000 | 23,017,590 | 5,610,747 |
| 13. Charles River Partnership XI | Early Stage | 2/15/2001 | 11,032,259 | 11,032,259 | 14,422,548 |
| 14. CID Greater China Venture Capital Fund II | Balanced | 8/10/2007 | 20,000,000 | 18,420,000 | 18,303,137 |
| 15. Clearstone Venture Partners III-A | Early Stage | 12/22/2004 | 25,000,000 | 24,250,000 | 12,828,843 |
| 16. Cross Atlantic Technology Fund | Balanced | 2/14/2000 | 20,000,000 | 20,149,041 | 23,742,240 |
| Cross Atlantic Technology Fund II | Balanced | 1/28/2002 | 32,900,000 | 32,900,000 | 32,507,568 |
| 17. Devon Park Bioventures | Balanced | 12/15/2006 | 10,842,697 | 9,589,743 | 23,545,999 |
| 18. Draper Fisher Jurvetson Fund VI | Early Stage | 8/13/1999 | 8,000,000 | 8,000,000 | 5,347,835 |
| Draper Fisher Jurvetson Fund VII | Early Stage | 9/22/2000 | 20,000,000 | 20,000,000 | 9,344,854 |
| 19. Draper Triangle Ventures | Early Stage | 12/20/1999 | 20,000,000 | 20,708,909 | 11,357,493 |
| Draper Triangle Ventures II | Early Stage | 10/13/2004 | 12,000,000 | 13,196,647 | 12,759,958 |
| Draper Triangle Ventures III | Early Stage | 1/28/2015 | 10,000,000 | 4,515,303 | 0 |
| 20. Fairview Capital | Fund of Funds | 9/30/1994 | 10,000,000 | 10,000,000 | 4,543,128 |
| Fairview II | Fund of Funds | 3/31/1998 | 10,000,000 | 9,870,000 | 4,028,770 |

INVESTMENT SECTION

Investment Summary - Private Equity

December 31, 2016 (unaudited)

Venture Capital Committed, Drawn, and Distributed (continued)

| Active Venture Capital Funds Limited Partnership | Strategy/Stage | SERS Initial Funding | Capital Committed ^{1/} | Accumulated Capital Drawn | Accumulated Distributions ^{2/} |
|---|----------------|-------------------------|------------------------------------|---------------------------------|--|
| 21. Frazier Healthcare III | Balanced | 3/31/1999 | \$30,000,000 | \$30,000,000 | \$12,700,255 |
| Frazier Healthcare IV | Balanced | 9/27/2001 | 30,000,000 | 29,820,000 | 24,821,191 |
| Frazier Healthcare V | Balanced | 5/10/2005 | 30,000,000 | 29,625,000 | 40,668,626 |
| 22. Guggenheim Technology Ventures I | Early Stage | 11/17/2008 | 2,000,000 | 2,000,000 | 585,422 |
| 23. Healthcare Ventures V | Early Stage | 12/31/1997 | 25,000,000 | 25,000,000 | 52,714,973 |
| Healthcare Ventures VI | Early Stage | 6/19/2000 | 35,000,000 | 35,000,000 | 4,722,059 |
| Healthcare Ventures VII | Early Stage | 10/29/2002 | 35,000,000 | 35,000,000 | 16,404,798 |
| Healthcare Ventures VIII | Early Stage | 8/22/2005 | 30,000,000 | 29,775,000 | 15,913,398 |
| 24. Highland Capital Partners VI | Early Stage | 10/25/2001 | 25,000,000 | 25,000,000 | 35,781,431 |
| Highland Capital Partners VII | Early Stage | 10/13/2006 | 35,000,000 | 35,001,991 | 27,335,325 |
| Highland Consumer Fund I | Early Stage | 5/4/2007 | 25,000,000 | 24,263,199 | 7,358,806 |
| 25. IP II | Balanced | 12/17/2001 | 8,600,000 | 8,584,073 | 2,799,296 |
| IP III | Balanced | 11/19/2004 | 10,500,000 | 9,555,000 | 12,920,296 |
| IP IV | Balanced | 9/21/2007 | 14,000,000 | 13,300,000 | 10,671,872 |
| 26. Insight Venture Partners VI | Balanced | 8/21/2007 | 30,000,000 | 32,244,176 | 59,033,977 |
| Insight Venture Partners VII | Balanced | 4/27/2011 | 20,000,000 | 20,781,133 | 12,590,034 |
| Insight Venture Partners VIII | Balanced | 7/10/2013 | 50,000,000 | 49,100,000 | 3,449,743 |
| Insight Venture Partners IX | Balanced | 3/24/2015 | 50,000,000 | 24,000,000 | 36,562 |
| 27. InterWest Partners VIII | Early Stage | 8/25/2000 | 25,000,000 | 25,000,000 | 11,786,981 |
| InterWest Partners IX | Balanced | 10/19/2005 | 20,000,000 | 20,000,000 | 19,192,552 |
| InterWest Partners X | Balanced | 10/30/2008 | 30,000,000 | 27,000,000 | 2,300,138 |
| 28. JP Morgan Venture Capital Investors | Fund of Funds | 7/8/1999 | 100,000,000 | 107,875,494 | 69,598,840 |
| JP Morgan Venture Capital Investors II | Fund of Funds | 9/8/2000 | 100,000,000 | 112,179,832 | 110,474,398 |
| JP Morgan Venture Capital Investors III | Fund of Funds | 6/20/2006 | 100,000,000 | 109,799,209 | 70,596,060 |
| 29. Kline Hawkes Pacific | Balanced | 8/30/2000 | 15,000,000 | 15,100,498 | 7,024,260 |
| 30. Knightsbridge Venture Capital VI | Fund of Funds | 12/7/2004 | 20,000,000 | 18,266,667 | 11,273,946 |
| 31. Lightspeed Venture Partners VII | Early Stage | 2/27/2006 | 18,000,000 | 17,737,490 | 6,660,237 |
| Lightspeed Venture Partners VIII | Early Stage | 6/27/2008 | 15,000,000 | 14,400,000 | 17,020,129 |
| Lightspeed India Partners I | Early Stage | 8/14/2015 | 15,000,000 | 5,100,000 | 0 |
| 32. Media/Communications Ventures Fund V | Growth Equity | 9/27/2000 | 35,000,000 | 34,812,205 | 56,014,639 |
| 33. Meritech Capital Partners II | Late Stage | 1/2/2001 | 26,475,166 | 24,842,529 | 37,926,932 |
| Meritech Capital Partners III | Late Stage | 4/5/2006 | 35,000,000 | 34,475,000 | 177,406,870 |
| Meritech Capital Partners IV | Late Stage | 2/10/2011 | 20,000,000 | 18,700,000 | 9,325,898 |
| Meritech Capital Partners V | Late Stage | 9/3/2014 | 23,000,000 | 8,797,500 | 0 |
| 34. Morgenthaler Partners VII | Balanced | 7/26/2001 | 35,000,000 | 35,143,798 | 28,717,913 |
| Morgenthaler Partners VIII | Balanced | 10/3/2005 | 35,000,000 | 35,957,046 | 37,466,826 |
| Morgenthaler Partners IX | Balanced | 11/25/2008 | 20,000,000 | 19,200,000 | 27,486,796 |
| 35. NEPA Venture-II | Balanced | 12/31/1992 | 7,500,000 | 7,500,000 | 34,879,769 |
| Mid-Atlantic Venture Fund III | Early Stage | 6/30/1997 | 20,008,308 | 20,000,000 | 5,654,702 |
| Mid-Atlantic Venture Fund IV | Early Stage | 5/4/2000 | 30,000,000 | 30,246,718 | 9,177,849 |

INVESTMENT SECTION

Investment Summary - Private Equity

December 31, 2016 (unaudited)

Venture Capital Committed, Drawn, and Distributed (continued)

| Active Venture Capital Funds Limited Partnership | Strategy/Stage | SERS Initial Funding | Capital Committed ^{1/} | Accumulated Capital Drawn | Accumulated Distributions ^{2/} |
|--|----------------|----------------------|---------------------------------|---------------------------|---|
| 36. New Enterprise Associates VII | Early Stage | 12/31/1996 | \$30,000,000 | \$30,000,000 | \$102,186,705 |
| New Enterprise Associates IX | Early Stage | 11/15/1999 | 20,000,000 | 19,600,000 | 6,787,262 |
| New Enterprise Associates X | Early Stage | 12/11/2000 | 35,000,000 | 35,028,000 | 32,493,542 |
| New Enterprise Associates 11 | Early Stage | 3/1/2004 | 25,000,000 | 25,000,000 | 53,030,687 |
| New Enterprise Associates 12 | Early Stage | 6/26/2006 | 35,000,000 | 35,631,130 | 39,693,167 |
| 37. Novitas Capital III | Early Stage | 4/17/2003 | 10,000,000 | 9,925,000 | 3,924,047 |
| 38. Oak Investment Partners XI | Late Stage | 7/21/2004 | 35,000,000 | 34,989,508 | 15,565,248 |
| Oak Investment Partners XII | Late Stage | 7/10/2006 | 40,000,000 | 39,968,468 | 28,154,258 |
| 39. Pitango Venture Capital Fund IV | Early Stage | 7/19/2004 | 20,000,000 | 20,001,534 | 9,809,664 |
| Pitango Venture Capital Fund V | Early Stage | 8/22/2007 | 30,000,000 | 28,163,295 | 16,866,840 |
| 40. Polaris Venture Partners II | Balanced | 9/30/1998 | 25,000,000 | 24,750,000 | 40,761,283 |
| Polaris Venture Partners III | Balanced | 1/21/2000 | 50,000,000 | 49,500,000 | 30,006,909 |
| Polaris Venture Partners IV | Balanced | 9/30/2002 | 50,000,000 | 49,750,000 | 38,429,448 |
| Polaris Venture Partners V | Balanced | 8/8/2006 | 50,000,000 | 49,000,000 | 33,243,318 |
| 41. Quaker BioVentures | Balanced | 2/20/2003 | 20,000,000 | 20,000,000 | 5,472,501 |
| Quaker BioVentures II | Balanced | 4/3/2007 | 25,000,000 | 23,250,000 | 14,298,256 |
| 42. SCP Private Equity Partners II | Late Stage | 6/15/2000 | 25,000,000 | 25,000,000 | 7,843,446 |
| 43. Sofinnova Venture Partners VII | Early Stage | 1/18/2007 | 20,000,000 | 20,000,000 | 26,736,522 |
| 44. Summit Accelerator Fund | Early Stage | 11/15/1999 | 8,000,000 | 7,609,500 | 13,302,985 |
| Summit Partners Venture Capital Fund II | Early Stage | 9/22/2006 | 15,000,000 | 15,823,703 | 27,059,160 |
| 45. T. Rowe Price Stock Distribution Account ^{3/} | Late Stage | 1/3/2005 | | See Footnote | |
| 46. Three Arch Capital | Balanced | 12/20/2000 | 20,000,000 | 19,500,000 | 16,008,488 |
| Three Arch Partners IV | Balanced | 6/4/2004 | 20,000,000 | 19,050,000 | 18,242,900 |
| 47. TL Ventures IV | Early Stage | 5/13/1999 | 35,000,000 | 35,000,000 | 25,582,809 |
| TL Ventures V | Early Stage | 10/18/2000 | 40,000,000 | 40,048,219 | 16,100,247 |
| 48. US Venture Partners VII | Balanced | 2/18/2000 | 13,750,000 | 13,750,000 | 4,800,279 |
| US Venture Partners VIII | Early Stage | 6/1/2001 | 26,250,000 | 25,830,000 | 30,849,103 |
| 49. Weathergage Venture Capital | Fund of Funds | 6/26/2007 | 25,000,000 | 22,875,000 | 18,431,174 |
| Weathergage Venture Capital II | Fund of Funds | 6/29/2010 | 25,000,000 | 22,750,000 | 4,358,292 |
| 50. Worldview Technology Partners IV | Balanced | 1/31/2001 | 18,130,023 | 16,951,175 | 7,034,048 |
| Total Active Venture Capital | | | \$2,636,495,593 | \$2,572,321,671 | \$2,251,511,936 |

Cash flows as of September 30, 2016.

*Not funded as of September 30, 2016.

^{1/}Commitments as of December 31, 2016.

^{2/}Distributions include stock distributions. Distributions may include fees that are recorded as negative distributions to be offset against future distributions of the underlying limited partnership investment.

^{3/}T. Rowe Price acts as a stock liquidation account. All cash and stock distributions are reflected in the corresponding distributions.

Investment Summary - Global Public Equity

December 31, 2016 (unaudited)

Role in the SERS Fund

SERS Global Public Equity program seeks high returns through capital appreciation and income from dividend payments while also improving the total fund's liquidity. SERS Global Public Equity program contributes a high expected long-term return to the fund but also may be the greatest contributor to near-term volatility.

Program Structure

Investments in public equity are achieved through buying and holding publicly-traded securities of

companies throughout the developed world and in emerging markets. These companies exhibit a wide range of market capitalizations in many industries and sectors, and offer vastly different equity return opportunities.

Objective

The objective of the Global Public Equity program is to generate annualized net-of-fee returns that exceed its benchmark, the MSCI All Country World Investable Market Index, over a three- to five-year period.

INVESTMENT SECTION

Investment Summary - Global Public Equity

December 31, 2016 (unaudited)

Global Public Equity

(\$ millions)

| Manager | Investment Style | Market Exposure as of 12/31/16 ^{1/} |
|---|--------------------------------|--|
| Global Mandates | | |
| 1. Walter Scott & Partners Limited | Growth | \$687.5 |
| Total Global Mandates | | 687.5 |
| U.S. Equity | | |
| 2. Emerald Advisers | Small-cap Growth | 504.7 |
| 3. Iridian Asset Management | Mid-cap private business value | 394.2 |
| 4. Mellon Capital Management Russell 1000 Index | Russell 1000 Index | 4,603.0 |
| Mellon Capital Management Russell 2000 Core | Russell 2000 Core | 272.2 |
| Mellon Capital Management Russell 2000 Value | Russell 2000 Value | 541.5 |
| Total U.S. Equity | | 6,315.6 |
| Non-U.S. Developed Markets Equity | | |
| 5. Artisan Partners - Global ex U.S. | Global ex-U.S. growth | 363.8 |
| 6. Harris Associates | Small-cap intrinsic value | 493.8 |
| Mellon Capital Management MSCI World ex U.S. Index | MSCI World ex-U.S. Index | 2,596.6 |
| 7. Morgan Stanley Investment Management Limited-developed ex U.S. | EAFE value | 379.0 |
| 8. Templeton Investment Counsel - Global ex U.S. | Global ex-U.S. value | 551.3 |
| Total Non-U.S. Developed Markets Equity | | 4,384.5 |
| Emerging Markets Equity | | |
| 9. Ashmore EMM | Small-cap value | 121.3 |
| 10. BlackRock/Emerging Markets Index Non-Lendable Fund | MSCI Emerging Markets Index | 135.2 |
| 11. Delaware Investment Advisers | Mid/large cap value | 241.5 |
| 12. GlobeFlex Capital | Small-cap - GARP | 74.1 |
| 13. Martin Currie Investment Management | All-cap | 229.0 |
| Total Emerging Markets Equity | | 801.1 |
| Transition Assets | | |
| 14. Northern Trust | Transition | 0.2 |
| Total Transition Assets | | 0.2 |
| Total Global Public Equity | | \$12,188.9 |

^{1/}Includes securities, cash, and accruals.

Investment Summary - Real Estate

December 31, 2016 (unaudited)

Role in the SERS Fund

Real Estate plays several roles within SERS overall investment portfolio, including enhancing returns, diversification and income and providing inflation hedging. In the past, SERS has emphasized tactical value-add and opportunistic Real Estate strategies to provide competitive total returns through capital appreciation. Going forward, SERS will tilt the risk profile to more core-like strategies, which is appropriate given the larger allocation to Real Estate and the desire for more income and liquidity created by SERS maturing pension fund obligations. This moderating risk profile may be achieved by improving diversification within Real Estate, which may result in better long-term risk-adjusted returns.

Program Structure

SERS will diversify its Real Estate allocation by increasing investments in more stable, core-like

investments, and by adding agriculture to the portfolio. New target allocations within the Real Estate program are designed to increase expected return, liquidity, diversification, and inflation hedging, while decreasing expected risk.

Objective

The objective of the Real Estate program is to generate annualized net-of-fee returns that exceed a custom benchmark (NCREIF Fund Index – Open-End Diversified Core Equity, S&P Developed Market Property Index for REITs, & CPI plus a 3% premium for Timber and Agriculture, with the various components weighted according to long-term allocation targets within the asset class), over a three- to five-year period.

Real Estate

(\$ millions)

| Sub-Asset Class | Fair Value | % of Total Fund |
|------------------------------------|------------------|-----------------|
| Core Real Estate | \$328.7 | 1.2% |
| Non-Core Real Estate ^{1/} | 514.8 | 2.0 |
| Separate Accounts | 1,032.2 | 3.9 |
| Timberland | 149.2 | 0.6 |
| REITs | 239.5 | 0.9 |
| Total Real Estate | \$2,264.4 | 8.6% |

^{1/}As of December 31, 2016 unfunded commitments are \$156.7 million.

INVESTMENT SECTION

Investment Summary - Real Estate

December 31, 2016 (unaudited)

The capital committed column represents total dollars allocated from SERS to each fund/manager. Accumulated capital drawn is the portion of SERS capital commitments drawn by the fund/manager to be invested. This amount may also include recycled capital (capital that was distributed and later recalled by the manager to be reinvested) as well as manager fees paid outside of the fund. The accumulated distributions column shows the value of capital and profits returned to SERS.

Real Estate

| Fund / Manager | Asset Type | SERS Initial Funding Year | Capital Committed ^{1/} | Accumulated Capital Drawn | Accumulated Distributions |
|---|-------------|---------------------------|---------------------------------|---------------------------|---------------------------|
| Core Real Estate | | | | | |
| 1. Heitman America Real Estate Trust | Diversified | 2007 | \$100,000,000 | \$140,702,747 | \$40,702,747 |
| 2. UBS Trumbull Property Fund | Diversified | 1988 | 25,558,525 | 25,558,525 | 66,185,346 |
| UBS Trumbull Property Income Fund | Diversified | 1988 | 33,332,027 | 33,332,027 | 86,625,792 |
| Total Core Real Estate | | | 158,890,552 | 199,593,299 | 193,513,885 |
| Non-Core Real Estate | | | | | |
| 3. AG Asia Realty Fund | Diversified | 2007 | 25,000,000 | 23,500,000 | 20,812,500 |
| 4. Apollo Real Estate Fund III | Diversified | 1998 | 50,000,000 | 52,456,214 | 77,266,237 |
| 5. Berwind Investment Partnership V | Diversified | 1999 | 25,000,000 | 26,809,652 | 45,513,547 |
| Berwind Investment Partnership VI | Diversified | 2002 | 25,000,000 | 24,543,712 | 39,054,058 |
| Berwind Investment Partnership VII | Diversified | 2005 | 25,000,000 | 25,000,000 | 2,320,250 |
| Berwind Investment Partnership VIII | Diversified | 2007 | 15,588,238 | 14,912,018 | 8,531,721 |
| Berwind Investment Partnership IX | Diversified | 2012 | 25,000,000 | 32,579,587 | 19,192,370 |
| 6. Blackstone Real Estate Partners IV | Diversified | 2003 | 25,000,000 | 33,958,442 | 42,860,641 |
| Blackstone Real Estate Partners V | Diversified | 2006 | 50,000,000 | 58,307,184 | 83,883,467 |
| Blackstone Real Estate Partners VI | Diversified | 2007 | 75,000,000 | 83,702,435 | 119,891,906 |
| Blackstone Real Estate Partners VII | Diversified | 2011 | 75,000,000 | 89,413,797 | 61,458,726 |
| 7. Clerestory Small Cap Fund I | Diversified | 2010 | 18,000,000 | 15,856,712 | 10,290,687 |
| 8. Colony Investors VIII | Diversified | 2007 | 22,500,000 | 23,905,943 | 6,692,995 |
| 9. Fidelity Real Estate Opportunistic Income Fund ^{2/} | Debt | 2007 | 35,000,000 | 35,000,000 | - |
| 10. Fillmore West Fund | Diversified | 2008 | 30,000,000 | 35,374,912 | 22,343,820 |
| 11. Hawkeye Scout Fund I | Diversified | 2009 | 75,000,000 | 78,038,821 | 118,663,120 |
| Hawkeye Scout Fund II | Diversified | 2016 | 30,000,000 | 1,371,009 | 0 |
| 12. LEM Real Estate High-Yield Debt Fund III | Debt | 2013 | 25,000,000 | 25,000,000 | 7,694,491 |
| 13. Lubert Adler Fund III | Diversified | 2000 | 30,000,000 | 30,000,000 | 45,442,098 |
| Lubert Adler Fund IV | Diversified | 2004 | 25,000,000 | 26,500,000 | 14,042,774 |
| Lubert Adler Fund V | Diversified | 2006 | 30,000,000 | 30,621,958 | 5,187,176 |
| Lubert Adler Fund VI | Diversified | 2008 | 21,945,337 | 19,880,760 | 13,771,441 |
| Lubert Adler Fund VI-A | Diversified | 2010 | 3,054,663 | 3,869,240 | 5,622,604 |
| Lubert Adler Fund VII | Diversified | 2014 | 25,000,000 | 17,500,000 | 0 |
| 14. OCM Real Estate Opp Fund III | Diversified | 2003 | 25,000,000 | 25,000,000 | 41,778,732 |

INVESTMENT SECTION

Investment Summary - Real Estate

December 31, 2016 (unaudited)

Real Estate (continued)

| Fund / Manager | Asset Type | SERS Initial Funding Year | Capital Committed ^{1/} | Accumulated Capital Drawn | Accumulated Distributions |
|---|------------------|---------------------------|---------------------------------|---------------------------|---------------------------|
| Non-Core Real Estate (continued) | | | | | |
| 15. Oxford GSA Fund | Diversified | 2006 | \$21,369,627 | \$27,205,500 | \$24,220,211 |
| 16. Prudential Latin America Retail Fund I | Retail | 2006 | 25,000,000 | 28,906,216 | 34,797,726 |
| Prudential Latin America Residential Fund III | Multi-Family | 2008 | 29,654,968 | 24,708,749 | 10,712,767 |
| Prudential Senior Housing Fund III | Senior Housing | 2006 | 35,000,000 | 36,412,463 | 60,702,700 |
| Prudential Senior Housing Fund IV | Senior Housing | 2011 | 25,000,000 | 23,806,811 | 9,687,513 |
| Prudential Senior Housing Fund V | Senior Housing | 2015 | 50,000,000 | 11,729,280 | 0 |
| 17. Rockpoint Finance Fund I | Residential Land | 2007 | 50,000,000 | 4,399,572 | 1,566,309 |
| Rockpoint Real Estate Fund I | Diversified | 2004 | 25,000,000 | 25,772,035 | 31,379,795 |
| Rockpoint Real Estate Fund II | Diversified | 2005 | 35,000,000 | 37,383,717 | 27,825,949 |
| Rockpoint Real Estate Fund III | Diversified | 2007 | 50,000,000 | 50,294,970 | 63,450,795 |
| Rockpoint Real Estate Fund V | Diversified | 2015 | 50,000,000 | 7,973,880 | 134,526 |
| 18. Starwood Fund IV | Diversified | 1997 | 37,750,000 | 37,750,000 | 81,363,493 |
| Starwood Fund VI | Diversified | 2001 | 50,000,000 | 50,153,525 | 37,655,142 |
| Starwood Fund VII | Diversified | 2006 | 35,000,000 | 35,000,000 | 15,386,983 |
| Starwood Fund VIII | Diversified | 2009 | 50,000,000 | 52,975,073 | 64,232,031 |
| 19. ValStone Opportunity Fund V | Diversified | 2014 | 14,663,402 | 17,511,819 | 5,304,760 |
| 20. Westbrook Fund V | Diversified | 2004 | 25,000,000 | 27,071,162 | 44,485,779 |
| Westbrook Fund VI | Diversified | 2006 | 35,000,000 | 43,154,659 | 34,568,680 |
| Westbrook Fund VII | Diversified | 2007 | 50,000,000 | 55,521,338 | 48,090,909 |
| Westbrook Fund VIII | Diversified | 2009 | 50,000,000 | 59,326,620 | 67,808,262 |
| Total Non-Core Real Estate | | | 1,554,526,235 | 1,490,159,785 | 1,475,689,691 |
| Separate Accounts^{3/} | | | | | |
| Heitman I.M.A. | Diversified | 1988 | NA | 919,055,486 | 1,194,474,873 |
| 21. LaSalle I.M.A. | Diversified | 1994 | NA | 801,764,412 | 964,822,922 |
| 22. Lowe I.M.A. | Diversified | 1994 | NA | 1,240,387,758 | 1,331,415,240 |
| Lowe GTO | Diversified | 2012 | NA | 368,869,212 | 222,770,000 |
| Total Separate Accounts | | | | 3,330,076,868 | 3,713,483,035 |
| Timberland^{3/} | | | | | |
| 23. Forest I.M.A. | Timberland | 1992 | NA | 124,231,969 | 108,472,772 |
| Total Timberland | | | | 124,231,969 | 108,472,772 |

INVESTMENT SECTION

Investment Summary - Real Estate

December 31, 2016 (unaudited)

Real Estate (continued)

| Fund/ Manager | Asset Type | SERS Initial Funding Year | Capital Committed ^{1/} | Accumulated Capital Drawn | Accumulated Distributions |
|---|-------------|---------------------------|---------------------------------|---------------------------|---------------------------|
| REITs^{3/} | | | | | |
| 24. CBRE Clarion Real Estate Securities | Diversified | 1996 | NA | \$273,206,464 | \$611,774,297 |
| 25. CenterSquare Real Estate Securities | Diversified | 2002 | NA | 26,197,305 | 36,082,862 |
| Total REITs | | | | 299,403,769 | 647,857,159 |
| Total Real Estate | | | \$1,713,416,787 | \$5,443,465,690 | \$6,139,016,542 |

Cash flows as of September 30, 2016.

^{1/}Commitments as of December 31, 2016.

^{2/}This is an open-end fund. All distributions are automatically reinvested.

^{3/}Due to the nature of the investments, there are no capital commitments for Separate Account, Timberland, and REIT managers.

Investment Summary - Hedge Funds

December 31, 2016 (unaudited)

Role in the SERS Fund

SERS Hedge Fund program includes investments designed to provide total returns comparable to the total fund return but with lower volatility and correlation to other asset classes. SERS Hedge Fund program is designed to provide attractive long-term, risk-adjusted returns, diversification from equity markets, low beta to equity markets, and downside protection during prolonged periods of equity market decline.

Program Structure

Investments in hedge funds are achieved through funds-of-hedge funds and direct investment in hedge funds. SERS Hedge Fund program invests in a

diverse set of strategies including long/short equity, global macro, relative value, credit, event driven, and other hedge fund strategies – all with attractive long-term, risk-adjusted returns. The program is designed to target a liquidity profile less than that of public equities but significantly more liquid than private equity.

Objective

The objective of the Hedge Fund program is to generate annualized net-of-fee returns that exceed its benchmark, the HFRI Fund-of-Funds Strategic Index, over a three- to five-year period.

INVESTMENT SECTION

Investment Summary - Hedge Funds

December 31, 2016 (unaudited)

Hedge Funds

(\$ millions)

| Manager | Investment Style | Market Exposure as of 12/31/16 ^{1/} |
|---|-------------------|---|
| Funds-of-Hedge Funds | | |
| 1. Arden Keystone | Fund-of-Funds | \$148.8 |
| 2. Blackstone Keystone | Fund-of-Funds | 1,046.6 |
| 3. Entrust Keystone | Fund-of-Funds | 311.2 |
| Total Hedged Strategies | | 1,506.6 |
| Absolute Return Strategies | | |
| Arden | Fund-of-Funds | 20.3 |
| Blackstone - Stable Alpha | Fund-of-Funds | 23.3 |
| 4. Mesirow Financial | Fund-of-Funds | 14.3 |
| 5. Morgan Stanley Alternative Investment Partners | Fund-of-Funds | 8.5 |
| 6. PAAMCO | Fund-of-Funds | 8.2 |
| 7. Robeco Investment | Fund-of-Funds | 0.3 |
| 8. Rock Creek | Fund-of-Funds | 2.6 |
| Total Absolute Return Strategies | | 77.5 |
| Direct Investments | | |
| 9. Hoplite Partners | Direct Hedge Fund | 21.1 |
| 10. Luxor Capital Partners | Direct Hedge Fund | 15.7 |
| 11. MKP Opportunity Fund | Direct Hedge Fund | 15.4 |
| 12. Pine River Fund | Direct Hedge Fund | 20.9 |
| 13. Samlyn Onshore Fund | Direct Hedge Fund | 15.9 |
| 14. Stelliam Fund | Direct Hedge Fund | 16.1 |
| Total Direct Investments | | 105.1 |
| Commodities | | |
| Blackstone Commodities | Commodities | 368.2 |
| Total Commodities | | 368.2 |
| Total Hedge Funds | | \$2,057.4 |

^{1/}Includes securities, cash, and accruals.

Investment Summary - Fixed Income

December 31, 2016 (unaudited)

Role in the SERS Fund

SERS Fixed Income program is structured to:

- Generate income to pay benefits
- Provide additional liquidity to minimize capital impairment risk
- Reduce volatility of the total fund
- Protect SERS against deflation (and inflation via TIPS)
- Contribute total return to SERS when market conditions permit

Program Structure

Fixed income includes investments in publicly-traded debt obligations of sovereign, quasi-sovereign, and

corporate entities. The asset class generates current income and the repayment of principal at maturity. Shorter duration fixed income has substantially lower volatility than equity, and most fixed income investments have a low correlation with equity returns. SERS Fixed Income program is categorized into five strategies and a separate cash allocation to improve transparency on SERS unallocated cash amount.

Objective

The objective of the Fixed Income program is to generate annualized net-of-fee returns that exceed its benchmark, the Bloomberg Barclays U.S. Aggregate Bond Index, over a three- to five-year period.

INVESTMENT SECTION

Investment Summary - Fixed Income

December 31, 2016 (unaudited)

Fixed Income

(\$ millions)

| Manager | Investment Style | Market Exposure as of 12/31/16 ^{1/} |
|--|---|---|
| Core Plus Fixed Income | | |
| 1. Brandywine Global | Global Sovereign Credit | \$175.4 |
| 2. Harvest Fund MLP | Energy Infrastructure | 136.6 |
| 3. Kayne Anderson MLP | Energy Infrastructure | 121.8 |
| 4. PIMCO EMD | Emerging Market Debt (liquidating) | 0.1 |
| 5. Pyramis Global Advisors | Commercial Mortgage-Backed Securities | 291.0 |
| 6. SEI Structured Credit Fund | High Yield Bank Loans | 268.8 |
| 7. Stone Harbor | Emerging Market Debt | 138.3 |
| Stone Harbor | Global High Yield | 175.7 |
| 8. W.R. Huff | High Yield (liquidating) | 9.8 |
| 9. Waterfall Asset Management | Asset-Backed Securities | 176.8 |
| Total Core Plus | | 1,494.3 |
| Core Fixed Income | | |
| 10. MacKay Shields Core | Bloomberg Barclays U.S. Aggregate | 192.3 |
| 11. Mellon Capital Management | Bloomberg Barclays U.S. Aggregate | 428.0 |
| PIMCO Core | Bloomberg Barclays U.S. Aggregate ex. Treasuries | 243.2 |
| 12. Taplin, Canida & Habacht (TCH) | U.S. Credit | 173.9 |
| 13. UBS Core Bond | Bloomberg Barclays U.S. Aggregate | 101.3 |
| Total Core | | 1,138.7 |
| Global Treasury Inflation Protected Securities (TIPS) | | |
| 14. Brown Brothers Harriman | Global TIPS | 210.5 |
| 15. New Century Advisors | Global TIPS | 106.1 |
| 16. NISA Investment Advisors | U.S. TIPS | 472.8 |
| Total Global Treasury Inflation Protected Securities (TIPS) | | 789.4 |
| Nominal U.S. Treasuries | | |
| PIMCO U.S. Treasuries | Domestic Treasuries | 269.9 |
| 17. Wellington U.S. Treasuries | Domestic Treasuries | 263.5 |
| Total Nominal U.S. Treasuries | | 533.4 |
| Short-Term Notes | | |
| 18. PNC Short Duration | Short Duration Government Credit | 236.4 |
| 19. Stone Ridge Short Duration | Short Duration Government Credit | 119.0 |
| Total Short-Term Notes | | 355.4 |
| Total Fixed Income | | \$4,311.2 |

^{1/}Includes securities, cash, and accruals.

Investment Summary - Cash

December 31, 2016 (unaudited)

Role in the SERS Fund

SERS investment program endeavors to maintain an appropriate level of cash to pay retirement benefits and covenants during prolonged periods of market decline and state budgetary constraints.

have historically been invested in the Pennsylvania Treasury Group Investment Fund, a short-term investment fund.

Program Structure

Cash investments emphasize the use of higher credit quality debt instruments that are liquid and have short maturities and durations, or have floating rates and

Objective

The objective of Cash is to generate annualized net-of-fee returns that exceed its benchmark, the Bank of America 90-Day T-Bill Index, over a three-year period.

Cash

(\$ millions)

| | Manager | Investment Style | Market Exposure as of 12/31/16 ^{1/} |
|-------------------|--------------------------|------------------|---|
| Cash | | | |
| 1. | PA State Treasury (STIF) | Cash | \$1,316.0 |
| Total Cash | | | \$1,316.0 |

^{1/}Includes securities, cash, and accruals.

2016

Actuarial Section



May 12, 2017

Mr. David E. Durbin
Executive Director
State Employees' Retirement System
30 North Third Street
Suite 150
Harrisburg, PA 17101-1716

Dear Mr. Durbin:

The purpose of this letter is to certify the actuarial adequacy of the contributions being made by the Commonwealth of Pennsylvania and other participating agencies to the Pennsylvania State Employees' Retirement System (SERS), and to discuss the approach currently being taken toward meeting the financing objectives of the plan. The results provided herein are based upon the December 31, 2016 annual actuarial valuation for funding purposes.

The funding objective of the plan is set forth in the State Employees' Retirement Code (SERC). The annual employer contribution is equal to the sum of the following for the fiscal year beginning July 1, 2017:

- (1) The employer share of the normal cost.
- (2) The fresh start amortization of the December 31, 2009 unfunded liability over a 30-year period beginning July 1, 2010 and ending on June 30, 2040.
- (3) The amortization of the change in liability due to Act 2010-120 (Act 120) over a 30-year period beginning July 1, 2011 and ending on June 30, 2041.
- (4) The amortization of changes in liability due to actual experience differing from assumed experience after December 31, 2009 over 30-year periods beginning with the July following the actuarial funding valuation determining such changes.
- (5) The amortization of legislated benefit changes, including cost-of-living increases, over 10-year periods beginning with the July following the actuarial funding valuation determining such changes. (Note: There are currently no 10-year amortizations being funded.)

The amortization payments are level dollar amounts over the remaining applicable amortization periods. The employer cost is determined as a percent of retirement covered compensation. The



Mr. David E. Durbin
May 12, 2017

total employer cost is the average contribution amount that needs to be received from the employer groups participating in the system. Some employer groups contribute a higher percent of compensation, and some contribute a lower percent of compensation depending on the benefits payable to their employees.

The actuarial funding valuation is based on financial and participant data, which is prepared by SERS staff. We rely on that data and ensure that it is reviewed for internal and year-to-year consistency as well as general reasonableness prior to being used in the actuarial funding valuation.

The actuarial funding valuation uses assumptions regarding future rates of investment return and rates of retirement, withdrawal, death, and disability among SERS members and their beneficiaries. The current set of assumptions used in the December 31, 2016 actuarial funding valuation, with the exception of the investment return and inflation assumptions, was adopted by the State Employees' Retirement Board (the Board) based upon actual experience of SERS during the years 2011 through 2015. To ensure that the investment return assumption remains up-to-date and appropriate for every actuarial valuation, we review it annually with the SERS Board. As a result of the review undertaken during March/April of 2017, the Board approved (i) a reduction in the annual investment return assumption from 7.50% to 7.25% and (ii) a reduction in the annual inflation assumption from 2.75% to 2.60%, and both changes became effective with the December 31, 2016 actuarial valuation. We will continue to closely monitor this assumption and will recommend changing it if conditions warrant such change. The actuarial value of assets is developed by recognizing the difference between the expected actuarial value of assets and the market value of assets over a five-year period.

Governmental Accounting Standards Board (GASB) Statement No. 67, *Financial Reporting for Pension Plans*, replaced the requirements of GASB Statement No. 25, *Financial Reporting for Defined Benefit Pension Plans and Note Disclosures for Defined Contribution Plans*, effective for financial statements for fiscal years ending on or after June 30, 2014. GASB Statement No. 68, *Accounting and Financial Reporting for Pensions*, replaced the requirements of GASB Statement No. 27, *Accounting for Pensions by State and Local Governmental Employers*, effective for fiscal years ending on or after June 30, 2015. GASB 67 is designed for financial reporting by pension plans and GASB 68 is designed for financial reporting by entities that participate in pension plans. The objective of both statements is to provide more useful, transparent, and comparable financial information related to pensions. The Financial Section now includes new schedules in response to the reporting requirements of GASB Statement No. 67. Although two schedules that were required disclosures under Statement No. 25 were discontinued, namely the "Schedule of Funding Progress" and the "Schedule of Employer Contributions," these schedules remain of interest and, therefore, have been updated to reflect the December 31, 2016 actuarial funding valuation and are included herein.



Mr. David E. Durbin
May 12, 2017

GASB Statement No. 25, although it has been replaced by GASB Statement No. 67, established the Annual Required Contribution (ARC), which was recognized for many years as the minimum annual contribution required by GASB. How a pension plan's actual contributions compare to the ARC is likely to remain of interest despite the fact that GASB has discontinued the ARC. For SERS, the scheduled contributions from July 1, 2005 through June 30, 2015 were below the minimum amount required to meet the GASB No. 25 minimum. Originally this was a result of financing changes implemented by Act 2003-40 in December 2003. Later, this became a consequence of the contribution collars required under Act 2010-120. After June 30, 2015, provided that employer contributions are made in accordance with current law, we expect employer contributions to exceed the GASB No. 25 minimum.

With the exception of the "Schedule of Retirees and Beneficiaries Added to and Removed from Rolls" and the "Summary of Plan Provisions", the schedules appearing in the Actuarial Section were prepared from the December 31, 2016 actuarial funding valuation.

Based upon the valuation results, it is our opinion that, provided future employer contributions are made in accordance with current law, the Pennsylvania State Employees' Retirement System is in sound condition in accordance with generally accepted actuarial principles and procedures.

It should be noted that, with the passage of Act 120, significant changes were legislated to many key benefit provisions of SERS. This was in response to the significant funding challenges SERS had been facing, and will continue to face in coming years. By reducing pensions for future commonwealth employees and providing funding relief to SERS' employers through the use of contribution collars, Act 120 addressed both SERS' long-term and short-term funding challenges.

Effective with the December 31, 2016 actuarial funding valuation, for the first time since 2010, the required employer contribution level is below the Act 120 collared contribution level, thereby making the Act 120 collars no longer applicable (for commonwealth FY 17/18 or beyond).

Actuarial Certification

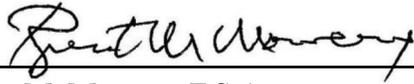
To the best of our knowledge, this report is complete and accurate and all costs and liabilities have been determined in accordance with the applicable actuarial standards of practice and on the basis of actuarial assumptions and methods which are reasonable (taking into account the past experience of SERS and reasonable expectations) and which represent our best estimate of anticipated experience under the plan.



Mr. David E. Durbin
May 12, 2017

The actuaries certifying to this valuation are members of the Society of Actuaries or other professional actuarial organizations, and meet the Qualification Standards of the American Academy of Actuaries for purposes of issuing Statements of Actuarial Opinion.

Respectfully submitted,
Korn Ferry Hay Group, Inc.

By 
Brent M. Mowery, F.S.A.
Member American Academy of Actuaries
Enrolled Actuary No. 17-3885

By 
David Reichert
Member American Academy of Actuaries
Enrolled Actuary No. 17-6461

By 
Craig R. Graby
Member American Academy of Actuaries
Enrolled Actuary No. 17-7319

Summary of Actuarial Assumptions and Methods

December 31, 2016 (unaudited)

The schedules in this Actuarial Section are reported in accordance with SERS actuarial funding valuation based on statutory requirements. For funding purposes, actuarial methods are specified by statute while actuarial assumptions are recommended by SERS actuary and approved by the SERS Board, as trustees of the State Employees' Retirement Fund. The State Employees' Retirement Code (SERC), legislated by the General Assembly and signed into law by the Governor, establishes funding policy. The SERC is administered by the SERS Board. The General Assembly, along with the Governor's signing, has the authority to amend the SERC. The Financial Section, except where noted, is reported in accordance with a separate actuarial accounting valuation based on Governmental Accounting Standards Board Statement No. 67 (GASB 67).

For funding purposes, a variation of the entry-age normal actuarial cost method, which is used to determine the liabilities and costs related to SERS benefits, is based on the benefits and contributions for new members rather than for all current members from their date of entry under the entry-age actuarial cost method for financial reporting purposes under GASB 67. Ultimately, this variation for funding purposes should produce approximately the same results as the typical entry-age method over the long run. For funding purposes, a five-year smoothed market value is used as the asset valuation method compared to fair (market) value for financial reporting purposes.

SERS uses amortization periods of 10 years and 30 years with level payments over closed periods. The current amortization schedules are as follows:

- (1) Act 2010-120 established a fresh start amortization of the December 31, 2009 unfunded liability over a 30-year period beginning July 1, 2010, and ending June 30, 2040.
- (2) The amortization of the change in liability due to Act 2010-120 over a 30-year period beginning July 1, 2011, and ending on June 30, 2041.
- (3) The amortization of changes in liability due to actual experience differing from assumed experience after December 31, 2009, over 30-year periods beginning with the July 1 following the actuarial valuation determining such changes.

Actuarial methods and assumptions used for both funding purposes as well as financial reporting purposes include:

- The investment rate of return of 7.25% per year is based on an underlying rate of inflation of 2.6% per year, which was approved by SERS Board with the recommendation of its actuary at its April 2017 meeting. Last year's valuation for December 31, 2015 used investment rate of return of 7.5% and an underlying rate of inflation of 2.75%
- For current and future non-disabled retirees, beneficiaries, and survivors, SERS uses the RP-2000 Male and Female Combined Healthy Mortality Tables projected (using Projection Scale AA) to 2016 for males and to 2020 for females, and then further adjusted to ensure sufficient margin for improvement in certain age ranges. For current and future disabled retirees, SERS uses the RP-2000 Male and Female Disabled Retiree Mortality Tables projected (using Projection Scale AA) to 2021 for males and to 2017 for females. For all pre-retirement active members, the mortality is based on actual SERS experience.

ACTUARIAL SECTION

Summary of Actuarial Assumptions and Methods

December 31, 2016 (unaudited)

- The rates for probability of retirement and the probabilities of withdrawal from active service, including death, before age and service retirements, which are presented in the **Schedules of Active Member Valuation Data**.
- The projected average salary increase of 5.6% with a range of 3.7% to 8.9%. This increase includes an underlying assumption of 2.60% for inflation. The annual rate of salary increase for promotions and longevity for members is presented in the **Schedules of Active Member Valuation Data**.
- No cost-of-living adjustments were used in the determination of actuarial valuations.

SERS periodically prepares a study using actual experience in order to develop assumptions for use in its actuarial valuations. The latest study dated March 9, 2016 was completed for the period January 1, 2011 through December 31, 2015. Based upon annual review, SERS Board with the recommendation of its actuary approved reduction in the investment rate of return to 7.25% and underlying rate of inflation to 2.6% at its April 2017 meeting for December 31, 2016 valuations.

The most recent valuations were based on members of SERS as of December 31, 2016. All census and asset data was supplied by SERS and was subject to reasonable consistency checks. The actuarial computations were prepared by, or under the supervision of, a Member of the American Academy of Actuaries (M.A.A.A.).

Schedules of Active Member Valuation Data

December 31, 2016 (unaudited)

Table A^{1/}
Withdrawal From Active Employment Before Age and Service Retirement

Annual Rate of Active Members Separating Within the Next Year

| Sample Age | Male | | | | | | Female | | | | | |
|------------|-----------------------------|-------|-------|-------|-------|------------|-----------------------------|-------|-------|-------|-------|------------|
| | Withdrawal Years of Service | | | | Death | Disability | Withdrawal Years of Service | | | | Death | Disability |
| | 0 | 5 | 9 | 14+ | | | 0 | 5 | 9 | 14+ | | |
| 20 | 24.20% | NA | NA | NA | 0.04% | NA | 28.40% | NA | NA | NA | 0.02% | NA |
| 25 | 18.50 | 3.00% | 2.10% | NA | 0.04 | 0.02% | 22.40 | 3.70% | 2.30% | NA | 0.02 | 0.04% |
| 30 | 16.40 | 3.00 | 2.10 | 1.00% | 0.05 | 0.06 | 19.20 | 3.30 | 2.30 | 1.70% | 0.02 | 0.09 |
| 35 | 15.60 | 2.40 | 1.30 | 1.00 | 0.06 | 0.11 | 15.00 | 3.20 | 2.30 | 1.20 | 0.03 | 0.14 |
| 40 | 15.00 | 2.40 | 1.30 | 1.00 | 0.09 | 0.17 | 13.40 | 3.20 | 1.20 | 1.00 | 0.04 | 0.19 |
| 45 | 14.40 | 2.40 | 0.70 | 1.10 | 0.13 | 0.30 | 13.10 | 2.70 | 1.20 | 1.00 | 0.06 | 0.30 |
| 50 | 14.40 | 2.60 | 0.70 | 1.10 | 0.24 | 0.42 | 13.10 | 2.70 | 1.50 | 1.00 | 0.09 | 0.45 |
| 55 | 14.40 | 1.90 | 0.80 | 0.80 | 0.29 | 0.55 | 13.10 | 1.80 | 1.00 | 1.60 | 0.14 | 0.57 |
| 60 | NA | NA | NA | NA | 0.35 | NA | NA | NA | NA | NA | 0.24 | NA |

Table B^{1/}
Annual Rate of Retirement

| Sample Age | Full Benefits | |
|------------|---------------|--------|
| | Male | Female |
| 53 | 20.0% | 23.0% |
| 54-55 | 23.0 | 23.0 |
| 56-57 | 24.0 | 23.0 |
| 58 | 27.0 | 23.0 |
| 59 | 30.0 | 25.0 |
| 60 | 25.0 | 25.0 |
| 61 | 20.0 | 20.0 |
| 62 | 25.0 | 25.0 |
| 63-64 | 20.0 | 20.0 |
| 65-66 | 25.0 | 25.0 |
| 67-70 | 23.0 | 23.0 |
| 71-79 | 20.0 | 20.0 |
| 80 | 100.0 | 100.0 |

^{1/}The assumptions presented in Table A and Table B were based on a review of SERS experience from 2011 – 2015. The rates are the probabilities that an event will occur in the year after the valuation. For instance, the male retirement rate of 25% at age 62 means that 250 of every 1,000 male employees age 62 and eligible for full benefits are expected to retire before they reach age 63.

ACTUARIAL SECTION

Schedules of Active Member Valuation Data

December 31, 2016 (unaudited)

Table C
Annual Rate of Salary Increase

| Completed Years of Service | Increase | Completed Years of Service | Increase |
|----------------------------|----------|----------------------------|----------|
| 1 | 6.00% | 16 | 2.10% |
| 2 | 4.50 | 17 | 2.05 |
| 3 | 4.00 | 18 | 2.00 |
| 4 | 3.75 | 19 | 1.95 |
| 5 | 3.50 | 20 | 1.90 |
| 6 | 3.25 | 21 | 1.85 |
| 7 | 3.00 | 22 | 1.75 |
| 8 | 2.90 | 23 | 1.65 |
| 9 | 2.80 | 24 | 1.55 |
| 10 | 2.70 | 25 | 1.45 |
| 11 | 2.60 | 26 | 1.25 |
| 12 | 2.50 | 27 | 1.05 |
| 13 | 2.40 | 28 | 0.90 |
| 14 | 2.30 | 29 | 0.85 |
| 15 | 2.20 | 30+ | 0.80 |

Table D
Reduced Benefits

| Sample Age | 5 - 14 Years of Service | | 15 or More Years of Service | |
|------------|-------------------------|--------|-----------------------------|--------|
| | Male | Female | Male | Female |
| 25 | 2.00% | 3.70% | NA | NA |
| 30 | 1.60 | 1.90 | NA | NA |
| 35 | 1.60 | 1.90 | 1.00% | 1.20% |
| 40 | 1.60 | 1.90 | 1.00 | 1.20 |
| 45 | 1.35 | 1.90 | 1.00 | 1.60 |
| 50 | 1.35 | 1.90 | 2.00 | 2.00 |
| 55 | 1.35 | 1.90 | 6.00 | 6.00 |

ACTUARIAL SECTION

Schedules of Active Member Valuation Data

December 31, 2016 (unaudited)

Active Members by Age and Years of Service - Male

| Age Group | Years of Service | | | | | | | Total | Average Salary |
|--------------|------------------|---------------|---------------|--------------|--------------|--------------|--------------|---------------|-----------------|
| | 0 - 4 | 5 - 9 | 10 - 14 | 15 - 19 | 20 - 24 | 25 - 29 | 30+ | | |
| < 20 | 34 | NA | NA | NA | NA | NA | NA | 34 | \$28,301 |
| 20 - 24 | 1,257 | 4 | NA | NA | NA | NA | NA | 1,261 | 34,394 |
| 25 - 29 | 3,887 | 570 | 15 | NA | NA | NA | NA | 4,472 | 44,263 |
| 30 - 34 | 2,878 | 2,338 | 788 | 8 | NA | NA | NA | 6,012 | 52,725 |
| 35 - 39 | 2,018 | 1,863 | 2,136 | 516 | 7 | NA | NA | 6,540 | 57,711 |
| 40 - 44 | 1,563 | 1,497 | 1,660 | 1,650 | 547 | 6 | NA | 6,923 | 62,764 |
| 45 - 49 | 1,488 | 1,363 | 1,601 | 1,797 | 2,299 | 821 | 25 | 9,394 | 68,416 |
| 50 - 54 | 1,427 | 1,211 | 1,354 | 1,316 | 1,414 | 1,486 | 591 | 8,799 | 66,054 |
| 55 - 59 | 1,181 | 1,102 | 1,259 | 1,182 | 960 | 1,117 | 1,215 | 8,016 | 63,681 |
| 60 - 64 | 832 | 901 | 1,055 | 923 | 560 | 514 | 564 | 5,349 | 63,867 |
| 65+ | 419 | 494 | 569 | 427 | 225 | 173 | 320 | 2,627 | 66,902 |
| Total | 16,984 | 11,343 | 10,437 | 7,819 | 6,012 | 4,117 | 2,715 | 59,427 | \$60,965 |

Average Age: 46.15
Average Service: 11.73

Active Members by Age and Years of Service - Female

| Age Group | Years of Service | | | | | | | Total | Average Salary |
|--------------|------------------|--------------|--------------|--------------|--------------|--------------|--------------|---------------|-----------------|
| | 0 - 4 | 5 - 9 | 10 - 14 | 15 - 19 | 20 - 24 | 25 - 29 | 30+ | | |
| < 20 | 38 | NA | NA | NA | NA | NA | NA | 38 | \$23,805 |
| 20 - 24 | 1,145 | 5 | NA | NA | NA | NA | NA | 1,150 | 30,487 |
| 25 - 29 | 2,672 | 426 | 17 | NA | NA | NA | NA | 3,115 | 38,357 |
| 30 - 34 | 2,203 | 1,479 | 506 | 23 | NA | NA | NA | 4,211 | 44,155 |
| 35 - 39 | 1,810 | 1,321 | 1,303 | 439 | 17 | NA | NA | 4,890 | 49,230 |
| 40 - 44 | 1,527 | 1,153 | 1,139 | 885 | 317 | 31 | NA | 5,052 | 51,473 |
| 45 - 49 | 1,553 | 1,220 | 1,234 | 991 | 886 | 532 | 54 | 6,470 | 53,609 |
| 50 - 54 | 1,390 | 1,263 | 1,173 | 973 | 800 | 821 | 630 | 7,050 | 54,111 |
| 55 - 59 | 1,180 | 1,180 | 1,266 | 1,039 | 826 | 797 | 921 | 7,209 | 54,534 |
| 60 - 64 | 644 | 834 | 903 | 768 | 456 | 396 | 404 | 4,405 | 53,620 |
| 65+ | 204 | 297 | 339 | 346 | 147 | 106 | 176 | 1,615 | 55,010 |
| Total | 14,366 | 9,178 | 7,880 | 5,464 | 3,449 | 2,683 | 2,185 | 45,205 | \$50,629 |

Average Age: 46.51
Average Service: 10.95

ACTUARIAL SECTION

Schedules of Active Member Valuation Data

December 31, 2016 (unaudited)

Aggregate Active Member Valuation Data

| Valuation Year Ended Dec 31 | Number of Employers | Number of Active Members | Covered Employee Payroll | Annual Average Pay | % (Decrease)/Increase in Average Pay |
|-----------------------------|---------------------|--------------------------|--------------------------|--------------------|--------------------------------------|
| 2016 | 103 ^{1/} | 104,632 | \$5,912,000,000 | \$56,499 | -0.6% |
| 2015 | 104 ^{2/} | 105,025 | 5,972,000,000 | 56,858 | 3.7 |
| 2014 | 104 ^{2/} | 104,431 | 5,720,000,000 | 54,769 | 2.8 |
| 2013 | 104 | 105,186 | 5,598,000,000 | 53,224 | 1.9 |
| 2012 | 105 | 106,048 | 5,539,000,000 | 52,230 | 0.1 |
| 2011 | 107 | 107,021 | 5,582,000,000 | 52,159 | 1.8 |
| 2010 | 106 | 109,255 | 5,597,000,000 | 51,228 | 0.8 |
| 2009 | 106 | 110,107 | 5,595,000,000 | 50,813 | 3.8 |
| 2008 | 108 | 110,866 | 5,428,000,000 | 48,957 | 1.3 |
| 2007 | 108 | 109,610 | 5,299,000,000 | 48,345 | 4.8 |

^{1/}The membership includes 38 employers and the commonwealth is classified as its largest employer. The commonwealth comprises 66 agencies and when everything is evaluated separately, SERS has a total of 103 participating employers/agencies.

^{2/}The membership includes 39 employers and the commonwealth is classified as its largest employer. The commonwealth comprises 66 agencies and when everything is evaluated separately, SERS has a total of 104 participating employers/agencies.

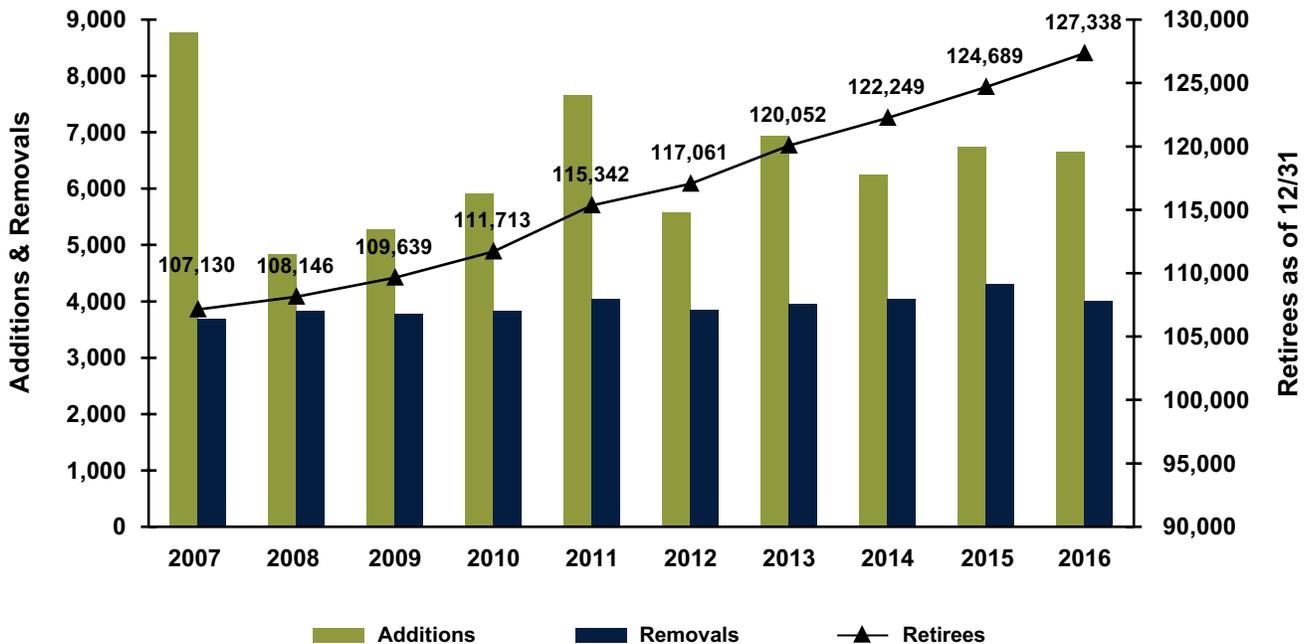
Schedule of Retirees and Beneficiaries Added to and Removed from Rolls

December 31, 2016 (unaudited)

Retirees and Beneficiaries Added to and Removed from Rolls

| Year Ended | Added to Rolls | | Removed from Rolls | | Rolls - End of Year | | Percentage Change | |
|------------|----------------|---------------|--------------------|--------------|---------------------|--------------------------|-------------------|------------|
| | No. | Allowances | No. | Allowances | No. | Allowances ^{1/} | No. | Allowances |
| 2016 | 6,658 | \$191,327,122 | 4,009 | \$60,165,549 | 127,338 | \$2,794,984,868 | 2.1% | 4.9% |
| 2015 | 6,743 | 175,810,502 | 4,303 | 63,027,188 | 124,689 | 2,664,418,763 | 2.0 | 4.4 |
| 2014 | 6,245 | 157,593,809 | 4,048 | 59,524,055 | 122,249 | 2,552,077,530 | 1.8 | 4.0 |
| 2013 | 6,944 | 178,392,487 | 3,953 | 53,186,262 | 120,052 | 2,454,388,693 | 2.6 | 5.4 |
| 2012 | 5,572 | 138,363,766 | 3,853 | 50,453,118 | 117,061 | 2,329,489,208 | 1.5 | 3.9 |
| 2011 | 7,669 | 205,521,876 | 4,040 | 50,132,667 | 115,342 | 2,241,716,566 | 3.3 | 7.4 |
| 2010 | 5,906 | 148,169,231 | 3,832 | 48,182,212 | 111,713 | 2,086,701,831 | 1.9 | 5.0 |
| 2009 | 5,278 | 125,610,303 | 3,785 | 45,195,072 | 109,639 | 1,987,109,540 | 1.4 | 4.2 |
| 2008 | 4,841 | 105,374,596 | 3,825 | 45,068,366 | 108,146 | 1,907,133,859 | 1.0 | 3.2 |
| 2007 | 8,761 | 234,585,550 | 3,691 | 42,238,843 | 107,130 | 1,847,681,816 | 5.0 | 11.6 |

^{1/}Calculated by multiplying monthly benefit for December 31 by 12 to arrive at an annual amount.



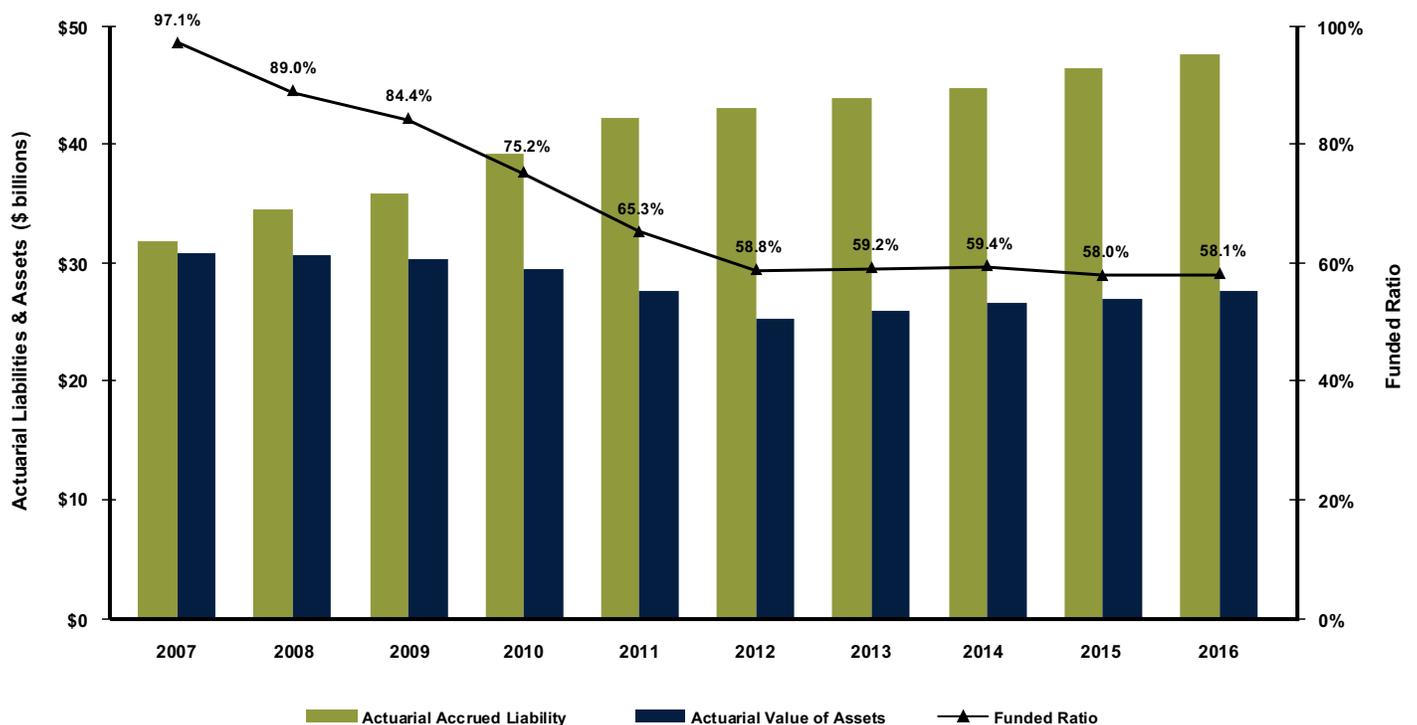
ACTUARIAL SECTION

Solvency Test

December 31, 2016 (unaudited)

Fund Solvency^{1/} (\$ thousands)

| Valuation Year Ended Dec 31 | Actuarial Accrued Liabilities For | | | Total Actuarial Liability (AAL) | Actuarial Value of Assets | Portion of Accrued Liabilities Covered by Reported Assets | | | Funded Ratio |
|-----------------------------|-----------------------------------|----------------------------|--|---------------------------------|---------------------------|---|-------|------|--------------|
| | (1) | (2) | (3) | | | (1) | (2) | (3) | |
| | Active Member Contributions | Retirees and Beneficiaries | Active Members (Employer Financed Portion) | | | | | | |
| 2016 | \$4,869,229 | \$26,824,306 | \$15,825,429 | \$47,518,964 | \$27,596,048 | 100.0% | 84.7% | 0.0% | 58.1% |
| 2015 | 4,816,121 | 25,156,125 | 16,356,683 | 46,328,929 | 26,877,127 | 100.0 | 87.7 | 0.0 | 58.0 |
| 2014 | 4,733,833 | 23,872,658 | 16,144,179 | 44,750,670 | 26,584,948 | 100.0 | 91.5 | 0.0 | 59.4 |
| 2013 | 4,636,219 | 23,046,717 | 16,191,644 | 43,874,580 | 25,975,185 | 100.0 | 92.6 | 0.0 | 59.2 |
| 2012 | 4,551,507 | 22,095,052 | 16,409,005 | 43,055,564 | 25,302,688 | 100.0 | 93.9 | 0.0 | 58.8 |
| 2011 | 4,406,306 | 21,222,075 | 16,653,481 | 42,281,862 | 27,618,461 | 100.0 | 100.0 | 11.9 | 65.3 |
| 2010 | 4,409,444 | 18,995,355 | 15,774,795 | 39,179,594 | 29,443,945 | 100.0 | 100.0 | 38.3 | 75.2 |
| 2009 | 4,280,680 | 17,962,741 | 13,553,596 | 35,797,017 | 30,204,693 | 100.0 | 100.0 | 58.7 | 84.4 |
| 2008 | 4,068,036 | 17,305,971 | 13,063,389 | 34,437,396 | 30,635,621 | 100.0 | 100.0 | 70.9 | 89.0 |
| 2007 | 3,849,293 | 16,255,843 | 11,648,835 | 31,753,971 | 30,839,877 | 100.0 | 100.0 | 92.2 | 97.1 |



^{1/}Based on statutory funding requirements.

Analysis of Financial Experience

December 31, 2016 (unaudited)

Gains and Losses in Accrued Liabilities^{1/}
Resulting from Differences Between Assumed Experience and Actual Experience
(\$ thousands)

| Type of Activity | 2016 | 2015 | 2014 | 2013 |
|--|--------------------|----------------------|--------------------|--------------------|
| Gain/(loss) from investment earnings ^{2/} | \$2,982 | \$(279,734) | \$237,982 | \$559,502 |
| Changes in demographics of new entrants | 6,113 | (6,055) | (31,582) | (6,131) |
| Pay increases different than assumptions | 613,858 | (253,176) | 86,914 | 248,583 |
| Differences between actual and expected demographic experience | 33,565 | (81,547) | (35,152) | (160,323) |
| Gain/(loss) during year from financial experience | 656,518 | (620,512) | 258,162 | 641,631 |
| Non-recurring items | | | | |
| Changes in assumptions ^{3/} | (1,021,315) | (366,637) | - | - |
| Loss due to collar restrictions ^{4/} | (375,572) | (535,701) | (740,401) | (985,902) |
| Composite loss | \$(740,369) | \$(1,522,850) | \$(482,239) | \$(344,271) |

^{1/}Based on statutory funding requirements.

^{2/}Net gains and losses from returns different than the assumed rate of return that are amortized over a five-year period.

^{3/}2016 change primarily due to reduction of investment rate of return to 7.25% from 7.5% and reduction of inflation to 2.6% from 2.75%, which was approved by SERS Board at its April 2017 meeting.

^{4/}Act 2010-120 capped the growth of employer contributions at 3.5% for commonwealth FY 12/13 and 4.5% for each subsequent year until no longer needed.

ACTUARIAL SECTION

Schedule of Funding Progress

December 31, 2016 (unaudited)

Funding Progress^{1/}

(\$ thousands)

| Actuarial Valuation Year Ended December 31 | Actuarial Value of Assets | Actuarial Accrued Liabilities (AAL) | Ratio of Assets to AAL | Unfunded Actuarial Accrued Liability (UAAL) | Covered-Employee Payroll | UAAL as a Percentage of Covered-Employee Payroll |
|--|---------------------------|-------------------------------------|------------------------|---|--------------------------|--|
| 2016 | \$27,596,048 | \$47,518,964 | 58.1% | \$19,922,916 | \$5,911,603 | 337.0% |
| 2015 | 26,877,127 | 46,328,929 | 58.0 | 19,451,802 | 5,971,511 | 325.7 |
| 2014 | 26,584,948 | 44,750,670 | 59.4 | 18,165,722 | 5,719,581 | 317.6 |
| 2013 | 25,975,185 | 43,874,580 | 59.2 | 17,899,395 | 5,598,420 | 319.7 |
| 2012 | 25,302,688 | 43,055,564 | 58.8 | 17,752,876 | 5,538,887 | 320.5 |
| 2011 | 27,618,461 | 42,281,862 | 65.3 | 14,663,401 | 5,582,108 | 262.7 |
| 2010 | 29,443,945 | 39,179,594 | 75.2 | 9,735,649 | 5,596,915 | 173.9 |
| 2009 | 30,204,693 | 35,797,017 | 84.4 | 5,592,324 | 5,594,867 | 100.0 |
| 2008 | 30,635,621 | 34,437,396 | 89.0 | 3,801,775 | 5,427,667 | 70.0 |
| 2007 | 30,839,877 | 31,753,971 | 97.1 | 914,094 | 5,299,095 | 17.3 |

^{1/}Based on statutory funding requirements.

Schedule of Contributions Under Previous Reporting Standards

December 31, 2016 (unaudited)

Contributions Under Previous Reporting Standards^{1/}

Annual Required Contributions Using Governmental Accounting Standards Board Statement No. 25

(\$ thousands)

| Actuarial Valuation Year Ended December 31 | Annual Required Contribution (ARC) | Actual Contribution | ARC as a Percentage of Actual Contribution |
|---|---------------------------------------|---------------------|---|
| 2016 ^{2/} | \$1,613,626 | \$1,613,626 | 100.0% |
| 2015 | 1,469,116 | 1,359,246 | 92.5 |
| 2014 | 1,407,361 | 1,081,826 | 76.9 |
| 2013 | 1,314,925 | 790,996 | 60.2 |
| 2012 | 1,044,632 | 562,883 | 53.9 |
| 2011 | 913,778 | 391,189 | 42.8 |
| 2010 | 866,822 | 272,525 | 31.4 |
| 2009 | 643,861 | 251,870 | 39.1 |
| 2008 | 584,248 | 233,138 | 39.9 |
| 2007 | 617,253 | 242,337 | 39.3 |

^{1/}The ARC is calculated as part of SERS funding valuation using Governmental Accounting Standard Board No. 25 (GASB 25) requirements. Starting in 2014, GASB 25 was superseded by Governmental Accounting Standards Board Statement No. 67 (GASB 67) for accounting purposes. GASB 67 replaces the ARC with an actuarially determined contribution (ADC). While no longer applicable to 2014 and subsequent years, this disclosure is being provided for informational purposes.

^{2/}ADC excludes multiple service transfers made to SERS. These transfers are included as contributions on the Statements of Changes in Fiduciary Net Position.

For developing the ARC, GASB 25 established a range of actuarial cost and amortization methods for the unfunded actuarial accrued liability. The scheduled contributions for the years shown above have been below the amount required to meet the GASB minimum under previous standards. Underfunding of the ARC in 2008 and 2009 was the result of significant provisions of Act 2003-40, which changed the periods in which unfunded liabilities

were amortized in a manner that artificially suppressed the employer contribution rate below the ARC. Underfunding of the ARC from 2010 through 2015 was the result of significant provisions of Act 2010-120, which capped increases in the employer contribution rate. The capped contribution rates during those years were below the respective years' ARC contribution rates.

ACTUARIAL SECTION

History and Projection of Contribution Rates and Funded Ratios

December 31, 2016 (unaudited)

Contribution Rates and Funded Ratios^{1/}

(\$ thousands)

For FY Beginning July 1 Following Valuation Year^{2/}

| Valuation Year Ended Dec 31 | Funding Payroll | Member Contribution Rate ^{3/} | Employer Normal Cost Rate | Unfunded Liability Rate ^{4/} | Preliminary Employer Contribution Rate ^{5/} | Final Employer Contribution Rate | Funded Ratio |
|-----------------------------|------------------|--|---------------------------|---------------------------------------|--|----------------------------------|--------------|
| 2007 | \$5,529,069 | 6.25% | 8.42% | -9.57% | -1.15% | 4.00% | 97.1% |
| 2008 | 5,660,319 | 6.25 | 9.51 | -5.88 | 3.63 | 4.00 | 89.0 |
| 2009 ^{6/} | 5,935,988 | 6.25 | 9.53 | -3.89 | 5.64 | 5.00 | 84.4 |
| 2010 ^{7/} | 5,851,704 | 6.25 | 4.08 | 14.85 | 18.93 | 8.00 | 75.2 |
| 2011 | 5,890,704 | 6.25 | 5.10 | 21.29 | 26.39 | 11.50 | 65.3 |
| 2012 | 5,836,402 | 6.25 | 5.01 | 26.21 | 31.22 | 16.00 | 58.8 |
| 2013 | 5,897,627 | 6.25 | 5.00 | 26.41 | 31.41 | 20.50 | 59.2 |
| 2014 | 6,021,688 | 6.25 | 4.95 | 26.56 | 31.51 | 25.00 | 59.4 |
| 2015 | 6,255,189 | 6.25 | 4.52 | 27.62 | 32.14 | 29.50 | 58.0 |
| 2016 | 6,187,427 | 6.25 | 4.91 | 28.31 | 33.22 | 33.22 | 58.1 |
| 2017 ^{8/,9/} | 6,366,862 | 6.25 | 4.91 | 27.92 | 32.83 | 32.83 | 58.7 |
| 2018 | 6,551,501 | 6.25 | 4.91 | 27.92 | 32.83 | 32.83 | 58.7 |
| 2019 | 6,741,495 | 6.25 | 4.91 | 27.81 | 32.72 | 32.72 | 58.9 |
| 2020 | 6,936,998 | 6.25 | 4.91 | 27.25 | 32.16 | 32.16 | 59.8 |
| 2021 | 7,138,171 | 6.25 | 4.91 | 26.61 | 31.52 | 31.52 | 60.8 |
| 2022 | 7,345,178 | 6.25 | 4.91 | 25.97 | 30.88 | 30.88 | 61.9 |
| 2023 | 7,558,188 | 6.25 | 4.91 | 25.33 | 30.24 | 30.24 | 63.1 |
| 2024 | 7,777,376 | 6.25 | 4.91 | 24.69 | 29.60 | 29.60 | 64.2 |
| 2025 | 8,002,920 | 6.25 | 4.91 | 24.07 | 28.98 | 28.98 | 65.4 |
| 2026 | 8,235,004 | 6.25 | 4.91 | 23.47 | 28.38 | 28.38 | 66.6 |
| 2027 | 8,473,820 | 6.25 | 4.91 | 22.88 | 27.79 | 27.79 | 67.8 |

^{1/}The projection of contribution rates is based on the assumption that there are no changes in SERS statutory funding methodology, no changes in demographics or economic assumptions, no changes in benefit provisions, and no actuarial gains or losses on the actuarial value of assets that result from recognizing currently deferred gains or losses on the fair value of assets. All information on this page is based on statutory funding requirements.

^{2/}Rates and values are for the fiscal year beginning July 1 following the valuation year and do not include Benefits Completion Plan contributions.

^{3/}For Class AA and A-3 employees, as they comprise most of SERS membership.

^{4/}Act 2003-40 imposed a split amortization that recognized Cost of Living Adjustments and certain large gains over 10 years, while recognizing other gains and losses over 30 years. The effect was to suppress the unfunded liability rate for 10 years ending in 2011.

^{5/}Actuarial rate before floor and collar.

^{6/}Act 2010-46 amended the Retirement Code to set the employer contribution rate at 5.00% for fiscal year beginning July 1, 2010.

^{7/}Act 2010-120 amended the Retirement Code to collar increases to the employer contribution rate at 3.00% and 3.50% for fiscal years beginning July 1, 2011 and 2012, respectively. The employer contribution rate is collared at 4.50% for fiscal years beginning July 1, 2013, and thereafter until collar becomes unnecessary.

^{8/}Numbers are projected from 2017 - 2027 based on 2016 actuarial funding valuation.

^{9/}Act 2010-120 amended the Retirement Code to place a permanent floor at employer normal cost after collars expire.

Summary of Plan Provisions

December 31, 2016 (unaudited)

Benefit and Contribution Provisions

SERS makes provision for retirement, disability, and death benefits for all state employees, except for those specifically excluded under section 5301 of the State Employees' Retirement Code, and certain other eligible groups. The major provisions may be summarized as follows:

Eligible Employees**Class A**

All regular state employees, employees of certain commissions and authorities, employees of state-owned educational institutions, and the Pennsylvania State University (unless such employees have joined the Public School Employees' Retirement System (PSERS), TIAA, or Alternative Retirement Program (ARP)) hired before July 1, 2001, who did not elect into the class AA membership as of December 31, 2001. This excludes judges and Magisterial District Judges who have elected class E-1 or class E-2.

Class AA

All regular state employees who are hired after June 30, 2001, and before January 1, 2011, and former class A state employees hired before July 1, 2001, who elected into class AA as of December 31, 2001. This includes employees of certain commissions and authorities, employees of state-owned educational institutions, and the Pennsylvania State University (unless such employees have joined PSERS, TIAA, or ARP), but excludes state police troopers, judges, Magisterial District Judges, and legislators with class D-4.

Class A-3

All regular state employees who enter SERS membership for the first time on or after January 1, 2011, and all legislators who became members on or after December 1, 2010; Capitol police and park rangers who became members after July 1, 2011; and

state police officers who became members after July 1, 2012, provided the member did not elect membership in the optional A-4 class within 45 days of becoming a member.

Class A-4

All members who would be class A-3 but elected A-4 within 45 days of becoming a member.

Class D-4

Legislators coming into service after June 30, 2001, and before December 1, 2010, who elect to be SERS members and legislators who elected class D-4 before July 1, 2001.

Class E-1

Judges who elect class E-1.

Class E-2

Magisterial District Judges who elect class E-2.

Age and Service Requirements for Superannuation (Normal Retirement)

(Full Formula Benefit)

Class AA/A

Age 60 with three years of service; except for members of the General Assembly, enforcement officers, correction officers, psychiatric security aids, and officers of the Delaware River Port Authority for whom the requirement is age 50 with three years of service. Members of class AA/A with 35 years of credited service are entitled to full formula benefits regardless of age. State police officers can retire on full benefits after age 50 or with 20 years of service. Capitol police and park rangers can retire on full benefits at age 50 with 20 years of Capitol police or park ranger service.

ACTUARIAL SECTION

Summary of Plan Provisions

December 31, 2016 (unaudited)

Class A-3/A-4

Age 65 for most members and age 55 for members of the General Assembly, enforcement officers, correction officers, psychiatric security aides, Delaware River Port Authority police officers, officers of the Pennsylvania State Police, and for Capitol police officers and park rangers with 20 or more years of credited service in the classification. Members of class A-3/A-4 are eligible for full formula benefits with 35 years of credited service with a superannuation score of 92.

Class D-4

Age 50, with three years of service.

Class E-1

Age 60, with three years of service; or 35 or more years of credited service, regardless of age.

Class E-2

Age 60, with three years of service; or 35 or more years of credited service, regardless of age.

Formula for Superannuation (Normal) Annuity

The maximum single-life annuity for most members is 2% of the highest three-year average salary of the member multiplied by years and fractions of credited service multiplied by the multiplier of the class of membership.

The annuity paid to a member shall not exceed the member's highest salary during any period of 12 consecutive months of creditable service.

The multiplier for each of the major classes are as follows:

Multiplier for Major Classes

| Class | Multiplier | |
|-------|------------|--|
| A | 1.00 | For state police with 20 – 24.99 years of service, the benefit is 50% of the highest annual salary; with 25 or more years of service, the benefit is 75% of the highest annual salary. |
| AA | 1.25 | |
| A-3 | 1.00 | |
| A-4 | 1.25 | |
| D-4 | 1.50 | |
| E-1 | 2.00 | For each of the first 10 years of judicial service dropping to 1.5 for each subsequent year of judicial service. |
| E-2 | 1.50 | For each year of judicial service. |

NOTE: There are conditions under which long-service members or members retiring at advanced ages may receive somewhat larger benefits than those described above. Further, benefit limitations exist for most members of SERS.

2016

Statistical Section

The Statistical Section of SERS CAFR presents detailed information related to the financial statements, as well as highlights of actuarial valuations. The schedules in this section are classified into the following four categories: financial trends, revenue capacity, demographic and economic information, and operating information.

Financial Trends

The **Schedule of Trend Data** provides key financial, actuarial, and demographic data for 10 years ended December 31, 2016. This data includes items such as employer and member contribution rates; contributions received and benefits paid by SERS; values of assets and liabilities; and the number of annuitants, beneficiaries, and active members.

The **Schedule of Additions to Fiduciary Net Position** presents the member and employer contributions, as well as the net investment income/loss for the 10 years ended December 31, 2016. SERS investment returns have the most significant impact on fiduciary net position.

The **Schedule of Deductions from Fiduciary Net Position** presents the benefits, refunds of contributions, and administrative expenses for the 10 years ended December 31, 2016. Of these three categories, SERS benefit payments have the most significant impact on the total deductions from fiduciary net position.

The **Schedule of Benefit and Refund Deductions from Fiduciary Net Position by Type** presents the amount of benefit payments and refunds by type for the 10 years ended December 31, 2016. Most benefit types are either normal or early, which is determined by the number of years of service and/or age at retirement.

The **Schedule of Total Changes in Fiduciary Net Position** combines the additions to and deductions from fiduciary net position from the Schedule of Additions to Fiduciary Net Position and Schedule of Deductions from Fiduciary Net Position to arrive at net increase/decrease of changes in fiduciary net position for the 10 years ended December 31, 2016.

Revenue Capacity

The **Schedule of Investment Income** presents the details of the total net investment income/loss for the 10 years ended December 31, 2016. SERS has two external sources of revenue and one own-source (internal) of revenue. Employer contributions and member contributions, which information is provided for in the Schedule of Additions to Fiduciary Net Position, are the two external sources of revenue, and investment income is SERS own-source revenue. Since investment income/loss has the greatest impact, to SERS, this schedule provides more detail on the major components of the investment income/loss, which is also disclosed in total on the Schedule of Additions to Fiduciary Net Position.

Demographic and Economic Information

The **Schedule of Active Member Statistics** provides the total number of active members, as well as the average age, average service, and average salary by gender for the 10 years ended December 31, 2016.

STATISTICAL SECTION

Statistical Section Narrative

December 31, 2016 (unaudited)

Operating Information

The **Schedule of Retired Members by Type of Benefit** presents, for given benefit ranges, the total number of retirees, total monthly benefits, and total number of retirees by retirement type as of December 31, 2016.

The **Schedule of Retired Members by Option** presents, for given benefit ranges, the total number of retirees, total monthly benefits, and total number of retirees by retirement option as of December 31, 2016.

The **Schedule of Average Monthly Benefit Payments** presents, in five-year increments of credited service, the average monthly benefit, average final average salary, and number of retired members for the 10 years ended December 31, 2016.

The **Schedule of Average Annual Benefit Payments** presents, in five-year age increments and by gender, the average annual benefit for each major retirement type as of December 31, 2016.

The **Schedule of Employer/Agency Participation** provides the number of covered members and the corresponding percentage of participation for the 20 largest employers/agencies for the 10 years ended December 31, 2016, as well as a listing of additional employers/agencies participating with SERS as of December 31, 2016.

Sources: Unless otherwise noted, the information for these schedules is derived from the Financial Section and Actuarial Section of the Comprehensive Annual Financial Report for the relevant year.

Schedule of Trend Data

December 31, 2016 (unaudited)

Trend Data^{1/}

| | 2016 | 2015 | 2014 | 2013 | 2012 | 2011 | 2010 | 2009 | 2008 | 2007 |
|---|----------------------|----------------------|----------------------|----------------------|----------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| Year-End Contribution Rates | | | | | | | | | | |
| Employer ^{2/3/4/} | 29.51% ^{7/} | 25.01% ^{7/} | 20.53% ^{7/} | 16.05% ^{7/} | 11.59% ^{7/} | 8.01% ^{7/} | 5.01% ^{8/} | 4.01% ^{9/} | 4.04% ^{9/} | 4.04% ^{9/} |
| Member | 6.25% | 6.25% | 6.25% | 6.25% | 6.25% | 6.25% | 6.25% | 6.25% | 6.25% | 6.25% |
| Contributions | | | | | | | | | | |
| Employer ^{2/} | \$1,622,123 | \$1,360,431 | \$1,084,104 | \$794,911 | \$565,621 | \$391,749 | \$273,083 | \$253,250 | \$235,288 | \$243,936 |
| Member | \$374,570 | \$371,624 | \$365,923 | \$351,968 | \$347,937 | \$350,852 | \$349,049 | \$348,805 | \$336,833 | \$333,818 |
| Average Annual Compensation | \$56,499 | \$56,858 | \$54,769 | \$53,224 | \$52,230 | \$52,159 | \$51,228 | \$50,813 | \$48,957 | \$48,345 |
| Fiduciary Net Position (FNP) | \$26,387,889 | \$26,054,890 | \$27,337,778 | \$27,394,156 | \$25,389,335 | \$24,377,179 | \$25,886,102 | \$24,661,949 | \$22,795,813 | \$35,516,198 |
| Total Pension Liability (TPL) ^{5/} | \$45,648,214 | \$44,238,721 | \$42,195,186 | \$41,057,541 | NA | NA | NA | NA | NA | NA |
| FNP as % of TPL ^{5/} | 57.8% | 58.9% | 64.8% | 66.7% | NA | NA | NA | NA | NA | NA |
| Net Pension Liability ^{5/} | \$19,260,325 | \$18,183,831 | \$14,857,408 | \$13,663,385 | NA | NA | NA | NA | NA | NA |
| Actuarial Value of Assets ^{4/} | \$27,596,048 | \$26,877,127 | \$26,584,948 | \$25,975,185 | \$25,302,688 | \$27,618,461 | \$29,443,945 | \$30,204,693 | \$30,635,621 | \$30,839,877 |
| Actuarial Accrued Liability ^{4/} | \$47,518,964 | \$46,328,929 | \$44,750,670 | \$43,874,580 | \$43,055,564 | \$42,281,862 | \$39,179,594 | \$35,797,017 | \$34,437,396 | \$31,753,971 |
| Funded Ratio ^{4/} | 58.1% | 58.0% | 59.4% | 59.2% | 58.8% | 65.3% | 75.2% | 84.4% | 89.0% | 97.1% |
| Total Benefits and Refunds | \$3,227,548 | \$3,080,861 | \$2,946,465 | \$2,844,285 | \$2,674,133 | \$2,705,263 | \$2,449,253 | \$2,273,372 | \$2,204,579 | \$2,336,368 |
| Average Pension ^{6/} | \$27,722 | \$27,042 | \$26,426 | \$25,839 | \$25,083 | \$24,448 | \$23,491 | \$22,695 | \$21,965 | \$21,326 |
| Annuity and Beneficiaries | 127,338 | 124,689 | 122,249 | 120,052 | 117,061 | 115,342 | 111,713 | 109,639 | 108,146 | 107,130 |
| Active Members | 104,632 | 105,025 | 104,431 | 105,186 | 106,048 | 107,021 | 109,255 | 110,107 | 110,866 | 109,610 |

^{1/}All dollar amounts are in thousands, except Average Annual Compensation and Average Pension.

^{2/}Includes Benefits Completion Plan contribution.

^{3/}Employer rate represents total contributions as a percent of covered-employee payroll at December 31.

^{4/}Based on actuarial valuation for funding purposes as required by statute.

^{5/}Based on actuarial valuation for financial purposes as required by Governmental Accounting Standards Board Statement No. 67 (GASB 67). Information for 10 years will be displayed in the future to coincide with financial reporting requirements under GASB 67.

^{6/}Represents average annual pension only for members who have reached superannuation through age or service credits.

^{7/}Act 2010-120 set collars on the increase of the employer contribution rate at 3% effective July 1, 2011, 3.5% for July 1, 2012, and 4.5% every year thereafter until no longer needed.

^{8/}Act 2010-46 set the employer contribution rate at 5% effective July 1, 2010.

^{9/}Act 2007-8 established a permanent minimum employer contribution rate floor of 4%.

Source: Pennsylvania State Employees' Retirement System

STATISTICAL SECTION

Schedule of Additions to Fiduciary Net Position

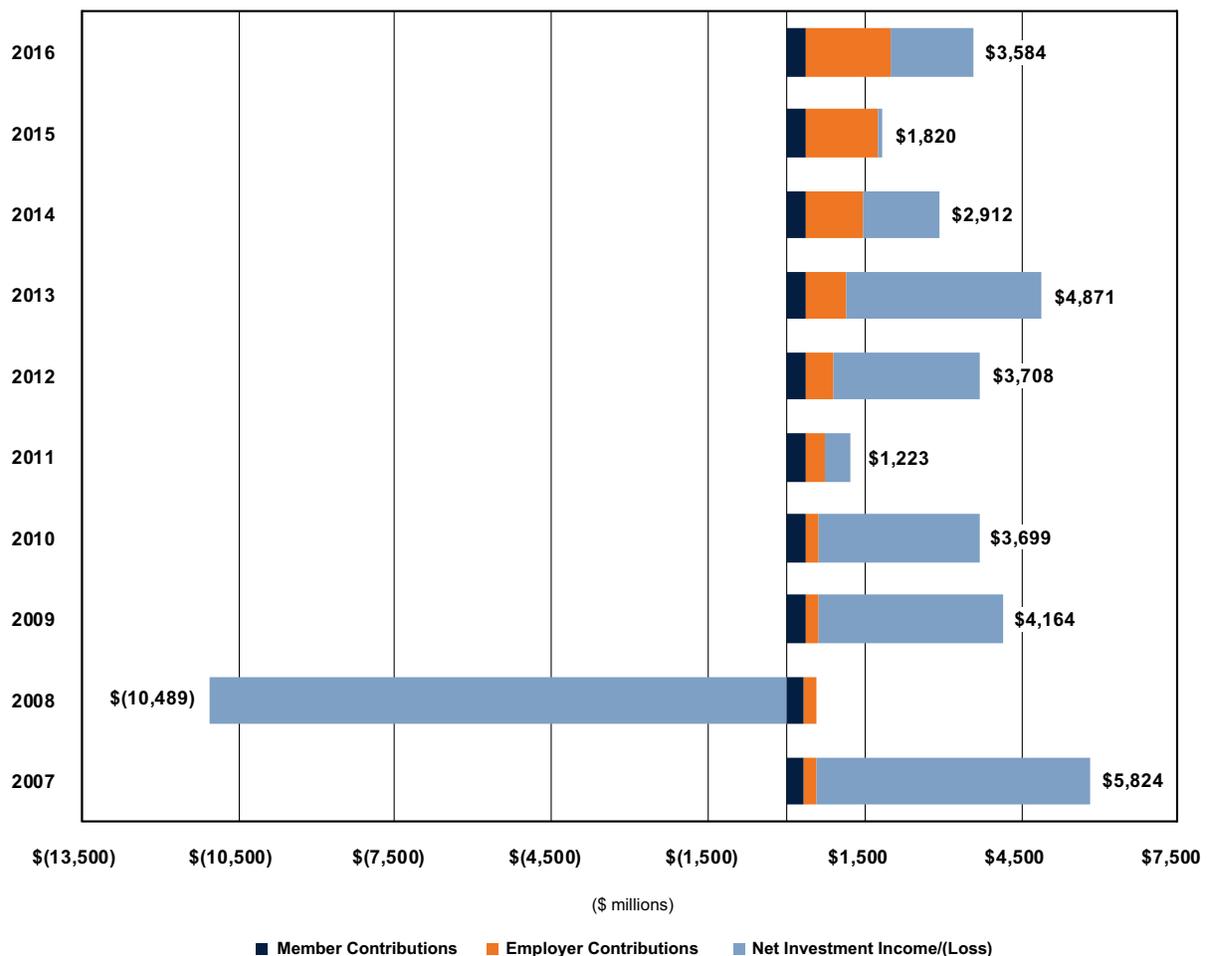
December 31, 2016 (unaudited)

Additions to Fiduciary Net Position

(\$ thousands)

| Year Ended | Member Contributions | Employer Contributions | | Net Investment Income/(Loss) | Total |
|------------|----------------------|------------------------|---|------------------------------|--------------|
| | | Dollar Amount | % of Covered-Employee Payroll ^{1/} | | |
| 2016 | \$374,570 | \$1,622,123 | 27.4% | \$1,586,853 | \$3,583,546 |
| 2015 | 371,624 | 1,360,431 | 22.8 | 87,990 | 1,820,045 |
| 2014 | 365,923 | 1,084,104 | 19.0 | 1,462,051 | 2,912,078 |
| 2013 | 351,968 | 794,911 | 14.2 | 3,724,038 | 4,870,917 |
| 2012 | 347,937 | 565,621 | 10.2 | 2,794,940 | 3,708,498 |
| 2011 | 350,852 | 391,749 | 7.0 | 480,445 | 1,223,046 |
| 2010 | 349,049 | 273,083 | 4.9 | 3,076,410 | 3,698,542 |
| 2009 | 348,805 | 253,250 | 4.5 | 3,561,526 | 4,163,581 |
| 2008 | 336,833 | 235,288 | 4.3 | (11,061,207) | (10,489,086) |
| 2007 | 333,818 | 243,936 | 4.6 | 5,246,730 | 5,824,484 |

^{1/}Calculated by dividing employer contributions by total annualized compensation (covered-employee payroll) provided by actuary.



Source: Pennsylvania State Employees' Retirement System

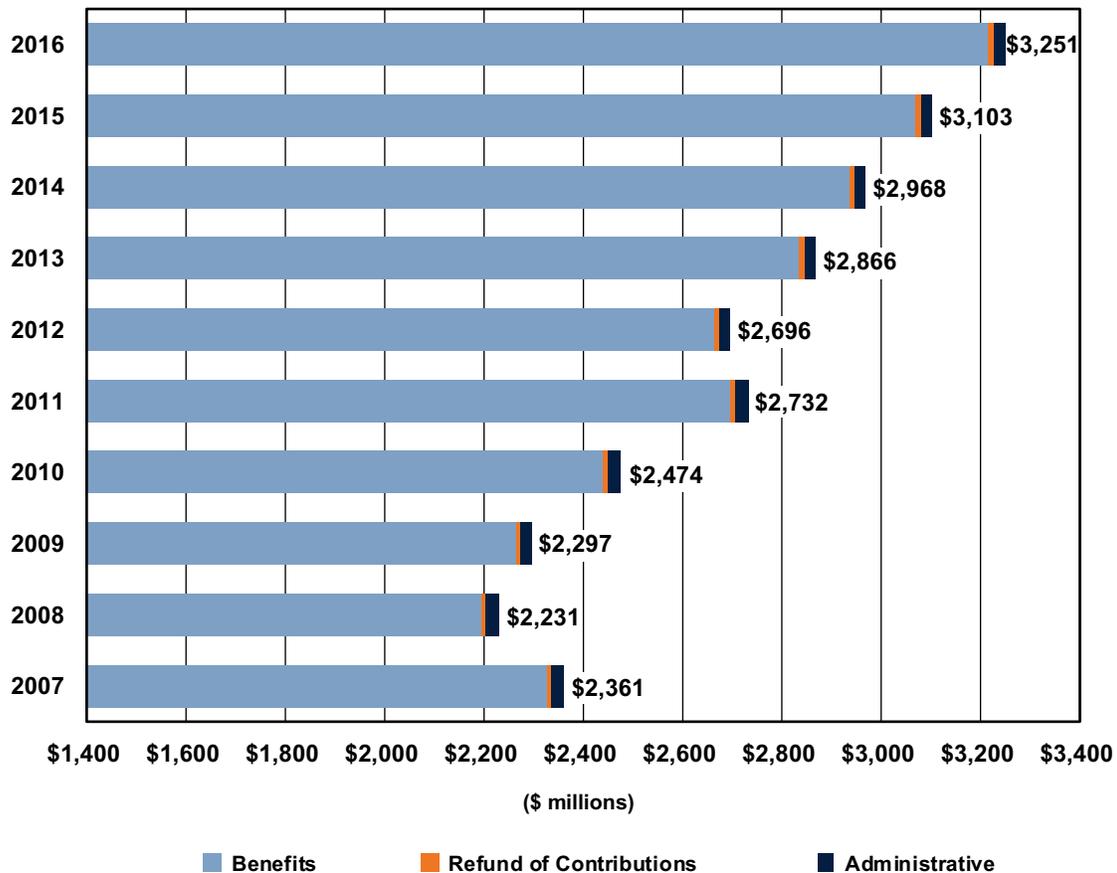
Schedule of Deductions from Fiduciary Net Position

December 31, 2016 (unaudited)

Deductions from Fiduciary Net Position

(\$ thousands)

| Year Ended | Benefits | Refund of Contributions | Administrative Expenses | Total |
|------------|-------------|-------------------------|-------------------------|-------------|
| 2016 | \$3,214,440 | \$13,108 | \$22,999 | \$3,250,547 |
| 2015 | 3,069,328 | 11,533 | 22,072 | 3,102,933 |
| 2014 | 2,936,591 | 9,874 | 21,991 | 2,968,456 |
| 2013 | 2,833,676 | 10,609 | 21,811 | 2,866,096 |
| 2012 | 2,664,242 | 9,891 | 22,209 | 2,696,342 |
| 2011 | 2,695,732 | 9,531 | 26,706 | 2,731,969 |
| 2010 | 2,440,246 | 9,007 | 25,136 | 2,474,389 |
| 2009 | 2,265,404 | 7,968 | 24,073 | 2,297,445 |
| 2008 | 2,195,206 | 9,373 | 26,720 | 2,231,299 |
| 2007 | 2,328,185 | 8,183 | 24,748 | 2,361,116 |



Source: Pennsylvania State Employees' Retirement System

STATISTICAL SECTION

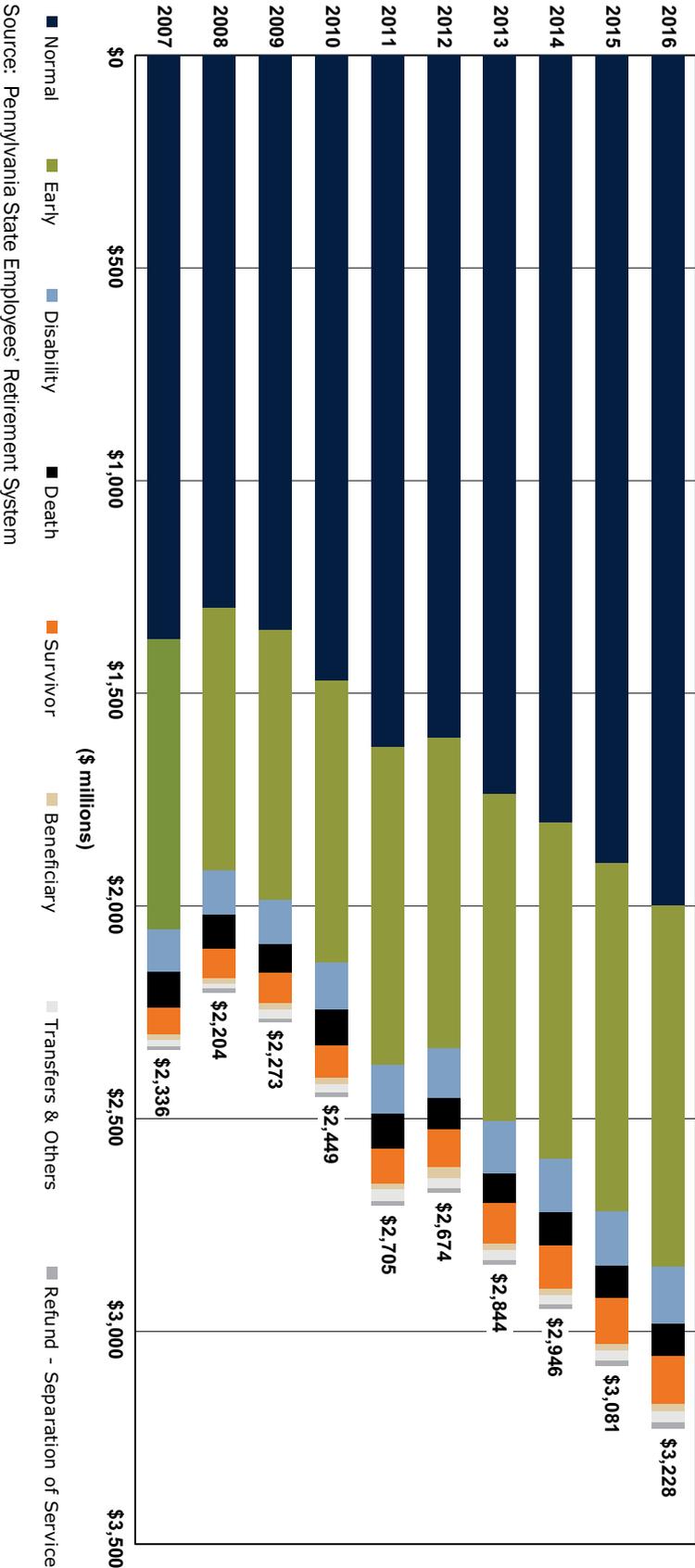
Schedule of Benefit and Refund Deductions from Fiduciary Net Position by Type

December 31, 2016 (unaudited)

Benefit and Refund Deductions from Fiduciary Net Position by Type (\$ thousands)

| Year Ended | Retirement | | | | | | | | | | Refunds | | | Total Refunds |
|------------|-------------|-----------|------------|----------|-----------|-------------|-------------------|--------------------------|-----------------------|-------|----------|--|--|---------------|
| | Normal | Early | Disability | Death | Survivor | Beneficiary | Transfers & Other | Total Benefit Deductions | Separation of Service | Death | Refunds | | | |
| 2016 | \$1,997,704 | \$851,302 | \$132,833 | \$76,455 | \$114,465 | \$15,976 | \$25,705 | \$3,214,440 | \$12,861 | \$247 | \$13,108 | | | |
| 2015 | 1,900,468 | 816,595 | 129,810 | 75,845 | 106,748 | 16,066 | 23,796 | 3,069,328 | 11,302 | 231 | 11,533 | | | |
| 2014 | 1,803,669 | 789,723 | 126,457 | 78,580 | 100,527 | 15,510 | 22,125 | 2,936,591 | 9,723 | 151 | 9,874 | | | |
| 2013 | 1,737,107 | 769,385 | 121,640 | 71,216 | 93,919 | 17,271 | 23,138 | 2,833,676 | 10,318 | 291 | 10,609 | | | |
| 2012 | 1,604,985 | 728,719 | 116,914 | 75,254 | 88,055 | 26,497 | 23,818 | 2,664,242 | 9,673 | 218 | 9,891 | | | |
| 2011 | 1,626,233 | 749,180 | 112,575 | 82,123 | 82,467 | 15,093 | 28,061 | 2,695,732 | 9,271 | 260 | 9,531 | | | |
| 2010 | 1,470,101 | 663,004 | 109,506 | 84,878 | 77,384 | 14,039 | 21,334 | 2,440,246 | 8,693 | 314 | 9,007 | | | |
| 2009 | 1,351,710 | 633,880 | 105,207 | 65,873 | 72,466 | 14,143 | 22,125 | 2,265,404 | 7,824 | 144 | 7,968 | | | |
| 2008 | 1,300,312 | 618,027 | 102,250 | 81,728 | 67,623 | 14,209 | 11,057 | 2,195,206 | 9,222 | 151 | 9,373 | | | |
| 2007 | 1,372,909 | 683,467 | 98,605 | 83,687 | 62,726 | 13,949 | 12,842 | 2,328,185 ^{1/} | 8,007 | 176 | 8,183 | | | |

^{1/} For most members who retired after July 1, 2007, members must contribute to medical insurance premiums as a result of AFSCME agreement dated July 1, 2007.



Source: Pennsylvania State Employees' Retirement System

Schedule of Total Changes in Fiduciary Net Position

December 31, 2016 (unaudited)

Total Changes in Fiduciary Net Position

(\$ thousands)

| Year Ended | Additions to Fiduciary Net Position | | | | Deductions from Fiduciary Net Position | | | | Net Increase/ (Decrease) |
|------------|-------------------------------------|------------------------|-------------------------------|-----------------|--|-------------------------|-------------------------|------------------|--------------------------|
| | Member Contributions | Employer Contributions | Net Investment Income/ (Loss) | Total Additions | Benefits | Refund of Contributions | Administrative Expenses | Total Deductions | |
| 2016 | \$374,570 | \$1,622,123 | \$1,586,853 | \$3,583,546 | \$3,214,440 | \$13,108 | \$22,999 | \$3,250,547 | \$332,999 |
| 2015 | 371,624 | 1,360,431 | 87,990 | 1,820,045 | 3,069,328 | 11,533 | 22,072 | 3,102,933 | (1,282,888) |
| 2014 | 365,923 | 1,084,104 | 1,462,051 | 2,912,078 | 2,936,591 | 9,874 | 21,991 | 2,968,456 | (56,378) |
| 2013 | 351,968 | 794,911 | 3,724,038 | 4,870,917 | 2,833,676 | 10,609 | 21,811 | 2,866,096 | 2,004,821 |
| 2012 | 347,937 | 565,621 | 2,794,940 | 3,708,498 | 2,664,242 | 9,891 | 22,209 | 2,696,342 | 1,012,156 |
| 2011 | 350,852 | 391,749 | 480,445 | 1,223,046 | 2,695,732 | 9,531 | 26,706 | 2,731,969 | (1,508,923) |
| 2010 | 349,049 | 273,083 | 3,076,410 | 3,698,542 | 2,440,246 | 9,007 | 25,136 | 2,474,389 | 1,224,153 |
| 2009 | 348,805 | 253,250 | 3,561,526 | 4,163,581 | 2,265,404 | 7,968 | 24,073 | 2,297,445 | 1,866,136 |
| 2008 | 336,833 | 235,288 | (11,061,207) | (10,489,086) | 2,195,206 | 9,373 | 26,720 | 2,231,299 | (12,720,385) |
| 2007 | 333,818 | 243,936 | 5,246,730 | 5,824,484 | 2,328,185 | 8,183 | 24,748 | 2,361,116 | 3,463,368 |

Source: Pennsylvania State Employees' Retirement System

STATISTICAL SECTION

Schedule of Investment Income

December 31, 2016 (unaudited)

Investment Income (\$ thousands)

| | 2016 | 2015 | 2014 | 2013 | 2012 | 2011 | 2010 | 2009 | 2008 | 2007 |
|--|--------------------|-----------------|--------------------|--------------------|--------------------|------------------|--------------------|--------------------|-----------------------|--------------------|
| Investment income/(loss) | | | | | | | | | | |
| From investing activities | | | | | | | | | | |
| Net appreciation/(depreciation) in fair value of investments ^{1/} | \$1,233,501 | \$(216,817) | \$1,155,301 | \$3,476,349 | \$2,268,730 | \$614,117 | \$2,211,065 | \$2,456,209 | \$(9,979,685) | \$4,164,231 |
| Commingled funds appreciation/(depreciation) and income ^{1/} | NA | NA | NA | NA | 275,103 | (267,177) | 810,147 | 1,063,673 | (1,377,568) | 798,941 |
| Interest | 126,219 | 130,616 | 142,434 | 120,815 | 144,431 | 165,082 | 146,995 | 149,040 | 342,163 | 347,507 |
| Dividends | 273,733 | 223,927 | 246,528 | 204,214 | 190,733 | 78,823 | 61,964 | 69,400 | 154,779 | 149,488 |
| Real estate income | 89,327 | 108,844 | 93,167 | 99,314 | 97,641 | 82,707 | 73,355 | 73,561 | 109,523 | 112,148 |
| Miscellaneous income | 27,381 | 3,426 | 1,799 | 668 | 4,583 | 2,316 | 6,471 | 3,499 | 5,969 | 6,149 |
| Total investing activities income/(loss) | 1,750,161 | 249,996 | 1,639,229 | 3,901,360 | 2,981,221 | 675,868 | 3,309,997 | 3,815,382 | (10,744,819) | 5,578,464 |
| Investment expenses | (167,712) | (166,610) | (186,527) | (181,042) | (189,722) | (197,505) | (235,826) | (260,376) | (310,454) | (344,707) |
| Net income/(loss) from investing activities | 1,582,449 | 83,386 | 1,452,702 | 3,720,318 | 2,791,499 | 478,363 | 3,074,171 | 3,555,006 | (11,055,273) | 5,233,757 |
| From securities lending activities | | | | | | | | | | |
| Securities lending income | 4,893 | 5,105 | 9,917 | 4,326 | 3,953 | 2,376 | 2,511 | 7,092 | 41,319 | 155,067 |
| Securities lending expenses | (489) | (501) | (568) | (606) | (512) | (294) | (272) | (572) | (47,253) | (142,094) |
| Net income/(loss) from securities lending activities | 4,404 | 4,604 | 9,349 | 3,720 | 3,441 | 2,082 | 2,239 | 6,520 | (5,934) | 12,973 |
| Net investment income/(loss) | \$1,586,853 | \$87,990 | \$1,462,051 | \$3,724,038 | \$2,794,940 | \$480,445 | \$3,076,410 | \$3,561,526 | \$(11,061,207) | \$5,246,730 |

^{1/}In 2014, SERS began to report commingled funds as part of net appreciation/(depreciation) in fair value of investments. Certain 2013 figures were restated to conform to 2014 reporting.

Source: Pennsylvania State Employees' Retirement System

Schedule of Active Member Statistics

December 31, 2016 (unaudited)

Active Member Statistics

| Year Ended | Male | | | Female | | | Total Number of Active Members |
|------------|-------------|-----------------|----------------|-------------|-----------------|----------------|--------------------------------|
| | Average Age | Average Service | Average Salary | Average Age | Average Service | Average Salary | |
| 2016 | 46.15 | 11.73 | \$60,965 | 46.51 | 10.95 | \$50,629 | 104,632 |
| 2015 | 46.33 | 11.94 | 61,639 | 46.57 | 11.11 | 50,525 | 105,205 |
| 2014 | 46.55 | 12.12 | 59,228 | 46.77 | 11.44 | 48,825 | 104,431 |
| 2013 | 46.63 | 12.19 | 57,416 | 46.92 | 11.64 | 47,583 | 105,186 |
| 2012 | 46.64 | 12.23 | 56,118 | 46.90 | 11.79 | 46,981 | 106,048 |
| 2011 | 46.55 | 12.17 | 56,008 | 46.70 | 11.70 | 46,992 | 107,021 |
| 2010 | 46.58 | 12.36 | 54,983 | 46.71 | 11.91 | 46,206 | 109,255 |
| 2009 | 46.50 | 12.35 | 54,414 | 46.52 | 12.00 | 45,987 | 110,107 |
| 2008 | 46.23 | 12.21 | 52,536 | 46.18 | 11.79 | 44,176 | 110,866 |
| 2007 | 46.11 | 12.22 | 51,663 | 45.95 | 11.76 | 43,888 | 109,610 |

Source: Pennsylvania State Employees' Retirement System

STATISTICAL SECTION

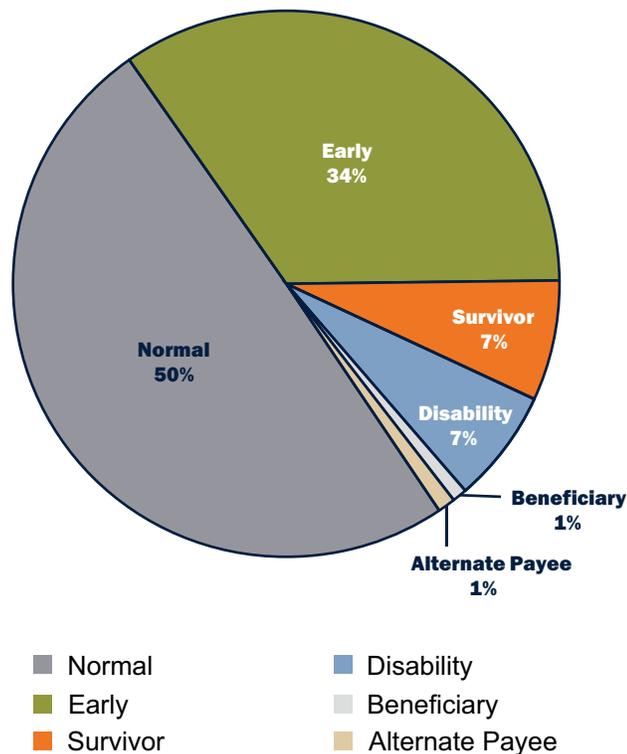
Schedule of Retired Members by Type of Benefit

December 31, 2016 (unaudited)

Retired Members by Type of Benefit

| Amount of Monthly Benefits | Total Monthly Benefits ^{4/} | Total Number of Retirees | Type of Benefit | | | | | |
|----------------------------|--------------------------------------|--------------------------|-----------------|--------------|---------------|--------------|--------------|-----------------|
| | | | Normal | Disability | Early | Beneficiary | Survivor | Alternate Payee |
| ≤ \$500 | \$6,706,011 | 27,714 | 5,977 | 537 | 17,126 | 449 | 3,144 | 481 |
| > 500 to 1,000 | 16,251,957 | 21,846 | 10,111 | 3,561 | 5,036 | 310 | 2,421 | 407 |
| > 1,000 to 1,500 | 21,614,456 | 17,477 | 9,243 | 2,108 | 4,287 | 132 | 1,439 | 268 |
| > 1,500 to 2,000 | 24,170,001 | 13,859 | 7,427 | 1,078 | 4,407 | 73 | 775 | 99 |
| > 2,000 to 2,500 | 25,974,031 | 11,588 | 6,616 | 586 | 3,803 | 42 | 506 | 35 |
| > 2,500 to 3,000 | 25,034,696 | 9,137 | 5,643 | 347 | 2,830 | 24 | 281 | 12 |
| > 3,000 to 3,500 | 24,937,018 | 7,695 | 5,052 | 172 | 2,261 | 15 | 184 | 11 |
| > 3,500 to 4,000 | 20,152,311 | 5,399 | 3,832 | 90 | 1,360 | 14 | 102 | 1 |
| > 4,000 to 4,500 | 16,310,430 | 3,855 | 2,880 | 46 | 858 | 9 | 62 | NA |
| > 4,500 to 5,000 | 12,377,762 | 2,615 | 2,008 | 24 | 529 | 8 | 44 | 2 |
| > 5,000 to 5,500 | 10,039,792 | 1,917 | 1,334 | 14 | 520 | 7 | 42 | NA |
| > 5,500 to 6,000 | 7,826,251 | 1,364 | 934 | 5 | 401 | 3 | 21 | NA |
| > 6,000 | 21,520,690 | 2,872 | 2,261 | 3 | 560 | 6 | 42 | NA |
| Totals | \$232,915,406 | 127,338 | 63,318 | 8,571 | 43,978 | 1,092 | 9,063 | 1,316 |

^{4/}Does not include supplemental payments and transfers.



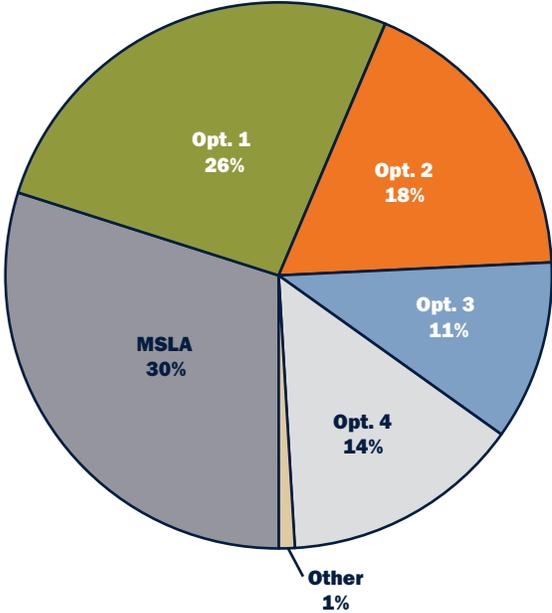
Source: Pennsylvania State Employees' Retirement System

Schedule of Retired Members by Option

December 31, 2016 (unaudited)

Retired Members by Option

| Amount of Monthly Benefits | Total Monthly Benefits | Total Number of Retirees | Option Selected | | | | | |
|----------------------------|------------------------|--------------------------|-----------------|---------------|---------------|---------------|---------------|--------------|
| | | | MSLA | Opt. 1 | Opt. 2 | Opt. 3 | Opt. 4 | Other |
| ≤ \$500 | \$6,706,011 | 27,714 | 6,349 | 11,298 | 5,904 | 1,724 | 1,960 | 479 |
| > 500 to 1,000 | 16,251,957 | 21,846 | 7,493 | 5,455 | 4,324 | 2,100 | 2,128 | 346 |
| > 1,000 to 1,500 | 21,614,456 | 17,477 | 5,336 | 4,234 | 3,516 | 1,881 | 2,360 | 150 |
| > 1,500 to 2,000 | 24,170,001 | 13,859 | 4,247 | 3,290 | 2,424 | 1,656 | 2,155 | 87 |
| > 2,000 to 2,500 | 25,974,031 | 11,588 | 3,398 | 2,607 | 1,941 | 1,458 | 2,136 | 48 |
| > 2,500 to 3,000 | 25,034,696 | 9,137 | 2,770 | 1,955 | 1,411 | 1,198 | 1,772 | 31 |
| > 3,000 to 3,500 | 24,937,018 | 7,695 | 2,350 | 1,696 | 1,101 | 1,024 | 1,508 | 16 |
| > 3,500 to 4,000 | 20,152,311 | 5,399 | 1,869 | 1,080 | 661 | 749 | 1,024 | 16 |
| > 4,000 to 4,500 | 16,310,430 | 3,855 | 1,309 | 702 | 486 | 519 | 829 | 10 |
| > 4,500 to 5,000 | 12,377,762 | 2,615 | 859 | 442 | 316 | 375 | 615 | 8 |
| > 5,000 to 5,500 | 10,039,792 | 1,917 | 622 | 315 | 223 | 226 | 524 | 7 |
| > 5,500 to 6,000 | 7,826,251 | 1,364 | 463 | 218 | 143 | 187 | 350 | 3 |
| > 6,000 | 21,520,690 | 2,872 | 1,008 | 423 | 307 | 427 | 701 | 6 |
| Totals | \$232,915,406 | 127,338 | 38,073 | 33,715 | 22,757 | 13,524 | 18,062 | 1,207 |



- MSLA - Maximum Single Life Annuity
- Opt. 1 - Beneficiary receiving remainder of present value when member dies
- Opt. 2 - Survivor receiving 100% of the member's annuity when member dies
- Opt. 3 - Survivor receiving 50% of the member's annuity when member dies
- Opt. 4 - Member designs a different plan approved by SERS not covered under the above options
- Other - Death benefit or domestic relations order

Source: Pennsylvania State Employees' Retirement System

STATISTICAL SECTION

Schedule of Average Monthly Benefit Payments

December 31, 2016 (unaudited)

Average Monthly Benefit Payments^{1/}

| Retirement Effective Dates | Years of Credited Service | | | | | | |
|--------------------------------------|---------------------------|----------|----------|----------|----------|----------|----------|
| | < 5 | 5-9 | 10-14 | 15-19 | 20-24 | 25-29 | 30+ |
| Period 1/1/2016 to 12/31/2016 | | | | | | | |
| Average monthly benefit | \$331 | \$472 | \$987 | \$1,574 | \$2,259 | \$4,116 | \$4,349 |
| Average final average salary | \$48,086 | \$45,428 | \$51,515 | \$57,976 | \$63,844 | \$85,896 | \$75,240 |
| Number of retired members | 53 | 777 | 786 | 528 | 845 | 1,209 | 1,332 |
| Period 1/1/2015 to 12/31/2015 | | | | | | | |
| Average monthly benefit | \$308 | \$433 | \$896 | \$1,369 | \$2,279 | \$3,396 | \$4,214 |
| Average final average salary | \$43,955 | \$44,272 | \$48,934 | \$53,496 | \$64,173 | \$75,168 | \$72,142 |
| Number of retired members | 71 | 924 | 744 | 515 | 772 | 1,036 | 1,454 |
| Period 1/1/2014 to 12/31/2014 | | | | | | | |
| Average monthly benefit | \$300 | \$453 | \$892 | \$1,462 | \$2,177 | \$3,256 | \$4,061 |
| Average final average salary | \$43,879 | \$43,513 | \$48,310 | \$55,258 | \$61,462 | \$72,587 | \$70,590 |
| Number of retired members | 91 | 963 | 814 | 473 | 912 | 1,018 | 1,344 |
| Period 1/1/2013 to 12/31/2013 | | | | | | | |
| Average monthly benefit | \$262 | \$399 | \$845 | \$1,466 | \$2,178 | \$3,408 | \$4,036 |
| Average final average salary | \$40,035 | \$42,368 | \$47,413 | \$55,071 | \$61,526 | \$74,649 | \$69,812 |
| Number of retired members | 68 | 947 | 779 | 496 | 814 | 1,049 | 1,451 |
| Period 1/1/2012 to 12/31/2012 | | | | | | | |
| Average monthly benefit | \$261 | \$406 | \$823 | \$1,495 | \$2,101 | \$3,464 | \$4,073 |
| Average final average salary | \$38,197 | \$42,106 | \$46,477 | \$54,120 | \$58,807 | \$74,455 | \$70,238 |
| Number of retired members | 94 | 899 | 724 | 535 | 680 | 908 | 1,184 |
| Period 1/1/2011 to 12/31/2011 | | | | | | | |
| Average monthly benefit | \$263 | \$445 | \$843 | \$1,430 | \$2,095 | \$2,994 | \$3,829 |
| Average final average salary | \$36,895 | \$44,808 | \$46,588 | \$52,687 | \$58,928 | \$67,793 | \$66,989 |
| Number of retired members | 103 | 851 | 716 | 769 | 856 | 1,134 | 2,276 |
| Period 1/1/2010 to 12/31/2010 | | | | | | | |
| Average monthly benefit | \$254 | \$398 | \$788 | \$1,332 | \$2,109 | \$2,938 | \$3,818 |
| Average final average salary | \$39,114 | \$41,128 | \$44,562 | \$50,607 | \$57,784 | \$66,053 | \$65,579 |
| Number of retired members | 75 | 755 | 505 | 646 | 712 | 846 | 1,662 |
| Period 1/1/2009 to 12/31/2009 | | | | | | | |
| Average monthly benefit | \$209 | \$374 | \$740 | \$1,337 | \$1,936 | \$2,919 | \$3,767 |
| Average final average salary | \$32,925 | \$38,184 | \$43,520 | \$50,161 | \$55,113 | \$65,193 | \$64,685 |
| Number of retired members | 60 | 543 | 448 | 545 | 539 | 710 | 1,287 |
| Period 1/1/2008 to 12/31/2008 | | | | | | | |
| Average monthly benefit | \$198 | \$340 | \$729 | \$1,266 | \$1,903 | \$2,968 | \$3,782 |
| Average final average salary | \$30,280 | \$39,066 | \$45,753 | \$48,823 | \$55,471 | \$65,893 | \$65,569 |
| Number of retired members | 64 | 646 | 484 | 788 | 586 | 705 | 938 |
| Period 1/1/2007 to 12/31/2007 | | | | | | | |
| Average monthly benefit | \$219 | \$322 | \$674 | \$1,214 | \$1,883 | \$2,538 | \$3,464 |
| Average final average salary | \$31,359 | \$37,629 | \$42,759 | \$45,817 | \$53,241 | \$58,974 | \$60,726 |
| Number of retired members | 53 | 637 | 476 | 1,057 | 759 | 1,258 | 3,384 |

^{1/}Includes normal retirement, early retirement, and disability benefits for new retirees in the years listed.

Source: Pennsylvania State Employees' Retirement System

Schedule of Average Annual Benefit Payments

December 31, 2016 (unaudited)

Average Annual Benefit Payments

| Age | Normal | | Early | | Disability | | Beneficiary and Survivor | |
|----------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|--------------------------|-----------------|
| | Male | Female | Male | Female | Male | Female | Male | Female |
| Under 25 | NA | NA | NA | NA | NA | NA | \$9,231 | \$6,763 |
| 25-29 | NA | NA | \$899 | \$670 | \$13,761 | \$11,297 | 9,577 | 7,127 |
| 30-34 | NA | NA | 1,196 | 934 | 13,779 | 12,340 | 6,661 | 7,424 |
| 35-39 | NA | NA | 1,591 | 1,310 | 14,279 | 13,962 | 9,837 | 9,177 |
| 40-44 | NA | NA | 3,239 | 1,978 | 16,375 | 13,115 | 15,997 | 10,134 |
| 45-49 | NA | NA | 24,392 | 4,322 | 17,831 | 14,803 | 10,157 | 9,392 |
| 50-54 | \$46,979 | \$34,787 | 28,724 | 9,351 | 18,891 | 15,930 | 7,441 | 12,513 |
| 55-59 | 41,587 | 41,901 | 23,548 | 14,873 | 19,728 | 17,168 | 8,791 | 12,819 |
| 60-64 | 35,940 | 33,762 | 22,547 | 17,545 | 17,977 | 16,331 | 10,685 | 13,726 |
| 65-69 | 31,289 | 27,900 | 23,439 | 16,778 | 15,785 | 14,556 | 11,837 | 15,295 |
| 70-74 | 31,127 | 23,827 | 22,160 | 15,021 | 12,802 | 12,548 | 12,880 | 15,419 |
| 75-79 | 29,619 | 20,003 | 16,603 | 11,237 | 9,989 | 9,379 | 9,987 | 14,431 |
| 80-84 | 24,337 | 15,370 | 15,229 | 9,432 | 8,958 | 8,484 | 9,525 | 12,199 |
| 85-89 | 21,712 | 12,032 | 14,684 | 8,972 | 9,808 | 7,481 | 9,506 | 10,904 |
| 90 and over | 17,812 | 10,129 | 14,055 | 7,612 | 8,484 | 7,699 | 7,052 | 8,305 |
| Total Average | \$30,622 | \$23,733 | \$21,160 | \$13,410 | \$16,207 | \$14,361 | \$10,410 | \$12,776 |

| | Normal | Early | Disability | Beneficiary and Survivor |
|------------------------|----------|----------|------------|--------------------------|
| Average Pension | \$27,722 | \$17,412 | \$15,245 | \$12,505 |
| Average Age | 72.3 | 64.3 | 63.4 | 74.5 |

Source: Pennsylvania State Employees' Retirement System

Schedule of Employer/Agency Participation - 20 Largest

December 31, 2016 (unaudited)

- Number of active members

% - Percentage of total active members

| Employer/Agency Name | 2016 ^{1/} | | 2015 ^{1/} | | 2014 ^{1/} | | 2013 | | 2012 | | 2011 | | 2010 | | 2009 | | 2008 | | 2007 | |
|--|--------------------|-------|--------------------|-------|--------------------|-------|---------|-------|---------|-------|---------|-------|---------|-------|---------|-------|---------|-------|---------|-------|
| | # | % | # | % | # | % | # | % | # | % | # | % | # | % | # | % | # | % | # | % |
| Dept of Human Services | 17,205 | 16.44 | 17,085 | 16.27 | 16,870 | 16.15 | 16,668 | 15.85 | 16,764 | 15.81 | 17,087 | 15.97 | 18,007 | 16.48 | 18,201 | 16.53 | 18,618 | 16.79 | 18,761 | 17.12 |
| Dept of Corrections | 15,752 | 15.05 | 15,362 | 14.63 | 14,916 | 14.28 | 15,529 | 14.76 | 15,682 | 14.79 | 15,764 | 14.73 | 16,133 | 14.77 | 16,174 | 14.69 | 16,075 | 14.50 | 15,523 | 14.16 |
| Dept of Transportation | 12,312 | 11.77 | 12,434 | 11.84 | 12,325 | 11.80 | 12,656 | 12.03 | 12,729 | 12.00 | 12,826 | 11.98 | 12,427 | 11.37 | 12,548 | 11.40 | 12,494 | 11.27 | 12,264 | 11.19 |
| Pennsylvania State University | 6,367 | 6.09 | 6,111 | 5.82 | 6,123 | 5.86 | 6,210 | 5.90 | 6,368 | 6.00 | 6,532 | 6.10 | 6,653 | 6.09 | 6,608 | 6.00 | 6,468 | 5.83 | 6,210 | 5.67 |
| Pennsylvania State Police | 6,219 | 5.94 | 6,459 | 6.15 | 6,323 | 6.05 | 6,084 | 5.78 | 6,012 | 5.67 | 6,033 | 5.64 | 6,084 | 5.57 | 6,102 | 5.54 | 6,222 | 5.61 | 6,266 | 5.72 |
| State System of Higher Education | 4,984 | 4.76 | 4,929 | 4.69 | 4,977 | 4.77 | 5,109 | 4.86 | 5,123 | 4.83 | 5,138 | 4.80 | 5,375 | 4.92 | 5,556 | 5.05 | 5,521 | 4.98 | 5,316 | 4.85 |
| Liquor Control Board | 4,338 | 4.15 | 4,313 | 4.11 | 4,340 | 4.16 | 4,264 | 4.05 | 4,141 | 3.90 | 4,080 | 3.81 | 4,286 | 3.92 | 4,303 | 3.91 | 4,097 | 3.70 | 3,969 | 3.62 |
| Dept of Labor and Industry | 4,235 | 4.05 | 4,751 | 4.52 | 4,981 | 4.77 | 5,113 | 4.86 | 5,474 | 5.16 | 5,768 | 5.39 | 5,919 | 5.42 | 5,719 | 5.19 | 5,178 | 4.67 | 5,234 | 4.78 |
| Pennsylvania Higher Education Assistance Agency | 3,453 | 3.30 | 3,443 | 3.28 | 3,225 | 3.09 | 2,983 | 2.84 | 2,776 | 2.62 | 2,460 | 2.30 | 2,265 | 2.07 | 2,230 | 2.03 | 2,135 | 1.93 | 2,494 | 2.28 |
| Dept of Military and Veterans Affairs | 2,533 | 2.42 | 2,534 | 2.41 | 2,481 | 2.38 | 2,487 | 2.36 | 2,385 | 2.25 | 2,471 | 2.31 | 2,505 | 2.29 | 2,478 | 2.25 | 2,568 | 2.32 | 2,545 | 2.32 |
| Dept of Environmental Protection | 2,420 | 2.31 | 2,485 | 2.37 | 2,510 | 2.40 | 2,571 | 2.44 | 2,632 | 2.48 | 2,643 | 2.47 | 2,623 | 2.40 | 2,677 | 2.43 | 2,802 | 2.53 | 2,767 | 2.52 |
| Dept of Conservation and Natural Resources | 2,083 | 1.99 | 2,110 | 2.01 | 2,100 | 2.01 | 2,063 | 1.96 | 2,057 | 1.92 | 1,909 | 1.78 | 1,913 | 1.75 | 2,031 | 1.84 | 2,111 | 1.90 | 2,080 | 1.90 |
| Pennsylvania Turnpike Commission | 2,066 | 1.97 | 2,054 | 1.96 | 2,062 | 1.97 | 2,108 | 2.00 | 2,126 | 2.00 | 2,104 | 1.97 | 2,132 | 1.95 | 2,164 | 1.97 | 2,254 | 2.03 | 2,232 | 2.04 |
| Administrative Office of Pennsylvania Courts | 2,007 | 1.92 | 1,940 | 1.85 | 2,009 | 1.92 | 1,967 | 1.87 | 2,018 | 1.90 | 1,977 | 1.85 | 2,025 | 1.85 | 1,992 | 1.81 | 2,015 | 1.82 | 1,988 | 1.81 |
| Dept of Revenue | 1,912 | 1.83 | 1,948 | 1.85 | 1,943 | 1.86 | 1,962 | 1.87 | 1,994 | 1.88 | 2,059 | 1.92 | 2,166 | 1.98 | 2,170 | 1.97 | 2,366 | 2.13 | 2,289 | 2.09 |
| Executive Offices | 1,591 | 1.52 | 1,640 | 1.56 | 1,689 | 1.62 | 1,739 | 1.65 | 1,851 | 1.75 | 1,949 | 1.82 | 2,006 | 1.84 | 2,155 | 1.96 | 2,257 | 2.04 | 2,201 | 2.01 |
| House of Representatives | 1,495 | 1.43 | 1,568 | 1.49 | 1,589 | 1.52 | 1,676 | 1.59 | 1,590 | 1.50 | 1,792 | 1.67 | 1,825 | 1.67 | 1,779 | 1.62 | 1,736 | 1.57 | 1,758 | 1.60 |
| Board of Probation and Parole | 1,249 | 1.19 | 1,213 | 1.15 | 1,210 | 1.16 | 1,176 | 1.12 | 1,161 | 1.09 | 1,096 | 1.02 | 1,100 | 1.01 | 1,108 | 1.01 | 1,098 | 0.99 | 1,009 | 0.92 |
| Dept of Health | 1,168 | 1.12 | 1,131 | 1.08 | 1,119 | 1.07 | 1,142 | 1.09 | 1,262 | 1.19 | 1,333 | 1.25 | 1,335 | 1.22 | 1,409 | 1.28 | 1,473 | 1.33 | 1,433 | 1.31 |
| Dept of General Services | 878 | 0.84 | 895 | 0.85 | 925 | 0.89 | 955 | 0.91 | 961 | 0.91 | 1,022 | 0.95 | 1,108 | 1.01 | 1,208 | 1.10 | 1,270 | 1.15 | 1,267 | 1.16 |
| Active members for 20 largest employers/agencies | 94,267 | 90.09 | 94,405 | 89.89 | 93,717 | 89.74 | 94,462 | 89.80 | 95,086 | 89.66 | 96,043 | 89.74 | 97,887 | 89.59 | 98,612 | 89.56 | 98,758 | 89.08 | 97,606 | 89.05 |
| Total number of active members | 104,632 | | 105,025 | | 104,431 | | 105,186 | | 106,048 | | 107,021 | | 109,255 | | 110,107 | | 110,866 | | 109,610 | |

Numbers may not add due to rounding.

^{1/}The membership includes 38 employers and the commonwealth is classified as its largest employer. The commonwealth comprises 66 agencies and when everything is evaluated separately, SERS has a total of 103 participating employers/agencies.

Source: Pennsylvania State Employees' Retirement System

Schedule of Employer/Agency Participation

As of December 31, 2016 (unaudited)

Remaining Employers/Agencies^{1/}

Bloomsburg University Community Activities
Bucks County Community College
Bucks County Health Department
California University Student Association, Inc.
Capitol Preservation Committee
Center for Rural Pennsylvania
Central Susquehanna Intermediate Unit
Chester County Health Department
Clarion Students' Association
Community College of Allegheny County
Community College of Philadelphia
Delaware County Community College
Delaware River Joint Toll Bridge Commission
Delaware River Port Authority
Delaware Valley Regional Planning Commission
Department of Aging
Department of Agriculture
Department of Banking and Securities
Department of Community & Economic Development
Department of Drug and Alcohol Programs
Department of Education
Department of State
Department of the Auditor General
East Stroudsburg University Student Activity Association, Inc.
Edinboro University Services Inc.
Environmental Hearing Board
Erie County Department of Health
Fish and Boat Commission
Game Commission
Harrisburg Area Community College
Historical and Museum Commission
House Democratic Appropriations Committee
House Republican Appropriations Committee
Independent Fiscal Office
Independent Regulatory Review Commission
Indiana University Student Co-op Association
Insurance Department
Joint Legislative Conservation Committee
Joint State Government Commission
Kutztown University Student Services, Inc.
Lancaster-Lebanon Intermediate Unit
Legislative Budget and Finance Committee
Legislative Data Processing Center
Legislative Reference Bureau
Lehigh Carbon Community College
Local Government Commission
Luzerne County Community College
Mansfield College Community Services, Inc.
Milk Marketing Board
Millersville University Student Services, Inc.
Montgomery County Community College
Northampton Community College
Office of Attorney General
Office of Liquidations and Rehabilitations
Office of the Lieutenant Governor
Office of the Governor
Pennsylvania College of Technology
Pennsylvania Convention Center
Pennsylvania eHealth Partnership
Pennsylvania Emergency Management Agency
Pennsylvania Gaming Control Board
Pennsylvania Health Care Cost Containment Council
Pennsylvania Highlands Community College
Pennsylvania Housing Finance Agency
Pennsylvania Infrastructure Investment Authority
Pennsylvania Municipal Retirement System
Pennsylvania Port Authority
Pennsylvania State Employees' Retirement System
Pennsylvania State Senate
Port Authority Transit Corporation
Public School Employees' Retirement System
Public Utility Commission
Reading Area Community College
Shippensburg University Student Services Inc.
Slippery Rock Student Government Association, Inc.
State Civil Service Commission
State Ethics Commission
State Public School Building Authority
Susquehanna River Basin Commission
Thaddeus Stevens College of Technology
Treasury Department
West Chester University Student Services, Inc.
Westmoreland County Community College

^{1/}The membership includes 38 employers and the commonwealth is classified as its largest employer. The commonwealth comprises 66 agencies and when everything is evaluated separately, SERS has a total of 103 participating employers/agencies.

State Employees' Retirement System

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