



# 2023

## Annual Comprehensive Financial Report

With Independent Auditors' Report for Fiscal  
Years Ended December 31, 2023 and 2022

Commonwealth of Pennsylvania  
State Employees' Retirement System

A Component Unit of the  
Commonwealth of Pennsylvania





# 2023

## **Annual Comprehensive Financial Report**

With Independent Auditors' Report for Fiscal  
Years Ended December 31, 2023 and 2022

Commonwealth of Pennsylvania  
State Employees' Retirement System

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

**Joseph A. Torta**

Executive Director

**Sara E. McSurdy**

Chief Financial Officer

**State Employees' Retirement System**

30 N 3rd St, Suite 150  
Harrisburg, PA 17101-1716  
1.800.633.5461  
[www.SERS.pa.gov](http://www.SERS.pa.gov)

A Component Unit of the  
Commonwealth of Pennsylvania

# INTRODUCTORY SECTION

## Table of Contents

### Introductory Section

GFOA and PPCC Award Certificates	i
Transmittal Letter	ii
SERS Mission, Vision, and Organizational Chart	vi
SERS Board	vii

### Financial Section

Independent Auditors' Report	1
Management's Discussion and Analysis (unaudited)	4
Basic Financial Statements:	
Statements of Fiduciary Net Position	14
Statements of Changes in Fiduciary Net Position	16
Notes to Basic Financial Statements	18
Required Supplementary Information (unaudited):	
Schedule 1 - Schedule of Changes in Net Pension Liability and Related Ratios	42
Schedule 2 - Schedule of Employer Contributions	43
Schedule 3 - Schedule of Investment Returns	43
Supplementary Information:	
Schedule 4 - Schedule of Administrative Expenses	44
Schedule 5 - Summary of Investment and Consultant Expenses	45

### Investment Section

Report on Investment Activity	46
Investment Policy and Objectives	48
Investment Returns	50
Pension Fund Values and Annual Returns	52
Largest Assets Held	53
Manager Fees & Expenses	55
Schedule of Trading Broker Commissions	57
Investment Summary	58
Private Equity	59
Real Estate	70
U.S. Equity	73
International Developed Markets Equity	74
Emerging Markets Equity	75
Fixed Income	76
Inflation Protection (TIPS)	77
Cash	78
Legacy Private Credit	79
Legacy Hedge Funds	80

### Investment Section (continued)

Defined Contribution Plan Investment Options	81
--	----

### Actuarial Section

Actuary's Certification	84
Summary of Actuarial Assumptions and Methods	88
Schedules of Active Member Valuation Data	90
Schedule of Retirees and Beneficiaries Added to and Removed from Rolls	94
Solvency Test	95
Analysis of Financial Experience	96
Schedule of Funding Progress	97
Schedule of Contributions Under Previous Reporting Standards	98
History and Projection of Contribution Rates and Funded Ratios	99
Summary of Plan Provisions	100

### Statistical Section

Statistical Section Narrative	103
Schedule of Trend Data	105
Schedule of Additions to Fiduciary Net Position	106
Schedule of Deductions from Fiduciary Net Position	107
Schedule of Benefit and Refund Deductions from Fiduciary Net Position by Type	108
Schedule of Total Changes in Fiduciary Net Position	109
Schedule of Investment Income	110
Schedules of Active Member and Participant Statistics	111
Schedule of Retired Members by Type of Benefit	112
Schedule of Retired Members by Option	113
Schedule of Average Monthly Benefit Payments	114
Schedule of Average Annual Benefit Payments	115
Schedule of Employer/Agency Participation	116

# INTRODUCTORY SECTION

## GFOA and PPCC Award Certificates



Government Finance Officers Association

**Certificate of  
Achievement  
for Excellence  
in Financial  
Reporting**

Presented to

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

For its Annual Comprehensive  
Financial Report  
For the Fiscal Year Ended

December 31, 2022

*Christopher P. Morrell*

Executive Director/CEO

### **CERTIFICATE OF ACHIEVEMENT FOR EXCELLENCE IN FINANCIAL REPORTING**

The Government Finance Officer's Association of the United States and Canada (GFOA) awarded a Certificate of Achievement for Excellence in Financial Reporting to SERS for its Annual Comprehensive Financial Report for the fiscal year ended December 31, 2022. This was the 25th consecutive year that SERS has achieved this prestigious award. To be awarded a Certificate of Achievement, a government must publish an easily readable and efficiently organized annual comprehensive financial report. This report must satisfy both generally accepted accounting principles and applicable legal requirements. A Certificate of Achievement is valid for a period of one year. We believe the current Annual Comprehensive Financial Report for December 31, 2023 continues to meet the Certificate of Achievement Program's requirements, and SERS will be submitting it to GFOA so they may determine SERS' eligibility for receiving another award certificate.

### **PUBLIC PENSION STANDARDS AWARD**

The Public Pension Coordinating Council awarded a Public Pension Standards Award for Funding and Administration to SERS for 2023. This is the 16th consecutive year that SERS has achieved this prestigious award. To be awarded a Public Pension Standards Award, a public pension program must meet professional standards for plan design and administration as set forth in the Public Pension Standards. This award is valid for a period of one year.



Public Pension Coordinating Council

**Public Pension Standards Award  
For Funding and Administration  
2023**

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 federation of*

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

*Alan H. Winkle*

Alan H. Winkle  
Program Administrator



June 12, 2024

The Honorable Josh Shapiro, Governor  
Commonwealth of Pennsylvania

Mr. Gregory C. Thall, Chairman, Pennsylvania State Employees' Retirement System  
Members, Pennsylvania General Assembly

Members and Participants, Pennsylvania State Employees' Retirement System

Citizens of the Commonwealth of Pennsylvania

Dear Governor Shapiro, Chairman Thall, Legislators, Members and Participants and Citizens:

The Pennsylvania State Employees' Retirement System (SERS) is pleased to present you with the 2023 calendar year Annual Comprehensive Financial Report (ACFR). The purpose of this report is to provide the Governor, legislature, system members, participants, 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. Stakeholders can be assured that their retirement system is administered well, and that staff carefully manages the funds entrusted to the board. Please refer to Management's Discussion and Analysis, beginning on page 4, for an overview of SERS' financial statements, as well as significant events and circumstances that impacted the operations and performance of the fund during the past year.

SERS administers four retirement plans for state employees – three plans require mandatory employee and employer contributions and one plan allows only voluntary employee contributions:

- **Hybrid Plan** – is a combination of two Internal Revenue Code-defined plans – a traditional pension or Internal Revenue Code (IRC) section 401(a) defined benefit plan with an IRC section 401(a) defined contribution investment plan. This plan requires mandatory contributions from both the employee and the employer. There are two classes of service within the Hybrid Plan, class A-5 and class A-6.
- **Defined Contribution Plan** – is an IRC section 401(a) investment plan. This plan requires mandatory contributions from both the employee and the employer.
- **Defined Benefit Plan** – is a traditional pension plan defined by IRC section 401(a). This plan requires mandatory contributions from both the employee and the employer.
- **Deferred Compensation Plan** – is a voluntary supplemental plan defined by IRC section 457(b). This plan allows only voluntary employee contributions. (Note: The Deferred Compensation Plan has its own stand-alone financial statements and is not included in the ACFR).

Most new state employees are automatically enrolled in the Hybrid Plan A-5 class of service, with the right to opt out of that class of service into the Hybrid Plan A-6 class of service or the defined contribution-only plan. The exceptions are hazardous-duty employees and those who contributed to the traditional defined benefit pension plan in the past. In those two cases, the employee is automatically enrolled in the traditional defined benefit pension plan.

For 2023, KPMG LLP 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 again received an unmodified opinion in 2023.

The Defined Contribution Plan opened for enrollment on January 1, 2019. As of December 31, 2023, there were approximately 33,900 accounts established and the plan had a net position of approximately \$189.4 million. The plan receives participant and employer contributions and the participant can choose to invest their money in several investment options, with most plan participants investing in the default option of a target date fund. A number of important legislative changes made in 2020 helped improve the funding stability of the Defined Contribution Plan. These included establishing the ability for SERS to assess a per-participant charge to all employers to cover the fees, costs, and expenses associated with the plan, as well as allowing for SERS to utilize unvested employer contributions towards paying the administrative costs of the plan. More information regarding the Defined Contribution Plan can be found throughout this report, while the remainder of the financial information in this letter is for the Defined Benefit Plan only.

As of December 31, 2023, the SERS' Defined Benefit Plan had a net position of approximately \$36.4 billion after paying out approximately \$3.9 billion in retirement benefits to nearly 137,000 retirees and beneficiaries; approximately \$3.5 billion was paid to people living in Pennsylvania, stimulating local economies.

In 2023, SERS served approximately 242,000 total members from 98 agencies/employers.

In mature pension plans such as SERS, newly retired members entering the pension rolls tend to have higher benefits than those who die and are removed from rolls. SERS' experience reflects that trend. In 2023, approximately 6,000 SERS members retired with an average annual benefit of about \$32,300, while approximately 4,600 retirees with an average annual benefit of about \$18,700 were removed from the rolls.

SERS' investment activities are focused on accomplishing our central mission – providing benefit payments to members and participants at the lowest cost to the commonwealth and to fund the program through a carefully planned and executed investment program. These investment activities are guided by a formal *Statement of Investment Policy* that was first adopted in 1979 and periodically revised and updated to reflect and incorporate legislative changes governing investments and amendments to policies guiding investments. The governing policy in place for 2023 was adopted December 4, 2019 ("*SERS' Defined Benefit Plan Investment Policy Statement*"), with further amendments enacted throughout 2020, 2021, 2022, and 2023.

During 2023, SERS passed a significant milestone as we celebrated our 100th anniversary. That's a long time for any organization, but especially for a public retirement system. But its significance is clear. For more than a century, SERS board members and staff have worked together – along with our colleagues in the legislature and various administrations – to help ensure the health and stability of the system so that the hundreds of thousands of members and participants we have served over the years could look forward to a financially secure retirement.

The past year, 2023, was a year of recovery for many sectors and regions. While inflation continues to be persistently higher than is optimal, employment has been strong, and there has been a welcome easing in the supply chain issues that developed during the course of the pandemic.

During 2023, SERS saw investment gains of approximately 12.2%, net of fees, for our Defined Benefit Plan, which exceeded the fund's annual assumed rate of return of 6.875% that was in place during the year. As of December 31, 2023, the value of the SERS fund was \$36.4 billion.

In 2024, we look to continue to make progress toward our long-term goal of eliminating our unfunded liability, thanks to an investment policy that allows us to adjust for unusual economic circumstances as we saw over the past few years, ongoing efforts to implement efficiencies across SERS, and continued payment of the full annual actuarially required funding amount by the General Assembly.

Now that SERS employers are paying the full "uncollared" contribution amount, after several years of underfunding, there continues to be a positive trend toward paying down the unfunded liability. This funding is crucial for the overall long-term health of the pension system.

Based on the Governmental Accounting Standards Board Statement No. 67 accounting valuation as of December 31, 2023, the resulting net pension liability was \$19.4 billion. SERS plan fiduciary net position as a percentage of the total pension liability was 65.3%. Based on the actuarial methods used for funding purposes, as of December 31, 2023, the unfunded actuarial accrued liability was \$17.0 billion. SERS funded ratio was 69.6%.

Employer contributions in 2023 represented an increase of \$123 million – or 6% – compared to 2022. This increase was due primarily to salaries increasing as well as a slight increase in the composite employer rate from 34.16% to 35.32% on July 1, 2023.

The FY 2024-25 composite employer contribution rate will decrease to 33.65% of payroll. The key factors in the decrease include exceeding the expected 2023 investment return and a change in amortization due to a change in payroll. Employer contributions for FY 2024-25 are estimated to generate approximately \$2.2 billion for the fund.

The annual cost of the plan continues to drop as the number of members in the newer classes of service, including the A-3 and A-4 classes and the new A-5, A-6, and defined contribution classes that opened January 1, 2019, increases. These newer classes of service comprise approximately 59% of the active member count as of December 31, 2023.

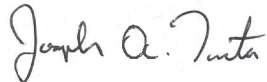
SERS continues major initiatives to improve services to our stakeholders, as well as improving efficiencies in the delivery of benefits and reducing costs in the administration of the system.

Improving customer service to our members remains a top priority for the plan. We continue to enhance our member materials, striving to make the information they provide more understandable and accessible to a range of employees. We increasingly leverage technology to deliver many of these materials electronically, allowing the plan to reduce administrative costs and employ data-driven results to help guide future communication initiatives. SERS is also working on, as part of our Strategic Plan, an independent comprehensive technology assessment detailing SERS technology architecture and the current platforms' functional potential to support a digital transformation project. Incorporated in this digital transformation; SERS is performing an analysis of strategic goals contained in this plan against the technical capabilities inventory to develop a plan to leverage/expand current solutions already owned by SERS to quickly solve new problems and incorporate where appropriate in our digital transformation.

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 the agency's 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, retirees, and the SERS Board. 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,



Joseph A. Torta  
Executive Director



Sara E. McSurdy, CPA  
Chief Financial Officer

## SERS Mission, Vision, and Organizational Chart

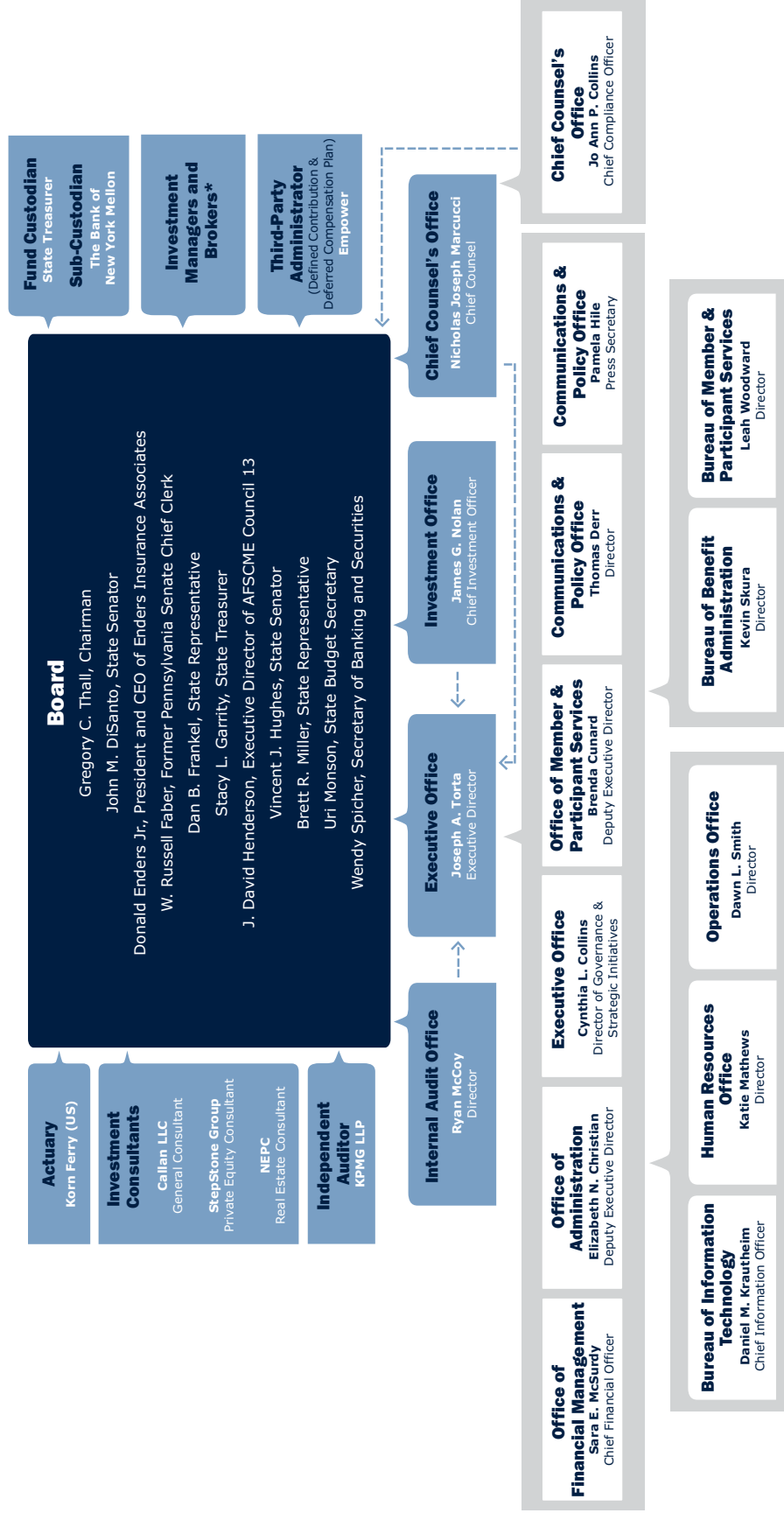
### Mission

The mission of SERS is to prepare our members and participants to achieve financial security in retirement.

### Vision

SERS' vision is to be an employer of choice and an innovative leader among public pension organizations by providing best-in-class services and products to our members, participants, and stakeholders.

### Organizational Chart



\*Investment managers are listed throughout the Investment Section on pages 46 - 80 and brokers are listed in the Schedule of Trading Broker Commissions on page 57 in the Investment Section of this ACFR.

# INTRODUCTORY SECTION

---

## SERS Board

December 31, 2023

**Mr. Gregory C. Thall**  
Chairman



**Honorable John M. DiSanto**  
State Senator



**Mr. Donald Enders Jr.**  
President and CEO of Enders Insurance  
Associates



**Mr. W. Russell Faber**  
Former Chief Clerk of the  
Pennsylvania Senate



**Honorable Dan B. Frankel**  
State Representative





# INTRODUCTORY SECTION

## SERS Board

December 31, 2023

**Honorable Stacy Garrity**  
State Treasurer



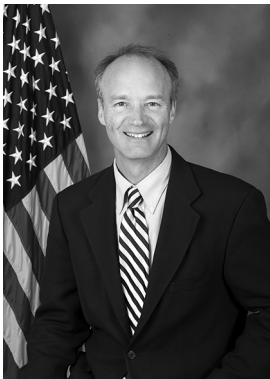
**Mr. J. David Henderson**  
Executive Director of AFSCME Council 13



**Honorable Vincent J. Hughes**  
State Senator



**Honorable Brett Miller**  
State Representative



**Honorable Uri Monson**  
State Budget Secretary



**Honorable Wendy S. Spicher**  
Secretary of Banking and Securities



# Financial Section





KPMG LLP  
Suite 1000  
30 North Third Street  
Harrisburg, PA 17101

## Independent Auditors' Report

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

### *Opinion*

We have audited the 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, 2023 and 2022, and the related notes to the financial statements, which collectively comprise SERS' basic financial statements for the years then ended as listed in the table of contents.

In our opinion, the accompanying financial statements referred to above present fairly, in all material respects, the fiduciary net position of SERS as of December 31, 2023 and 2022, and the changes in fiduciary net position for the years then ended in accordance with U.S. generally accepted accounting principles.

### *Basis for Opinion*

We conducted our audits in accordance with auditing standards generally accepted in the United States of America (GAAS). Our responsibilities under those standards are further described in the Auditors' Responsibilities for the Audit of the Financial Statements section of our report. We are required to be independent of SERS and to meet our other ethical responsibilities, in accordance with the relevant ethical requirements relating to our audits. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

### *Responsibilities of Management for the Financial Statements*

Management is responsible for the preparation and fair presentation of the financial statements in accordance with U.S. generally accepted accounting principles, and for 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.

In preparing the financial statements, management is required to evaluate whether there are conditions or events, considered in the aggregate, that raise substantial doubt about SERS' ability to continue as a going concern for twelve months beyond the financial statement date, including any currently known information that may raise substantial doubt shortly thereafter.

### *Auditors' Responsibilities for the Audit of the Financial Statements*

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditors' report that includes our opinion. Reasonable assurance is a high level of assurance but is not absolute assurance and therefore is not a guarantee that an audit conducted in accordance with GAAS will always detect a material misstatement when it exists. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control. Misstatements are considered material if there is a substantial likelihood that, individually or in the aggregate, they would influence the judgment made by a reasonable user based on the financial statements.



In performing an audit in accordance with GAAS, we:

- Exercise professional judgment and maintain professional skepticism throughout the audit.
- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, and design and perform audit procedures responsive to those risks. Such procedures include examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements.
- Obtain an understanding of internal control relevant to the audit 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 SERS' internal control. Accordingly, no such opinion is expressed.
- Evaluate the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluate the overall presentation of the financial statements.
- Conclude whether, in our judgment, there are conditions or events, considered in the aggregate, that raise substantial doubt about SERS' ability to continue as a going concern for a reasonable period of time.

We are required to communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit, significant audit findings, and certain internal control related matters that we identified during the audit.

#### *Required Supplementary Information*

U.S. generally accepted accounting principles require that the management's discussion and analysis and the required supplementary information in schedules 1 through 3 be presented to supplement the basic financial statements. Such information is the responsibility of management and, 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 GAAS, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audits of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

#### *Supplementary 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 are presented for purposes of additional analysis and are not a required part of the basic financial statements. Such information 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. The 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 basic financial statements themselves, and other additional procedures in accordance with GAAS. In our opinion, the information is fairly stated, in all material respects, in relation to the basic financial statements as a whole.



### *Other Information*

Management is responsible for the other information included in the annual comprehensive financial report. The other information comprises the introductory, investment, actuarial, and statistical sections but does not include the basic financial statements and our auditors' report thereon. Our opinion on the basic financial statements does not cover the other information, and we do not express an opinion or any form of assurance thereon.

In connection with our audits of the basic financial statements, our responsibility is to read the other information and consider whether a material inconsistency exists between the other information and the basic financial statements, or the other information otherwise appears to be materially misstated. If, based on the work performed, we conclude that an uncorrected material misstatement of the other information exists, we are required to describe it in our report.

*KPMG LLP*

Harrisburg, Pennsylvania

May 24, 2024, except for the Other Information section of our report, as to which the date is June 12, 2024.

# FINANCIAL SECTION

---

## Management's Discussion and Analysis

December 31, 2023 and 2022 (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, 2023, 2022, and 2021.

In addition to historical information, the Management's Discussion and Analysis includes forward-looking statements, which involve currently known facts and 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 and inflation rates, legislation, and global conflicts.

### Overview of the Financial Statements and Accompanying Information

SERS administers two mandatory-participation retirement plans defined by the Internal Revenue Code: the Defined Benefit Plan, for which assets are held in the State Employee Retirement Fund (Defined Benefit Plan or pension plan); and the Defined Contribution Plan, for which assets are held in a trust with ownership attributed to individual participant investment accounts. The financial statements present the financial position and activities for the Defined Benefit Plan and the Defined Contribution Plan.

**(1) Financial Statements.** SERS presents Statements of Fiduciary Net Position as of December 31, 2023 and 2022 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 Financial Statements.** The notes to 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. Among other items, the notes provide information about SERS' organization; benefits and contributions; determination of investment values; contingencies and commitments; and actuarial liabilities and the associated methods and assumptions used to calculate them.

### **(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. Supplementary information is considered useful in understanding and evaluating the financial activities of SERS.

## Financial Highlights

- The time-weighted rate of return on investments for the pension plan was 12.2% for the year ended December 31, 2023, and -12.2% for the year ended December 31, 2022. Financial market challenges resulting from increasing inflation led to negative returns in 2022. In 2022 and 2023, the Federal Reserve gradually increased interest rates in response to the high inflation resulting from fiscal responses to COVID-19 and supply chain challenges. While inflation began to subside in 2023, it still presents uncertainty in the markets moving forward.
- In June 2022, the SERS Board approved a reduction in the Defined Benefit Plan investment return assumption from 7.0%

## Management's Discussion and Analysis

December 31, 2023 and 2022 (unaudited)

to 6.875%, which was effective with the December 31, 2022, valuation. In June 2023 the board deliberated and decided to maintain the 6.875% investment return assumption for the December 31, 2023, valuation.

- The Defined Benefit Plan net position increased by approximately \$2.8 billion to \$36.4 billion for the year ended December 31, 2023, compared to a decrease of approximately \$6.6 billion for the year ended December 31, 2022. The increase in 2023 was mainly attributable to the combination of positive investment returns and employer contributions exceeding the benefit payments and expenses of the plan.
- The Defined Contribution Plan opened for enrollment on January 1, 2019, and continues to grow. The net position for the Defined Contribution Plan was approximately \$189.4 million as of December 31, 2023, which is an increase of approximately \$83.6 million from the December 31, 2022, net position of \$105.8 million. The increase is attributed to contributions, investment earnings, and funding from employers, exceeding total deductions of the plan.
- See Condensed Financial Information tables on page 13 for consolidated Defined Benefit Plan and Defined Contribution Plan information.
- On December 29, 2022, the SECURE 2.0 Act of 2022 was signed into law by U.S. President Joe Biden. SECURE 2.0 contains several retirement-savings provisions intended to offer more flexibility to those saving for retirement. Certain provisions of SECURE 2.0 became effective starting January 1, 2023, while other provisions will take effect in future years. SERS management will be analyzing SECURE 2.0 to determine its impact.

- SERS reviews all new Governmental Accounting Standards Board (GASB) pronouncements and assesses their potential impact on SERS reporting. For the years ended December 31, 2023 and 2022, there were no new GASB standards that materially impacted SERS.

### The Defined Benefit Plan

The Defined Benefit Plan is a traditional pension plan defined by IRC section 401(a). This plan requires mandatory contributions from both the member and employer. SERS invests the contributions to achieve returns to help ensure sufficient funds are available to make required payments to current and future retirees.

### Member Contributions

Member contributions were approximately \$427 million, \$419 million, and \$405 million for the years ended December 31, 2023, 2022, and 2021, respectively. The increase in contributions in 2023 was due to an increase in gross salaries and active membership, while the contribution increase in 2022 was due to an increase in gross salaries. The member contribution rate is set by statute and is 6.25% of gross salary for most members, with a majority of newer members contributing less into the plan at 5%. Most members hired since 2011 are subject to shared-risk and shared-gain adjustments to their contributions. To date, there have been no shared-risk/shared-gain adjustments.

### Employer Contributions

Employer contributions were approximately \$2.2 billion, \$2.1 billion, and \$2.9 billion for the years ended December 31, 2023, 2022, and 2021, respectively. The 2023 contributions represented an increase of \$123 million, or 6%, compared to 2022. The growth was due to an increase in gross salaries paired with an increase in overall active membership and a slight increase in the composite employer rate from 34.16% to 35.32% on July 1, 2023. 2022 contributions represented a decrease of \$796 million, or 28%, compared to 2021. The decrease in contributions, despite a slight increase

# FINANCIAL SECTION

## Management’s Discussion and Analysis

December 31, 2023 and 2022 (unaudited)

in the employer rate from 33.81% to 34.16% on July 1, 2022, was mainly due to a one-time lump sum contribution of \$825 million under Act 2019-105 in 2021 and no such payment in 2022.

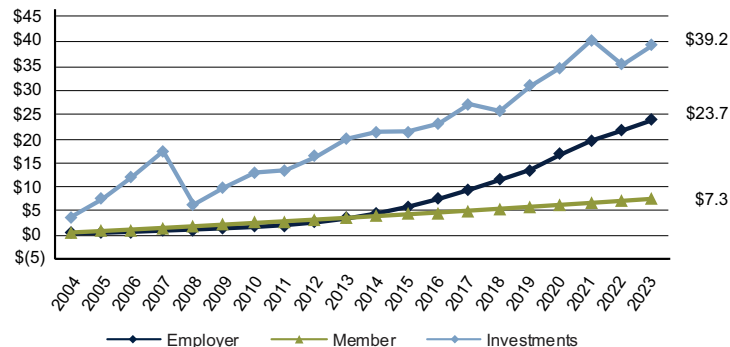
Beginning in 2005, Pennsylvania law statutorily suppressed employer contribution rates, primarily through Acts 2003-40 and 2010-120. Act 2010-120 limited the rate at which employer contributions increased in any given year after fiscal year (FY) 2011-12, up to a maximum of 4.5% each year, until rate collars were no longer needed. Under this schedule, commonwealth FY 2017-18 was the first year since legislatively mandated contribution rates were enacted through Act 2010-120 that collars were no longer needed and employers paid the uncollared rate. Since FY 2017-18, employers continued to show commitment by making contributions to the Defined Benefit Plan at the actuarially required rate. The FY 2024-25 composite employer contribution rate is expected to be 33.65% of payroll.

While the above-noted suppressed employer contributions have provided budgetary relief to commonwealth agencies and the taxpayers of Pennsylvania, they are a factor influencing the pension liability. The short-term benefit, however, has resulted in the need for employers to contribute more over a 30-year period due to implied financing costs. Such financing costs are incurred because the monies were not available to invest and compound.

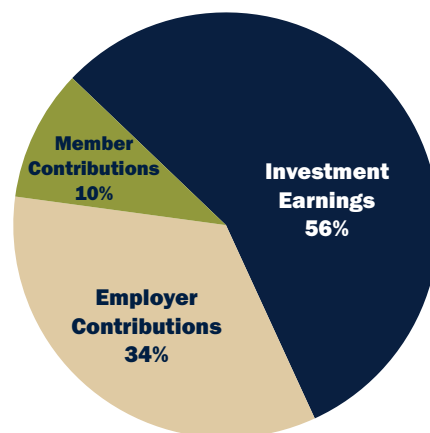
From 2004 through 2023, employer contributions totaled \$23.7 billion, or 34%, of total additions to fiduciary net position, compared to \$7.3 billion, or 10%, of total additions attributed to member contributions, and \$39.2 billion, or 56%, of total additions attributed to investment earnings, as illustrated in the following charts.

### 20-Year Cumulative Additions to Fiduciary Net Position

(\$ billions)



### 20-Year Cumulative Additions to Fiduciary Net Position



### Net Investment Income

SERS utilizes two methodologies when analyzing Defined Benefit Plan 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. Defined Benefit Plan investment returns, net of manager



## Management's Discussion and Analysis

December 31, 2023 and 2022 (unaudited)

fees, on both a money-weighted and time-weighted basis, were 12.2%, -12.2%, and 17.2% for the years 2023, 2022, and 2021, respectively.

Positive investment returns contributed approximately \$4.1 billion to net investment income in 2023. A net investment loss of approximately \$5.2 billion occurred in 2022 and a net investment gain of approximately \$5.7 billion occurred in 2021.

SERS has reviewed and modified the Defined Benefit Plan's strategic investment plan, as necessary. In December 2019, the SERS Board adopted the *SERS Defined Benefit Plan Investment Policy Statement*, with the latest amendment occurring in 2023. Its purpose is to outline the investment philosophy and practices of SERS and serve as the governing policy for the management of the system's defined benefit assets. The board approves the asset allocation and targets set forth in the statement, which supports the Defined Benefit Plan's long-term investment rate of return actuarial assumption.

The objective of the strategic investment plan is to provide benefit payments to annuitants and beneficiaries at the lowest cost to the commonwealth and to fund the program through a carefully planned and executed investment program with a focus on liquidity.

SERS assets are managed by external investment managers hired by the SERS 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.

The Defined Benefit Plan 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 managing the investments.

Defined Benefit Plan investment expenses, which include fees paid to managers, were \$180 million and \$157 million for the years ended December 31, 2023 and 2022, respectively.

### Benefits, Refunds, and Expenses

Benefit payments to annuitants are the most significant recurring deductions from the fiduciary net position. During 2023 and 2022, the SERS Defined Benefit Plan paid out approximately \$3.9 billion each year in benefits and refunds. Approximately 90% of benefit payments are made to annuitants residing in Pennsylvania.

There were approximately 6,000 new retirees added to the annuity payroll in 2023, with an average annual benefit of \$32,300. There were approximately 6,100 new retirees added to the annuity payroll in 2022, with an average annual benefit of \$30,900. There were more than 4,600 and 4,800 retirees removed from the rolls with an average annual benefit of \$18,700 and \$18,400 in 2023 and 2022, respectively. As is typical in mature pension plans, new retirees in 2023 received a higher annual benefit than those removed from the annuity payroll.

The benefits expense on the Defined Benefit Plan's financial statements consists of two components. A majority of the payments relate to normal monthly annuity payments, with a lesser portion related to supplemental payments. Most of the supplemental payments were paid to retiring members who chose to withdraw their contributions and interest at retirement. Such withdrawals reduce the retirees' annuity payments over their remaining life. Supplemental payments were \$436 million and \$500 million in 2023 and 2022, respectively.

Act 2010-120 lowered the benefits earned by most employees who joined SERS on or after January 1, 2011, through December 31, 2018, by reducing the retirement benefit accrual rate, increasing normal retirement age, extending the vesting period from five years to 10 years, and other provisions. Another important benefit-related aspect of Act 2010-120 was that retirement provisions for

# FINANCIAL SECTION

## Management's Discussion and Analysis

December 31, 2023 and 2022 (unaudited)

legislators elected after December 1, 2010 were reduced and made consistent with those of most rank-and-file employees.

Act 2017-5 further lowered and fundamentally changed the benefits earned by most employees who joined SERS on or after January 1, 2019, by introducing a hybrid benefit. One portion of the employee's retirement benefit comes from the Defined Benefit Plan that features guaranteed monthly payments for life based on a calculation. The other portion comes from the Defined Contribution Plan which is based on the employer and employee contributions and the amount of money the employee generates from their investment choices and market performance. Employees have the option to elect to exclusively participate in the Defined Contribution Plan, as opposed to a hybrid benefit. Act 2017-5 further reduced the retirement benefit accrual rate and increased the normal retirement age under the Defined Benefit Plan. The accrual rate is determined by the employee's class of service.

It will take considerable time to realize savings from Act 2010-120 and Act 2017-5 as detailed above. SERS expects benefit expenses to rise steadily because the number of retirees added to the rolls is projected to outpace the number of retirees removed from the rolls. Additionally, despite the benefit cost reductions for new employees, the monthly annuities for retirees in the near-term are projected to be approximately 73% higher than the annuities of those being removed from the payrolls.

SERS was established in 1923, but did not pay more than \$1 billion in annual benefits until 1997. SERS' Defined Benefit Plan annual benefit payments reached \$2 billion in 2007 and \$3 billion in 2015. Based on recent actuarial projections, the SERS Defined Benefit Plan annual benefit payments will reach \$4 billion by 2025.

## Growth in Annuity Payroll

	December		
	2023	2022	2021
Monthly annuity payroll (\$ millions)	\$292	\$283	\$274
Retirees	136,972	135,647	134,360

SERS' administrative expenses represented 0.1% of fiduciary net position in 2023 and 2022. All expenses were within budget.

## SERS' Assets

Investments are the most significant component of SERS' assets. The total Defined Benefit Plan investment portfolio fair value was \$36.6 billion and \$33.9 billion as of December 31, 2023 and 2022, respectively. The increase in SERS' total investments is related to the fact that the net investment income and contributions exceeded benefit payments and expenses for the year. SERS reports investments 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 most significant changes to investment values were seen in common and preferred stock and commingled public equity. Common and preferred stock values increased to \$12.9 billion in 2023, from \$11.6 billion in 2022. Commingled public equity values increased to \$5.7 billion in 2023, from \$4.6 billion in 2022. The increase in both common and preferred stock and commingled public equity was primarily due to favorable performance. Additionally, real estate values decreased to \$2.3 billion for 2023, from \$2.6 billion in 2022. The decline in value was due to unfavorable returns offset by capital infusion into real estate assets. All other investments within SERS' investment portfolio had nominal changes.



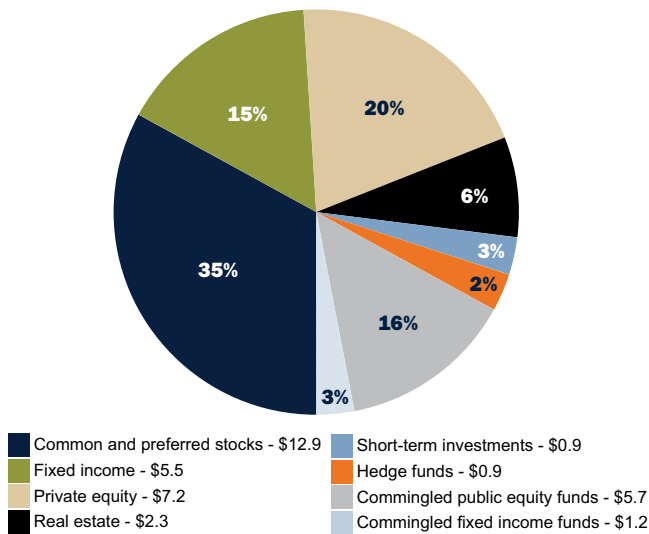
## Management's Discussion and Analysis

December 31, 2023 and 2022 (unaudited)

The total investment portfolio fair value of \$36.6 billion in 2023 was composed as shown by the chart below:

### Investments at Fair Value (2023)

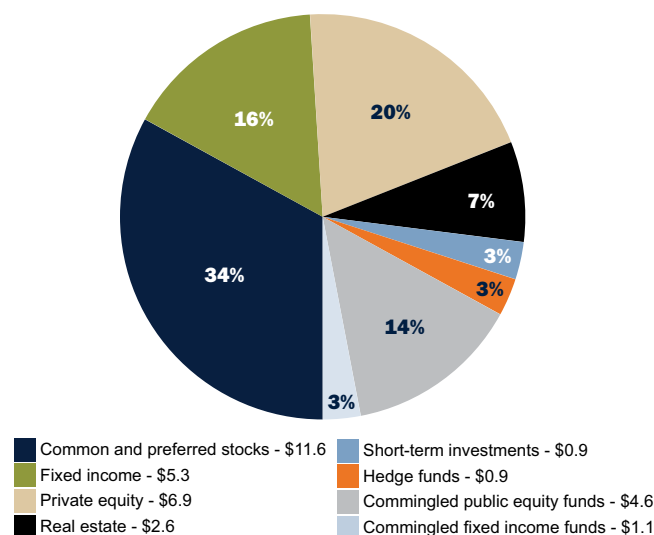
(\$ billions)



The total investment portfolio fair value of \$33.9 billion in 2022 was composed as shown by the chart below:

### Investments at Fair Value (2022)

(\$ billions)



SERS earns additional investment income by lending investment securities to brokers. The brokers provide collateral to SERS for borrowed securities generally equal to 102% to 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.

During 2023 and 2022, SERS' Defined Benefit Plan earned approximately \$2.7 million each year through securities lending. The program's guidelines provide for investment of cash collateral in highly liquid, highly-rated securities. As of December 31, 2023 and 2022, the fair value of loaned securities was \$571 million and \$497 million, respectively. The fair value of the associated collateral was \$589 million and \$513 million, respectively, of which \$157 million and \$190 million was cash, respectively.

### Derivatives

SERS' Defined Benefit Plan permits investment managers to use derivatives to hedge risks and provide market exposure to various asset classes within narrowly prescribed policy guidelines. Used properly, such derivatives cost-efficiently provide market exposures in the respective asset classes without disrupting Defined Benefit Plan liquidity needs. SERS' Defined Benefit Plan investment managers manage counterparty credit risk by entering into contracts with parties with credit ratings of at least investment grade 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

SERS' investment policy utilizes Cash as an asset class that serves as the primary source of short-term liquidity for the Defined Benefit Plan. At both December 31, 2023 and 2022, the Defined Benefit Plan held approximately \$0.6 billion in Cash, which is included in short-term investments on the Statements of Fiduciary Net Position. Specific

# FINANCIAL SECTION

## Management's Discussion and Analysis

December 31, 2023 and 2022 (unaudited)

short-term investments and fixed income holdings also offer liquidity. These investments provide a stable source for meeting the cash flow needs of the plan and protect against the risk that equity or other investments would need to be liquidated at unfavorable values in order to pay member benefits. Having adequate liquidity levels is especially vital for a mature pension plan that has growing benefit payments that exceed contributions into the plan.

### Actuarial Valuations

Annually, the SERS Defined Benefit Plan 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.

Every five years, the SERS Defined Benefit Plan 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 demographic trends and economic conditions.

The actuary, under oversight of the SERS Board, reviews 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). The 19th Investigation of

Actuarial Experience covering the period 2015 - 2019 was released and approved by the SERS Board in July 2020, and the recommended assumption changes were effective with the December 31, 2020 valuation. SERS experience studies can be viewed at [www.SERS.pa.gov](http://www.SERS.pa.gov).

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). Under the funding valuation, current investment gains and losses are deferred and smoothed into assets over five years (actuarial value of assets) as opposed to being recognized immediately in the fiduciary net position balance (market value of assets) of each respective year under the accounting valuation. Funding valuations in 2020 and earlier were based on a statutorily required modified entry-age funding method. This method calculated employer normal costs based upon the cost of new hires only. Act 2017-5 required SERS to convert to the traditional entry-age funding method beginning with 2021, which brings it in line with the accounting valuation. The traditional entry-age funding method calculates employer normal costs based on a blend of all active members in the system in that year, rather than only on new hires.

Key valuation results for the accounting valuation compared to the funding valuation for the years ended December 31, 2023 and 2022 are as shown in the following tables:

### As of December 31, 2023

(\$ millions)

GASB 67 - Accounting Valuation		Funding Valuation	
Total Pension Liability (TPL)	\$55,780	Actuarial Accrued Liability (AAL)	\$55,778
Fiduciary Net Position	36,425	Actuarial Value of Assets	38,793
<b>Net Pension Liability (NPL)</b>	<b>\$19,355</b>	<b>Unfunded AAL</b>	<b>\$16,985</b>
Ratio - Fiduciary Net Position/TPL	65.3%	Funded Ratio	69.6%

## Management's Discussion and Analysis

December 31, 2023 and 2022 (unaudited)

### As of December 31, 2022

(\$ millions)

GASB 67 - Accounting Valuation		Funding Valuation	
Total Pension Liability (TPL)	\$54,622	Actuarial Accrued Liability (AAL)	\$54,614
Fiduciary Net Position	33,607	Actuarial Value of Assets	37,125
<b>Net Pension Liability (NPL)</b>	<b>\$21,015</b>	<b>Unfunded AAL</b>	<b>\$17,489</b>
Ratio - Fiduciary Net Position/TPL	61.5%	Funded Ratio	68.0%

Under the accounting valuation, the net pension liability decreased to \$19.4 billion in 2023 from \$21.0 billion in 2022. This was due to a \$2.8 billion increase in the fiduciary net position mostly due to investment gains offset by benefit payments exceeding contributions. The increase in net position was offset by a \$1.2 billion increase in the total pension liability mostly due to service costs and interest costs, offset by benefit payments and refunds of contributions.

Under the funding valuation, the unfunded actuarial accrued liability decreased to \$17.0 billion in 2023 from \$17.5 billion in 2022 due to mostly the same factors as discussed above, except the effect of current year investment income being not as impactful because of asset smoothing.

### The Defined Contribution Plan

On June 12, 2017, Governor Wolf signed Act 2017-5 into law. The law established two new side-by-side hybrid defined benefit/defined contribution benefit options and a new defined contribution-only option for all state employees, excluding most hazardous duty employees, who first enter SERS membership on or after January 1, 2019. Additionally, all legacy SERS members had a one-time, irrevocable option to select one of the three new retirement benefit options.

While new employees are automatically enrolled in the hybrid Defined Benefit/Defined Contribution Plan A-5 class of service, they have the option to elect the other hybrid Defined Benefit/Defined Contribution Plan option A-6 class of service, or to join the stand-alone Defined Contribution Plan option. The Defined Contribution Plan, for all options, has three-year vesting for employer

contributions and immediate vesting for employee contributions.

The SERS Board selects the investment options offered through the Defined Contribution Plan, and contracts with investment managers and with a third-party administrator (TPA) for the plan. The employee defined contribution accounts are maintained by the TPA. Employee and employer contributions for the Defined Contribution Plan are deposited into participants' individual investment accounts. Employees may invest their money in several investment options including a range of target date funds, equity funds, fixed income funds, a short-term investment fund, and the self-directed brokerage option. If no active selection is made, contributions will be defaulted into one of the target date funds. Most participants are invested in the target date funds. The benefit to which a participant is entitled to is their vested account balance at termination. Distribution of benefits can be made in installments, lump sum payments, or through an annuity.

The Defined Contribution Plan continues to grow. There were approximately 33,900 and 25,300 defined contribution accounts as of December 31, 2023 and 2022, respectively. The net position of the Defined Contribution Plan was approximately \$189.4 million as of December 31, 2023, and \$105.8 million as of December 31, 2022. Employee contributions were approximately \$42.9 million for the year ended December 31, 2023, and \$31.4 million for the year ended December 31, 2022. Employer contributions were approximately \$23.5 million for the year ended December 31, 2023, and approximately \$16.8 million for the year ended December 31, 2022. Net investment gain was

# FINANCIAL SECTION

---

## Management's Discussion and Analysis

December 31, 2023 and 2022 (unaudited)

approximately \$25.1 million for the year ended December 31, 2023, and a loss of \$14.0 million for the year ended December 31, 2022. The plan distributed approximately \$4.6 million in benefits and refunds for the year ended December 31, 2023, and \$3.0 million for the year ended December 31, 2022.

Administrative expenses were approximately \$5.0 million and \$4.6 million for the years ended December 31, 2023 and 2022, respectively. The fees, costs, and expenses of administering the Defined Contribution Plan are funded by participating employers through an annual per-participant charge and unvested employer contributions. There is no administrative charge to participants.

### **Pennsylvania Act 2019-105**

Governor Wolf signed House Bill 1982 into law as Act 2019-105 on November 27, 2019. The law allows eligible employers to enter into an agreement with the SERS Board to make a one-time lump sum payment of 75% to 100% of their respective unfunded accrued liability. SERS' actuaries will calculate the portion of the unfunded accrued liability that an eligible employer is liable for based on SERS' most recent valuation report. The eligible employer will receive credit against future actuarially determined contributions on

a periodic basis that coincides with its existing schedule for making employer contributions to the system. With limited exceptions, this schedule is fixed once it is set. The lump sum payment covers only liabilities accrued as of the date of the calculation. Future changes in liability, whether gains or losses, will attach to the employer as if the advance payment was not made. Agreements must be entered into by December 31, 2024, and the lump sum payments must be made by May 1, 2025. There were no lump sum payments made by employers in 2023 or 2022.

In April 2021, the Pennsylvania State System of Higher Education (PASSHE) made a lump sum contribution under the Act, submitting a payment of \$825 million to SERS. In return, PASSHE receives an annual credit against their contributions over 30 years following a schedule set forth in their respective agreements.

The lump sum payment exclusively benefits PASSHE and does not impact other employers in the pension plan. These funds are part of the general assets of SERS and will not be segregated or invested separately for the account or benefit of the employer making the payment. This lump sum payment is included as employer contributions on the respective year's Statement of Changes in Fiduciary Net Position.

## Management's Discussion and Analysis

December 31, 2023 and 2022 (unaudited)

### Condensed Financial Information

(\$ millions)

#### Fiduciary Net Position

	2023	Increase/ (Decrease)	2022	Increase/ (Decrease)	2021
Total investments	\$36,788	\$2,811	\$33,977	(\$6,445)	\$40,422
Net other assets and liabilities	(174)	90	(264)	(151)	(113)
<b>Net position restricted for pensions and held in trust for defined contribution plan participants</b>	<b>\$36,614</b>	<b>\$2,901</b>	<b>\$33,713</b>	<b>(\$6,596)</b>	<b>\$40,309</b>

#### Changes in Fiduciary Net Position

	2023	Increase/ (Decrease)	2022	Increase/ (Decrease)	2021
Contributions	\$2,692	\$150	\$2,542	(\$768)	\$3,310
Annual employer charge	1	—	1	(1)	2
Net investment income/(loss)	4,152	9,379	(5,227)	(10,917)	5,690
Benefit, refunds, and administrative expenses	3,944	32	3,912	151	3,761
<b>Net increase/(decrease) in net position restricted for pensions and held in trust for defined contribution plan participants</b>	<b>\$2,901</b>	<b>\$9,497</b>	<b>(\$6,596)</b>	<b>(\$11,837)</b>	<b>\$5,241</b>

# FINANCIAL SECTION

## Statements of Fiduciary Net Position

### Statement of Fiduciary Net Position

December 31, 2023

(\$ thousands)

	Defined Benefit Plan	Defined Contribution Plan	Total
<b>Assets</b>			
Receivables			
Plan members/participants	\$1,553	\$179	\$1,732
Employers	11,290	38	11,328
Investment income	64,868	41	64,909
Investment proceeds and other receivables	572,147	57	572,204
Miscellaneous	274	82	356
<b>Total receivables</b>	<b>650,132</b>	<b>397</b>	<b>650,529</b>
Investments			
Short-term investments	950,520	9,608	960,128
Fixed income	5,492,007	—	5,492,007
Common and preferred stocks	12,906,117	—	12,906,117
Hedge funds	873,102	—	873,102
Real estate	2,252,630	—	2,252,630
Private equity	7,199,928	—	7,199,928
Target date funds	—	162,519	162,519
Commingled public equity funds	5,745,462	16,012	5,761,474
Commingled fixed income funds	1,176,563	2,839	1,179,402
Other investments	360	220	580
<b>Total investments</b>	<b>36,596,689</b>	<b>191,198</b>	<b>36,787,887</b>
Securities lending collateral pool	156,887	—	156,887
Other assets	26,170	2,232	28,402
<b>Total assets</b>	<b>37,429,878</b>	<b>193,827</b>	<b>37,623,705</b>
<b>Liabilities</b>			
Accounts payable and accrued expenses	49,058	1,155	50,213
Investment purchases and other liabilities	754,283	75	754,358
Obligations under securities lending	156,887	—	156,887
Other liabilities	44,723	3,162	47,885
<b>Total liabilities</b>	<b>1,004,951</b>	<b>4,392</b>	<b>1,009,343</b>
<b>Net position restricted for pensions and held in trust for defined contribution plan participants</b>	<b>\$36,424,927</b>	<b>\$189,435</b>	<b>\$36,614,362</b>

See accompanying notes to basic financial statements.

## Statements of Fiduciary Net Position

### Statement of Fiduciary Net Position

December 31, 2022

(\$ thousands)

	Defined Benefit Plan	Defined Contribution Plan	Total
<b>Assets</b>			
Receivables			
Plan members/participants	\$1,592	\$154	\$1,746
Employers	19,722	76	19,798
Investment income	57,612	28	57,640
Investment proceeds and other receivables	212,123	—	212,123
Miscellaneous	1,998	3	2,001
<b>Total receivables</b>	<b>293,047</b>	<b>261</b>	<b>293,308</b>
Investments			
Short-term investments	878,765	8,658	887,423
Fixed income	5,258,909	—	5,258,909
Common and preferred stocks	11,626,346	—	11,626,346
Hedge funds	871,809	—	871,809
Real estate	2,562,930	—	2,562,930
Private equity	6,913,933	—	6,913,933
Target date funds	—	88,490	88,490
Commingled public equity funds	4,601,477	8,480	4,609,957
Commingled fixed income funds	1,154,876	1,536	1,156,412
Other investments	372	157	529
<b>Total investments</b>	<b>33,869,417</b>	<b>107,321</b>	<b>33,976,738</b>
Securities lending collateral pool	189,697	—	189,697
Other assets	28,618	3,202	31,820
<b>Total assets</b>	<b>34,380,779</b>	<b>110,784</b>	<b>34,491,563</b>
<b>Liabilities</b>			
Accounts payable and accrued expenses	52,321	923	53,244
Investment purchases and other liabilities	479,819	171	479,990
Obligations under securities lending	189,697	—	189,697
Other liabilities	51,735	3,899	55,634
<b>Total liabilities</b>	<b>773,572</b>	<b>4,993</b>	<b>778,565</b>
<b>Net position restricted for pensions and held in trust for defined contribution plan participants</b>	<b>\$33,607,207</b>	<b>\$105,791</b>	<b>\$33,712,998</b>

See accompanying notes to basic financial statements.

# FINANCIAL SECTION

## Statements of Changes in Fiduciary Net Position

### Statement of Changes in Fiduciary Net Position

Year Ended December 31, 2023

(\$ thousands)

	Defined Benefit Plan	Defined Contribution Plan	Total
<b>Additions</b>			
Contributions			
Plan members/participants	\$427,368	\$42,902	\$470,270
Employers	2,198,430	23,458	2,221,888
<b>Total contributions</b>	<b>2,625,798</b>	<b>66,360</b>	<b>2,692,158</b>
Annual employer charge	—	1,696	1,696
Investment income			
From investing activities			
Net depreciation in fair value of investments	3,909,608	24,825	3,934,433
Interest	192,834	398	193,232
Dividends	200,010	—	200,010
Miscellaneous income	1,687	—	1,687
<b>Total investing activities income</b>	<b>4,304,139</b>	<b>25,223</b>	<b>4,329,362</b>
Investment expenses	(179,977)	(85)	(180,062)
Net income from investing activities	4,124,162	25,138	4,149,300
From securities lending activities			
Securities lending income	2,995	—	2,995
Securities lending expenses	(299)	—	(299)
Net income from securities lending activities	2,696	—	2,696
Net investment income	4,126,858	25,138	4,151,996
<b>Total additions</b>	<b>6,752,656</b>	<b>93,194</b>	<b>6,845,850</b>
<b>Deductions</b>			
Benefits	3,883,225	2,780	3,886,005
Refunds of contributions	27,553	1,802	29,355
Administrative expenses	24,158	4,968	29,126
<b>Total deductions</b>	<b>3,934,936</b>	<b>9,550</b>	<b>3,944,486</b>
Net increase	2,817,720	83,644	2,901,364
Net position restricted for pensions and held in trust for defined contribution plan participants			
Balance, beginning of year	33,607,207	105,791	33,712,998
<b>Balance, end of year</b>	<b>\$36,424,927</b>	<b>\$189,435</b>	<b>\$36,614,362</b>

See accompanying notes to basic financial statements.



## Statements of Changes in Fiduciary Net Position

### Statement of Changes in Fiduciary Net Position

Year Ended December 31, 2022

(\$ thousands)

	Defined Benefit Plan	Defined Contribution Plan	Total
<b>Additions</b>			
Contributions			
Plan members/participants	\$418,589	\$31,372	\$449,961
Employers	2,074,999	16,750	2,091,749
<b>Total contributions</b>	<b>2,493,588</b>	<b>48,122</b>	<b>2,541,710</b>
Annual employer charge	—	1,288	1,288
Investment (loss)/income			
From investing activities			
Net depreciation in fair value of investments	(5,439,865)	(14,102)	(5,453,967)
Interest	171,411	127	171,538
Dividends	207,912	—	207,912
Miscellaneous income	1,849	—	1,849
<b>Total investing activities loss</b>	<b>(5,058,693)</b>	<b>(13,975)</b>	<b>(5,072,668)</b>
Investment expenses	(157,345)	(50)	(157,395)
Net loss from investing activities	(5,216,038)	(14,025)	(5,230,063)
From securities lending activities			
Securities lending income	2,993	—	2,993
Securities lending expenses	(299)	—	(299)
Net income from securities lending activities	2,694	—	2,694
Net investment loss	(5,213,344)	(14,025)	(5,227,369)
<b>Total additions</b>	<b>(2,719,756)</b>	<b>35,385</b>	<b>(2,684,371)</b>
<b>Deductions</b>			
Benefits	3,852,073	1,886	3,853,959
Refunds of contributions	32,953	1,116	34,069
Administrative expenses	19,026	4,601	23,627
<b>Total deductions</b>	<b>3,904,052</b>	<b>7,603</b>	<b>3,911,655</b>
Net (decrease)/increase	(6,623,808)	27,782	(6,596,026)
Net position restricted for pensions and held in trust for defined contribution plan participants			
Balance, beginning of year	40,231,015	78,009	40,309,024
<b>Balance, end of year</b>	<b>\$33,607,207</b>	<b>\$105,791</b>	<b>\$33,712,998</b>

See accompanying notes to basic financial statements.

# FINANCIAL SECTION

## Notes to Basic Financial Statements

December 31, 2023 and 2022

### (1) Organization and Description of Pennsylvania State Employees' Retirement System (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 SERS Board has 11 members including the State Treasurer (ex officio), the Secretary of Banking and Securities (ex officio), two Senators, two members of the House of Representatives, and five 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 the State Employees' Retirement Fund (Defined Benefit Plan or pension plan), which is a cost-sharing multiple employer defined benefit pension plan. SERS is also the administrator of the State Employees' Defined Contribution Plan, which was established as part of Act 2017-5. The Defined Contribution Plan opened for enrollment on January 1, 2019. Both the Defined Benefit Plan and Defined Contribution Plan were established by the Commonwealth of Pennsylvania (commonwealth) to provide retirement benefits for employees of state government and certain independent agencies. The Defined Benefit and Defined Contribution Plans operate under separate trusts.

SERS is a component unit of the commonwealth, and the Defined Benefit and Defined Contribution Plans are included in the commonwealth's financial report as pension trust funds.

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.

Participation in the Defined Benefit Plan includes 35 employers with the commonwealth being classified as its largest employer. The commonwealth comprises 64 agencies and when everything is evaluated separately, the Defined Benefit Plan has a total of 98 participating employers/agencies as of December 31, 2023. As of December 31, 2022 participation in the Defined Benefit Plan included 38 employers. The commonwealth comprised 64 agencies and when everything was evaluated separately, the Defined Benefit Plan had a total of 101 participating employers/agencies.

Participation in the Defined Contribution Plan includes 20 employers and the commonwealth is classified as its largest employer. The commonwealth comprises 60 agencies and when everything is evaluated separately, the Defined Contribution Plan has a total of 79 participating employers/agencies as of December 31, 2023. As of December 31, 2022, participation in the Defined Contribution Plan included 20 employers. The commonwealth comprised 59 agencies and when everything was evaluated separately, the Defined Contribution Plan had a total of 78 participating employers/agencies. Additional employers/agencies will join the Defined Contribution Plan as they hire employees who are mandated to be in the plan. At December 31, 2023 and 2022, SERS' membership consisted of the following:

#### SERS Membership

	2023	2022
<b>Defined Benefit Plan</b>		
Inactive plan members or beneficiaries currently receiving benefits	136,972	135,647
Inactive plan members entitled to but not yet receiving benefits	7,077	7,188
Active plan members	98,115	96,395
<b>Total members</b>	<b>242,164</b>	<b>239,230</b>
<b>Defined Contribution Plan</b>		
Inactive accounts	10,325	7,595
Active participants contributing to plan	23,543	17,711
<b>Total participants</b>	<b>33,868</b>	<b>25,306</b>

As a result of the hybrid benefit structure established by Act 2017-5, certain employees may be included in both the defined benefit and defined contribution figures above.

### **(b) Defined Benefit Plan Benefits**

The SERS Defined Benefit Plan 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 provisions of the pension plan to the General Assembly. Member retirement benefits are determined by taking years of credited service multiplied by the final average salary multiplied by the annual accrual rate.

Most employees who entered SERS membership prior to January 1, 2011, and who retire at age 60 with three years of service, or at any age with 35 years of service, are entitled to a full 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, through December 31, 2018. Act 2010-120 created a class of service in which members earn a benefit that accrues at 2% of the member's final average salary instead of 2.5% each year and vests in 10 years instead of five. The full retirement age is 65 for most employees who entered SERS membership after January 1, 2011, and age 55 for members of the General Assembly and certain employees classified in hazardous duty positions. Act 2017-5 changed the benefit structure for most new employees effective January 1, 2019, which created two hybrid plan options as well as a defined contribution-only plan option. The two hybrid plan options contain a Defined Benefit Plan component with a full retirement age of 67 that accrues at 1.25% or 1% of the member's final average salary.

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 an A-3 class of service and an optional A-4 class for most employees who enter SERS membership for the first time on or after January 1, 2011, and December 1, 2010, for legislators newly elected in November 2010, through December 31, 2018. On or after January 1, 2019, class A-3 is only offered to hazardous duty employees. Employees who enter SERS membership under 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%.

# FINANCIAL SECTION

## Notes to Basic Financial Statements

December 31, 2023 and 2022

Act 2017-5 created a new A-5 hybrid class of service with optional hybrid A-6 class and straight defined contribution-only plan options for state employees (excluding most hazardous duty employees), who first enter SERS membership on or after January 1, 2019. Employees who enter SERS membership under Act 2017-5 enter as members of the A-5 class with a 45-day window to elect membership in the optional A-6 class or straight Defined Contribution Plan. The general annual benefit for Class A-5 members is 1.25% of an average of the highest five calendar years of the member's salary multiplied by years of service, while the Class A-6 benefit accrual rate is 1%. Those members choosing the straight Defined Contribution Plan do not have a benefit accrual rate and retire with their contributions, employer contributions, if vested, and any investment gains on those contributions.

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

### (c) Defined Benefit Plan Contributions

SERS' retirement code (71 Pa. C.S.) requires that all SERS participating employers make contributions to the pension plan on behalf of all active members and annuitants necessary to fund the liabilities and provide the annuity reserves required to pay benefits. The SERS Defined Benefit Plan funding policy, as set by the board, provides for periodic active member contributions at statutory rates. The Defined Benefit Plan funding policy also provides for periodic employer contributions at actuarially determined rates based on the Defined Benefit Plan 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. In FY 2017-18, the commonwealth paid the full actuarially required rate after being collared in previous years due to Act 2010-120. At December 31, 2023 and 2022, the composite actuarially determined rate was 35.32% and 34.16%, respectively. Employers may pay

individual rates higher or lower than the composite rate based on an employees' class of service. Act 2017-5 includes a savings "plow-back" provision requiring that the annual savings achieved through SERS' benefit changes flow back into the Defined Benefit Plan through the employer contribution rate rather than to other non-pension obligations.

Employer rates are computed based on SERS' fiscal year end of December 31 and applied to employers using the commonwealth's fiscal year beginning the following July 1. 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, 2023 and 2022, the blended contribution rates were 34.74% and 33.99%, 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 general membership contribution rate under Act 2017-5 for A-5 and A-6 members is 5% and 4% of salary, respectively. The contribution rate for Class D-4 Members of the General Assembly is 7.5%. Certain Judges and Magisterial District Judges have the option of electing special membership classes requiring a contribution of 10% and 7.5%, respectively. All Defined Benefit Plan 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 or elects to waive their benefits.

### (d) Defined Contribution Plan

The SERS retirement code requires that all SERS participating employers make contributions to the Defined Contribution Plan on behalf of all active participants. SERS' funding policy, as set by the SERS Board, provides for periodic employer and active participant contributions at statutory rates.

Participants in the A-5 class, A-6 class, and defined contribution-only plan option contribute 3.25%, 3.5%, and 7.5% to the plan, respectively.

Participants may also make additional voluntary contributions to the plan. Employers contribute 2.25%, 2%, and 3.5% for participants in the A-5 class, A-6 class, and defined contribution-only plan option, respectively. Employers do not match participant voluntary contributions to the plan. Participants are also permitted to transfer or roll over monies into the plan from other qualified plans.

While participant contributions are immediately vested, the employer contributions are not vested until a participant earns three eligibility points. Eligibility points are generally credited based on hours worked in a calendar year.

If a participant terminates employment before earning three eligibility points, any unvested employer contributions are returned to the Defined Contribution Plan to be used to offset future administrative costs to the plan. These monies are kept in a forfeiture account with the third-party administrator (TPA). There were \$2.4 million and \$3.8 million in forfeitures available to pay for administrative costs as of December 31, 2023 and 2022, respectively.

Each participant in the Defined Contribution Plan holds an individual account with the plan's TPA. The TPA is paid a fee for administering the plan. This TPA fee, and other administrative fees, costs, and expenses are incurred to operate the plan. These fees, costs, and expenses are funded through a per-participant assessment charged to employers and unvested employer contributions.

Participant accounts are credited with the participant's contributions as well as their employer's contributions and are adjusted for the investment earnings and investment management expenses associated with the investment options chosen by the participant. Participants can choose to invest their money in any of several investment options including a range of target date funds, equity funds, fixed income funds, a short-term

investment fund, and a self-directed brokerage option.

The benefit to which a participant is entitled to is their vested account balance at termination. Distribution of benefits can be made in installments, lump sum payments, or through an annuity. Participants are also permitted to transfer or roll over monies out of the plan into other qualified plans.

### **(2) Summary of Significant Accounting Policies**

#### **(a) Basis of Accounting**

SERS' financial statements 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, disbursements, and refunds are recognized when due and payable in accordance with the terms of the plans. 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.

Defined Benefit Plan common and preferred stocks and foreign exchange contracts are generally valued based on published market prices and quotations at the close of business from national security exchanges and securities pricing services.

# FINANCIAL SECTION

## Notes to Basic Financial Statements

December 31, 2023 and 2022

U.S. government securities and corporate and foreign bonds and notes are valued based on matrix pricing. Real estate separate accounts are valued using unobservable estimates and appraisals. For the Defined Contribution Plan, target date funds, self-directed brokerage accounts, commingled public equity funds, and commingled fixed income funds are reported at fair value, since these securities are considered actively traded as participants are able to actively buy and sell their interest.

Defined Benefit Plan private equity, certain real estate, hedge funds, commingled public equity funds, and commingled fixed income funds are reported at fair value as estimated and reported by general partners and investment managers, based upon the underlying net asset value (NAV) of the fund or partnership as a practical expedient of fair value. Adjustments 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 and amortized cost. The securities lending collateral pool, which is operated by the securities lending agent, is also accounted for at amortized cost.

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' expenses and fees, as well as those expenses directly related to SERS investment operations.

### **(d) Other Assets and Other Liabilities on the Statement of Fiduciary Net Position**

Other assets consist of an internally developed software capital asset capitalized under Governmental Accounting Standards Board (GASB) Statement No. 51, leases capitalized under GASB Statement No. 87, and deferred outflows related to other post-employment benefits (OPEB) for employees of SERS recorded under GASB Statement No. 75.

SERS' employees are eligible to participate in the Retired Employees Health Program (REHP) if they meet certain criteria upon retirement. The REHP is a single employer defined benefit OPEB plan that includes commonwealth agencies and some component units. More detail regarding this at the REHP plan level can be found in the commonwealth's ACFR, which is an audited financial statement and is available at [www.budget.pa.gov](http://www.budget.pa.gov).

Intangible capital assets are amortized over the useful life of the asset once they are placed into service.

Other liabilities represent the liabilities associated with any capitalized leases and the liabilities and deferred inflows related to OPEB.

Interest and amortization expenses related to capitalized leases are reported within the real estate line on the Schedule of Administrative Expenses.

### **(e) Commitments**

As of December 31, 2023 and 2022, SERS' Defined Benefit Plan had contractual commitments totaling approximately \$3.1 billion and \$3.2 billion, respectively, to fund future private equity and real estate investments over the next several years.

### **(f) Federal Income Taxes**

The Internal Revenue Service (IRS) issued a favorable tax determination letter on May 19, 2017, confirming its prior determination that the Defined Benefit Plan is a qualified Governmental Plan under the Internal Revenue Code (IRC) § 401(a). Member contributions to SERS for current service are federal income tax deferred under IRC § 414(h).

### **(g) 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, director, and officer liability. During the past three fiscal years, SERS insurance settlements did not exceed insurance coverage.

### (h) Interfund Transactions

Interfund transfers of assets take place on a regular basis between the Defined Benefit Plan and Defined Contribution Plan. Interfund activity is used to properly align expenses with each plan.

### (3) Legally Required Reserves

The retirement code requires the maintenance of the following reserve accounts representing the net position held for future and current benefit payments.

The **Members' 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 pension plan. Funds are transferred to the Annuity Reserve Accounts as members retire. The amount 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 investment related administrative expenses. SERS utilizes brokers to rebate a percentage of trade commissions directly to SERS. During the years ended December 31, 2023 and 2022, SERS earned approximately

\$40,000 and \$59,000 of income resulting from the commission recapture program, respectively. During 2023 and 2022, no investment related administrative expenditures were made from the program. These commission reserves can be used to pay for future administrative 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 pension plan. In addition, all administrative and investment expenses incurred by the pension plan 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 pension plan less any benefits paid out of the pension plan. Act 2002-234 amended the retirement code that directs the SERS 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 retirement code.

There were 24 and 22 individuals receiving benefits from the BCP at December 31, 2023 and 2022, respectively.

# FINANCIAL SECTION

## Notes to Basic Financial Statements

December 31, 2023 and 2022

Account balances at December 31, 2023 and 2022 are as follows:

### Account Balances

(\$ thousands)

	2023	2022
Members' savings account	\$5,583,794	\$5,456,160
State accumulation and interest reserve accounts	(3,897,684)	(5,708,543)
Directed commissions reserve account	3,801	3,761
Annuity reserve accounts		
Annuitants and beneficiaries	30,884,971	30,124,258
State police	3,788,814	3,673,437
Enforcement officers	50,989	50,033
Benefit completion plan reserve account	10,242	8,101
<b>Total</b>	<b>\$36,424,927</b>	<b>\$33,607,207</b>

The **State Employees' Defined Contribution Trust** accumulates Defined Contribution Plan participant and employer contributions, investment earnings, and plan expenses. The trust is comprised of individual participant investment accounts and administrative income received to cover plan costs. The assets of the plan are held in trust for the exclusive benefit of the participants and their beneficiaries and may be used for the payment of the fees, costs, and expenses related to the administration of the plan. All fees, costs, and expenses of administering the plan are being assessed to employers as a per-participant charge and through unvested employer contributions.

### (4) Investments

As provided by statute, the SERS Board has exclusive control and management responsibility of the Defined Benefit Plan and the Defined Contribution Plan with full power to invest or select investment options for the respective plans. In exercising its fiduciary responsibility to SERS' collective membership, the SERS Board is governed by the prudent expert rule in establishing investment policy. The prudent expert 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 SERS Board has adopted *SERS' Defined Benefit Plan Investment Policy Statement* and the *401(a) Defined Contribution Plan Statement of Investment Policy* to formally document investment objectives and responsibilities. These policies, as well as applicable state law, establish guidelines for permissible investments of SERS.

### Fair Value Hierarchy

SERS measures and records its investments using fair value measurement guidelines established by generally accepted accounting principles. The guidelines use a fair value hierarchy that 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.

Most common and preferred stocks, foreign exchange contracts, and the Defined Contribution Plan's target date funds, commingled public equity funds, commingled fixed income funds, and self-directed brokerage account are valued using prices quoted in active markets for those securities and are categorized as Level 1. They are



## Notes to Basic Financial Statements

December 31, 2023 and 2022

marked-to-market daily with changes in fair value recognized as part of investments and investment income.

Most 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.

Value add/opportunistic separately managed accounts (SMA) in real estate, certain fixed income securities, 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. A majority of the Level 3 investments are real estate investments where the fair value is determined based on appraisals using discounted

cash flows, recent comparable sales, and current market conditions. All SMA investments are to be independently appraised not less than once every three years by appraisers who meet specific professional qualifications. The valuation process involves significant judgment and estimating; thus, the value upon sale of an asset may differ from its appraised value.

Certain derivative instruments in the Defined Benefit Plan, such as foreign exchange contracts, interest rate swaps, credit default swaps, and futures, as well as the self-directed brokerage account in the Defined Contribution Plan, are included in other investments in the fair value tables.

At December 31, 2023 and 2022, the Defined Benefit Plan's investments measured at fair value are shown in the following tables:

### Defined Benefit Plan Investments Measured at Fair Value (2023)

(\$ thousands)

	Fair Value	Level 1	Level 2	Level 3
<b>Fixed income</b>				
Government	\$3,618,955	\$—	\$3,618,955	\$—
Corporates	1,221,523	—	1,211,955	9,568
Asset- and mortgage-backed securities	373,911	—	373,901	10
Sovereign debt	123,479	—	123,479	—
Private placements	115,982	—	113,385	2,597
Agencies	38,157	—	38,157	—
<b>Total fixed income</b>	<b>5,492,007</b>	<b>—</b>	<b>5,479,832</b>	<b>12,175</b>
<b>Equity</b>				
Domestic common and preferred stocks	11,934,623	11,932,010	2,613	—
Foreign common and preferred stocks	971,494	971,494	—	—
<b>Total equity</b>	<b>12,906,117</b>	<b>12,903,504</b>	<b>2,613</b>	<b>—</b>
<b>Real estate</b>				
Value add/opportunistic SMA	402,335	—	—	402,335
<b>Other investments</b>				
Other investments	360	69	291	—
<b>Total</b>	<b>\$18,800,819</b>	<b>\$12,903,573</b>	<b>\$5,482,736</b>	<b>\$414,510</b>

# FINANCIAL SECTION

## Notes to Basic Financial Statements

December 31, 2023 and 2022

### Defined Benefit Plan Investments Measured at Fair Value (2022)

(\$ thousands)

	Fair Value	Level 1	Level 2	Level 3
<b>Fixed income</b>				
Government	\$3,408,374	\$—	\$3,408,374	\$—
Corporates	1,113,124	—	1,093,060	20,064
Asset- and mortgage-backed securities	296,596	—	296,563	33
Private placements	271,927	—	262,198	9,729
Sovereign debt	119,780	—	119,780	—
Agencies	49,108	—	49,108	—
<b>Total fixed income</b>	<b>5,258,909</b>	<b>—</b>	<b>5,229,083</b>	<b>29,826</b>
<b>Equity</b>				
Domestic common and preferred stocks	10,816,308	10,813,772	2,536	—
Foreign common and preferred stocks	810,038	810,038	—	—
<b>Total equity</b>	<b>11,626,346</b>	<b>11,623,810</b>	<b>2,536</b>	<b>—</b>
<b>Real estate</b>				
Value add/opportunistic SMA	526,808	—	—	526,808
<b>Other investments</b>				
Other investments	372	350	22	—
<b>Total</b>	<b>\$17,412,435</b>	<b>\$11,624,160</b>	<b>\$5,231,641</b>	<b>\$556,634</b>

At December 31, 2023 and 2022, the Defined Contribution Plan's investments measured at fair value are shown in the following tables:

### Defined Contribution Plan Investments Measured at Fair Value (2023)

(\$ thousands)

	Fair Value	Level 1	Level 2	Level 3
<b>Target date funds</b>				
Target date funds	\$162,519	\$162,519	\$—	\$—
<b>Equity</b>				
Commingled public equity funds	16,012	16,012	—	—
<b>Commingled fixed income funds</b>				
Commingled fixed income funds	2,839	2,839	—	—
<b>Other investments</b>				
Other investments	220	220	—	—
<b>Total</b>	<b>\$181,590</b>	<b>\$181,590</b>	<b>\$—</b>	<b>\$—</b>

### Defined Contribution Plan Investments Measured at Fair Value (2022)

(\$ thousands)

	Fair Value	Level 1	Level 2	Level 3
<b>Target date funds</b>				
Target date funds	\$88,490	\$88,490	\$—	\$—
<b>Equity</b>				
Commingled public equity funds	8,480	8,480	—	—
<b>Commingled fixed income funds</b>				
Commingled fixed income funds	1,536	1,536	—	—
<b>Other investments</b>				
Other investments	157	157	—	—
<b>Total</b>	<b>\$98,663</b>	<b>\$98,663</b>	<b>\$—</b>	<b>\$—</b>

In certain circumstances, NAV can be used as a practical expedient of fair value to establish the fair value of an investment that does not have a readily determinable fair value.

Private equity limited partnerships are valued at the NAV of SERS' ownership interest in partnership's capital, which approximates fair value. NAV is determined by the general partners. Private equity limited partnerships produce quarterly capital account statements and are audited at least annually. Since private equity investments in such partnerships are generally illiquid with holding periods lasting three to 10 years, the value realized by SERS upon disposition may differ from estimated values reflected in the financial statements. SERS' private equity investments on the Statement of Fiduciary Net Position are categorized into the following strategies in the Defined Benefit Plan Investments Measured at NAV tables:

- **Buyouts** are investments in established businesses that are undergoing a fundamental change in operations or strategy.
- **Special Situations** are investments in funds that acquire distressed companies or companies in need of restructuring, funds

from the secondary market, and funds providing mezzanine financing.

- **Growth Equity** consists of private equity investments in late-stage ventures, minority growth equity, and small buyout strategies.
- **Legacy Private Equity** consists of a consolidation of private equity funds from various sub-asset classes (Buyouts, Special Situations, and Growth Equity) that were not considered part of SERS core investment strategy. These assets are currently being managed by a third-party administrator which provides day-to-day oversight of operations.
- **Legacy Private Credit Funds** are closed-end (drawdown) limited partnership structures, often with a significant contractual cash flow component, with liquidity events in five to 10 years. SERS no longer has an asset allocation targeting this strategy as a stand-alone asset class.

Real estate limited partnerships are valued at the NAV of SERS' ownership percentage in partnership's capital. Real estate limited partnerships produce quarterly capital account statements and are audited at least annually. The

# FINANCIAL SECTION

---

## Notes to Basic Financial Statements

December 31, 2023 and 2022

investment managers use third-party appraisals based on discounted cash flows, recent comparable sales, and current market conditions to arrive at NAV. The appraisal process involves significant judgment and estimating; thus, the value upon sale of an asset may differ from its appraised value.

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 investments are valued at NAV:

- **Core/Core Plus** are long-term investments in high-quality real estate that generate returns primarily from stable income producing properties. These are open-ended funds.
- **Value Add/Oppportunistic Funds** utilize greater leverage and development strategies relative to core strategies, thereby taking higher risks but demanding 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. These are closed-end funds.
- **Legacy Real Assets** differ from real estate in that they focus on real assets other than real estate, but maintain the characteristics of collateralization by hard assets and income-producing potential. The remaining assets in this category were liquidated in 2023.

Hedge funds are valued by general partners based on information provided by underlying hedge fund investments, third-party administrators, and brokers. Hedge fund investments are valued using NAV of units held at the end of the period based on the fair value of underlying investments. Hedge funds are valued on a monthly basis and are audited at least annually.

Most of the hedge fund investments are being scaled down since they are not part of the current investment strategy. Hedge funds are categorized into the following specific strategies:

- **Opportunistic Fixed Income** are investments that include directional and relative value investments through various structures, excluding closed-end funds, that may include debt securities, credit derivatives and related instruments, and/or multi-sector fixed income funds.
- **Legacy Hedge Funds** includes hedge funds that SERS is no longer actively investing in. The assets are to be sold in an orderly fashion as market conditions dictate.

The Defined Benefit Plan's commingled public equity funds and commingled fixed income funds are pooled investments in multiple securities, with each fund being valued at NAV on a monthly basis. The NAV is calculated using the closing price of the underlying investments, with the total value of the fund being apportioned to SERS based on units of ownership.

## Notes to Basic Financial Statements

December 31, 2023 and 2022

At December 31, 2023 and 2022, the Defined Benefit Plan's investments measured at NAV are shown in the following tables:

### Defined Benefit Plan Investments Measured at NAV (2023)

(\$ thousands)

	NAV	Unfunded Commitments	Redemption Frequency	Redemption Notice Period
<b>Private equity</b>				
Buyouts	\$3,678,808	\$1,232,599	NA	NA
Special Situations	1,746,895	932,987	NA	NA
Growth Equity	1,176,945	274,694	NA	NA
Legacy private credit	403,200	166,430	NA	NA
Legacy private equity	194,080	31,729	NA	NA
<b>Total private equity</b>	<b>7,199,928</b>	<b>2,638,439</b>		
<b>Real estate</b>				
Core/core plus	1,109,027	21,869	Quarterly	60 - 90 days
Value add/opportunistic	741,268	429,845	NA	NA
<b>Total real estate</b>	<b>1,850,295</b>	<b>451,714</b>		
<b>Hedge funds</b>				
Opportunistic fixed income	856,850	—	Quarterly	95 days
Legacy hedge funds	16,252	—	See note <sup>1/</sup>	See note <sup>1/</sup>
<b>Total hedge funds</b>	<b>873,102</b>	<b>—</b>		
<b>Commingled public equity funds</b>				
Commingled public equity funds	5,745,462	—	Daily	30 days
<b>Commingled fixed income funds</b>				
Commingled fixed income funds	1,176,563	—	Daily	1 day
<b>Total</b>	<b>\$16,845,350</b>	<b>\$3,090,153</b>		

<sup>1/</sup>The assets are to be sold in an orderly fashion as market conditions dictate.

# FINANCIAL SECTION

## Notes to Basic Financial Statements

December 31, 2023 and 2022

### Defined Benefit Plan Investments Measured at NAV (2022)

(\$ thousands)

	NAV	Unfunded Commitments	Redemption Frequency	Redemption Notice Period
<b>Private equity</b>				
Buyouts	\$3,618,468	\$1,371,209	NA	NA
Special Situations	1,581,492	948,567	NA	NA
Growth Equity	1,102,609	264,236	NA	NA
Legacy private credit	393,968	174,356	NA	NA
Legacy private equity	217,396	36,322	NA	NA
<b>Total private equity</b>	<b>6,913,933</b>	<b>2,794,690</b>		
<b>Real estate</b>				
Core/core plus	1,273,570	21,870	Quarterly	60 - 90 days
Value add/opportunistic	762,045	426,276	NA	NA
Legacy real assets	507	—	Daily	None
<b>Total real estate</b>	<b>2,036,122</b>	<b>448,146</b>		
<b>Hedge funds</b>				
Opportunistic fixed income	854,588	—	Quarterly	95 days
Legacy hedge funds	17,221	—	See note <sup>1/</sup>	See note <sup>1/</sup>
<b>Total hedge funds</b>	<b>871,809</b>	<b>—</b>		
<b>Commingled public equity funds</b>				
Commingled public equity funds	4,601,477	—	Daily	30 days
<b>Commingled fixed income funds</b>				
Commingled fixed income funds	1,154,876	—	Quarterly	30 days
<b>Total</b>	<b>\$15,578,217</b>	<b>\$3,242,836</b>		

<sup>1/</sup>The assets are to be sold in an orderly fashion as market conditions dictate.

SERS also has short-term investments that are not valued using fair value or NAV. SERS owns a portion of the commonwealth Treasury Department's short-term investment fund (STIF), which is valued at amortized cost. Additionally, there are other short-term investments valued at cost.

At December 31, 2023 and 2022, the Defined Benefit Plan's short-term investments totaled \$950.5 million and \$878.8 million respectively, and the Defined Contribution Plan's short-term investments totaled \$9.6 million and \$8.7 million respectively.

SERS' investment office, in consultation with the board and its investment consultants, updates the *SERS Defined Benefit Plan Investment Policy Statement* and the *Defined Contribution Plan Statement of Investment Policy* as necessary.

In June 2018, the board adopted the *SERS 401(a) Defined Contribution Plan Investment Policy Statement*, which was most recently amended on May 5, 2022. The policy defines the purpose of the 401(a) Plan, defines the roles of those responsible for managing the Plan, defines the investment options for the Plan and establishes investment funds performance standards and the objectives,

standards and processes for monitoring and evaluating investment options.

In December 2019, the board adopted the *SERS Defined Benefit Plan Investment Policy Statement* and a 10-year asset allocation strategy designed to further mitigate risk, reduce external management fees, and increase fund liquidity. The target asset allocation is used to support the Defined Benefit Plan's long-term return assumption. The policy has been amended by the board from time to time as necessitated.

The following table shows the Defined Benefit Plan's long-term 10-year strategic target asset allocation in place at December 31, 2023 and 2022:

### Target Asset Allocation

Asset Class	2022-2023
Private Equity	16%
Real Estate	7
U.S. Equity	31
International Developed Markets Equity	14
Emerging Markets Equity	5
Fixed Income	22
Inflation Protection (TIPS)	3
Cash	2
<b>Total</b>	<b>100%</b>

For the years ended December 31, 2023 and 2022, the money-weighted rate of return for SERS' Defined Benefit Plan, net of manager fees, was 12.2% and -12.2% respectively. A money-weighted rate of return expresses investment performance, net of manager fees, adjusted for the changing amounts actually invested.

In June 2022, with the desire to provide an opportunity to reduce risk while maintaining the potential for achieving a reasonable long-term assumed investment rate of return, the board reduced the actuarial investment return assumption from 7.0% to 6.875%. This change became effective with the December 31, 2022

actuarial valuation, and the 6.875% return assumption remains in effect for the December 31, 2023 actuarial valuation. The investment return assumption is reviewed annually and as a part of the normal five-year experience study cycle.

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, 2023 and 2022, 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.

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 the retirement code (71 Pa. C.S. §5931(c)), the State Treasurer serves as custodian of the Defined Benefit Plan. 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, which are primarily in commingled funds, hedge funds, and limited partnerships, including real estate and private equity.

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



# FINANCIAL SECTION

## Notes to Basic Financial Statements

December 31, 2023 and 2022

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 Defined Benefit Plan fixed income and short-term investment holdings exposed to credit risk, 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, 2023 and 2022 by debt sector.

### Debt Securities Exposed to Credit Risk (2023)

(\$ thousands)

	AAA	AA	A	BAA	BA and below	NA <sup>1/</sup>	Short-Term Investments <sup>2/</sup>	Total Exposed to Credit Risk <sup>3/</sup>
Corporates	\$61,068	\$45,949	\$449,103	\$626,672	\$31,206	\$7,525	\$—	\$1,221,523
Commingled	—	—	—	—	—	1,176,563	—	1,176,563
Short-term investments <sup>2/</sup>	—	—	—	—	—	—	950,520	950,520
Asset- and mortgage-backed securities	334,750	13,758	5,144	2,037	17,347	875	—	373,911
Sovereign debt	16,437	51,812	15,083	38,657	1,490	—	—	123,479
Private placements <sup>4/</sup>	12,067	—	5,253	34,788	34,682	29,192	—	115,982
Agencies	—	38,157	—	—	—	—	—	38,157
Government	2,218	21,489	9,758	3,805	—	—	—	37,270
<b>Total</b>	<b>\$426,540</b>	<b>\$171,165</b>	<b>\$484,341</b>	<b>\$705,959</b>	<b>\$84,725</b>	<b>\$1,214,155</b>	<b>\$950,520</b>	<b>\$4,037,405</b>

<sup>1/</sup>Represents other securities that were either not rated or had a withdrawn rating.

<sup>2/</sup>Represents short-term investments mostly in the commonwealth 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.

<sup>3/</sup>Debt securities exposed to credit risk and U.S. government guaranteed securities, as noted in the subsequent paragraph, comprised short-term investments, commingled fixed income funds, and fixed income from the Statements of Fiduciary Net Position.

<sup>4/</sup>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.

## Notes to Basic Financial Statements

December 31, 2023 and 2022

### Debt Securities Exposed to Credit Risk (2022)

(\$ thousands)

	AAA	AA	A	BAA	BA and below	NA <sup>1/</sup>	Short-Term Investments <sup>2/</sup>	Total Exposed to Credit Risk <sup>3/</sup>
Commingled	\$—	\$—	\$—	\$—	\$—	\$1,154,876	\$—	\$1,154,876
Corporates	58,345	43,154	372,185	593,505	36,958	8,977	—	1,113,124
Short-term investments <sup>2/</sup>	—	—	—	—	—	—	878,765	878,765
Asset- and mortgage-backed securities	250,164	13,473	5,142	3,031	23,560	1,226	—	296,596
Private placements <sup>4/</sup>	13,569	—	5,123	84,247	84,097	84,891	—	271,927
Sovereign debt	16,941	48,879	18,640	34,174	1,146	—	—	119,780
Agencies	—	49,108	—	—	—	—	—	49,108
Government	1,749	22,655	6,009	9,199	—	—	—	39,612
<b>Total</b>	<b>\$340,768</b>	<b>\$177,269</b>	<b>\$407,099</b>	<b>\$724,156</b>	<b>\$145,761</b>	<b>\$1,249,970</b>	<b>\$878,765</b>	<b>\$3,923,788</b>

<sup>1/</sup>Represents other securities that were either not rated or had a withdrawn rating.

<sup>2/</sup>Represents short-term investments mostly in the commonwealth 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.

<sup>3/</sup>Debt securities exposed to credit risk and U.S. government guaranteed securities, as noted in the subsequent paragraph, comprised short-term investments, commingled fixed income funds, and fixed income from the Statements of Fiduciary Net Position.

<sup>4/</sup>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.

U.S. government guaranteed securities with a fair value of \$3.6 billion and \$3.4 billion as of December 31, 2023 and 2022, respectively, are not included in the previous tables because they are not subject to credit risk.

The Defined Contribution Plan is exposed to credit risk through investment in the commonwealth Treasury Department's STIF, which is not rated. The plan had \$9.6 million and \$8.7 million in STIF as of December 31, 2023 and 2022, respectively. The plan also has indirect exposure to credit risk through the commingled fixed income funds, which had a cumulative balance of \$2.8 million and \$1.5 million, and the target date funds, which had a balance of \$162.5 million and \$88.5 million as of December 31, 2023 and 2022, respectively. These funds hold investment grade securities.

Interest rate risk is the risk that interest rate changes 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.

# FINANCIAL SECTION

## Notes to Basic Financial Statements

December 31, 2023 and 2022

At December 31, 2023 and 2022, SERS' Defined Benefit Plan had the following option-adjusted durations by debt sector:

### Debt Option-Adjusted Durations

(\$ thousands)

	2023		2022	
	Fair Value	Option-Adjusted Duration	Fair Value	Option-Adjusted Duration
Sovereign debt	\$123,479	8.6	\$119,780	8.6
Government	3,618,955	7.4	3,408,374	7.6
Corporates	1,221,523	6.7	1,113,124	6.7
Commingled investment funds	1,176,563	5.9	1,154,876	5.7
Asset- and mortgage-backed securities	373,911	5.5	296,596	6.0
Private placements <sup>1/</sup>	115,982	3.1	271,927	3.2
Agencies	38,157	3.0	49,108	3.0
Short-term investments	950,520	0.1	878,765	0.1
<b>Total<sup>2/</sup></b>	<b>\$7,619,090</b>		<b>\$7,292,550</b>	

<sup>1/</sup>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.

<sup>2/</sup>Total fair values exposed to interest rate risk comprised short-term investments, commingled fixed income funds, and fixed income from the Statements of Fiduciary Net Position.

The Defined Contribution Plan is exposed to interest rate risk through investment in the commonwealth Treasury Department's STIF, which had a duration of approximately one month at December 31, 2023 and 2022, respectively. The plan also has indirect exposure to interest rate risk through commingled fixed income funds, which have an average duration of approximately 5.4 years and 5.9 years at December 31, 2023 and 2022, respectively. The cumulative balance of these funds was \$2.8 million

and \$1.5 million as of December 31, 2023 and 2022 respectively.

Foreign currency risk is the risk that fluctuations 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, 2023 and 2022, the SERS Defined Benefit Plan had the following currency exposures:

### Foreign Currency Exposures (2023)

(\$ thousands)

Currency	Short-Term Investments <sup>1/</sup>	Fixed Income	Common and Preferred Stocks	Other Investments	Real Estate	Private Equity	Total
European Euro	\$8,566	\$20,043	\$129,205	(\$782)	\$280,937	\$702,338	\$1,140,307
Swedish Krona	—	—	8,478	808	—	108,291	117,577
British Pound Sterling	791	25,378	63,445	(1,625)	—	—	87,989
Japanese Yen	62	—	50,110	3,451	—	—	53,623
Swiss Franc	842	—	41,412	(21)	—	—	42,233
Canadian Dollar	137	2,250	37,967	(455)	—	—	39,899
Danish Krone	397	—	37,326	160	—	—	37,883
New Taiwan Dollar	67	—	27,280	—	—	—	27,347
South Korean Won	162	—	26,591	—	—	—	26,753
Hong Kong Dollar	(13)	—	23,695	13	—	—	23,695
Australian Dollar	27	1,195	20,519	70	—	—	21,811
Mexican Peso	57	1,147	12,030	(539)	—	—	12,695
Thai Baht	—	—	9,734	—	—	—	9,734
Turkish Lira	—	—	8,908	—	—	—	8,908
Norwegian Krone	17	—	6,615	591	—	—	7,223
South African Rand	211	—	4,000	—	—	—	4,211
Chilean Peso	—	—	3,003	—	—	—	3,003
Indonesian Rupiah	—	—	2,728	—	—	—	2,728
Philippine Peso	—	—	1,887	—	—	—	1,887
Hungarian Forint	—	—	849	—	—	—	849
Malaysian Ringgit	—	—	780	—	—	—	780
Israeli Shekel	—	—	725	—	—	—	725
Polish Zloty	119	—	596	—	—	—	715
New Zealand Dollar	139	2,347	—	(1,850)	—	—	636
Brazilian Real	535	—	—	—	—	—	535
<b>Total</b>	<b>\$12,116</b>	<b>\$52,360</b>	<b>\$517,883</b>	<b>(\$179)</b>	<b>\$280,937</b>	<b>\$810,629</b>	<b>\$1,673,746</b>

<sup>1/</sup>Includes investment related receivables and payables as of December 31.

# FINANCIAL SECTION

## Notes to Basic Financial Statements

December 31, 2023 and 2022

### Foreign Currency Exposures (2022)

(\$ thousands)

Currency	Short-Term Investments <sup>1/</sup>	Fixed Income	Common and Preferred Stocks	Other Investments	Real Estate	Private Equity	Total
European Euro	\$5,844	\$17,881	\$101,685	\$1,869	\$362,346	\$625,880	\$1,115,505
Swedish Krona	—	—	7,585	1,371	—	101,822	110,778
British Pound Sterling	582	24,997	56,730	(1,833)	—	—	80,476
Japanese Yen	205	—	39,261	3,362	—	—	42,828
Swiss Franc	751	—	41,322	81	—	—	42,154
Canadian Dollar	30	—	31,712	1,831	—	—	33,573
Danish Krone	506	—	30,162	155	—	—	30,823
Hong Kong Dollar	48	—	25,755	—	—	—	25,803
Australian Dollar	140	—	19,269	3,300	—	—	22,709
New Taiwan Dollar	58	—	22,131	—	—	—	22,189
South Korean Won	540	—	18,325	—	—	—	18,865
Mexican Peso	2	—	12,025	—	—	—	12,027
Turkish Lira	—	—	7,931	—	—	—	7,931
Indonesian Rupiah	122	—	7,765	—	—	—	7,887
Thai Baht	—	—	7,148	—	—	—	7,148
South African Rand	175	1,146	7,918	(2,296)	—	—	6,943
Norwegian Krone	52	—	4,885	—	—	—	4,937
Hungarian Forint	—	—	1,371	—	—	—	1,371
Philippine Peso	—	—	1,244	—	—	—	1,244
Israeli Shekel	—	—	1,015	—	—	—	1,015
Polish Zloty	106	—	868	—	—	—	974
Brazilian Real	530	—	—	—	—	—	530
Other currencies (4)	113	1,091	692	(2,814)	—	—	(918)
<b>Total</b>	<b>\$9,804</b>	<b>\$45,115</b>	<b>\$446,799</b>	<b>\$5,026</b>	<b>\$362,346</b>	<b>\$727,702</b>	<b>\$1,596,792</b>

<sup>1/</sup>Includes investment related receivables and payables as of December 31.

The Defined Benefit Plan and the Defined Contribution Plan have indirect foreign currency exposure through its holdings in commingled public equity funds and commingled fixed income funds.

The Defined Contribution Plan also has indirect foreign currency exposure through its holdings in target date funds.

#### (5) Securities Lending

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

The custodian, acting as lending agent, lends the plan's 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. Accordingly, neither securities collateral received from borrowers nor the related obligation to borrowers are reported on the Statement of Fiduciary Net Position.

As of December 31, 2023 and 2022, the Defined Benefit Plan's credit exposure to individual borrowers was limited because the amounts owed to the borrowers exceeded the amounts the borrowers owed the plan. The treasurer's contract with the lending agent requires the agent to indemnify the plan 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, 2023 and 2022, could be terminated on demand by either the lending agent or the borrower. Cash collateral is invested in a short-term collective investment pool, which is accounted for at amortized cost. The duration of the investments in the pool at December 31, 2023 and 2022 was two days and three days, 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, 2023 and 2022, for the Defined Benefit Plan, the fair value of loaned securities was \$571 million and \$497 million, respectively; the fair value of the associated collateral was \$589 million and \$513 million, of which \$157 million and \$190 million was cash, respectively. As of December 31, 2023 and 2022, securities collateral of \$432 million and \$323 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**

SERS mitigates its legal risk on investment holdings including derivatives by ensuring that legal requirements, including indemnification, sovereign immunity, jurisdiction, etc., are

acknowledged and agreed to in the derivatives agreements to which they are subject.

Within narrowly prescribed guidelines, the SERS Defined Benefit Plan and Defined Contribution Plan permit investment managers to directly 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, forward settling mortgage instruments for liquidity as well as to gain mortgage exposure, and swaps to more efficiently gain investment exposure in the equity and credit markets.

SERS indirectly holds derivatives and financial instruments through commingled fund structures in the Defined Benefit Plan and the Defined Contribution Plan. At a fund level, these managers hold foreign exchange contracts, futures contracts, and certain swap contracts. These funds invest in instruments directly and indirectly to gain foreign exchange exposure and to manage interest rate risk by altering the average life of the portfolio. Derivatives are viewed within the context of the fund's total portfolio and are consistent with the funds' overall strategy.

SERS is exposed to counterparty credit risk on some open derivative positions. Counterparty credit risk is the risk that a derivative counterparty may fail to meet its payment obligation under the derivative contract.

SERS invests in mortgage-backed securities (MBS) in the form of specified pools to maximize yields. These securities are sensitive to prepayments of mortgages, which may result from a drop in interest rates. The system also uses MBS forwards, which are forward-settling mortgage instruments that are used for liquidity as well as a low-cost, efficient way to gain mortgage exposure. The MBS forwards are subject to credit risk in the event of nonperformance by counterparties. For the Defined Benefit Plan, the fair value of MBS forwards was

# FINANCIAL SECTION

## Notes to Basic Financial Statements

December 31, 2023 and 2022

\$334 million and \$249 million as of December 31, 2023 and 2022, respectively. These investments are included in fixed income in the Statement of Fiduciary Net Position.

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 the net position and represents the fair value of the contracts on December 31.

At December 31, 2023 and 2022, the Defined Benefit Plan directly-owned contracts to purchase and sell by foreign currencies are shown in the following tables:

### Foreign Exchange Contracts (2023)

(\$ thousands)

Currency	Purchases	Unrealized Gain/(Loss)	Sales	Unrealized Gain/(Loss)
Japanese Yen	\$3,512	\$188	\$62	\$—
Australian Dollar	2,254	96	2,184	(103)
European Euro	1,972	84	2,753	(49)
British Pound Sterling	1,971	13	3,596	(162)
South African Rand	1,068	6	1,068	(23)
Swedish Krona	808	80	—	—
Norwegian Krone	591	54	—	—
Danish Krone	160	7	—	—
Hong Kong Dollar	13	—	—	—
New Zealand Dollar	—	—	1,850	(79)
Mexican Peso	—	—	540	(24)
Canadian Dollar	—	—	455	(19)
Swiss Franc	—	—	21	—
<b>Total</b>	<b>\$12,349</b>	<b>\$528</b>	<b>\$12,529</b>	<b>(\$459)</b>



### Foreign Exchange Contracts (2022)

(\$ thousands)

Currency	Purchases	Unrealized Gain/(Loss)	Sales	Unrealized Gain/(Loss)
Japanese Yen	\$4,520	\$337	\$1,158	(\$14)
Canadian Dollar	3,464	(27)	1,633	2
Australian Dollar	3,301	52	—	—
European Euro	2,260	147	391	(10)
Swedish Krona	1,370	25	—	—
Mexican Peso	713	5	713	(7)
Danish Krone	261	16	106	(3)
Swiss Franc	81	—	—	—
New Zealand Dollar	—	—	2,814	(22)
South African Rand	—	—	2,296	(62)
British Pound Sterling	—	—	1,833	(90)
<b>Total</b>	<b>\$15,970</b>	<b>\$555</b>	<b>\$10,944</b>	<b>(\$206)</b>

Swap agreements provide for periodic payments between parties based on the change in value of underlying assets, indexes, rates, and credit worthiness. SERS' managers use 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' direct exposure to swap agreements was not significant at December 31, 2023 and 2022.

Futures are standardized contracts traded on an exchange. Contract details include the price and quantity of a specific asset to be transacted by

either the buyer or the seller on a set date. Futures are subject to certain risks which include liquidity, interest rate, market, and credit risks. Futures are used by SERS' managers to gain desired exposures or hedge certain risks within the portfolio. SERS' managers do not use futures for the purpose of speculation. SERS did not have exposure to futures at December 31, 2023. SERS' exposure to futures was not significant at December 31, 2022.

### (7) 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. SERS makes every effort to defend its position in these proceedings.

# FINANCIAL SECTION

## Notes to Basic Financial Statements

December 31, 2023 and 2022

### (8) Net Pension Liability

The components of the net pension liability of participating employers at December 31, 2023 and 2022, were as follows:

#### Net Pension Liability

(\$ thousands)

	2023	2022
Total pension liability	\$55,780,367	\$54,622,092
Plan fiduciary net position	36,424,927	33,607,207
<b>Net pension liability</b>	<b>\$19,355,440</b>	<b>\$21,014,885</b>
Plan fiduciary net position as a percentage of the total pension liability	65.3%	61.5%

The total pension liability was determined by an actuarial valuation for financial reporting purposes as of December 31, 2023 and 2022, using some of the following actuarial methods and assumptions:

- Actuarial cost method: entry age
- Investment rate of return (discount rate): 6.875% including inflation for 2023 and 2022
- Projected salary increases: average of 4.55% for 2023 and 2022, with a range of 3.30% to 6.95% including inflation for both years
- Asset valuation method: fair (market) value
- Inflation: 2.50%
- Mortality rate: projected PubG-2010 and PubNS-2010 Mortality Tables adjusted for actual plan experience and future improvement for retirees, beneficiaries, and survivors and rates determined by SERS' actuaries using actual SERS experience for pre-retirement active members

The assumptions mentioned above, unless otherwise approved by the board, are based on

the *19th Investigation of Actuarial Experience* study covering the periods 2015 - 2019, which was released in July 2020.

The long-term expected real rate of return on pension plan investments is determined using a building-block method in which best-estimate ranges of expected future real rates of return (expected returns, net of 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 geometric 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, 2023 and 2022 (see the discussion of the pension plan's investment policy) are summarized in the following table:

#### Long-Term Expected Real Rate of Return

Asset Class	2023	2022
Private Equity	6.00%	5.75%
Real Estate	4.80	5.12
U.S. Equity	4.85	4.35
International Developed Markets Equity	4.75	4.25
Emerging Markets Equity	4.95	4.65
Fixed Income	1.75	(0.50)
Inflation Protection (TIPS)	1.50	(1.00)
Cash	0.25	(1.05)

The projection of cash flows used to determine the discount rate assumed that contributions from plan members will be made at the current contribution rates 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

## Notes to Basic Financial Statements

December 31, 2023 and 2022

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 6.875% for

2023 and 2022, 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 (2023)

(\$ thousands)

	<b>1% Decrease to 5.875%</b>	<b>Current Discount Rate of 6.875%</b>	<b>1% Increase to 7.875%</b>
Net pension liability	\$25,400,650	\$19,355,440	\$14,250,456

### Sensitivity of the Net Pension Liability to Change in the Discount Rate (2022)

(\$ thousands)

	<b>1% Decrease to 5.875%</b>	<b>Current Discount Rate of 6.875%</b>	<b>1% Increase to 7.875%</b>
Net pension liability	\$26,937,912	\$21,014,885	\$16,012,481

# FINANCIAL SECTION

## Required Supplementary Information

December 31, 2023 (unaudited)

### Schedule 1: Schedule of Changes in Net Pension Liability and Related Ratios

(\$ millions)

	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014
<b>Total pension liability</b>										
Service cost	\$929	\$901	\$924	\$1,003	\$982	\$965	\$961	\$953	\$955	\$944
Interest	3,687	3,635	3,594	3,458	3,409	3,334	3,262	3,271	3,123	3,042
Differences between expected and actual experience	453	363	(105)	35	66	167	130	(534)	378	98
Changes of assumptions	—	672	—	2,041	562	—	—	947	669	—
Benefit payments, including refunds of member contributions	(3,911)	(3,885)	(3,731)	(3,557)	(3,513)	(3,395)	(3,304)	(3,228)	(3,081)	(2,946)
Net change in total pension liability	1,158	1,686	682	2,980	1,506	1,071	1,049	1,409	2,044	1,138
Total pension liability - beginning	54,622	52,936	52,254	49,274	47,768	46,697	45,648	44,239	42,195	41,057
<b>Total pension liability - ending (a)</b>	<b>\$55,780</b>	<b>\$54,622</b>	<b>\$52,936</b>	<b>\$52,254</b>	<b>\$49,274</b>	<b>\$47,768</b>	<b>\$46,697</b>	<b>\$45,648</b>	<b>\$44,239</b>	<b>\$42,195</b>
<b>Plan fiduciary net position</b>										
Contributions - employer <sup>1/</sup>	2,198	2,075	2,871	3,186	2,115	2,049	1,898	1,622	1,360	1,084
Contributions - member	427	419	405	410	405	394	383	375	372	366
Net investment income/(loss)	4,128	(5,214)	5,682	3,920	5,175	(1,442)	4,066	1,587	88	1,462
Benefit payments, including refunds of member contributions	(3,911)	(3,885)	(3,731)	(3,557)	(3,513)	(3,395)	(3,304)	(3,228)	(3,081)	(2,946)
Administrative expense	(24)	(19)	(24)	(27)	(23)	(26)	(26)	(23)	(22)	(22)
Net change in plan fiduciary net position	2,818	(6,624)	5,203	3,932	4,159	(2,420)	3,017	333	(1,283)	(56)
Plan fiduciary net position - beginning	33,607	40,231	35,028	31,096	26,937	29,405	26,388	26,055	27,338	27,394
Cumulative effect of change in accounting principle	NA	NA	NA	NA	NA	(48)	NA	NA	NA	NA
Beginning balance restated	NA	NA	NA	NA	NA	29,357	NA	NA	NA	NA
Plan fiduciary net position - ending (b)	36,425	33,607	40,231	35,028	31,096	26,937	29,405	26,388	26,055	27,338
<b>Net pension liability - ending (a) - (b)</b>	<b>\$19,355</b>	<b>\$21,015</b>	<b>\$12,705</b>	<b>\$17,226</b>	<b>\$18,178</b>	<b>\$20,831</b>	<b>\$17,292</b>	<b>\$19,260</b>	<b>\$18,184</b>	<b>\$14,857</b>
Plan fiduciary net position as a percentage of the total pension liability	65.3%	61.5%	76.0%	67.0%	63.1%	56.4%	63.0%	57.8%	58.9%	64.8%
Covered payroll	\$6,855	\$6,548	\$6,384	\$6,442	\$6,329	\$6,179	\$5,984	\$5,912	\$5,972	\$5,720
Net pension liability as percentage of covered payroll	282.3%	321.0%	199.0%	267.4%	287.2%	337.1%	288.9%	325.8%	304.5%	259.7%

<sup>1/</sup>Contributions - employer includes the \$825 million one-time lump sum payment received from the Pennsylvania State System of Higher Education (PASSHE) in 2021, and \$1.06 billion from Penn State University in 2020.

See accompanying independent auditors' report.

## Required Supplementary Information

December 31, 2023 (unaudited)

### Schedule 2: Schedule of Employer Contributions

(\$ millions)

Year <sup>1/</sup>	Actuarially Determined Contribution (ADC)	Contributions in Relation to the ADC	Contribution Deficiency (Excess)	Covered Payroll	Contributions as a Percentage of Covered Payroll
2023 <sup>2/</sup>	\$2,188	\$2,188	\$—	\$6,855	31.92%
2022 <sup>2/</sup>	2,066	2,066	—	6,548	31.55
2021 <sup>2/</sup>	2,079	2,858 <sup>4/</sup>	(779)	6,384	44.77
2020 <sup>2/</sup>	2,164	3,175 <sup>5/</sup>	(1,011)	6,442	49.29
2019 <sup>2/</sup>	2,106	2,106	—	6,329	33.28
2018 <sup>2/</sup>	2,040	2,040	—	6,179	33.02
2017 <sup>2/ 3/</sup>	1,884	1,884	—	5,984	31.47
2016 <sup>3/</sup>	1,614	1,614	—	5,912	27.30
2015 <sup>3/</sup>	1,360	1,360	—	5,972	22.78
2014 <sup>3/</sup>	1,084	1,084	—	5,720	18.95

<sup>1/</sup>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 for valuation years 2014 - 2020 and traditional entry-age for valuation years 2021 - 2023
- Asset valuation method: five-year smoothing (all years)
- Inflation: 2.75% for valuation years 2014 - 2015, 2.6% for valuation years 2016 - 2019, and 2.5% for valuation years 2020 - 2023
- Projected average salary increases: 6.1% for valuation year 2014, 5.7% for valuation year 2015, 5.6% for valuation years 2016 - 2019, 4.6% for valuation years 2020 - 2021, and 4.55% for valuation years 2022 - 2023
- Assumed investment rate of return (net of manager fees including inflation): 7.5% for valuation years 2014 - 2015, 7.25% for valuation years 2016 - 2018, 7.125% for valuation year 2019, 7.0% for valuation years 2020 - 2021, and 6.875% for valuation years 2022 - 2023

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

<sup>3/</sup>The ADC disclosed above is based on minimum floor rates or suppressed rates resulting from collars that were required based on statutory law. These rates were 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 were applied. These “final employer contribution rates” fell within the realm of an appropriate ADC calculation under actuarial standards of practice and temporarily deferred a portion of the payments that work towards fully funding the plan.

<sup>4/</sup>Contributions include the \$825 million one-time lump sum payment received from the Pennsylvania State System of Higher Education (PASSHE), less credits utilized during the year.

<sup>5/</sup>Contributions include the \$1.06 billion one-time lump sum payment received from Penn State University, less credits utilized during the year.

### Schedule 3: Schedule of Investment Returns

	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014
Annual money-weighted rate of return, net of investment expense	12.2%	-12.2%	17.2%	11.3%	18.8%	-4.5%	15.1%	6.4%	0.4%	6.4%

See accompanying independent auditors' report.

# FINANCIAL SECTION

## Supplementary Information

Year Ended December 31, 2023

### Schedule 4: Schedule of Administrative Expenses

(\$ thousands)

	Defined Benefit Plan	Defined Contribution Plan	Total
Personnel services			
Salaries	\$11,297	\$1,508	\$12,805
Benefits	8,186	1,035	9,221
Temporary personnel wages and overtime	381	26	407
<b>Total personnel services</b>	<b>19,864</b>	<b>2,569</b>	<b>22,433</b>
Operational			
Travel	36	—	36
Training	79	—	79
Communication services	323	32	355
Consultants	367	99	466
Legal services/fees	28	—	28
Specialized services	626	1,663	2,289
Advertising	2	—	2
IT consulting	1,230	31	1,261
Contracted maintenance non-IT	46	—	46
Hardware/software and maintenance	1,575	140	1,715
Real estate	2,148	163	2,311
Vehicles	40	—	40
Office equipment	176	—	176
Other rentals/leases	20	—	20
Office supplies	57	3	60
Motorized equipment maintenance	4	—	4
Postage	524	22	546
Freight	3	—	3
Printing	159	1	160
Subscriptions and licensing	86	—	86
Membership dues	46	—	46
Conference	30	—	30
Insurance, surety, and fidelity bonds	5	—	5
Other operational	1,247	12	1,259
<b>Total operational</b>	<b>8,857</b>	<b>2,166</b>	<b>11,023</b>
Total administrative expenses before OPEB	28,721	4,735	33,456
(OPEB benefit)/OPEB expense	(4,563)	233	(4,330)
<b>Total administrative expenses</b>	<b>\$24,158</b>	<b>\$4,968</b>	<b>\$29,126</b>

See accompanying independent auditors' report.

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

(\$ thousands)

**Investment Expenses**

Expense Category	Expenses
Defined Benefit Plan manager investment expenses	
Private Equity	\$91,939
Real Estate	39,895
U.S. Equity	2,454
International Developed Markets Equity	6,576
Emerging Markets Equity	7,061
Fixed Income	9,710
Inflation Protection (TIPS)	1,082
Legacy Private Credit	11,015
<b>Total Defined Benefit Plan manager investment expenses</b>	<b>169,732</b>
Investment professional personnel	5,670
Investment consultants	2,944
Custodian	1,001
Subscriptions and memberships	489
Operational	141
<b>Total Defined Benefit Plan investment expenses</b>	<b>179,977</b>
Defined Contribution Plan investment expenses	85
<b>Total investment expenses</b>	<b>\$180,062</b>

**Consultant Expenses**

Firm	Service Type	Expenses
Defined Benefit Plan investment consultant expenses		
StepStone Group	Private equity investments	\$1,674
NEPC	Real estate investments	525
Callan	General investments	424
Fairview Capital Partners	Investment portfolio management	208
Other	Other	113
<b>Total Defined Benefit Plan investment consultant expenses</b>		<b>2,944</b>
Defined Benefit Plan administrative consultant expenses		
Korn Ferry Hay Group	Actuary	280
Other	Multiple	87
<b>Total Defined Benefit Plan administrative consultant expenses</b>		<b>367</b>
Defined Contribution Plan consultant expenses	Multiple	99
<b>Total consultant expenses</b>		<b>\$3,410</b>

See accompanying independent auditors' report.



# Investment Section

May 24, 2024

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

On behalf of the Pennsylvania State Employees' Retirement System's (SERS) Investment Office, I am pleased to present the investment section of SERS Annual Comprehensive Financial Report for calendar year 2023. The SERS Board administers a Defined Benefit Plan with approximately \$36.4 billion in net position, a Defined Contribution Plan with approximately \$189.4 million in net position, and a voluntary Deferred Compensation Plan offered to members with approximately \$4.5 billion in net position.

SERS' Defined Benefit Plan investment performance for the calendar year ended December 31, 2023, was 12.2% (net of fees). The end of 2023 marks 3-, 5-, 10-, 15-, 20-, and 25-year periods of returns of 5.0%, 8.8%, 6.7%, 7.7%, 7.1%, and 6.6% (net of fees), respectively. Performance is calculated using a Modified Dietz return methodology.

SERS' funded status as a percentage of the total pension liability was approximately 69.6% (actuarial value), as of December 31, 2023. SERS' Board considers its funded status in selecting its risk tolerance, and as such prioritizes an asset allocation to meet the long-term actuarial assumed rate of return, while also addressing shorter-term liquidity needs to pay benefits.

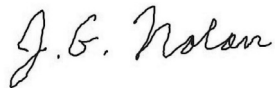
A number of key accomplishments were achieved in 2023 pertaining primarily to the Defined Benefit Plan, several of which are documented below:

- Maintained low annual investment manager fees and expenses paid to external firms of approximately 48.6 basis points or 0.49% of total plan assets
- Committed \$295 million to three best-in-class Private Equity managers inclusive of two no-fee/no-carry sidecars for co-investment
- Allocated \$60 million to SERS' current co-investment program to further enhance returns and reduce Private Equity fees
- Committed \$100 million to one best-in-class Real Estate manager with a co-investment component
- Started to restructure the Real Estate portfolio to enhance projected returns. Executed two partial redemption requests from Core/Core Plus and REITs managers totaling \$225 million with \$175 million of proceeds received to date

- Completed a search for Real Estate Consulting Services which included a thorough diligence process and interviews with prospective firms. The process was concluded ahead of schedule with the selection of NEPC at favorable fee terms

The investment section of this report provides further information regarding the investment program. The Investment Office continues to operate efficiently and effectively. I remain confident that with a focus on the SERS mission, thoughtful leadership from the board, and a disciplined investment process aligned with the investment objectives, SERS and its members will continue on the path of financial security.

Sincerely,



James G. Nolan  
Chief Investment Officer

### Investment Policy

The SERS Board originally adopted a formal *Statement of Investment 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. On May 2, 2023, the SERS Board adopted the amended *SERS' Defined Benefit Plan Investment Policy Statement (IPS)*.

The purpose of the IPS 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 IPS 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 expert standard as set forth in Title 71, Pennsylvania Consolidated Statutes, Section 5931(a).
- The members of the board, employees of SERS, and agents thereof shall stand in a fiduciary relationship to the members of the system regarding the investments and disbursements of any of the moneys 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.
- 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.
- A 10-year asset allocation strategy is designed to achieve or exceed the expected return, maintain exposure to less liquid non-traditional strategies, and continue the plan's commitment to liquidity through the allocation to capital preservation assets.

# INVESTMENT SECTION

---

## Investment Policy and Objectives

December 31, 2023 (unaudited)

### Investment Objectives

As indicated in SERS' IPS, 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 SERS' actuarial assumed rate of return over the long-term, net of fees.
- Achieve SERS' total fund policy benchmark return over 10-year periods, net of fees. The fund policy benchmark index will be based on the asset allocation set forth in the IPS approved by the board.

SERS' investment process requires a thorough analysis of the plan liabilities, liquidity requirements, and market opportunities. The board, in collaboration with the Chief Investment Officer, actuarial consultant, and investment consultants, establishes the actuarial assumed rate of return. Achieving, or exceeding this actuarial assumed rate of return is the primary investment performance objective of SERS' Investment Office to help meet the desired funded status.

## Investment Returns

December 31, 2023 (unaudited)

### Calendar Year, Net-of-Fees Returns<sup>1/</sup>

For the period ending December 31, 2023

Asset Class	1-Year Total Return	3-Year Total Return	5-Year Total Return	10-Year Total Return
Private Equity <sup>2/,5/</sup>	6.6%	15.6%	14.9%	12.5%
<i>Burgiss All Private Equity Custom Index<sup>3/,5/</sup></i>	0.0	10.8	10.5	11.9
<i>Global Equity +3%<sup>4/,5/</sup></i>	24.9	12.2	11.7	14.2
Real Estate <sup>5/</sup>	-11.9	3.3	4.6	4.6
<i>Real Estate Custom Benchmark<sup>5/,6/</sup></i>	-13.1	6.2	4.7	7.0
<i>Consumer Price Index +3%<sup>5/</sup></i>	6.7	8.8	7.1	5.8
U.S. Equity	25.6	8.2	14.9	10.6
<i>Russell 3000 Index</i>	26.0	8.5	15.2	11.5
<i>S&amp;P 1500 Index</i>	25.5	9.8	15.4	11.8
International Developed Markets Equity	19.0	4.9	9.4	5.1
<i>MSCI World ex U.S. IMI</i>	17.2	3.7	8.2	4.4
Emerging Markets Equity	11.4	-5.1	5.3	3.4
<i>MSCI Emerging Markets IMI</i>	11.7	-3.7	4.5	3.0
Fixed Income	5.6	-2.8	1.3	1.9
<i>Bloomberg U.S. Aggregate Bond Index</i>	5.5	-3.3	1.1	1.8
Inflation Protection (TIPS)	3.9	-1.7	2.7	2.2
<i>Bloomberg U.S. TIPS Index</i>	3.9	-1.0	3.2	2.4
Cash	5.1	2.3	2.0	1.5
<i>ICE BofAML U.S. 3-Month Treasury Bill Index</i>	5.0	2.2	1.9	1.3
Legacy Private Credit <sup>5/,8/</sup>	10.9	13.2	10.2	NA
<i>S&amp;P/LSTA Leveraged Loan Index +1%<sup>5/</sup></i>	14.1	7.1	5.5	NA
<b>Total Fund<sup>7/</sup></b>	<b>12.2%</b>	<b>5.0%</b>	<b>8.8%</b>	<b>6.7%</b>
<b>Total Fund Custom Benchmark</b>	<b>12.7%</b>	<b>5.3%</b>	<b>9.2%</b>	<b>7.4%</b>
<b>Total Fund Custom Public Market Equivalent Benchmark</b>	<b>17.1%</b>	<b>4.7%</b>	<b>8.6%</b>	<b>7.4%</b>
<b>Total Fund 60/40 Index</b>	<b>15.0%</b>	<b>2.0%</b>	<b>7.6%</b>	<b>5.6%</b>

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

<sup>2/</sup>Historical Private Equity performance includes Buyouts, Special Situations, and Growth Equity.

<sup>3/</sup>Intended to compare the program's performance to its peers.

<sup>4/</sup>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.

<sup>5/</sup>Private Equity, Legacy Private Credit, Real Estate and the corresponding benchmarks are reported on a quarter-lagged basis.

<sup>6/</sup>Calculated monthly using beginning of the month asset class weights applied to each corresponding primary benchmark return. The real estate custom benchmark consists of 100% NCREIF NFI-ODCE (Qtr lag).

<sup>7/</sup>Legacy Hedge Funds are in liquidation, values and performance are no longer reported. However, all performance activity continues to be reflected in SERS' Total Fund return.

<sup>8/</sup>Legacy Private Credit performance is included in the total fund starting at the composite's true inception date, July 1, 2022. The history is calculated and shown for informational purposes.

# INVESTMENT SECTION

## Investment Returns

December 31, 2023 (unaudited)

### Fiscal Year, Net-of-Fees Returns<sup>1/</sup>

For the period ending June 30, 2023

Asset Class	1-Year Total Return	3-Year Total Return	5-Year Total Return	10-Year Total Return
Private Equity <sup>2/,5/</sup>	-2.8%	23.5%	15.7%	13.0%
<i>Burgiss All Private Equity Custom Index<sup>3/,5/</sup></i>	-5.2	16.5	12.2	12.8
<i>Global Equity +3%<sup>4/,5/</sup></i>	-3.1	21.0	13.3	14.8
Real Estate <sup>5/</sup>	-6.0	7.2	4.7	6.1
<i>Real Estate Custom Benchmark<sup>5/,6/</sup></i>	-3.7	8.2	6.7	8.2
<i>Consumer Price Index +3%<sup>5/</sup></i>	8.0	8.4	6.9	5.6
U.S. Equity	18.8	14.1	10.6	11.5
<i>Russell 3000 Index</i>	19.0	13.9	11.4	12.3
<i>S&amp;P 1500 Index</i>	19.2	14.7	11.8	12.6
International Developed Markets Equity	18.8	10.4	5.3	6.3
<i>MSCI World ex U.S. IMI</i>	16.4	8.9	4.2	5.5
Emerging Markets Equity	5.6	3.3	2.3	4.0
<i>MSCI Emerging Markets IMI</i>	3.2	3.6	1.4	3.2
Fixed Income	-0.5	-2.5	0.8	1.7
<i>Bloomberg U.S. Aggregate Bond Index</i>	-0.9	-4.0	0.8	1.5
Inflation Protection (TIPS)	-1.7	-0.7	2.0	2.0
<i>Bloomberg U.S. TIPS Index</i>	-1.4	-0.1	2.5	2.1
Cash	3.9	1.4	1.6	1.2
<i>ICE BofAML U.S. 3-Month Treasury Bill Index</i>	3.6	1.3	1.6	1.0
Legacy Private Credit <sup>5/,8/</sup>	6.6	13.5	12.1	NA
<i>S&amp;P/LSTA Leveraged Loan Index +1%<sup>5/</sup></i>	3.7	9.6	4.7	NA
<b>Total Fund<sup>7/</sup></b>	<b>6.9%</b>	<b>8.8%</b>	<b>6.6%</b>	<b>7.1%</b>
<b>Total Fund Custom Benchmark</b>	<b>7.6%</b>	<b>8.8%</b>	<b>7.4%</b>	<b>7.8%</b>
<b>Total Fund Custom Public Market Equivalent Benchmark</b>	<b>8.6%</b>	<b>8.0%</b>	<b>6.9%</b>	<b>7.7%</b>
<b>Total Fund 60/40 Index</b>	<b>9.2%</b>	<b>5.0%</b>	<b>5.2%</b>	<b>6.0%</b>

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

<sup>2/</sup>Historical Private Equity performance includes Buyouts, Special Situations, and Growth Equity.

<sup>3/</sup>Intended to compare the program's performance to its peers.

<sup>4/</sup>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.

<sup>5/</sup>Private Equity, Legacy Private Credit, Real Estate and the corresponding benchmarks are reported on a quarter-lagged basis.

<sup>6/</sup>Calculated monthly using beginning of the month asset class weights applied to each corresponding primary benchmark return. The real estate custom benchmark consists of 100% NCREIF NFI-ODCE (Qtr lag).

<sup>7/</sup>Legacy Hedge Funds are in liquidation, values and performance are no longer reported. However, all performance activity continues to be reflected in SERS' Total Fund return.

<sup>8/</sup>Legacy Private Credit performance is included in the total fund starting at the composite's true inception date, July 1, 2022. The history is calculated and shown for informational purposes.



## Pension Fund Values and Annual Returns

December 31, 2023 (unaudited)

### Defined Benefit Plan Values and Annual Returns

(\$ millions)

Year Ended	Pension Fund Fair Value	Annual Total Pension Fund Rate of Return <sup>1/</sup>
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
2017	29,405	15.1
2018	26,937	-4.6
2019	31,096	18.8
2020	35,028	11.1
2021	40,231	17.2
2022	33,607	-12.2
2023	36,425	12.2

<sup>1/</sup>Returns were calculated using the Modified Dietz day-weighted return methodology.

# INVESTMENT SECTION

## Largest Assets Held

December 31, 2023 (unaudited)

### U.S. Equity

Holding	Fair Value
Microsoft Corp	\$699,357,312
Apple Inc	679,053,503
Amazon.Com Inc	327,323,582
Nvidia Corp	281,459,277
Alphabet Inc Class A	198,424,896
Meta Platforms Inc	198,371,927
Alphabet Inc Class C	191,379,558
Tesla Inc	164,272,861
Berkshire Hathaway Inc	156,257,026
Broadcom Inc	120,594,069

### Non-U.S. Equity

Holding	Fair Value
Linde PLC	\$70,284,392
Accenture PLC	53,342,531
IShares MSCI India Small-Cap	40,213,207
Novo Nordisk A/S	31,106,666
Medtronic PLC	26,139,504
LVMH Moet Hennessy Louis Vuitton	23,905,952
Eaton Corp PLC	23,172,182
Chubb Ltd	21,791,146
Taiwan Semiconductor Manufacturing Corp	21,069,672
Alimentation Couche-Tard Inc	19,060,718

### Non-U.S. Fixed Income

Holding	Fair Value
Deutsche Bank AG/New York NY, Variable Rate, November 26, 2025	\$3,442,593
UBS Group AG, 4.550%, April 17, 2026	3,197,663
Deutsche Bundesrepublik I Regs, 0.100%, April 15, 2033	2,867,043
Kreditanstalt Fuer Wiederaufbau, 2.875%, April 3, 2028	2,864,346
Barclays PLC, 4.375%, January 12, 2026	2,860,414
Inter-American Development Bank, 0.625%, July 15, 2025	2,826,784
United Kingdom Inflation-Regs, 0.125%, March 22, 2026	2,729,860
United Kingdom Inflation-Regs, 0.125%, August 10, 2031	2,402,657
United Kingdom Inflation-Regs, 0.750%, November 22, 2033	2,355,405
Santander UK Group Holdings PLC, Variable Rate, November 3, 2028	2,348,563

Note: A detailed list of SERS investment holdings at December 31, 2023 may be viewed at [www.SERS.pa.gov](http://www.SERS.pa.gov).

## U.S. Government and Government Related Fixed Income

Holding	Fair Value
U.S. Treasury Inflation Index Note, 0.125%, January 15, 2030	\$77,992,824
U.S. Treasury Inflation Index Note, 0.375%, January 15, 2027	72,970,255
U.S. Treasury Inflation Index Note, 0.125%, April 15, 2027	71,421,713
U.S. Treasury Inflation Index Note, 0.875%, January 15, 2029	70,093,752
U.S. Treasury Inflation Index Note, 0.750%, July 15, 2028	68,563,128
U.S. Treasury Inflation Index Note, 1.375%, July 15, 2033	66,854,994
U.S. Treasury Inflation Index Note, 0.125%, April 15, 2026	61,124,771
U.S. Treasury Inflation Index Note, 0.750%, February 15, 2042	47,357,943
U.S. Treasury Inflation Index Note, 3.625%, April 15, 2028	46,122,165
U.S. Treasury Inflation Index Note, 1.250%, April 15, 2028	37,225,516

## U.S. Corporate Fixed Income

Holding	Fair Value
Bank of America Corp, Variable Rate, April 22, 2032	\$5,066,584
Bank of America Corp, Variable Rate, December 20, 2028	4,601,323
JP Morgan Chase & Co, Variable Rate, February 1, 2028	4,346,460
BX Commercial Mortgage Trust 2019-XL, Variable Rate, October 15, 2036	3,602,031
AT&T Inc, 2.550%, December 1, 2033	3,533,116
Broadstone Mezzanine A-3, Variable Rate, January 1, 2059	3,400,000
JP Morgan Chase & Co, Variable Rate, July 23, 2029	3,352,437
Morgan Stanley, Variable Rate, December, 10, 2026	3,220,079
MHP Commercial Mortgage Trust 2022-MHIL Mezzanine, Variable Rate, January 14, 2027	2,928,995
Bank of America Corp, Variable Rate, July 23, 2029	2,780,609

Note: A detailed list of SERS investment holdings at December 31, 2023, may be viewed at [www.SERS.pa.gov](http://www.SERS.pa.gov).

# INVESTMENT SECTION

## Manager Fees & Expenses

December 31, 2023 (unaudited)

SERS pays manager fees and expenses to external investment managers hired by the SERS Board to manage SERS' assets. The manager fees cover the basic costs of running and administering a fund. Many of the investment managers are paid fees 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. Manager fees are inclusive of any incentive fees paid to a manager for exceeding certain performance thresholds. Manager expenses

include, but are not limited to, operating and other recurring expenses such as legal expenses, office expenses, audit fees, accounting fees, custodial fees, and third-party vendor fees.

The managers of the SERS investment portfolio are paid from investment earnings. Their fees and expenses are treated as a reduction of the investment income of the SERS Fund, rather than as a direct administrative expense. Thus, when investment performance is reported, numbers are reported net-of-fees - that is, performance after all investment manager fees have been incurred.

### Manager Fees and Expenses

for the year ended December 31, 2023

(\$ thousands)

Asset Class	Fees/Expenses	Fees/Expenses <sup>1/</sup> (in basis points)
Private Equity	\$91,939	135.7
Real Estate	39,895	149.1
U.S. Equity	2,454	2.3
International Developed Markets Equity	6,576	13.7
Emerging Markets Equity	7,061	47.0
Fixed Income	9,710	15.4
Inflation Protection (TIPS)	1,082	10.6
Legacy Private Credit	11,015	277.1
<b>Total Manager Fees and Expenses</b>	<b>\$169,732</b>	<b>48.6</b>

<sup>1/</sup>The fees/expenses were divided by SERS total fund and asset class quarterly average values during calendar year 2023 to arrive at the basis point calculations.

### History of Manager Fees and Expenses

Calendar Year	Fees/Expenses	Fees/Expenses (in basis points)
2019	169,969,812	58.3 <sup>1/</sup>
2020	140,038,195	45.3
2021	163,242,575	43.6
2022	147,696,760	41.2
2023	169,731,607	48.6

<sup>1/</sup>Fees include approximately \$19 million in real estate incentive fees that were earned over a multi-year period but recorded in 2019.

## Manager Fees & Expenses

December 31, 2023 (unaudited)

### Annual Investment Manager Fees and Expenses Report

The Public Pension Management and Asset Investment Review Commission (PPMAIRC) was created as part of Act 2017-5. The PPMAIRC issued a report in December 2018, which outlined over 100 recommendations designed to achieve cost savings, streamline operations, and increase transparency at SERS. One recommendation was to publish investment management fees, costs and

expenses by manager and aggregated by asset class. Because SERS has an ongoing commitment to demonstrate transparency, while working within its legal and fiduciary framework, the SERS Board adopted this recommendation. The inaugural annual report was prepared for the period ending December 31, 2019. Each report is presented to the SERS Board and is posted for all stakeholders to see on the SERS website.

# INVESTMENT SECTION

## Schedule of Trading Broker Commissions

December 31, 2023 (unaudited)

Broker commissions on equity and fixed income investment transactions for the year ended December 31, 2023 were approximately \$900,000.

Below is a list of brokers receiving commissions in excess of \$20,000 during the year.

Broker Name	Commissions Paid	Shares (in thousands)	Average Cents Per Share
Macquarie Group	\$214,141	135,207	0.2
Bank of America	108,931	7,516	1.4
UBS	95,904	54,430	0.2
Jefferies Group LLC	72,007	15,129	0.5
JP Morgan Chase	68,750	8,172	0.8
Royal Bank of Canada	60,900	3,684	1.7
TP ICAP	60,852	3,508	1.7
Citigroup	55,521	8,420	0.7
Nomura	40,902	43,556	0.1
Goldman Sachs	38,888	2,155	1.8
Bank of New York Mellon	29,097	1,298	2.2
Wells Fargo and Company	24,253	1,059	2.3
Morgan Stanley Smith Barney	24,030	1,986	1.2

## Investment Summary December 31, 2023 (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 regularly 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

as of December 31, 2023

(\$ millions)

Asset Class	Fair Value	% of Total Fund	Long-Term 10-Year Strategic Target
Private Equity	\$7,022.8	19.3%	16.0%
Real Estate	2,383.5	6.5	7.0
U.S. Equity	11,667.6	32.0	31.0
International Developed Markets Equity	5,151.8	14.1	14.0
Emerging Markets Equity	1,661.8	4.6	5.0
Fixed Income	6,472.7	17.7	22.0
Inflation Protection (TIPS)	1,044.6	2.9	3.0
Cash	644.3	1.8	2.0
Legacy Private Credit	403.2	1.1	*
Legacy Hedge Funds	16.3	0.0	**
<b>Total Fund</b>	<b>\$36,468.6</b>	<b>100.0%</b>	<b>100.0%</b>

\*SERS no longer has an asset allocation targeting this strategy as a stand-alone asset class.

\*\*Legacy Hedge Funds asset class is in liquidation.

### Number of Investment Managers and Portfolios

Asset Class	Investment Managers	Investment Portfolios
Private Equity	66	199
Real Estate	25	47
U.S. Equity	2	4
International Developed Markets Equity	9	9
Emerging Markets Equity	5	5
Fixed Income	6	8
Inflation Protection (TIPS)	3	3
Cash	1	1
Legacy Private Credit	6	7
Legacy Hedge Funds	2	2
<b>Total</b>	<b>125</b>	<b>285</b>



# INVESTMENT SECTION

## Investment Summary - Private Equity

December 31, 2023 (unaudited)

### Objective

The objective of Private Equity is to achieve a return in excess of its public equity benchmark (75% Russell 3000 Index / 25% MSCI World ex U.S. Index plus a 300 basis point premium) over 10-year periods (annualized, net of fees).

### Structure

Private Equity investments are non-traditional investments made in the form of closed-end limited partnership structures organized to make domestic and international private investments such as buyouts, special situations, and growth equity.

### Private Equity

as of December 31, 2023

(\$ millions)

	Unfunded Commitments	Fair Value	% of Total Fund
<b>Core Sub-Asset Classes</b>			
Buyouts	\$1,232.6	\$3,806.0	10.5%
Special Situations	933.0	1,746.9	4.8
Growth Equity	274.7	1,275.8	3.5
<b>Total Core Sub-Asset Classes</b>	<b>2,440.3</b>	<b>6,828.7</b>	<b>18.8</b>
<b>Non-Core Holdings<sup>1/</sup></b>			
Keystone Legacy Fund	31.7	194.1	0.5
<b>Total Private Equity</b>	<b>\$2,472.0</b>	<b>\$7,022.8</b>	<b>19.3%</b>

<sup>1/</sup>A total of 38 legacy holdings from the Private Equity core sub-asset classes (Buyouts, Special Situations, and Growth Equity) make up the Keystone Legacy Fund, a special purpose vehicle which is managed by a third-party.

## Investment Summary - Private Equity

December 31, 2023 (unaudited)

### Portfolio Exposure

The Private Equity program is well diversified by sub-sector, geography, and industry focus.

As of September 30, 2023, based on fair value, the program's exposure was:

#### By Fund Sub-Sector

U.S. Buyout	36.2%
Non-U.S. <sup>1/</sup>	26.1
Distressed/Oppportunistic	18.7
U.S. Growth Equity	16.8
Pennsylvania-Related	2.2

#### By Geography<sup>2/</sup>

United States	66.5%
United Kingdom	6.1
Germany	4.3
South Korea	2.1
China	1.9
France	1.8
Switzerland	1.7
Rest of World	15.6

#### By Industry<sup>2/</sup>

Information Technology	38.3%
Industrials	13.2
Consumer Discretionary	12.4
Financials	10.9
Health Care	10.5
Telecommunication Services	4.2
Energy	3.9
Consumer Staples	3.2
Materials	2.1
Utilities	0.8
Real Estate	0.5

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

<sup>2/</sup>Geography and industry are determined by the portfolio company.

# INVESTMENT SECTION

## Investment Summary - Private Equity

December 31, 2023 (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 Buyout Funds Limited Partnership	Strategy/ Stage	SERS Initial Funding	Capital Committed <sup>1/</sup>	Accumulated Capital Drawn	Accumulated Distributions <sup>2/</sup>
ABRY Partners VI	Middle	3/26/2008	\$50,000,000	\$60,107,028	\$107,944,545
ABRY Partners VII	Middle	8/10/2011	30,000,000	38,355,700	51,558,373
ABRY Partners VIII	Middle	5/5/2015	25,000,000	29,830,701	37,164,641
Advent Latin American Private Equity Fund IV	Small	8/2/2007	30,000,000	30,797,073	43,955,921
Advent International GPE VI-A	Middle	7/7/2008	35,000,000	35,146,325	70,431,146
Advent Latin American Private Equity Fund V	Small	7/5/2011	15,000,000	14,430,000	12,224,997
Advent International GPE VII-B	Global	12/6/2012	40,000,000	38,400,000	63,725,466
Advent Latin American Private Equity Fund VI	Small	8/13/2015	25,000,000	23,250,000	14,292,073
Advent International GPE VIII-B	Global	9/26/2016	50,000,000	50,000,000	48,603,111
Altaris Health Partners V	Middle	4/22/2021	50,000,000	30,947,280	467,183
Apollo Investment Fund IV	Large	9/30/1998	75,000,000	74,838,620	124,814,033
Apollo Investment Fund V	Large	8/23/2001	50,000,000	44,972,146	122,673,016
Apollo Investment Fund VI	Global	7/19/2006	40,000,000	38,911,805	64,467,407
Apollo Investment Fund IX	Global	3/15/2019	85,400,000	75,424,839	30,236,381
Asia Alternatives Capital Partners	Fund of Funds	6/26/2007	25,000,000	25,218,098	44,268,821
Asia Alternatives Capital Partners II	Fund of Funds	3/7/2008	29,949,500	29,105,691	72,182,168
Asia Alternatives Korea Buyout Investors (Hahn & Co)	Fund of Funds	7/22/2011	7,000,000	8,891,037	12,677,843
Asia Alternatives Capital Partners III	Fund of Funds	8/3/2012	50,000,000	55,637,190	75,772,569
Penn Asia Investors	Fund of Funds	9/28/2012	133,000,000	126,703,043	111,839,250
Asia Alternatives Capital Partners V	Fund of Funds	10/5/2017	50,000,000	51,803,554	8,914,141
Audax Private Equity Fund	Small	5/25/2000	35,000,000	36,839,098	56,057,910
Audax Private Equity Fund III	Small	11/7/2007	37,000,000	42,498,691	82,716,671
Audax Private Equity Fund V	Small	1/25/2016	50,000,000	44,939,958	66,745,788
Audax Private Equity Fund VI	Small	8/29/2019	75,000,000	76,268,853	41,288,729
Berkshire Fund VI	Middle	7/11/2002	20,000,000	18,819,615	55,273,814
Berkshire Fund VII	Middle	11/15/2006	32,000,000	32,613,937	68,596,870
Blackstone Communications Partners I	Global	8/29/2000	25,000,000	25,114,042	30,998,189
Blackstone Capital IV	Global	2/26/2003	69,379,875	69,119,097	193,976,664
Blackstone Capital Partners V	Global	5/30/2006	150,000,000	150,134,053	250,461,118
Blackstone Capital Partners VII	Global	10/21/2016	50,000,000	53,909,854	34,804,923
Blackstone Capital Partners VIII	Global	2/22/2021	70,000,000	46,684,423	2,882,440
Capvis Equity IV	Small	1/30/2014	43,039,837	46,342,729	33,984,236

# INVESTMENT SECTION

## Investment Summary - Private Equity

December 31, 2023 (unaudited)

### Buyouts Committed, Drawn, and Distributed (continued)

Active Buyout Funds Limited Partnership	Strategy/ Stage	SERS Initial Funding	Capital Committed <sup>1/</sup>	Accumulated Capital Drawn	Accumulated Distributions <sup>2/</sup>
Carlyle Energy Mezzanine Opportunities Fund	Global	9/5/2012	\$50,000,000	\$65,670,223	\$40,417,028
Horizon Strategic Fund - Carlyle Group	Global	1/23/2014	100,000,000	107,340,007	148,503,328
CVC Capital Partners VII	Global	12/3/2018	91,557,910	89,496,998	31,444,733
CVC Capital Partners VIII	Global	12/13/2021	54,150,315	31,206,537	249,432
Eureka II	Small	1/30/2006	20,000,000	21,906,935	23,437,755
Eureka Growth Capital III	Small	10/21/2013	20,000,000	17,210,666	40,332,770
Francisco Partners II	Global	7/10/2006	30,000,000	29,383,916	48,734,237
Francisco Partners III	Global	10/17/2011	20,000,000	20,514,684	58,501,352
Francisco Partners IV	Global	4/15/2015	25,000,000	24,656,280	48,419,069
Francisco Partners VII	Global	*	100,000,000	—	—
Francisco Partners VII PA Co-Invest	Co-Investment	*	50,000,000	—	—
Francisco Partners Agility III	Middle	*	30,000,000	—	—
FSN Capital IV	Small	12/19/2013	38,009,855	38,520,666	82,280,821
FSN Capital V	Small	1/4/2017	80,277,053	85,410,313	23,602,863
Great Hill Equity Partners IV	Middle	9/8/2008	25,000,000	25,125,662	61,653,900
GTCR Fund XI	Middle	9/2/2014	25,000,000	24,775,445	54,589,100
GTCR Fund XII	Middle	5/4/2018	32,500,000	32,620,693	19,642,335
H.I.G. Growth Buyouts & Equity Fund II	Small	7/20/2011	15,000,000	17,245,509	20,572,566
H.I.G. Europe Capital Partners II	Middle	1/10/2014	24,491,162	22,568,576	17,832,358
H.I.G. Brazil and Latin America Partners	Middle	8/12/2015	50,000,000	54,008,902	18,683,595
Hahn & Company II	Small	5/29/2015	50,000,000	56,912,445	58,117,303
Hahn & Company III	Middle	12/20/2018	56,250,000	43,851,912	3,726,004
Hahn & Company III - Supplemental Fund	Middle	12/20/2018	18,750,000	17,074,155	57,377
HarbourVest IPEP III	Fund of Funds	6/30/1998	40,000,000	39,400,000	61,092,165
Horizon Impact Fund	Fund of Funds	10/24/2014	50,000,000	42,649,604	69,252,180
Horizon Impact Fund B	Fund of Funds	5/31/2017	100,000,000	90,500,000	28,710,000
HarbourVest PA Co-Investment Fund	Co-Investment	5/14/2020	200,000,000	156,625,000	9,487,500
Hellman & Friedman Capital Partners VIII	Global	9/1/2016	50,000,000	51,540,472	27,218,400
Hellman & Friedman Capital Partners IX	Global	4/7/2020	90,000,000	91,074,083	5,229,094
Hellman & Friedman Capital Partners X	Global	11/24/2021	100,000,000	71,962,964	—
Hellman & Friedman Capital Partners XI	Global	*	100,000,000	—	—
Incline Equity Partners III	Small	1/14/2013	15,000,000	16,006,245	41,866,592
Kelso VII	Global	10/18/2004	40,000,000	41,169,937	65,821,118
Kelso VIII	Global	11/29/2007	150,000,000	146,686,760	208,554,873
LLR Equity Partners III	Small	7/24/2008	30,000,000	29,108,722	65,280,571
LLR Equity Partners IV	Small	3/14/2014	50,000,000	45,485,764	95,620,140
LLR Equity Partners V	Small	3/21/2018	75,000,000	72,090,002	29,618,357
LLR Equity Partners VI	Small	5/13/2021	50,000,000	38,622,962	—

# INVESTMENT SECTION

## Investment Summary - Private Equity

December 31, 2023 (unaudited)

### Buyouts Committed, Drawn, and Distributed (continued)

Active Buyout Funds Limited Partnership	Strategy/ Stage	SERS Initial Funding	Capital Committed <sup>1/</sup>	Accumulated Capital Drawn	Accumulated Distributions <sup>2/</sup>
Madison Dearborn Capital Partners V	Middle	12/14/2006	\$63,817,077	\$71,571,265	\$116,191,907
Madison Dearborn Capital Partners VI	Middle	5/27/2008	50,000,000	53,296,374	119,770,626
Neuberger Berman PA Co-Investment Fund	Co-Investment	1/6/2021	200,000,000	128,308,246	16,491,683
NGP XII	Middle	11/14/2018	75,000,000	59,416,217	54,192,166
NGP Keystone	Co-Investment	11/1/2021	25,000,000	10,150,000	—
Oaktree Power Opportunities Fund III	Large	10/18/2010	25,000,000	19,267,532	29,128,397
Permira European Fund II	Large	6/7/2000	45,672,612	45,672,612	91,560,959
Permira European Fund III	Large	1/12/2004	127,062,518	127,340,454	218,157,969
Permira IV	Global	12/14/2006	136,385,706	138,422,695	208,443,061
Permira VI	Global	1/10/2017	56,579,572	51,942,740	29,924,475
Permira VII	Global	2/4/2020	75,942,482	72,958,617	5,589,425
Permira Susquehanna Opportunities - Buyout	Co-Investment	1/26/2021	40,000,000	20,875,338	99,900
Primavera Capital Fund II	Global	11/17/2015	50,000,000	57,656,595	24,318,255
Primavera Capital Fund III	Global	4/12/2019	75,000,000	79,789,191	12,334,187
Providence Equity Partners IV	Middle	11/27/2000	25,000,000	23,420,840	56,065,270
Providence Equity Partners V	Middle	4/4/2005	45,000,000	42,692,347	52,204,745
Providence Equity Partners VI	Large	3/16/2007	49,976,748	54,530,937	78,145,686
Ridgemont Equity Partners II	Small	11/30/2015	50,000,000	52,604,567	80,305,272
Sentinel Capital Partners V	Middle	7/15/2014	10,000,000	10,044,690	19,188,852
Sentinel Capital Partners VII	Large	7/14/2023	100,000,000	2,917,656	—
Silver Lake Partners V	Global	6/12/2018	78,000,000	78,189,013	31,178,984
Sterling Group Partners IV	Small	6/15/2016	20,000,000	20,452,388	16,765,338
TDR Capital IV	Middle	11/16/2018	87,408,592	72,540,172	23,812,536
Thoma Bravo Fund XIII	Global	2/14/2019	75,000,000	91,498,386	45,140,596
Thoma Bravo Fund XIV	Global	4/15/2021	50,000,000	49,253,111	12
Thoma Bravo Discover Fund III	Middle	6/11/2021	20,000,000	19,679,588	—
Thoma Bravo Fund XV	Global	6/10/2022	100,000,000	67,901,182	21,669
Thoma Bravo Discover Fund IV	Middle	12/8/2022	50,000,000	20,921,107	—
Thoma Bravo Co-Invest Opportunities XV-5	Co-Investment	2/27/2023	50,000,000	5,274,451	—
TPG Partners IV	Global	12/29/2003	27,907,484	27,981,463	58,314,713
TPG Partners V	Global	6/27/2006	88,831,038	92,531,812	130,273,217
TPG Asia V	Global	2/19/2008	22,500,000	21,964,311	30,075,459
TPG Partners VI	Global	5/22/2008	44,294,641	50,576,261	74,076,065
TSG8	Large	1/3/2020	100,000,000	87,763,611	3,315,893
TSG9	Large	1/24/2023	100,000,000	19,247,512	—

## Investment Summary - Private Equity

December 31, 2023 (unaudited)

### Buyouts Committed, Drawn, and Distributed (continued)

Active Buyout Funds Limited Partnership	Strategy/ Stage	SERS Initial Funding	Capital Committed <sup>1/</sup>	Accumulated Capital Drawn	Accumulated Distributions <sup>2/</sup>
Veritas Capital Fund VIII	Global	12/5/2022	\$100,000,000	\$44,191,212	\$20,267
Keystone Co-Investors Veritas VIII	Co-Investment	*	25,000,000	—	—
Vista Equity Partners Fund VI	Global	12/29/2016	150,000,000	189,159,528	215,996,192
Vista Equity Partners Fund VII	Global	2/13/2019	75,000,000	68,015,812	7,157,217
<b>Total Active Buyouts</b>			<b>\$6,287,133,977</b>	<b>\$5,434,497,352</b>	<b>\$5,392,810,346</b>

Cash flows as of September 30, 2023.

\*Not funded as of September 30, 2023.

<sup>1/</sup>Commitments as of December 31, 2023.

<sup>2/</sup>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, 2023 (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 <sup>1/</sup>	Accumulated Capital Drawn	Accumulated Distributions <sup>2/</sup>
ABRY Senior Equity II	Mezzanine	7/27/2006	\$30,000,000	\$28,400,326	\$45,262,542
ABRY Advanced Securities Fund	Mezzanine	8/1/2008	7,262,950	23,529,104	38,786,236
ADV Opportunities Fund I	Distressed/ Turnaround	10/5/2015	50,000,000	63,268,073	39,604,546
AXA Secondary Fund III	Secondaries	11/19/2004	26,000,000	21,737,894	37,244,706
AXA Secondary Fund III-2	Secondaries	11/24/2004	14,000,000	11,677,210	19,062,764
AXA Secondary Fund IV	Secondaries	2/26/2007	80,000,000	70,134,752	99,618,118
AXA Secondary Fund V B	Secondaries	6/19/2012	75,000,000	61,682,742	97,816,150
ASF VII B	Secondaries	2/19/2016	100,000,000	72,401,963	72,089,141
ASF VII PA Co-Invest	Secondaries	5/18/2016	50,000,000	36,479,053	33,557,884
ASF VIII B	Secondaries	6/13/2019	100,000,000	60,281,037	15,700,812
ASF VIII PA Co-Invest	Secondaries	3/12/2020	50,000,000	24,940,129	2,644,711
ASF IX B	Secondaries	10/13/2022	100,000,000	3,524,544	3,062
ASF IX PA Co-Invest	Secondaries	4/20/2023	50,000,000	5,693,623	—
Ares PA Opportunities Fund - Distressed Debt	Distressed/ Turnaround	12/20/2019	200,000,000	135,622,615	33,685,925
Ares PA Opportunities Fund - Diversified Credit	Distressed/ Turnaround	12/15/2020	70,000,000	47,626,360	3,118,888
Ares PA Opportunities Fund - Special Situations	Distressed/ Turnaround	2/22/2021	130,000,000	122,070,319	15,885,564
Avenue Special Situations Fund VI	Distressed/ Turnaround	11/2/2010	20,000,000	20,068,464	21,075,410
Centerbridge Capital Partners I	Distressed/ Turnaround	2/27/2007	50,000,000	57,337,396	117,317,806
Centerbridge Capital Partners III	Distressed/ Turnaround	5/21/2015	30,000,000	39,554,787	37,531,996
Clearlake Capital Partners IV	Distressed/ Turnaround	9/1/2015	15,000,000	23,488,447	37,859,122
Clearlake Capital Partners V	Distressed/ Turnaround	2/1/2018	55,000,000	79,060,871	103,083,664
Clearlake Opportunities Partners II	Distressed/ Turnaround	8/30/2019	75,000,000	50,356,203	14,949,084
Clearlake Capital Partners VI	Distressed/ Turnaround	5/22/2020	60,000,000	61,857,278	7,593,355
Clearlake Capital Partners VII	Distressed/ Turnaround	4/26/2022	100,000,000	57,849,852	268,947
Clearlake Opportunities Partners III	Distressed/ Turnaround	12/28/2022	75,000,000	17,245,610	284,018
Clearlake Capital Partners VIII	Distressed/ Turnaround	*	100,000,000	—	—



# INVESTMENT SECTION

## Investment Summary - Private Equity

December 31, 2023 (unaudited)

### Special Situations Committed, Drawn, and Distributed (continued)

Active Special Situations Funds Limited Partnership	Strategy/ Stage	SERS Initial Funding	Capital Committed <sup>1/</sup>	Accumulated Capital Drawn	Accumulated Distributions <sup>2/</sup>
Clearlake Capital Partners Sidecar Co-Investment Vehicle	Distressed/ Turnaround	*	\$20,000,000	—	—
Glendon Opportunities Fund II	Distressed/ Turnaround	10/18/2019	150,000,000	135,000,000	—
H.I.G. Bayside Debt & LBO Fund II	Distressed/ Turnaround	6/17/2008	30,000,000	31,448,253	51,691,289
H.I.G. Bayside Loan Opp. Fund III	Distressed/ Turnaround	6/12/2013	50,000,000	42,696,553	49,904,323
H.I.G. Bayside Loan Opp. Fund IV	Distressed/ Turnaround	1/16/2015	25,000,000	22,626,299	20,452,258
Dover Street VII	Secondaries	7/2/2008	30,000,000	28,696,128	41,026,994
HPS Mezzanine Partners 2019	Mezzanine	11/16/2020	75,000,000	71,491,399	22,238,686
ICG Europe Fund VII	Mezzanine	8/24/2018	90,216,852	87,061,845	42,097,360
ICG Europe Mid-Market Fund	Mezzanine	4/8/2020	73,861,441	58,204,634	24,141,866
KPS Special Situations Fund IV	Distressed/ Turnaround	5/8/2014	25,000,000	23,891,443	36,951,704
KPS Special Situations Mid-Cap Fund	Distressed/ Turnaround	11/25/2019	25,000,000	15,599,258	4,598,409
KPS Special Situations Fund V	Distressed/ Turnaround	7/13/2020	75,000,000	38,889,805	10,635,571
KPS Special Situations Fund VI	Distressed/ Turnaround	*	75,000,000	—	—
KPS Special Situations Mid-Cap Fund II	Distressed/ Turnaround	*	25,000,000	—	—
LBC Credit Partners III	Mezzanine	3/4/2013	50,000,000	46,696,243	54,218,929
Lexington Capital Partners III	Secondaries	1/26/1999	35,000,000	34,516,449	43,576,611
Lexington Capital Partners V	Secondaries	1/17/2002	75,000,000	74,623,418	125,170,164
Lexington Capital Partners VI	Secondaries	10/21/2005	50,000,000	53,066,325	73,905,823
OCM Opportunities Fund VII	Distressed/ Turnaround	5/16/2007	40,000,000	40,000,000	54,917,803
OCM Opportunities Fund VII b	Distressed/ Turnaround	6/3/2008	40,000,000	36,000,000	62,330,206
OCM Opportunities Fund VIII	Distressed/ Turnaround	9/20/2010	12,500,000	12,583,425	18,205,746
OCM Opportunities Fund VIII b	Distressed/ Turnaround	8/22/2011	12,500,000	12,500,000	16,729,634
Oaktree Opportunities Fund IX	Distressed/ Turnaround	3/26/2013	50,000,000	50,000,000	47,733,854
Platinum Equity Capital Partners III	Distressed/ Turnaround	8/5/2013	50,000,000	47,144,882	91,722,117
RRJ Capital Master Fund III	Mezzanine	12/10/2015	50,000,000	51,015,720	45,702,378
Sentinel Junior Capital II	Middle	8/9/2023	25,000,000	1,862,621	—

# INVESTMENT SECTION

## Investment Summary - Private Equity

December 31, 2023 (unaudited)

### Special Situations Committed, Drawn, and Distributed (continued)

Active Special Situations Funds Limited Partnership	Strategy/ Stage	SERS Initial Funding	Capital Committed <sup>1/</sup>	Accumulated Capital Drawn	Accumulated Distributions <sup>2/</sup>
Sixth Street TAO 4.0 (B)	Distressed/ Turnaround	11/9/2017	\$100,000,000	\$98,929,730	\$48,296,456
Sixth Street Opportunities Partners IV (A)	Distressed/ Turnaround	1/25/2019	50,000,000	40,355,923	10,436,409
Sixth Street TAO Contingent (D)	Distressed/ Turnaround	4/16/2020	150,000,000	90,229,514	24,124,376
Sixth Street Opportunities Partners V	Distressed/ Turnaround	6/7/2022	50,000,000	19,457,851	474,914
<b>Total Active Special Situations</b>			<b>\$3,321,341,243</b>	<b>\$2,460,476,370</b>	<b>\$1,915,328,331</b>

Cash flows as of September 30, 2023.

\*Not funded as of September 30, 2023.

<sup>1/</sup>Commitments as of December 31, 2023.

<sup>2/</sup>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, 2023 (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.

### Growth Equity Committed, Drawn, and Distributed

Active Growth Equity Funds Limited Partnership	Strategy/ Stage	SERS Initial Funding	Capital Committed <sup>1/</sup>	Accumulated Capital Drawn	Accumulated Distributions <sup>2/</sup>
Battery Ventures VIII	Venture Capital	8/13/2007	\$25,000,000	\$25,050,751	\$61,036,312
Battery Ventures VIII Side Car Fund	Venture Capital	8/29/2008	6,768,000	6,803,790	18,828,496
HarbourVest Partners VI	Fund of Funds	5/7/1999	200,000,000	196,586,055	251,227,115
HarbourVest Partners VII	Fund of Funds	3/24/2003	75,000,000	73,687,500	117,260,978
HarbourVest Partners VIII	Fund of Funds	10/5/2006	100,000,000	98,000,000	181,982,175
Insight Venture Partners VII	Large	4/27/2011	20,000,000	22,129,992	53,377,064
Insight Venture Partners VIII	Large	7/10/2013	50,000,000	54,916,419	117,288,540
Insight Venture Partners IX	Large	3/24/2015	50,000,000	52,784,788	68,236,964
Insight Venture Partners X	Large	4/17/2018	100,000,000	104,723,487	49,561,162
Insight Partners XI	Large	3/25/2020	75,000,000	72,975,000	461,676
Insight Partners XII	Large	8/27/2021	50,000,000	37,489,234	13,065
JMI Equity Fund VII	Medium	2/14/2011	10,000,000	9,780,000	23,216,560
JMI Equity Fund VIII	Medium	10/1/2015	25,000,000	27,550,000	49,664,235
Lightspeed Venture Partners VII	Venture Capital	2/27/2006	18,000,000	18,000,000	53,968,729
Lightspeed Venture Partners VIII	Venture Capital	6/27/2008	15,000,000	15,000,000	37,035,502
Lightspeed India Partners I	Venture Capital	8/14/2015	15,000,000	14,137,500	2,125,958
Meritech Capital Partners IV	Venture Capital	2/10/2011	20,000,000	20,000,000	47,596,799
Meritech Capital Partners V	Venture Capital	9/3/2014	23,000,000	22,540,000	153,534,193
New Enterprise Associates IX	Venture Capital	11/15/1999	20,000,000	19,600,000	8,739,870
New Enterprise Associates X	Venture Capital	12/11/2000	35,000,000	35,028,000	39,412,034
New Enterprise Associates 11	Venture Capital	3/1/2004	25,000,000	25,000,000	63,385,828
New Enterprise Associates 12	Venture Capital	6/26/2006	35,000,000	35,631,130	48,025,951
NewSpring Growth Capital II	Small	4/20/2007	10,000,000	9,850,000	19,617,977
Providence Strategic Growth II	Small	12/7/2016	60,000,000	79,176,533	126,230,222
Providence Strategic Growth III	Small	7/26/2018	75,000,000	89,953,986	73,654,499
Providence Strategic Growth IV	Small	3/27/2020	75,000,000	77,734,515	37,113,486
Providence Strategic Growth Europe	Small	5/7/2021	71,915,741	59,203,237	13,280,317
PSG V	Small	12/23/2021	50,000,000	34,753,744	2,910,808
PSG Europe II	Small	*	71,654,630	—	—
PSG VI	Small	*	75,000,000	—	—
T. Rowe Price Stock Distribution Account <sup>3/</sup>	Various	1/3/2005	—	1,433,196,941	1,482,915,279

# INVESTMENT SECTION

## Investment Summary - Private Equity

December 31, 2023 (unaudited)

### Growth Equity Committed, Drawn, and Distributed (continued)

Active Growth Equity Funds Limited Partnership	Strategy/ Stage	SERS Initial Funding	Capital Committed <sup>1/</sup>	Accumulated Capital Drawn	Accumulated Distributions <sup>2/</sup>
TCV X	Large	5/17/2019	\$75,000,000	\$56,289,972	\$13,692,960
Weathergage Venture Capital	Fund of Funds	6/26/2007	25,000,000	22,875,000	46,144,239
Weathergage Venture Capital II	Fund of Funds	6/29/2010	25,000,000	23,250,000	58,567,205
<b>Total Active Growth Equity</b>			<b>\$1,606,338,371</b>	<b>\$2,873,697,574</b>	<b>\$3,320,106,198</b>

Cash flows as of September 30, 2023.

\*Not funded as of September 30, 2023.

<sup>1/</sup>Commitments as of December 31, 2023.

<sup>2/</sup>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.

<sup>3/</sup>T. Rowe Price acts as a stock liquidation account. All cash and stock distributions are reflected in the corresponding distributions.

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.

### Legacy Private Equity Committed, Drawn, and Distributed

Legacy Private Equity Funds Limited Partnership	Strategy/ Stage	SERS Initial Funding	Capital Committed <sup>1/</sup>	Accumulated Capital Drawn	Accumulated Distributions <sup>2/</sup>
Keystone Legacy Non-Core Fund <sup>3/</sup>	Various	7/1/2018	\$1,260,928,144	\$1,272,537,029	\$1,489,709,633
<b>Total Legacy Private Equity</b>			<b>\$1,260,928,144</b>	<b>\$1,272,537,029</b>	<b>\$1,489,709,633</b>

Cash flows as of September 30, 2023.

<sup>1/</sup>Commitments as of September 30, 2023.

<sup>2/</sup>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.

<sup>3/</sup>A total of 38 legacy holdings from the Private Equity core sub-asset classes (Buyouts, Special Situations, and Growth Equity) make up the Keystone Legacy Fund, a special purpose vehicle which is managed by a third-party.

## Investment Summary - Real Estate

December 31, 2023 (unaudited)

### Objective

The objective of Real Estate is to generate returns through capital appreciation and current income to achieve a return in excess of its benchmark (NCREIF Fund Index – Open End Diversified Core Equity (“NFI-ODCE”)) over five-year periods (annualized, net of fees). Real Estate investments may also lower overall fund volatility and provide a moderate hedge against inflation.

### Structure

Real Estate investments are non-traditional investments made in the form of individually managed accounts and pooled investment vehicles organized to invest in private market equity and debt investments in real estate and real estate related companies and public market investments in real estate investment trusts (REITs) and real estate operating companies.

### Real Estate

as of December 31, 2023

(\$ millions)

Sub-Asset Class	Fair Value	% of Total Fund
Core/Core Plus <sup>1/</sup>	\$1,109.0	3.0%
Value Add/Oppportunistic Funds <sup>2/</sup>	742.1	2.0
Value Add/Oppportunistic SMA	401.5	1.1
Real Estate Securities	130.9	0.4
<b>Total Real Estate</b>	<b>\$2,383.5</b>	<b>6.5%</b>

<sup>1/</sup>Unfunded commitments are \$21.9 million.

<sup>2/</sup>Unfunded commitments are \$429.8 million.

# INVESTMENT SECTION

## Investment Summary - Real Estate

December 31, 2023 (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

Active Fund / Manager	Asset Type	SERS Initial Funding	Capital Committed <sup>1/</sup>	Accumulated Capital Drawn	Accumulated Distributions
<b>Core/Core Plus Real Estate</b>					
Blackstone Property Partners	Diversified	1/10/2018	\$300,000,000	\$300,000,000	\$18,348,544
Blue Owl Real Estate Net Lease Property Fund	Diversified	2/8/2019	309,743,743	309,743,743	57,592,203
Heitman America Real Estate Trust	Diversified	3/29/2007	100,000,000	102,947,145	100,490,242
Henderson Park Enhanced Income Fund	Diversified	6/13/2019	342,021,825	318,867,566	72,881,431
UBS Trumbull Property Fund	Diversified	1/1/1988	25,558,525	25,558,525	126,601,294
<b>Total Core/Core Plus Real Estate</b>			<b>1,077,324,093</b>	<b>1,057,116,979</b>	<b>375,913,714</b>

### Value Add/Opportunistic Funds

Activum SG Fund VI	Diversified	12/11/2019	57,044,851	49,786,709	2,613,676
Activum SG Fund VI Pennsylvania Side-Car	Diversified	6/18/2021	55,243,527	33,049,871	325,069
AG Asia Realty Fund	Diversified	4/27/2007	25,000,000	23,500,000	27,487,500
Ares PA Opportunities Fund - Opportunistic Real Estate	Diversified	*	100,000,000	—	—
Berwind Investment Partnership VI	Diversified	9/10/2002	24,543,712	24,543,712	44,895,114
Berwind Investment Partnership VII	Diversified	9/12/2005	25,000,000	24,985,519	18,270,069
Berwind Investment Partnership IX	Diversified	2/24/2012	25,000,000	24,189,456	40,262,169
Blackstone Real Estate Partners IV	Diversified	6/30/2003	25,000,000	25,000,000	41,002,682
Blackstone Real Estate Partners V	Diversified	1/24/2006	50,000,000	47,912,974	100,311,328
Blackstone Real Estate Partners VI	Diversified	3/28/2007	75,000,000	71,621,919	153,645,373
Blackstone Real Estate Partners VII	Diversified	12/12/2011	75,000,000	69,616,854	121,476,241
Blackstone Real Estate Partners X	Diversified	3/24/2023	75,000,000	3,480,170	—
Blue Moon Senior Housing II	Senior Housing	1/27/2020	50,000,000	42,456,684	—
Blue Moon Senior Housing II Sidecar	Senior Housing	5/19/2020	50,000,000	41,468,832	—
Blue Owl Real Estate Fund IV	Diversified	11/20/2017	100,000,000	100,000,000	117,718,288
Blue Owl Real Estate Fund V	Diversified	11/16/2020	50,000,000	49,996,863	15,361,143
Blue Owl Real Estate Fund VI	Diversified	1/31/2023	75,000,000	8,875,173	214,287
C-III Recovery Fund III	Diversified	9/24/2018	100,000,000	88,815,579	8,471,944
Hawkeye Scout Fund II	Diversified	9/28/2016	30,000,000	30,000,000	605,865
LEM Multifamily Fund VI	Multifamily	9/30/2022	75,000,000	34,875,000	835,598
Lubert Adler Fund VII	Diversified	7/15/2014	25,000,000	24,375,000	14,355,221
Mesirow Financial Real Estate Value Fund III	Multifamily	5/18/2018	25,647,559	25,859,215	8,164,868

# INVESTMENT SECTION

## Investment Summary - Real Estate

December 31, 2023 (unaudited)

### Real Estate (continued)

Active Fund / Manager	Asset Type	SERS Initial Funding	Capital Committed <sup>1/</sup>	Accumulated Capital Drawn	Accumulated Distributions
Prudential Senior Housing Fund V	Senior Housing	5/15/2015	\$45,727,881	\$41,137,690	\$4,886,698
Prudential Senior Housing Fund VI	Senior Housing	8/6/2019	100,000,000	75,266,435	—
Rockpoint Real Estate Fund III	Diversified	9/30/2007	50,632,887	50,675,144	68,151,141
Rockpoint Real Estate Fund V	Diversified	6/30/2015	50,000,000	47,839,001	25,396,310
Rubicon First Ascent	Office	6/30/2021	30,000,000	9,460,493	—
Rubicon First Ascent Sidecar	Office	6/30/2022	20,000,000	5,757,389	—
SRE Opportunity Fund III	Diversified	6/20/2018	50,000,000	44,653,386	16,863,561
SRE Opportunity Fund III Select	Diversified	7/25/2019	50,000,000	29,897,486	18,629,003
Starwood Fund VI	Diversified	6/30/2001	50,000,000	50,153,525	51,927,126
Starwood Fund VII	Diversified	1/10/2006	35,000,000	35,000,000	27,413,405
Starwood Fund VIII	Diversified	10/14/2009	50,000,000	45,356,281	72,256,025
ValStone Opportunity Fund V	Diversified	8/27/2014	14,663,402	14,663,777	10,164,834
Westbrook Fund VI	Diversified	5/4/2006	35,000,000	38,550,099	38,837,150
Westbrook Fund VII	Diversified	12/3/2007	50,000,000	56,347,333	56,575,755
Westbrook Fund VIII	Diversified	12/28/2009	50,000,000	54,335,646	63,418,319
<b>Total Value Add/Oppportunistic Funds</b>			<b>1,873,503,819</b>	<b>1,443,503,215</b>	<b>1,170,535,762</b>
<b>Value Add/ Opportunistic SMA<sup>2/</sup></b>					
Heitman I.M.A.	Diversified	1/1/1988	NA	825,277,792	1,230,476,873
hotelAVE I.M.A.	Hotel	7/1/2018	NA	95,994,432	57,691,396
LaSalle I.M.A.	Diversified	1/1/1994	NA	501,011,172	778,848,456
LaSalle Takeover I.M.A.	Diversified	7/1/2018	NA	319,593,524	172,440,449
<b>Total Value Add/Oppportunistic SMA</b>			<b>NA</b>	<b>1,741,876,920</b>	<b>2,239,457,174</b>
<b>Real Estate Securities<sup>2/</sup></b>					
CenterSquare Real Estate Securities	Diversified	5/14/2002	NA	183,616,773	211,168,336
<b>Total Real Estate Securities</b>			<b>NA</b>	<b>183,616,773</b>	<b>211,168,336</b>
<b>Total Active Real Estate</b>			<b>\$2,950,827,912</b>	<b>\$4,426,113,887</b>	<b>\$3,997,074,986</b>

Cash flows as of September 30, 2023.

\*Not funded as of September 30, 2023.

<sup>1/</sup>Commitments as of December 31, 2023.

<sup>2/</sup>Due to the nature of the investments, there are no capital commitments for value add/opportunistic SMA, legacy real assets, and real estate securities managers.



# INVESTMENT SECTION

## Investment Summary - U.S. Equity

December 31, 2023 (unaudited)

### Objective

The objective of U.S. Equity is to generate returns through capital appreciation, income from dividend payments and to generate returns comparable to its public equity benchmark (Russell 3000 Index) over five-year periods (annualized, net of fees).

### Structure

U.S. Equity investments are traditional equity investments made in the form of separate accounts and commingled funds. U.S. Equity contributes to a higher expected long-term return to the fund and is also a material contributor to volatility.

## U.S. Equity

as of December 31, 2023

(\$ millions)

Manager	Investment Style	Fair Value <sup>1/</sup>
<b>U.S. Large/Mid Cap</b>		
Mellon Investments Corporation Russell 1000	U.S. Large Cap Equity	\$10,533.1
<b>Total U.S. Large/Mid Cap</b>		<b>10,533.1</b>
<b>U.S. Small Cap</b>		
Emerald Asset Management	U.S. Small Cap Growth Equity	397.4
Mellon Investments Corporation Russell 2000 Core	U.S. Small Cap Equity	368.2
Mellon Investments Corporation Russell 2000 Value	U.S. Small Cap Value Equity	368.9
<b>Total U.S. Small Cap</b>		<b>1,134.5</b>
<b>Total U.S. Equity</b>		<b>\$11,667.6</b>

<sup>1/</sup>Includes securities and cash, which the manager had available for investment.

## Investment Summary - International Developed Markets Equity

December 31, 2023 (unaudited)

### Objective

The objective of International Developed Markets Equity is to generate returns through capital appreciation and income from dividend payments that meet or exceed the MSCI World ex U.S. Index over five-year periods (annualized, net of fees).

### Structure

International Developed Markets Equity investments are traditional equity investments made in the form of separate accounts and commingled funds. International Developed Markets Equity contributes to a higher expected long-term return to the fund and is also a material contributor to volatility.

### International Developed Markets Equity

as of December 31, 2023

(\$ millions)

Manager	Investment Style	Fair Value <sup>1/</sup>
Artisan Partners - Global ex U.S.	Global ex-U.S. growth	\$0.6
BlackRock MSCI World ex U.S. Index	World ex-U.S. Equity	3,999.8
Harris Associates	World ex-U.S. Small Cap Equity	151.3
Mellon Investments Corporation MSCI World ex U.S. Index	MSCI World ex-U.S. Index	2.2
Morgan Stanley Investment Management Limited-developed ex U.S.	EAFE value	0.3
Northern Trust - Equity	Transition	1.0
Templeton Investment Counsel - Global ex U.S.	Global ex-U.S. value	0.7
Walter Scott & Partners Limited	Global Equity	761.3
Xponance	International Small Cap Equity	234.6
<b>Total International Developed Markets Equity</b>		<b>\$5,151.8</b>

<sup>1/</sup>Includes securities and cash, which the manager had available for investment.

# INVESTMENT SECTION

## Investment Summary - Emerging Markets Equity

December 31, 2023 (unaudited)

### Objective

The objective of Emerging Markets Equity is to generate returns through capital appreciation and income from dividend payments that exceed the MSCI Emerging Markets Index over five-year periods (annualized, net of fees).

### Structure

Emerging Markets Equity investments are traditional equity investments generally made in the form of commingled funds since there are legal challenges for SERS to use separate accounts to open sub-custodial trading accounts in certain emerging market countries. Emerging Markets Equity contributes to a higher expected long-term return to the fund and is also a material contributor to volatility.

Emerging markets are generally regarded as less efficient than developed markets and historically have been more volatile than developed markets. Returns have been influenced by capital flows into and out of these markets; however, longer term, emerging markets can be attractive to those investors seeking to access the financial returns derived from rapidly expanding economies. Due to the high return volatility associated with emerging markets, the SERS Fund takes a diversified approach using a variety of investment strategies. The SERS Fund employs a structure diversified by investment advisor, style, and type.

### Emerging Markets Equity

as of December 31, 2023

(\$ millions)

Manager	Investment Style	Fair Value <sup>1/</sup>
BlackRock MSCI Emerging Markets Index	Emerging Markets Equity	\$562.7
GlobeFlex Capital	Emerging Markets Small Cap Equity	150.9
Leading Edge Investment Advisors	Emerging Markets Equity	232.2
Macquarie Emerging Markets	Emerging Markets Equity	357.9
Martin Currie Investment Management	Emerging Markets Equity	358.1
<b>Total Emerging Markets Equity</b>		<b>\$1,661.8</b>

<sup>1/</sup>Includes securities and cash, which the manager had available for investment.

# INVESTMENT SECTION

## Investment Summary - Fixed Income

December 31, 2023 (unaudited)

### Objective

The objective of the Fixed Income allocation is to provide liquidity to minimize capital impairment risk, diversify investment risk, and enhance return to meet the fund's obligations. It is expected that the returns from the Fixed Income allocation will meet or exceed its benchmark (Bloomberg U.S. Aggregate Bond Index) performance over five-year periods (annualized, net of fees).

### Structure

Fixed Income investments are traditional investments made in the form of separate accounts and commingled funds. They include investments in publicly-traded debt obligations of sovereign, quasi-sovereign and corporate entities and securitized assets.

### Fixed Income

as of December 31, 2023

(\$ millions)

Manager	Investment Style	Fair Value <sup>1/</sup>
<b>Core Fixed Income</b>		
Mellon Investments Corporation Bond Index	U.S. Aggregate Bond	\$4,077.5
PIMCO Core	U.S. Aggregate Bond	545.9
<b>Total Core Fixed Income</b>		<b>4,623.4</b>
<b>Nominal US Treasuries</b>		
Mellon Investments Corporation Intermediate Treasury Bond Index	U.S. Intermediate Treasuries	377.3
Mellon Investments Corporation Long Duration Bond Index	U.S. Long Duration Treasuries	502.0
<b>Total Nominal US Treasuries</b>		<b>879.3</b>
<b>Opportunistic Fixed Income</b>		
Blackstone Keystone	Fund-of-Funds	881.9
<b>Total Opportunistic Fixed Income</b>		<b>881.9</b>
<b>Legacy Fixed Income</b>		
Brandywine Global	Global Sovereign Credit	0.1
Fidelity Institutional Asset Management	Commercial Mortgage-Backed Securities	87.9
Stone Harbor HY	Global High Yield	0.1
<b>Total Legacy Fixed Income</b>		<b>88.1</b>
<b>Total Fixed Income</b>		<b>\$6,472.7</b>

<sup>1/</sup>Includes securities and cash, which the manager had available for investment.

# INVESTMENT SECTION

## Investment Summary - Inflation Protection (TIPS)

December 31, 2023 (unaudited)

### Objective

The objective of Inflation Protection is to protect against both expected and unexpected higher inflation, provide liquidity to minimize capital impairment risk, reduce volatility of the total fund, and contribute total return to the fund that meet or exceed its benchmark (Bloomberg U.S. TIPS Index) over five-year periods (annualized, net of fees).

### Structure

Treasury Inflation-Protected Securities (TIPS) are traditional investments made in the form of separate accounts and commingled funds. The primary advantage of TIPS is that their return

offers protection against both expected and unexpected higher inflation, as the securities' coupon payments are directly tied to the rate of inflation. TIPS, therefore, maintain the purchasing power of the investor. The coupon payments of TIPS have two components: a real coupon rate that is established at the issuance of the bond, and an accrual equal to the rate of inflation which adds to the principal balance of the security. TIPS are also useful for hedging liabilities which are affected by inflation and for hedging a cash flow stream against the need to liquidate equities and conventional bonds at depressed prices, in order to meet pension obligations during periods of unexpected inflation.

### Inflation Protection (TIPS)

as of December 31, 2023

(\$ millions)

Manager	Investment Style	Fair Value <sup>1/</sup>
Brown Brothers Harriman	U.S. TIPS	\$476.1
New Century Advisors	Global TIPS	113.9
NISA Investment Advisors	U.S. TIPS	454.6
<b>Total Inflation Protection (TIPS)</b>		<b>\$1,044.6</b>

<sup>1/</sup>Includes securities and cash, which the manager had available for investment

## Investment Summary - Cash

December 31, 2023 (unaudited)

### Objective

The objective of Cash is to serve as the primary source of liquidity and generate returns that meet or exceed its benchmark (ICE BofAML U.S. 3-Month Treasury Bill Index) over a three-year period.

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

### Cash

as of December 31, 2023

(\$ millions)

Manager	Investment Style	Fair Value <sup>1/</sup>
PA State Treasury (STIF)	Cash	\$644.3
<b>Total Cash</b>		<b>\$644.3</b>

<sup>1/</sup>Includes securities and cash, which the manager had available for investment.

# INVESTMENT SECTION

## Investment Summary - Legacy Private Credit

December 31, 2023 (unaudited)

### Objective

SERS will continue to work with existing Legacy Private Credit managers to actively achieve a return in excess of the S&P/LSTA Leveraged Loan Index plus 100 basis points for the duration of the investments.

### Structure

Private Credit investments are non-traditional investments made in the form of closed-end limited

partnership structures. The current structure of this portfolio consists of legacy investments that will continue to decrease over time as investments are realized, liquidated, and redeemed.

### Status

SERS no longer has an asset allocation targeting this strategy as a stand-alone asset class.

### Legacy Private Credit

as of December 31, 2023

(\$ millions)

Sub-Asset Class	Unfunded Commitments	Fair Value	% of Total Fund
Legacy Private Credit	\$166.4	\$403.2	1.1%

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.

### Legacy Private Credit Committed, Drawn, and Distributed

Active Legacy Private Credit Funds	Strategy/ Stage	SERS Initial Funding	Capital Committed <sup>1/</sup>	Accumulated Capital Drawn	Accumulated Distributions <sup>2/</sup>
Apollo Hybrid Value Fund	Diversified Credit	12/24/2018	\$100,000,000	\$131,481,502	\$123,775,437
Ares PA Opportunities Fund - Direct Lending	Direct Lending	10/12/2021	100,000,000	75,303,031	4,236,879
Audax Direct Lending Solutions Fund-A	Direct Lending	10/26/2018	100,000,000	112,999,621	68,919,601
Brightwood Capital Fund IV	Direct Lending	4/24/2018	100,000,000	100,000,000	40,112,657
ICG North American Private Debt Fund II	Direct Lending	2/27/2019	50,000,000	44,959,803	16,558,827
Permira Credit Solutions IV Master (Feeder) SCSp	Direct Lending	9/26/2019	75,000,000	62,933,547	16,859,260
Permira Susquehanna Opportunities - Credit	Direct Lending	4/7/2021	60,000,000	12,287,712	924,980
<b>Total Active Legacy Private Credit Funds</b>			<b>\$585,000,000</b>	<b>\$539,965,216</b>	<b>\$271,387,641</b>

Cash flows as of September 30, 2023.

<sup>1/</sup>Commitments as of December 31, 2023.

<sup>2/</sup>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 - Legacy Hedge Funds

December 31, 2023 (unaudited)

### Objective

SERS will continue to work with existing legacy managers as well as explore options to work with strategic partners to expedite the redemption process in a thoughtful and cost-effective way.

### Structure

The current structure of this portfolio consists of legacy investments that will continue to decrease over time as investments are realized, liquidated, and redeemed.

### Status

SERS is no longer actively investing in this strategy; legacy hedge fund portfolios are currently in liquidation. The remaining balance has continued to decrease as SERS has successfully redeemed assets from legacy managers.

### Legacy Hedge Funds

as of December 31, 2023

(\$ millions)

Manager	Investment Style	Fair Value <sup>1/</sup>
Legacy Hedge Funds	Fund-of-Funds	\$14.4
Luxor Capital Partners	Direct Hedge Fund	1.9
<b>Total Legacy Hedge Funds</b>		<b>\$16.3</b>

<sup>1/</sup>Includes securities and cash, which the manager had available for investment.

# INVESTMENT SECTION

---

## Defined Contribution Plan Investment Options

December 31, 2023 (unaudited)

### Investment Policy

The SERS Board originally adopted the 401(a) Defined Contribution Plan (Defined Contribution Plan) Investment Policy Statement (DC IPS) on June 13, 2018, and most recently amended the policy on May 5, 2022.

The purpose of the DC IPS 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 purpose of the Defined Contribution Plan is to provide eligible employees (employees) with a source of retirement income from accumulated employee contributions, employer contributions, and investment returns. The objective of the Defined Contribution Plan is to allow employees to defer a portion of their salary into the plan, promote and maximize capital accumulation, and enable employees to meet their personal retirement investment goals. It is the board's intent to make available an array of low-cost investment options that satisfy the following criteria:

- Each investment option is diversified within itself
- Each investment option has different risk and return and/or style characteristics; and
- Each investment option, in combination with the other available investment options, contributes to the diversification opportunities of a participant's portfolio

The board has delegated certain responsibilities related to the effective management of the Defined Contribution Plan. Various responsibilities are allocated among the board, agency staff, investment managers, investment consultant, custodian/sub-custodian, and the third-party administrator. All persons who act as agents of the board are expected to adhere to the highest standards of professional integrity and honesty. The responsibilities of the Defined Contribution Plan's service providers are governed by the applicable service agreements, as well as the DC IPS.

The board employs an investment staff and investment consultant, which are 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.

### Investment Options

It is the board's intent to offer a broad range of investment options with materially different risk and return characteristics to allow participants, by choosing among such investment options, the opportunity to diversify their balances and construct portfolios consistent with their unique circumstances, goals, time horizons, and tolerance for risk. It is the objective of the board to offer investment options at a reasonable cost in terms of management, custody, other costs, and have investment characteristics that can be successfully communicated to participants. Further, it is the intent of the board to designate names for the investment options that are easily understood by participants. The Defined Contribution Plan is required to offer a minimum of ten investment options that are professionally managed by at least three investment managers. The board offers three tiers of investment options to meet various participant investment objectives. Described below are the various types of investment options. The board selects available investment options and investment managers and adds or removes such options or investment managers at any time in its discretion. The screening process for the initial selection of any investment option or manager will consider attributes relevant to the specific asset class and search objective, as developed by the board with the assistance of SERS-Investment Office staff and in consultation with its external investment consultant, where applicable.

### Target Date Fund Investment Options

Target date funds provide a series of asset allocation funds that allow participants to choose a single fund that is based on their expected target retirement date. Each target date fund includes a professionally managed portfolio of underlying investments that may include fixed income, equity and alternative asset classes. BlackRock, the

## Defined Contribution Plan Investment Options

December 31, 2023 (unaudited)

investment manager, adjusts and rebalances the allocation of assets over time to reduce the expected risk as each fund progresses toward its target date. The board recognizes that some participants may fail to make investment choices for their plan account. Therefore, the board believes it is appropriate to designate a target date fund based on the participant's age as the default investment option for any participant who fails to make an investment choice for his or her contributions.

### Asset Class Investment Options

Additional investment options that match participants' unique investment goals, investor profile, and risk tolerance are also available. The additional investment options provide a broad

exposure to major asset classes including stocks, bonds, and capital preservation investments. The Short-Term Investment Fund is managed by the Commonwealth of Pennsylvania Treasury Department. The other funds are managed by Mellon Investments Corporation.

### Self-Directed Brokerage Option

The self-directed brokerage option provides access to a brokerage window for participants who seek greater investment flexibility. This investment option is offered through the Charles Schwab Corporation. Participants investing in this option do so at their own risk. The board is not responsible for the monitoring or evaluation of any self-directed brokerage account investments.

# INVESTMENT SECTION

## Defined Contribution Plan Investment Options

December 31, 2023 (unaudited)

### Defined Contribution Plan Investment Options, Returns, and Expenses

Participation, Assets, Performance, and Fund Expense  
as of December 31, 2023

Fund Name	Participants	Fund Balance	Inception Date	Estimated Calendar Year, Net-of-Fees Returns <sup>1/</sup>					Max Total Investment Fund Expense <sup>2/</sup>
				1 Year	3 Year	5 Year	10 Year	10 Year	
Post Retirement Date Fund	627	\$2,326,474	08-2005	11.13%	0.49%	5.61%	4.45%	0.0775%	
2025 Retirement Date Fund	1,235	6,247,121	07-2006	12.00	1.15	6.60	5.26	0.0775	
2030 Retirement Date Fund	2,364	14,943,474	08-2005	14.24	2.27	7.84	6.00	0.0775	
2035 Retirement Date Fund	2,991	16,352,110	07-2006	16.29	3.32	9.00	6.69	0.0775	
2040 Retirement Date Fund	3,163	19,113,382	08-2005	18.30	4.28	10.05	7.31	0.0775	
2045 Retirement Date Fund	3,294	20,370,380	07-2006	20.14	5.11	10.94	7.79	0.0775	
2050 Retirement Date Fund	3,570	21,749,633	09-2007	21.25	5.58	11.41	8.03	0.0775	
2055 Retirement Date Fund	4,049	22,499,523	05-2010	21.56	5.69	11.51	8.08	0.0775	
2060 Retirement Date Fund	4,661	21,111,069	11-2014	21.57	5.68	11.51	NA	0.0775	
2065 Retirement Date Fund	6,794	17,804,713	09-2019	21.62	5.68	NA	NA	0.0775	
U.S. Large Company Stock Index Fund	1,338	7,198,601	12-1994	26.29	10.00	15.69	12.04	0.0150	
U.S. Small/Mid Company Stock Index Fund	1,080	2,653,545	08-1998	25.39	1.50	12.10	8.67	0.0250	
U.S. All Company Stock Index Fund	1,052	2,471,169	01-2011	25.96	8.52	15.12	11.45	0.0250	
Global Non-U.S. Stock Index Fund	1,021	3,696,893	03-2009	16.07	1.76	7.36	4.06	0.0450	
U.S. Bond Index Fund	917	1,578,151	02-1995	5.54	(3.32)	1.10	1.80	0.0200	
U.S. Short-Term Bond Index Fund	565	610,443	12-2017	4.59	0.07	1.50	NA	0.0200	
U.S. Treasury Inflation Protected Security Index Fund <sup>3/</sup>	865	650,169	07-2007	3.90	(0.99)	3.15	NA	0.0200	
Short-Term Investment Fund <sup>4/</sup>	332	3,357,289	10-1988	5.00	2.20	1.91	1.36	0.0000	
Charles Schwab Self-Directed Brokerage <sup>5/</sup>	35	220,117	NA	NA	NA	NA	NA	NA	

<sup>1/</sup>Performance is calculated using time-weighted rate of return.

<sup>2/</sup>Maximum possible expense that can be charged.

<sup>3/</sup>There was a break in the return history of the TIPS fund between 2010 and 2017, since there were no participants during that time.

<sup>4/</sup>Short-Term Investment Fund balance includes \$2.4 million in unvested employer contributions forfeited to the Plan.

<sup>5/</sup>For those in the Self-Directed Brokerage Option (SDB), the asset fee is assessed against the balance in the SDB but the actual deduction is prorated against the core investment options separately.

The Plan's monthly recordkeeping fee is \$4.55 per participant and is paid by plan employers in the form of an annual per participant charge.

# Actuarial Section



11911 FREEDOM DRIVE, SUITE 790  
RESTON, VA 20190  
+1.703.841.3100 www.kornferry.com

June 11, 2024

Mr. Joseph A. Torta  
Executive Director  
State Employees' Retirement System  
30 North Third Street - Suite 150  
Harrisburg, PA 17101-1716

Dear Mr. Torta:

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, 2023 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 commonwealth fiscal year beginning July 1, 2024:

- (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 extra contribution to return Act 2017-5 savings.
- (6) 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 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 others contribute a lower percent of compensation, depending on the



Mr. Joseph A. Torta

June 11, 2024

benefits payable to each group's employees. The contribution amount is sufficient to cover the normal cost of benefits accruing during the year and interest on the unfunded liability.

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 valuation uses various economic and demographic assumptions regarding future plan experience. These assumptions were adopted by the State Employees' Retirement Board (the Board) in July of 2020 based upon the recommendations included in our July 2020 report on the nineteenth investigation of actuarial experience of SERS, covering the years 2015 through 2019. These changes to both the economic and demographic assumptions, were implemented with the December 31, 2020 actuarial valuation. To ensure that the investment return assumption remains up-to-date and appropriate for every actuarial valuation, it is reviewed annually by the SERS actuaries and Board. The Board reduced the annual investment return assumption to 6.875% and maintained the inflation assumption at 2.50% during its 2022 review. We will continue to closely monitor the investment return 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, 2023 actuarial funding valuation and are included herein.



Mr. Joseph A. Torta

June 11, 2024

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, because employer contributions are being made in accordance with current law, they are exceeding the GASB No. 25 minimum.

The following schedules were prepared by us, Korn Ferry, from the December 31, 2023 actuarial funding valuation: "Schedules of Active Member Valuation Data", "Solvency Test", "Analysis of Financial Experience", "Schedule of Funding Progress", "Schedule of Contributions Under Previous Reporting Standards", and "History and Projection of Contribution Rates and Funded Ratios".

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, and will continue to be, adequately funded, in accordance with generally accepted actuarial principles and procedures. The current funding policy guarantees that there are sufficient assets to pay benefits when they come due based on current assumptions.

It should be noted that, during June of 2017, Governor Tom Wolf signed into law Act 2017-5. Act 2017-5 fundamentally changed retirement options for most new hires beginning January 1, 2019. This legislation introduced two new hybrid defined benefit (DB)/defined contribution (DC) options and a straight DC option. New classes of service now apply to most State employees who first become SERS members on or after January 1, 2019; however, most hazardous duty employees are exempt from the new plan design.

In April 2020, SERS received an advance payment of \$1,061 million from the Pennsylvania State University (PSU), and in April 2021, SERS received an advance payment of \$825 million from the Pennsylvania State System of Higher Education (PASSHE). The advance payments were part of a funding agreement under Act 2019-105 that reduced PSU's and PASSHE's allocated shares of the unfunded liability and created schedules of setoff amounts that reduce the future contributions due from each. These arrangements accelerated the funding of SERS but are not expected to increase the long-term funded status of SERS since the future contributions from PSU and PASSHE will be reduced by the value of the advance payments.





Mr. Joseph A. Torta  
June 11, 2024

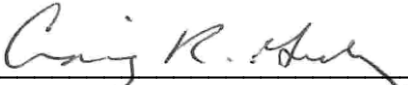
To ensure the expected benefit of the advance payments is allocated to PSU and PASSHE, the value of the future setoff amounts is added to the unfunded liability to determine the Amortization Liability. The Amortization Liability is used to determine the amortization payments due from all employers, prior to recognizing any setoff amounts. This allows the effect of the advance payments to be allocated only to PSU and PASSHE and have no expected effect on the contributions due from the other employers.

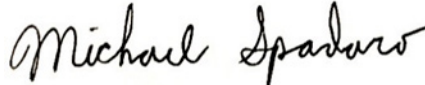
### **Actuarial Certification**

To the best of our knowledge, this report is complete and accurate and all costs and liabilities have been determined 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. The report, costs, liabilities, assumptions, and methods used for funding purposes are in accordance with the parameters set by Actuarial Standards of Practice.

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

By   
Craig R. Graby  
Member American Academy of Actuaries  
Enrolled Actuary No. 23-7319

By   
Michael Spadaro, F.S.A.  
Member American Academy of Actuaries  
Enrolled Actuary No. 23-8969

**Summary of Actuarial Assumptions and Methods**

December 31, 2023 (unaudited)

The Actuarial Section of SERS' Annual Comprehensive Financial Report presents information on the Defined Benefit Plan, unless noted otherwise. The schedules in this 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 (retirement code), legislated by the General Assembly and signed into law by the Governor, establishes funding policy. The retirement code is administered by the SERS Board. The General Assembly, along with the Governor's signing, has the authority to amend the retirement code. The Financial Section, except where noted, is reported in accordance with a separate actuarial accounting valuation based on Governmental Accounting Standards Board (GASB) Statement No. 67.

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 under GASB 67. As of December 31, 2021, the traditional entry-age cost method was used for both the funding valuation and the accounting valuation. This method calculates employer normal costs based on a blend of all active members in the system in that year. For the December 31, 2020 funding valuation and prior, a statutorily required modified entry-age funding method was used. That method calculated employer normal costs based upon the cost of new hires only.

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 and from changes in assumptions 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 6.875% per year is based on an underlying rate of inflation of 2.5% per year.
- For current and future male non-disabled retirees, beneficiaries, and survivors, SERS uses the PubG-2010 Male Retiree Mortality Table, with post-2010 mortality improvement based on Scale MP-2019 for Males. For current and future female non-disabled retirees, beneficiaries, and survivors, SERS uses the PubG-2010 Female Retiree Mortality Table, set forward one year, with post-2010 mortality improvement based on Scale MP-2019 for Females. For current and future male disabled retirees, SERS uses the PubNS-2010 Male Disabled Retiree Mortality Table, set forward two years, with post-2010 mortality improvement based on Scale MP-2019 for Males. For current and future female disabled retirees, SERS uses the PubNS-2010 Female Disabled Retiree Mortality Table, set forward two years, with post-2010 mortality improvement based on Scale MP-2019 for Females. For all pre-retirement active members, the mortality is determined by SERS' actuaries using actual SERS experience.

# ACTUARIAL SECTION

---

## Summary of Actuarial Assumptions and Methods

December 31, 2023 (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 increases of 4.55% with a range of 3.30% to 6.95%. This increase includes an underlying assumption of 2.5% for inflation. The general salary increase and annual rate of salary increase for promotions and longevity is presented in the **Schedules of Active Member Valuation Data**.
- No cost-of-living adjustments were used in the determination of actuarial valuations.

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 demographic trends and economic conditions.

The *19th Investigation of Actuarial Experience* study for the period 2015 – 2019 was released and approved by the SERS Board in July 2020. The changes in assumptions were effective with the December 31, 2020, valuation.

The most recent valuations were based on members of SERS as of December 31, 2023. 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.).

# ACTUARIAL SECTION

## Schedules of Active Member Valuation Data

December 31, 2023 (unaudited)

### Withdrawal From Active Employment Before Age and Service Retirement<sup>1/</sup>

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	30.00%	NA	NA	NA	0.06%	NA	40.00%	NA	NA	NA	0.03%	NA
25	21.00	6.10%	3.00%	NA	0.06	0.01%	24.80	8.50%	2.40%	NA	0.03	0.02%
30	18.50	6.10	3.00	1.90%	0.07	0.03	21.30	7.70	2.30	2.90%	0.03	0.05
35	18.50	4.90	1.60	1.90	0.08	0.06	16.60	4.50	2.40	2.10	0.04	0.08
40	18.20	3.40	2.80	1.90	0.11	0.09	14.80	4.50	2.30	1.60	0.05	0.16
45	17.40	3.40	1.60	0.60	0.14	0.20	17.80	4.30	1.10	1.60	0.08	0.26
50	19.10	3.10	1.60	0.60	0.20	0.33	15.80	4.30	1.80	1.60	0.11	0.40
55	19.10	2.60	0.80	0.40	0.25	0.44	15.80	4.00	1.30	1.00	0.12	0.50
60	NA	NA	NA	NA	0.29	NA	NA	NA	NA	NA	0.19	NA

### Annual Rate of Retirement with Full Benefits (Superannuation)<sup>1/</sup>

Class A-3 and A-4		Class A-5 and A-6		All Other Membership Classes		
Sample Age	Rate	Sample Age	Rate	Rate		
				Sample Age	Male	Female
55	15.0%	55	15.0%	53-54	15.0%	23.0%
56	16.0	56	16.0	55-57	20.0	23.0
57	17.0	57	17.0	58	25.0	23.0
58	18.0	58	18.0	59	25.0	28.0
59	19.0	59	19.0	60	20.0	23.0
60	20.0	60	20.0	61-64	20.0	20.0
61	20.0	61	20.0	65-67	26.0	26.0
62	25.0	62	25.0	68-70	23.0	23.0
63	20.0	63	20.0	71-79	20.0	20.0
64	20.0	64	20.0	80	100.0	100.0
65	25.0	65	25.0			
66-79	20.0	66-79	20.0			
80	100.0	80	100.0			

<sup>1/</sup>The assumptions presented in the above tables were based on a review of SERS experience from 2015 - 2019. The rates are the probabilities that an event will occur in the year after the valuation. For instance, the male retirement rate of 20% at age 60 means that 200 of every 1,000 male employees age 60 and eligible for full benefits are expected to retire before they reach age 61.

# ACTUARIAL SECTION

## Schedules of Active Member Valuation Data

December 31, 2023 (unaudited)

### Annual Rate of Salary Increase<sup>1/</sup>

Completed Years of Service	Career Salary Increase	Completed Years of Service	Career Salary Increase
1	4.15%	16	1.25%
2	3.25	17	1.20
3	2.90	18	1.15
4	2.70	19	1.15
5	2.50	20	1.10
6	2.35	21	1.00
7	2.15	22	0.95
8	2.10	23	0.90
9	2.00	24	0.85
10	1.60	25	0.80
11	1.55	26	0.70
12	1.45	27	0.60
13	1.40	28	0.50
14	1.35	29	0.50
15	1.30	30+	0.50

<sup>1/</sup>In addition, it is assumed that salaries will increase by 2.8% per year, which includes inflation. The table above does not include that general salary increase. It is assumed that only the general salary increase is applicable to classes D and E.

### Reduced Benefits

Class A-3 and A-4		Class A-5 and A-6		All Other Membership Classes				
10 or More Years of Service				5 - 14 Years of Service		15 or More Years of Service		
Sample Age	Rate	Sample Age	Rate	Sample Age	Male	Female	Male	Female
35	1.5%	35	1.5%	25	2.2%	4.0%	NA	NA
40	1.5	40	1.5	30	2.2	2.0	NA	NA
45	1.5	45	1.5	35	1.3	2.0	0.8%	1.4%
50	2.0	50	2.0	40	1.0	1.4	0.6	1.3
55	5.5	55	5.5	45	1.0	1.4	0.6	1.3
60	5.5	60	5.5	50	1.0	1.4	1.1	1.6
61	6.0	61	6.0	55	2.0	2.3	5.0	4.5
62	20.0	62	8.0					
63	10.0	63	10.0					
64	15.0	64	10.0					
65	NA	65	15.0					
		66	20.0					
		67	NA					

# ACTUARIAL SECTION

## Schedules of Active Member Valuation Data

December 31, 2023 (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	81	NA	NA	NA	NA	NA	NA	81	\$37,003
20 - 24	1,594	21	NA	NA	NA	NA	NA	1,615	43,552
25 - 29	3,097	749	2	NA	NA	NA	NA	3,848	55,271
30 - 34	2,617	2,706	513	7	NA	NA	NA	5,843	65,777
35 - 39	1,934	2,288	2,042	675	12	NA	NA	6,951	72,398
40 - 44	1,557	1,501	1,525	2,171	579	8	NA	7,341	77,711
45 - 49	1,347	1,143	1,077	1,658	1,521	433	5	7,184	80,812
50 - 54	1,299	1,068	1,015	1,445	1,393	1,072	411	7,703	82,286
55 - 59	1,174	887	937	1,085	1,101	825	996	7,005	79,723
60 - 64	867	777	752	871	571	326	522	4,686	74,816
65+	679	508	481	540	330	155	299	2,992	77,898
<b>Total</b>	<b>16,246</b>	<b>11,648</b>	<b>8,344</b>	<b>8,452</b>	<b>5,507</b>	<b>2,819</b>	<b>2,233</b>	<b>55,249</b>	<b>\$74,220</b>

Average Age: 45.78

Average Service: 11.20

### 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	33	NA	NA	NA	NA	NA	NA	33	\$34,042
20 - 24	1,028	1	NA	NA	NA	NA	NA	1,029	39,471
25 - 29	2,025	407	5	NA	NA	NA	NA	2,437	48,928
30 - 34	2,034	1,504	290	9	NA	NA	NA	3,837	55,585
35 - 39	1,835	1,543	992	406	10	NA	NA	4,786	61,026
40 - 44	1,772	1,354	969	1,289	396	17	NA	5,797	65,455
45 - 49	1,569	1,176	842	1,117	919	268	23	5,914	68,359
50 - 54	1,465	1,111	823	1,132	923	607	396	6,457	69,339
55 - 59	1,204	955	858	1,068	847	495	696	6,123	68,771
60 - 64	696	786	710	877	529	295	379	4,272	67,570
65+	356	371	404	463	252	132	203	2,181	67,477
<b>Total</b>	<b>14,017</b>	<b>9,208</b>	<b>5,893</b>	<b>6,361</b>	<b>3,876</b>	<b>1,814</b>	<b>1,697</b>	<b>42,866</b>	<b>\$64,263</b>

Average Age: 46.91

Average Service: 10.58

# ACTUARIAL SECTION

## Schedules of Active Member Valuation Data

December 31, 2023 (unaudited)

### Aggregate Active Member Valuation Data

Valuation Year Ended Dec 31	Number of Employers	Number of Active Members	Covered-Employee Payroll	Annual Average Pay	% Increase/(Decrease) in Average Pay
2023	98 <sup>1/</sup>	98,115	\$6,855,295,000	\$69,870	2.9%
2022	101 <sup>2/</sup>	96,395	6,547,630,000	67,925	4.1
2021	101 <sup>2/</sup>	97,857	6,383,604,000	65,234	2.2
2020	102 <sup>3/</sup>	100,962	6,441,578,000	63,802	3.7
2019	102 <sup>3/</sup>	102,850	6,328,566,000	61,532	2.6
2018	102 <sup>3/</sup>	103,007	6,178,000,000	59,984	3.2
2017	102 <sup>3/</sup>	102,978	5,984,000,000	58,113	2.9
2016	103 <sup>4/</sup>	104,632	5,912,000,000	56,499	(0.6)
2015	104 <sup>5/</sup>	105,025	5,972,000,000	56,858	3.8
2014	104 <sup>5/</sup>	104,431	5,720,000,000	54,769	2.9

<sup>1/</sup>The membership includes 35 employers and the commonwealth is classified as its largest employer. The commonwealth comprises 64 agencies and when everything is evaluated separately, the Defined Benefit Plan has a total of 98 participating employers/agencies.

<sup>2/</sup>The membership includes 38 employers and the commonwealth is classified as its largest employer. The commonwealth comprises 64 agencies and when everything is evaluated separately, the Defined Benefit Plan has a total of 101 participating employers/agencies.

<sup>3/</sup>The membership includes 38 employers and the commonwealth is classified as its largest employer. The commonwealth comprises 65 agencies and when everything is evaluated separately, the Defined Benefit Plan has a total of 102 participating employers/agencies.

<sup>4/</sup>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, the Defined Benefit Plan has a total of 103 participating employers/agencies.

<sup>5/</sup>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, the Defined Benefit Plan has a total of 104 participating employers/agencies.

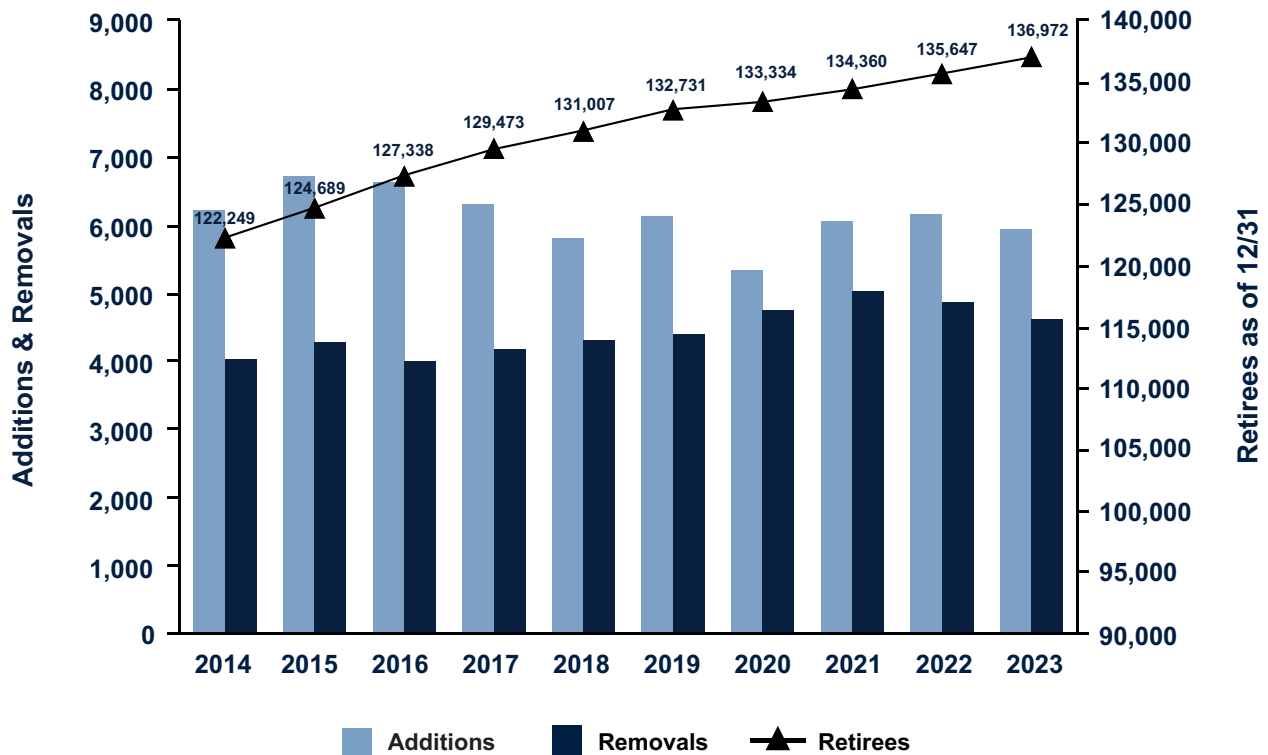
## Schedule of Retirees and Beneficiaries Added to and Removed from Rolls

December 31, 2023 (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 <sup>1/</sup>	No.	Allowances
2023	5,951	\$192,261,922	4,626	\$86,372,653	136,972	\$3,498,832,326	1.0%	3.1%
2022	6,180	190,728,048	4,893	90,271,430	135,647	3,393,469,966	1.0	3.0
2021	6,085	194,538,188	5,059	91,133,818	134,360	3,293,477,182	0.8	3.2
2020	5,363	161,626,682	4,760	79,668,921	133,334	3,190,566,922	0.5	2.6
2019	6,132	176,664,651	4,408	72,004,815	132,731	3,108,945,258	1.3	3.5
2018	5,847	166,594,854	4,313	70,862,628	131,007	3,004,855,159	1.2	3.3
2017	6,338	178,317,205	4,203	63,576,892	129,473	2,909,267,596	1.7	4.1
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

<sup>1/</sup>Calculated by multiplying monthly benefit for December 31 by 12 to arrive at an annual amount.





# ACTUARIAL SECTION

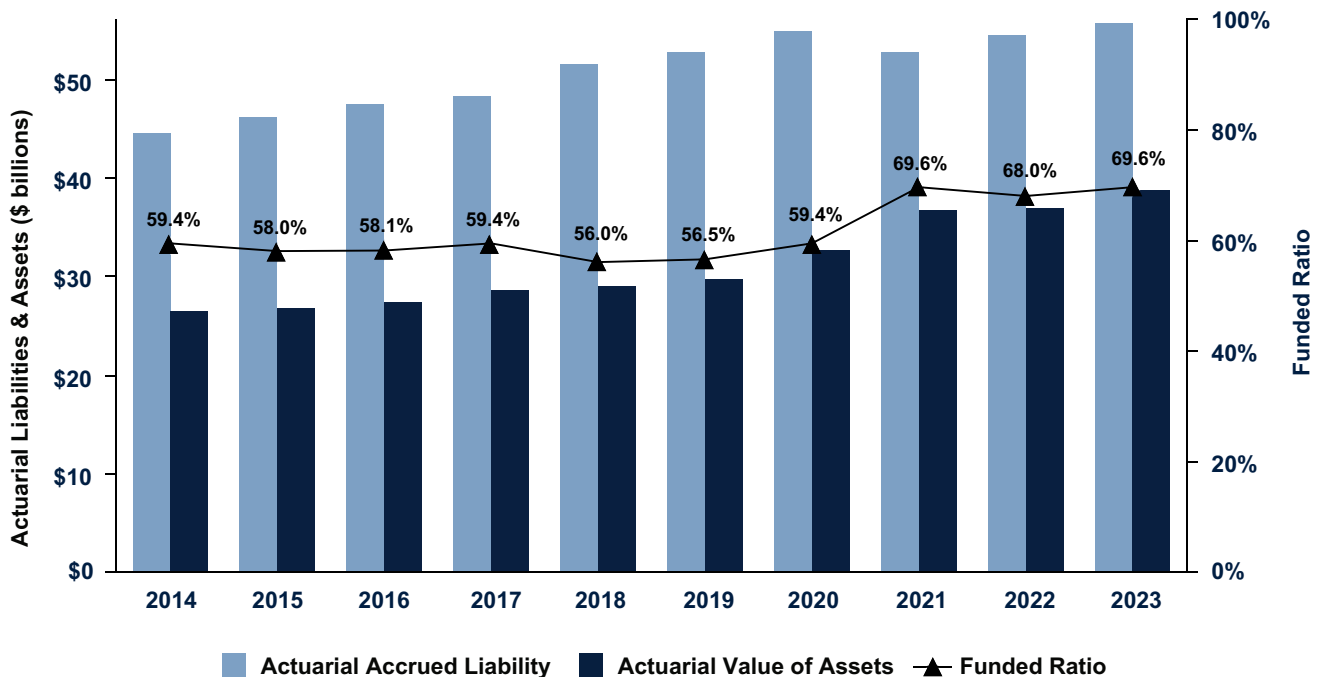
## Solvency Test

December 31, 2023 (unaudited)

### Fund Solvency<sup>1/</sup>

(\$ 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)						
2023	\$5,583,794	\$34,724,773	\$15,469,102	\$55,777,669	\$38,793,394	100.0%	95.6%	0.0%	69.6%
2022	5,456,160	33,847,728	15,309,899	54,613,787	37,124,677	100.0	93.6	0.0	68.0
2021	5,414,329	32,664,861	14,847,656	52,926,846	36,846,611	100.0	96.2	0.0	69.6
2020	5,327,815	31,754,551	18,016,392	55,098,758	32,703,275	100.0	86.2	0.0	59.4
2019	5,183,195	29,651,542	18,137,838	52,972,575	29,934,024	100.0	83.5	0.0	56.5
2018	5,074,760	28,558,283	18,149,162	51,782,205	28,989,607	100.0	83.7	0.0	56.0
2017	4,965,765	27,798,045	15,675,593	48,439,403	28,776,939	100.0	85.7	0.0	59.4
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



<sup>1/</sup>Based on statutory funding requirements.

## Analysis of Financial Experience

December 31, 2023 (unaudited)

### Gains and Losses in Accrued Liabilities<sup>1/</sup>

Resulting from Differences Between Assumed Experience and Actual Experience

(\$ thousands)

Type of Activity	2023	2022	2021	2020
Gain/(loss) from investment earnings <sup>2/</sup>	\$460,684	(\$572,026)	\$1,383,743	\$625,338
Changes in demographics of new entrants	—	—	(51,558)	58,259
Pay increases different than assumptions	(316,037)	(352,661)	63,451	(178,582)
Differences between actual and expected demographic experience	(102,305)	(238,357)	(52,115)	(63,639)
<b>Gain/(loss) during year from financial experience</b>	<b>42,342</b>	<b>(1,163,044)</b>	<b>1,343,521</b>	<b>441,376</b>
Non-recurring items				
Changes in funding method <sup>3/</sup>	—	—	3,699,984	—
Changes in demographic assumptions	—	—	—	(700,180)
Changes in economic assumptions <sup>4/</sup>	—	(671,544)	—	(599,077)
<b>Composite gain/(loss)</b>	<b>\$42,342</b>	<b>(\$1,834,588)</b>	<b>\$5,043,505</b>	<b>(\$857,881)</b>

<sup>1/</sup>Based on statutory funding requirements.

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

<sup>3/</sup>Act 2017-5 required SERS to convert to the traditional entry-age funding method beginning with 2021, which brings it in line with the accounting valuation.

<sup>4/</sup>2022 change primarily due to a reduction in the annual investment return to 6.875% from 7.0%, which was approved by SERS Board at its June 10, 2022 meeting. 2020 change primarily due to reduction of investment rate of return to 7.0% from 7.125%, which was approved by SERS Board at its July 29, 2020 meeting.

# ACTUARIAL SECTION

## Schedule of Funding Progress

December 31, 2023 (unaudited)

### Funding Progress<sup>1/</sup>

(\$ 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 Payroll	UAAL as a Percentage of Covered Payroll
2023	\$38,793,394	\$55,777,669	69.6%	\$16,984,275	\$6,855,295	247.8%
2022	37,124,677	54,613,787	68.0	17,489,110	6,547,630	267.1
2021	36,846,611	52,926,846	69.6	16,080,235	6,383,604	251.9
2020	32,703,275	55,098,758	59.4	22,395,483	6,441,578	347.7
2019	29,934,024	52,972,575	56.5	23,038,551	6,328,566	364.0
2018	28,989,607	51,782,205	56.0	22,792,598	6,178,772	368.9
2017	28,776,939	48,439,403	59.4	19,662,464	5,984,361	328.6
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

<sup>1/</sup>Based on statutory funding requirements.

## Schedule of Contributions Under Previous Reporting Standards

December 31, 2023 (unaudited)

### Contributions Under Previous Reporting Standards<sup>1/</sup>

Annual Required Contributions Using GASB 25

(\$ thousands)

Actuarial Valuation Year Ended December 31	Annual Required Contribution (ARC)	Actual Contribution	Actual Contribution as a Percentage of ARC
2023 <sup>2/</sup>	\$2,188,125	\$2,188,125	100.0%
2022 <sup>2/</sup>	2,066,132	2,066,132	100.0
2021 <sup>2/</sup>	2,078,951	2,858,088 <sup>3/</sup>	137.5
2020 <sup>2/</sup>	2,164,144	3,174,854 <sup>4/</sup>	146.7
2019 <sup>2/</sup>	2,106,138	2,106,138	100.0
2018 <sup>2/</sup>	2,040,434	2,040,434	100.0
2017 <sup>2/</sup>	1,883,541	1,883,541	100.0
2016 <sup>2/</sup>	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

<sup>1/</sup>The ARC is calculated as part of SERS funding valuation using GASB 25 requirements. Starting in 2014 GASB 25 was superseded by 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.

<sup>2/</sup>ARC excludes multiple service transfers made to SERS. These transfers are included as contributions on the Statements of Changes in Fiduciary Net Position.

<sup>3/</sup>Includes a one-time lump sum payment from the Pennsylvania State System of Higher Education, less credits utilized during the year.

<sup>4/</sup>Includes a one-time lump sum payment from Penn State University, less credits utilized during the year.

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 from 2013 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, 2023 (unaudited)

### Contribution Rates and Funded Ratios<sup>1/</sup>

(\$ thousands)

For FY Beginning July 1 Following Valuation Year<sup>2/</sup>

Valuation Year Ended Dec 31	Funding Payroll	Member Contribution Rate <sup>3/</sup>	Employer Normal Cost Rate	Unfunded Liability Rate	Preliminary Employer Contribution Rate <sup>4/</sup>	Final Employer Contribution Rate	Funded Ratio
2014 <sup>5/</sup>	\$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 <sup>6/</sup>	6,265,071	6.25	4.88	28.02	32.90	32.90	59.4
2018	6,469,401	6.25	1.25	32.28	33.53	33.53	56.0
2019 <sup>7/</sup>	6,657,541	6.25	1.67	31.78	33.45	33.45	56.5
2020 <sup>8/</sup>	6,700,320	6.25	1.50	32.26	33.76	33.76	59.4
2021 <sup>9/</sup>	6,649,292	6.25	8.32	25.78	34.10	34.10	69.6
2022	6,832,806	6.18	8.29	26.98	35.27	35.27	68.0
2023	7,168,727	6.18	7.94	25.66	33.60	33.60	69.6
2024 <sup>10/</sup>	7,492,698	6.17	7.60	24.79	32.39	32.39	70.5
2025	7,657,032	6.02	7.36	24.80	32.16	32.16	70.9
2026	7,821,581	5.92	7.12	25.50	32.62	32.62	70.2
2027	7,987,555	5.88	6.87	24.65	31.52	31.52	72.1
2028	8,167,245	5.85	6.64	24.11	30.75	30.75	73.5
2029	8,354,160	5.81	6.41	23.55	29.96	29.96	75.0
2030	8,525,296	5.78	6.18	23.04	29.22	29.22	76.6
2031	8,673,102	5.75	5.97	22.70	28.67	28.67	78.2
2032	8,852,971	5.73	5.78	22.30	28.08	28.08	79.9
2033	9,067,100	5.68	5.59	21.84	27.43	27.43	81.7

<sup>1/</sup>Except as noted, 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.

<sup>2/</sup>Rates and values are for the fiscal year beginning July 1 following the valuation year and do not include Benefits Completion Plan contributions.

<sup>3/</sup>Prior to December 31, 2022, 6.25% was for Class AA and A-3 employees since they comprised most of SERS membership. Beginning with December 31, 2022, the expected fiscal year rate represents a blend of the membership since employee contributions for non-exempt new hires have a lower contribution rate.

<sup>4/</sup>Actuarial rate before floor and collar.

<sup>5/</sup>Act 2010-120 amended the Retirement Code to place a collar on increases to employer contribution rates starting July 1, 2011. A 4.50% collar was in place for fiscal year beginning July 1, 2013, and continued onward until the collar was deemed unnecessary.

<sup>6/</sup>Act 2010-120 amended the Retirement Code to place a permanent floor at employer normal cost after collars expire.

<sup>7/</sup>Act 2017-5 amended the Retirement Code to add two hybrid Defined Benefits (DB)/Defined Contributions (DC) plans and a DC-only plan effective January 1, 2019.

<sup>8/</sup>The Penn State \$1.061 billion one-time lump sum payment immediately reduced the total SERS unfunded liability and increased the funded ratio.

<sup>9/</sup>Act 2017-5 amended the Retirement Code to change the funding method to Traditional Entry Age. The funding method change along with the PASSHE \$825 million one-time lump sum payment immediately reduced the total SERS unfunded liability and increased the funded ratio.

<sup>10/</sup>Numbers are projected from 2024 – 2033 based on 2023 actuarial funding valuation.

## Summary of Plan Provisions

December 31, 2023 (unaudited)

### Benefit and Contribution Provisions

SERS makes provisions 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 before January 1, 2019, and all legislators who became members on or after December 1, 2010; Capitol police and park rangers who became members starting July 1, 2011; and state police officers who became members starting July 1, 2012, provided the member did not elect membership in the optional A-4 class within 45 days of becoming a member.

Starting January 1, 2019, class A-3 is only offered to state employees in exempt positions.

#### Class A-4

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

#### Class A-5

All regular state employees who enter SERS membership for the first time on or after January 1, 2019, and SERS members hired before January 1, 2019, who were given a one-time, irrevocable option to elect class A-5 as of April 1, 2019, starting July 1, 2019, while retaining prior class up to July 1, 2019, including members of the General Assembly, judges, and Magisterial District Judges.

#### Class A-6

All members who would be class A-5 but elected A-6 within 45 days of becoming a member, and SERS members hired before January 1, 2019, who were given a one-time, irrevocable option to elect class A-6 as of April 1, 2019, starting July 1, 2019, while retaining prior class up to July 1, 2019.

### Defined Contribution-Only Plan

All members who would be class A-5 but elected the defined contribution-only plan within 45 days of becoming a member, and SERS members hired before January 1, 2019, who were given a one-time, irrevocable option to elect defined contribution-only plan as of April 1, 2019, starting July 1, 2019, while retaining prior class up to July 1, 2019. Those members choosing the defined contribution-only plan are not eligible for a benefit from the Defined Benefit Plan; but retire with their contributions, employer contributions if vested with three eligibility points, and any investment earnings on those contributions less investment expenses and fees, however SERS members hired before January 1, 2019, who elected defined contribution-only plan as of April 1, 2019, starting July 1, 2019, still retained their eligibility for a benefit from the Defined Benefit Plan for service up to July 1, 2019.

# ACTUARIAL SECTION

---

## Summary of Plan Provisions

December 31, 2023 (unaudited)

### 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) in Defined Benefit Plan

(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 aides, 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.

#### Class A-3/A-4

Age 65 for most members with three years of service, and age 55, with three years of service, for members of the General Assembly, enforcement officers, correction officers, psychiatric security aides, Delaware River Port Authority police officers, and officers of the Pennsylvania State Police. Capitol police officers and park rangers can retire on full benefits at age 55 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 A-5/A-6

Age 67, with three years of service; or eligible for full formula benefits with 35 years of credited service with a superannuation score of 97.

### 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 in Defined Benefit Plan

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. For A-5 and A-6 members the maximum single-life annuity is 2% of an average of the highest five calendar years 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 Defined Benefit Plan multiplier for each of the major classes are as follows:

**Defined Benefit Plan Multiplier for Major Classes**

<b>Class</b>	<b>Multiplier</b>	
A <sup>1/</sup>	1.00	
AA	1.25	
A-3 <sup>1/</sup>	1.00	
A-4 <sup>1/</sup>	1.25	
A-5	0.625	
A-6	0.50	
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.

<sup>1/</sup>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.

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.



# Statistical Section

The Statistical Section of SERS' Annual Comprehensive Financial Report presents detailed information related to the financial statements, as well as highlights of actuarial valuations. The Statistical Section presents information on the Defined Benefit Plan as well as select information for the Defined Contribution Plan, which opened for enrollment on January 1, 2019. 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, 2023. 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/participant and employer contributions, net investment income/loss, and other additions.

The **Schedule of Deductions from Fiduciary Net Position** presents the benefits, refunds of contributions, and administrative expenses.

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, 2023. Most Defined Benefit Plan 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.

### Revenue Capacity

The **Schedule of Investment Income** presents the details of the total net investment income/loss for the 10 years ended December 31, 2023. The Defined Benefit Plan 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 **Schedules of Active Member and Participant Statistics** provides the total number of active members and participants, as well as the average age, average service, and average salary by gender for the 10 years ended December 31, 2023.

### 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, 2023.

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, 2023.

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, 2023.

# STATISTICAL SECTION

---

## Statistical Section Narrative

December 31, 2023 (unaudited)

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, 2023.

The **Schedule of Employer/Agency Participation** provides the number of covered members/participants and the corresponding percentage of participation for the five largest

employers/agencies for the Defined Benefit and Defined Contribution Plans, as well as a listing of additional employers/agencies participating with both plans as of December 31, 2023.

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

Schedule of Trend Data  
December 31, 2023 (unaudited)

Defined Benefit Plan Trend Data<sup>1/</sup>

	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014
<b>Year-End Contribution Rates</b>										
Employer <sup>2/,3/4/</sup>	35.32%	34.16%	33.81%	33.48%	33.59%	32.93%	33.24%	29.51% <sup>7/</sup>	25.01% <sup>7/</sup>	20.53% <sup>7/</sup>
Member	5.98%	6.05%	6.09%	4.96%	4.95% <sup>8/</sup>	6.25%	6.25%	6.25%	6.25%	6.25%
<b>Contributions</b>										
Employer <sup>2/</sup>	\$2,198,430	\$2,074,999	\$2,871,253	\$3,186,445	\$2,114,882	\$2,048,594	\$1,897,404	\$1,622,123	\$1,360,431	\$1,084,104
Member	\$427,368	\$418,589	\$405,138	\$409,637	\$404,769	\$393,925	\$383,359	\$374,570	\$371,624	\$365,923
Average Annual Compensation	\$69,870	\$67,925	\$65,234	\$63,802	\$61,532	\$59,984	\$58,113	\$56,499	\$56,858	\$54,769
Fiduciary Net Position (FNP)	\$36,424,927	\$33,607,207	\$40,231,015	\$35,027,730	\$31,096,319	\$26,936,990	\$29,405,042 <sup>9/</sup>	\$26,387,889	\$26,054,890	\$27,337,778
Total Pension Liability (TPL) <sup>5/</sup>	\$55,780,367	\$54,622,092	\$52,936,505	\$52,253,754	\$49,274,314	\$47,768,011	\$46,696,751	\$45,648,214	\$44,238,721	\$42,195,186
FNP as % of TPL <sup>5/</sup>	65.3%	61.5%	76.0%	67.0%	63.1%	56.4%	63.0%	57.8%	58.9%	64.8%
Net Pension Liability <sup>5/</sup>	\$19,355,440	\$21,014,885	\$12,705,490	\$17,226,024	\$18,177,995	\$20,831,021	\$17,291,709	\$19,260,325	\$18,183,831	\$14,857,408
Actuarial Value of Assets <sup>4/</sup>	\$38,793,394	\$37,124,677	\$36,846,611	\$32,703,275	\$29,934,024	\$28,989,607	\$28,776,939	\$27,596,048	\$26,877,127	\$26,584,948
Actuarial Accrued Liability <sup>4/</sup>	\$55,777,669	\$54,613,787	\$52,926,846	\$55,098,758	\$52,972,575	\$51,782,205	\$48,439,403	\$47,518,964	\$46,328,929	\$44,750,670
Funded Ratio <sup>4/</sup>	69.6%	68.0%	69.6%	59.4%	56.5%	56.0%	59.4%	58.1%	58.0%	59.4%
Total Benefits and Refunds	\$3,910,778	\$3,885,026	\$3,731,143	\$3,556,728	\$3,512,671	\$3,394,636	\$3,303,543	\$3,227,548	\$3,080,861	\$2,946,465
Average Pension <sup>6/</sup>	\$31,944	\$31,331	\$30,712	\$30,050	\$29,440	\$28,880	\$28,352	\$27,722	\$27,042	\$26,426
Annuityants and Beneficiaries	136,972	135,647	134,360	133,334	132,731	131,007	129,473	127,338	124,689	122,249
Active Members	98,115	96,395	97,857	100,962	102,850	103,007	102,978	104,632	105,025	104,431

<sup>1/</sup>All dollar amounts are in thousands, except Average Annual Compensation and Average Pension.

<sup>2/</sup>Includes Benefits Completion Plan contribution.

<sup>3/</sup>Employer rate represents total contributions as a percent of covered payroll at December 31.

<sup>4/</sup>Based on actuarial valuation for funding purposes as required by statute.

<sup>5/</sup>Based on actuarial valuation for financial purposes as required by Governmental Accounting Standards Board (GASB) Statement No. 67.

<sup>6/</sup>Represents average annual pension only for members who have reached superannuation through age or service credits.

<sup>7/</sup>Act 2010-120 set collars on the increase of the employer contribution rate at 3.5% effective July 1, 2012 and 4.5% every year thereafter until no longer needed.

<sup>8/</sup>Act 2017-5 established a new side-by-side hybrid defined benefit/defined contribution benefit option and a new DC-only option to all state employees, excluding most hazardous duty employees. This reduced the member contribution rate.

<sup>9/</sup>In 2017, fiduciary net position excluded OPEB adjustment by GASB 75.

Source: Pennsylvania State Employees' Retirement System

# STATISTICAL SECTION

## Schedule of Additions to Fiduciary Net Position

December 31, 2023 (unaudited)

### Defined Benefit Plan Additions to Fiduciary Net Position

(\$ thousands)

Year Ended	Member Contributions	Employer Contributions		Net Investment Income/(Loss)	Total
		Dollar Amount	% of Covered-Employee Payroll <sup>1/</sup>		
2023	\$427,368	\$2,198,430	32.1%	\$4,126,858	\$6,752,656
2022	418,589	2,074,999	31.7	(5,213,344)	(2,719,756)
2021	405,138	2,871,253	45.0	5,682,480	8,958,871
2020	409,637	3,186,445	49.5	3,919,279	7,515,361
2019	404,769	2,114,882	33.4	5,175,624	7,695,275
2018	393,925	2,048,594	33.2	(1,442,291)	1,000,228
2017	383,359	1,897,404	31.7	4,066,055	6,346,818
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

<sup>1/</sup>Calculated by dividing employer contributions by total annualized compensation (covered-employee payroll) provided by actuary.

### Defined Contribution Plan Additions to Fiduciary Net Position<sup>1/</sup>

(\$ thousands)

Year Ended	Participant Contributions	Employer Contributions	Annual Employer Charge/Commonwealth Funding	Net Investment Income/(Loss)	Total
2023	\$42,902	\$23,458	\$1,696	\$25,138	\$93,194
2022	31,372	16,750	1,288	(14,025)	35,385
2021	22,533	11,440	1,696	7,470	43,139
2020	14,799	7,733	4,556	4,971	32,059
2019	6,124	2,836	3,852	673	13,485

<sup>1/</sup>Schedule is intended to show information for 10 years. Additional years will be displayed as they become available.

Source: Pennsylvania State Employees' Retirement System

**Schedule of Deductions from Fiduciary Net Position**

December 31, 2023 (unaudited)

**Defined Benefit Plan Deductions from Fiduciary Net Position**

(\$ thousands)

<b>Year Ended</b>	<b>Benefits</b>	<b>Refund of Contributions</b>	<b>Administrative Expenses</b>	<b>Total</b>
2023	\$3,883,225	\$27,553	\$24,158	\$3,934,936
2022	3,852,073	32,953	19,026	3,904,052
2021	3,705,674	25,469	24,443	3,755,586
2020	3,538,634	18,094	27,222	3,583,950
2019	3,490,311	22,360	23,275	3,535,946
2018	3,375,394	19,242	25,950	3,420,586
2017	3,287,923	15,620	26,122	3,329,665
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

**Defined Contribution Plan Deductions from Fiduciary Net Position<sup>1/</sup>**

(\$ thousands)

<b>Year Ended</b>	<b>Benefits</b>	<b>Refund of Contributions</b>	<b>Administrative Expenses</b>	<b>Total</b>
2023	\$2,780	\$1,802	\$4,968	\$9,550
2022	1,886	1,116	4,601	7,603
2021	783	868	3,971	5,622
2020	201	103	3,660	3,964
2019	52	20	5,185	5,257

<sup>1/</sup>Schedule is intended to show information for 10 years. Additional years will be displayed as they become available.

# STATISTICAL SECTION

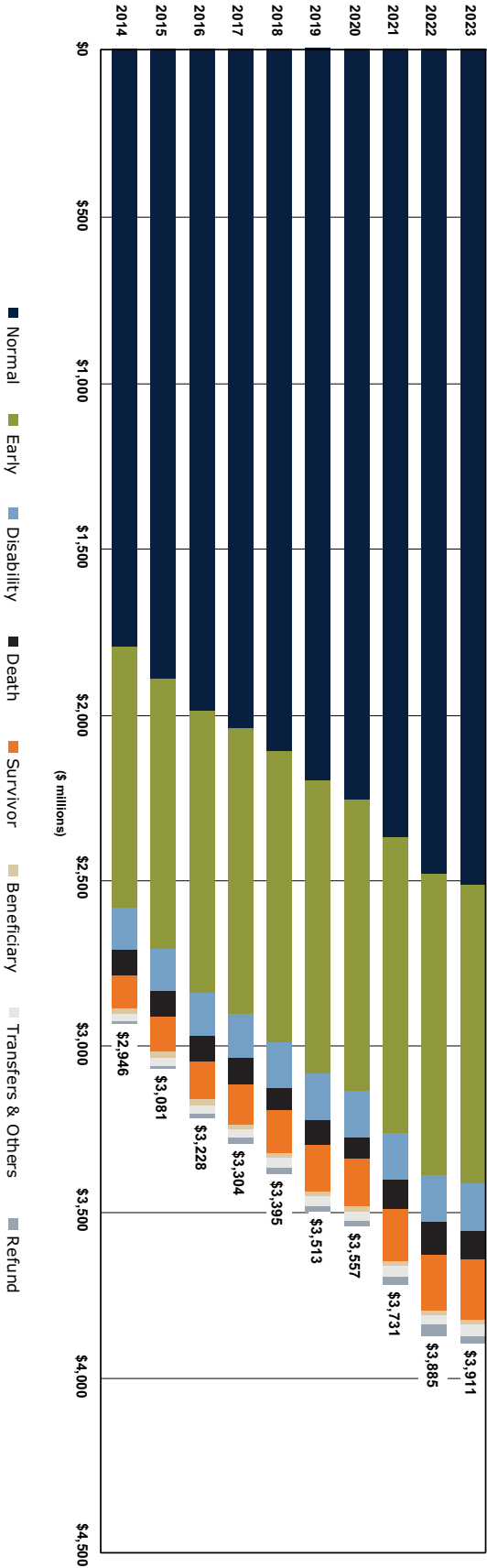
## Schedule of Benefit and Refund Deductions from Fiduciary Net Position by Type

December 31, 2023 (unaudited)

### Defined Benefit Plan 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	
2023	\$2,522,684	\$904,749	\$143,764	\$85,098	\$179,205	\$17,515	\$30,210	\$3,883,225	\$26,911	\$642	\$27,553
2022	2,490,656	908,788	142,545	96,539	168,662	16,916	27,967	3,852,073	31,833	1,120	32,953
2021	2,379,999	892,807	141,257	87,658	157,459	16,856	29,638	3,705,674	24,788	681	25,469
2020	2,264,119	881,623	140,813	61,629	145,877	15,860	28,713	3,538,634	17,535	559	18,094
2019	2,207,145	888,899	139,607	74,257	137,479	16,855	26,069	3,490,311	21,932	428	22,360
2018	2,122,512	877,579	137,616	66,408	129,533	15,581	26,165	3,375,394	19,009	233	19,242
2017	2,051,059	859,554	135,707	80,322	121,511	16,510	23,260	3,287,923	15,372	248	15,620
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



Source: Pennsylvania State Employees' Retirement System

Schedule of Total Changes in Fiduciary Net Position

December 31, 2023 (unaudited)

Defined Benefit Plan 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	Investment Income/ (Loss)	Total Additions	Benefits	Refund of Contributions	Administrative Expenses	Total Deductions	
2023	\$427,368	\$2,198,430	\$4,126,858	\$6,752,656	\$3,883,225	\$27,553	\$24,158	\$3,934,936	\$2,817,720
2022	418,589	2,074,999	(5,213,344)	(2,719,756)	3,852,073	32,953	19,026	3,904,052	(6,623,808)
2021	405,138	2,871,253	5,682,480	8,958,871	3,705,674	25,469	24,443	3,755,586	5,203,285
2020	409,637	3,186,445	3,919,279	7,515,361	3,538,634	18,094	27,222	3,583,950	3,931,411
2019	404,769	2,114,882	5,175,624	7,695,275	3,490,311	22,360	23,275	3,535,946	4,159,329
2018	393,925	2,048,594	(1,442,291)	1,000,228	3,375,394	19,242	25,950	3,420,586	(2,420,358)
2017	383,359	1,897,404	4,066,055	6,346,818	3,287,923	15,620	26,122	3,329,665	3,017,153
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)

Defined Contribution Plan Total Changes in Fiduciary Net Position<sup>1/</sup>

(\$ thousands)

Year Ended	Additions to Fiduciary Net Position				Deductions from Fiduciary Net Position				Net Increase	
	Participant Contributions	Employer Contributions	Annual Employer Charge/ Commonwealth Funding	Investment Income/ (Loss)	Total Additions	Benefits	Refund of Contributions	Administrative Expenses		Total Deductions
2023	\$42,902	\$23,458	\$1,696	\$25,138	\$93,194	\$2,780	\$1,802	\$4,968	\$9,550	\$83,644
2022	31,372	16,750	1,288	(14,025)	35,385	1,886	1,116	4,601	7,603	27,782
2021	22,533	11,440	1,696	7,470	43,139	783	868	3,971	5,622	37,517
2020	14,799	7,733	4,556	4,971	32,059	201	103	3,660	3,964	28,095
2019	6,124	2,836	3,852	673	13,485	52	20	5,185	5,257	8,228

<sup>1/</sup>Schedule is intended to show information for 10 years. Additional years will be displayed as they become available.

Source: Pennsylvania State Employees' Retirement System



# STATISTICAL SECTION

## Schedule of Investment Income

December 31, 2023 (unaudited)

	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014
Investment income/(loss)										
From investing activities										
Net appreciation/(depreciation) in fair value of investments	\$3,909,608	(\$5,439,865)	\$5,396,397	\$3,653,648	\$4,901,079	(\$1,733,999)	\$3,710,739	\$1,233,501	(\$216,817)	\$1,155,301
Interest	192,834	171,411	204,996	199,398	162,152	142,918	126,728	126,219	130,616	142,434
Dividends	200,010	207,912	159,733	162,817	182,853	203,533	260,013	273,733	223,927	246,528
Real estate income <sup>1/</sup>	NA	NA	87,796	48,510	101,283	74,115	95,533	89,327	108,844	93,167
Miscellaneous income	1,687	1,849	4,231	2,059	5,269	889	3,713	27,381	3,426	1,799
Total investing activities income/(loss)	4,304,139	(\$5,058,693)	5,853,153	4,066,432	5,352,636	(1,312,544)	4,196,726	1,750,161	249,996	1,639,229
Investment expenses	(179,977)	(157,345)	(172,375)	(149,509)	(179,344)	(133,146)	(135,079)	(167,712)	(166,610)	(186,527)
Net income/(loss) from investing activities	4,124,162	(\$5,216,038)	5,680,778	3,916,923	5,173,292	(1,445,690)	4,061,647	1,582,449	83,386	1,452,702
From securities lending activities										
Securities lending income	2,995	2,993	1,891	2,617	2,587	3,771	4,883	4,893	5,105	9,917
Securities lending expenses	(299)	(299)	(189)	(261)	(255)	(372)	(475)	(489)	(501)	(568)
Net income from securities lending activities	2,696	2,694	1,702	2,356	2,332	3,399	4,408	4,404	4,604	9,349
<b>Net investment income/(loss)</b>	<b>\$4,126,858</b>	<b>(\$5,213,344)</b>	<b>\$5,682,480</b>	<b>\$3,919,279</b>	<b>\$5,175,624</b>	<b>(\$1,442,291)</b>	<b>\$4,066,055</b>	<b>\$1,586,853</b>	<b>\$87,990</b>	<b>\$1,462,051</b>

<sup>1/</sup>In 2023, SERS began to report real estate income from limited partnerships and separately managed accounts as part of net appreciation/(depreciation) in fair value of investments and income from real estate investment trusts as part of dividends. Certain 2022 figures were restated to conform to 2023 reporting.

Source: Pennsylvania State Employees' Retirement System

**Schedules of Active Member and Participant Statistics**

December 31, 2023 (unaudited)

**Defined Benefit Plan Active Member Statistics**

Year Ended	Male			Female			Total Number of Active Members
	Average Age	Average Service	Average Salary	Average Age	Average Service	Average Salary	
2023	45.78	11.20	\$74,220	46.91	10.58	\$64,263	98,115
2022	46.04	11.50	72,502	47.15	10.89	61,970	96,395
2021	46.11	11.59	69,621	47.14	11.01	59,482	97,857
2020	46.11	11.57	68,125	46.93	10.90	58,182	100,962
2019	46.00	11.51	66,220	46.61	10.71	55,439	102,850
2018	46.06	11.65	64,716	46.62	10.83	53,794	103,007
2017	46.23	11.79	62,739	46.61	10.97	52,049	102,978
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

**Defined Contribution Plan Active Participant Statistics<sup>1/</sup>**

Year Ended	Male			Female			Total Number of Active Participants
	Average Age	Average Service	Average Salary	Average Age	Average Service	Average Salary	
2023	41.41	1.54	\$52,496	41.22	1.55	\$50,653	23,543
2022	41.30	1.30	50,329	41.16	1.29	48,233	17,711
2021	40.93	1.01	46,806	40.65	1.05	45,513	13,441
2020	40.50	0.64	44,651	39.92	0.64	43,709	10,237
2019	39.14	0.21	41,172	38.64	0.16	40,004	6,814

<sup>1/</sup>Schedule is intended to show information for 10 years. Additional years will be displayed as they become available.

# STATISTICAL SECTION

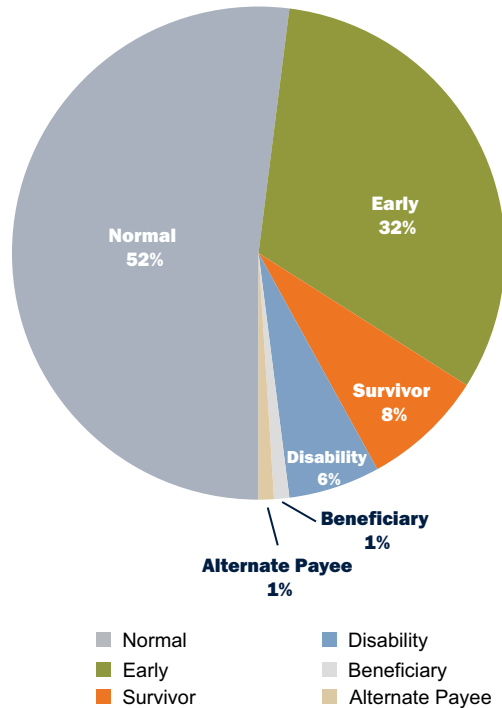
## Schedule of Retired Members by Type of Benefit

December 31, 2023 (unaudited)

### Defined Benefit Plan Retired Members by Type of Benefit

Amount of Monthly Benefits	Total Monthly Benefits <sup>1/</sup>	Total Number of Retirees	Type of Benefit					
			Normal	Disability	Early	Beneficiary	Survivor	Alternate Payee
≤ \$500	\$6,034,678	25,130	5,252	339	15,987	415	2,536	601
> 500 to 1,000	14,740,723	19,731	8,781	2,847	4,655	307	2,559	582
> 1,000 to 1,500	21,734,106	17,508	9,094	2,182	3,751	160	1,904	417
> 1,500 to 2,000	26,188,398	15,010	8,233	1,208	4,073	101	1,205	190
> 2,000 to 2,500	29,837,320	13,309	7,759	732	3,843	58	850	67
> 2,500 to 3,000	29,745,654	10,845	6,864	429	2,945	35	538	34
> 3,000 to 3,500	30,271,983	9,338	6,236	241	2,427	24	394	16
> 3,500 to 4,000	25,828,376	6,917	5,009	131	1,559	16	198	4
> 4,000 to 4,500	22,121,660	5,228	3,986	71	1,011	16	142	2
> 4,500 to 5,000	17,124,460	3,616	2,808	30	668	7	98	5
> 5,000 to 5,500	14,620,398	2,790	2,030	15	653	7	84	1
> 5,500 to 6,000	12,395,257	2,160	1,541	9	560	4	46	—
> 6,000	40,926,348	5,390	4,148	10	1,119	4	108	1
<b>Totals</b>	<b>\$291,569,361</b>	<b>136,972</b>	<b>71,741</b>	<b>8,244</b>	<b>43,251</b>	<b>1,154</b>	<b>10,662</b>	<b>1,920</b>

<sup>1/</sup>Does not include supplemental payments and transfers.



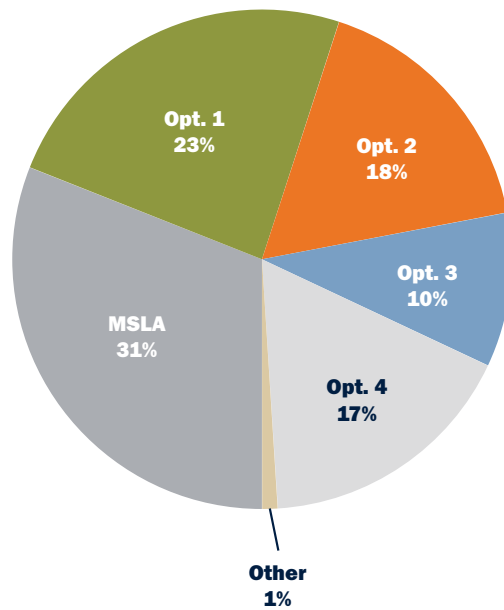
Source: Pennsylvania State Employees' Retirement System

## Schedule of Retired Members by Option

December 31, 2023 (unaudited)

### Defined Benefit Plan 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	\$6,034,678	25,130	5,897	9,981	5,245	1,255	2,318	434
> 500 to 1,000	14,740,723	19,731	6,944	4,248	3,959	1,884	2,370	326
> 1,000 to 1,500	21,734,106	17,508	5,589	3,624	3,547	1,857	2,725	166
> 1,500 to 2,000	26,188,398	15,010	4,749	3,106	2,678	1,778	2,588	111
> 2,000 to 2,500	29,837,320	13,309	4,011	2,703	2,298	1,594	2,642	61
> 2,500 to 3,000	29,745,654	10,845	3,409	2,152	1,712	1,323	2,211	38
> 3,000 to 3,500	30,271,983	9,338	2,878	1,883	1,359	1,160	2,033	25
> 3,500 to 4,000	25,828,376	6,917	2,333	1,316	928	922	1,401	17
> 4,000 to 4,500	22,121,660	5,228	1,740	938	680	675	1,179	16
> 4,500 to 5,000	17,124,460	3,616	1,179	590	476	473	891	7
> 5,000 to 5,500	14,620,398	2,790	884	428	346	328	797	7
> 5,500 to 6,000	12,395,257	2,160	706	318	250	286	596	4
> 6,000	40,926,348	5,390	1,886	709	625	734	1,432	4
<b>Totals</b>	<b>\$291,569,361</b>	<b>136,972</b>	<b>42,205</b>	<b>31,996</b>	<b>24,103</b>	<b>14,269</b>	<b>23,183</b>	<b>1,216</b>



- 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, 2023 (unaudited)

### Defined Benefit Plan Average Monthly Benefit Payments<sup>1/</sup>

Retirement Effective Dates	Years of Credited Service						
	< 5	5-9	10-14	15-19	20-24	25-29	30+
<b>Period 1/1/2023 to 12/31/2023</b>							
Average monthly benefit	\$243	\$667	\$997	\$1,937	\$2,731	\$4,486	\$5,616
Average final average salary	\$47,958	\$54,838	\$58,715	\$70,003	\$76,106	\$97,084	\$93,866
Number of retired members	45	409	653	593	868	739	931
<b>Period 1/1/2022 to 12/31/2022</b>							
Average monthly benefit	\$263	\$649	\$1,113	\$1,859	\$2,663	\$4,163	\$5,344
Average final average salary	\$45,502	\$53,553	\$58,346	\$67,185	\$74,767	\$91,570	\$91,041
Number of retired members	68	440	767	684	967	854	1,121
<b>Period 1/1/2021 to 12/31/2021</b>							
Average monthly benefit	\$379	\$664	\$1,081	\$1,750	\$2,636	\$4,327	\$4,996
Average final average salary	\$46,456	\$50,055	\$56,535	\$63,821	\$73,421	\$92,746	\$86,031
Number of retired members	55	409	832	576	1,040	829	1,179
<b>Period 1/1/2020 to 12/31/2020</b>							
Average monthly benefit	\$253	\$615	\$1,099	\$1,669	\$2,535	\$4,029	\$4,728
Average final average salary	\$41,977	\$51,381	\$55,608	\$62,136	\$72,097	\$86,841	\$83,005
Number of retired members	49	412	599	539	886	810	1,084
<b>Period 1/1/2019 to 12/31/2019</b>							
Average monthly benefit	\$258	\$570	\$1,061	\$1,606	\$2,422	\$3,778	\$4,654
Average final average salary	\$44,084	\$48,697	\$55,118	\$59,822	\$68,438	\$82,120	\$80,137
Number of retired members	76	512	839	574	861	940	1,178
<b>Period 1/1/2018 to 12/31/2018</b>							
Average monthly benefit	\$284	\$531	\$1,018	\$1,556	\$2,467	\$3,937	\$4,466
Average final average salary	\$39,834	\$46,591	\$54,260	\$58,668	\$68,305	\$84,510	\$78,312
Number of retired members	51	586	808	578	799	1,008	1,093
<b>Period 1/1/2017 to 12/31/2017</b>							
Average monthly benefit	\$226	\$488	\$928	\$1,490	\$2,352	\$3,853	\$4,495
Average final average salary	\$36,612	\$43,755	\$51,691	\$56,721	\$65,980	\$83,170	\$78,194
Number of retired members	46	681	820	526	788	1,033	1,166
<b>Period 1/1/2016 to 12/31/2016</b>							
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
<b>Period 1/1/2015 to 12/31/2015</b>							
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
<b>Period 1/1/2014 to 12/31/2014</b>							
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

<sup>1/</sup>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, 2023 (unaudited)

**Defined Benefit Plan 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	\$8,506	\$8,941
25-29	NA	NA	NA	NA	NA	NA	8,723	12,097
30-34	NA	NA	\$1,323	\$1,968	\$17,358	\$17,073	11,718	8,957
35-39	NA	NA	2,518	1,667	18,677	15,377	10,174	9,317
40-44	NA	NA	3,520	2,317	21,669	17,482	9,955	10,287
45-49	NA	NA	10,657	3,965	24,331	17,229	10,683	12,564
50-54	\$57,202	\$41,483	31,826	8,979	22,352	18,810	9,238	13,936
55-59	53,408	46,406	34,345	15,545	21,200	18,918	9,916	15,358
60-64	42,703	38,127	28,383	18,712	20,309	17,651	10,794	15,615
65-69	34,935	30,913	24,082	18,125	18,413	16,533	13,125	16,610
70-74	31,655	28,694	23,163	17,049	16,685	15,783	14,336	18,060
75-79	32,020	25,792	23,967	16,119	14,568	13,559	14,569	17,770
80-84	32,310	22,211	19,320	12,695	11,551	10,442	12,462	17,599
85-89	29,375	18,272	15,867	10,137	8,176	8,801	12,144	15,718
90 and over	24,079	12,886	15,511	9,070	10,052	7,609	9,411	12,878
<b>Total Average</b>	<b>\$34,934</b>	<b>\$27,856</b>	<b>\$24,123</b>	<b>\$14,860</b>	<b>\$18,384</b>	<b>\$15,991</b>	<b>\$12,535</b>	<b>\$16,378</b>

	Normal	Early	Disability	Beneficiary and Survivor
<b>Average Pension</b>	\$31,944	\$19,597	\$17,132	\$15,894
<b>Average Age</b>	72.9	67.4	65.9	74.9

Source: Pennsylvania State Employees' Retirement System

# STATISTICAL SECTION

## Schedule of Employer/Agency Participation

December 31, 2023 (unaudited)

### Defined Benefit Plan Schedule of Employer/Agency Participation - 5 Largest

# - Number of active members

% - Percentage of total active members

Year Ended	Department of Corrections		Department of Human Services		Department of Transportation		Pennsylvania State University		Pennsylvania State Police		Active Members for 5 Largest Employers/Agencies	
	#	%	#	%	#	%	#	%	#	%	#	%
2023 <sup>1/</sup>	14,634	14.92	14,050	14.32	11,543	11.76	6,926	7.06	6,339	6.46	<b>53,492</b>	<b>54.52</b>
2022 <sup>2/</sup>	14,424	14.96	14,360	14.90	11,352	11.78	6,627	6.87	6,283	6.52	<b>53,046</b>	<b>55.03</b>
2021 <sup>2/</sup>	14,701	15.02	15,147	15.48	11,841	12.10	6,455	6.60	6,385	6.52	<b>54,529</b>	<b>55.72</b>
2020 <sup>3/</sup>	15,143	15.00	16,074	15.92	12,023	11.91	6,653	6.59	6,362	6.30	<b>56,255</b>	<b>55.72</b>
2019 <sup>3/</sup>	15,359	14.93	16,404	15.95	12,144	11.81	6,868	6.68	6,432	6.25	<b>57,207</b>	<b>55.62</b>
2018 <sup>3/</sup>	15,610	15.15	16,396	15.92	12,088	11.74	6,772	6.57	6,353	6.17	<b>57,219</b>	<b>55.55</b>
2017 <sup>3/</sup>	15,435	14.99	16,624	16.14	12,221	11.87	6,308	6.13	6,255	6.07	<b>56,843</b>	<b>55.20</b>
2016 <sup>4/</sup>	15,752	15.05	17,205	16.44	12,312	11.77	6,367	6.09	6,219	5.94	<b>57,855</b>	<b>55.29</b>
2015 <sup>5/</sup>	15,362	14.60	17,085	16.27	12,434	11.82	6,111	5.81	6,459	6.14	<b>57,451</b>	<b>54.61</b>
2014 <sup>5/</sup>	14,916	14.28	16,870	16.15	12,325	11.80	6,123	5.86	6,323	6.05	<b>56,557</b>	<b>54.16</b>

Numbers may not add due to rounding.

<sup>1/</sup>The membership includes 35 employers, and the commonwealth is classified as its largest employer. The commonwealth is comprised of 64 agencies and when everything is evaluated separately, the Defined Benefit Plan has a total of 98 participating employers/agencies.

<sup>2/</sup>The membership includes 38 employers, and the commonwealth is classified as its largest employer. The commonwealth is comprised of 64 agencies and when everything is evaluated separately, the Defined Benefit Plan has a total of 101 participating employers/agencies.

<sup>3/</sup>The membership includes 38 employers, and the commonwealth is classified as its largest employer. The commonwealth is comprised of 65 agencies and when everything is evaluated separately, the Defined Benefit Plan has a total of 102 participating employers/agencies.

<sup>4/</sup>The membership includes 38 employers, and the commonwealth is classified as its largest employer. The commonwealth is comprised of 66 agencies and when everything is evaluated separately, the Defined Benefit Plan has a total of 103 participating employers/agencies.

<sup>5/</sup>The membership includes 39 employers, and the commonwealth is classified as its largest employer. The commonwealth is comprised of 66 agencies and when everything is evaluated separately, the Defined Benefit Plan has a total of 104 participating employers/agencies.

Source: Pennsylvania State Employees' Retirement System

**Schedule of Employer/Agency Participation**

December 31, 2023 (unaudited)

**Defined Contribution Plan Schedule of Employer/Agency Participation - 5 Largest<sup>1/</sup>**

# - Number of active participants

% - Percentage of total active participants

Year Ended	Department of Transportation		Department of Human Services		Liquor Control Board		Pennsylvania State University		Department of Labor and Industry		Active Participants for 5 Largest Employers/Agencies	
	#	%	#	%	#	%	#	%	#	%	#	%
2023 <sup>2/</sup>	3,671	15.59	3,514	14.93	2,477	10.52	2,330	9.90	1,499	6.37	<b>13,491</b>	<b>57.30</b>
2022 <sup>3/</sup>	2,785	15.72	2,805	15.84	1,923	10.86	1,709	9.65	1,098	6.20	<b>10,320</b>	<b>58.27</b>
2021 <sup>4/</sup>	2,324	17.29	2,360	17.56	1,309	9.74	1,120	8.33	797	5.93	<b>7,910</b>	<b>58.85</b>
2020 <sup>5/</sup>	1,650	16.12	1,979	19.33	1,030	10.06	847	8.27	678	6.62	<b>6,184</b>	<b>60.41</b>
2019 <sup>6/</sup>	1,062	15.59	1,357	19.91	634	9.30	606	8.89	385	5.65	<b>4,044</b>	<b>59.35</b>

Numbers may not add due to rounding.

<sup>1/</sup>Schedule is intended to show information for 10 years. Additional years will be displayed as they become available.

<sup>2/</sup>Participation includes 20 employers, and the commonwealth is classified as its largest employer. The commonwealth is comprised of 60 agencies and when everything is evaluated separately, the Defined Contribution Plan has a total of 79 participating employers/agencies.

<sup>3/</sup>Participation includes 20 employers, and the commonwealth is classified as its largest employer. The commonwealth is comprised of 59 agencies and when everything is evaluated separately, the Defined Contribution Plan has a total of 78 participating employers/agencies.

<sup>4/</sup>Participation includes 21 employers, and the commonwealth is classified as its largest employer. The commonwealth is comprised of 57 agencies and when everything is evaluated separately, the Defined Contribution Plan has a total of 77 participating employers/agencies.

<sup>5/</sup>Participation includes 20 employers, and the commonwealth is classified as its largest employer. The commonwealth is comprised of 57 agencies and when everything is evaluated separately, the Defined Contribution Plan has a total of 76 participating employers/agencies.

<sup>6/</sup>Participation includes 18 employers, and the commonwealth is classified as its largest employer. The commonwealth is comprised of 54 agencies and when everything is evaluated separately, the Defined Contribution Plan has a total of 71 participating employers/agencies.

Source: Pennsylvania State Employees' Retirement System



# STATISTICAL SECTION

## Schedule of Employer/Agency Participation

As of December 31, 2023 (unaudited)

### Complete Listing of Defined Benefit Plan Employers/Agencies<sup>1/</sup>

Administrative Office of Pennsylvania Courts\*  
Bloomsburg University Community Activities  
Bucks County Community College  
California University Student Association, Inc.  
Capitol Preservation Committee  
Center for Rural Pennsylvania\*  
Central Susquehanna Intermediate Unit  
Clarion University 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 and Economic Development\*  
Department of Conservation and Natural Resources\*  
Department of Corrections\*  
Department of Drug and Alcohol Programs\*  
Department of Education\*  
Department of Environmental Protection\*  
Department of General Services\*  
Department of Health\*  
Department of Human Services\*  
Department of Labor and Industry\*  
Department of Military and Veterans Affairs\*  
Department of Revenue\*  
Department of State\*  
Department of the Auditor General\*  
Department of Transportation\*  
East Stroudsburg University Student Activity Association, Inc.\*  
Edinboro University Services, Inc.\*  
Environmental Hearing Board\*  
Executive Offices\*  
Fish and Boat Commission\*  
Game Commission\*  
Harrisburg Area Community College\*  
Historical and Museum Commission\*  
House Democratic Appropriations Committee\*  
House of Representatives\*  
House Republican Appropriations Committee\*  
Independent Fiscal Office  
Independent Regulatory Review Commission\*  
Indiana University Student Co-op Association\*  
Insurance Department\*  
Joint State Government Commission\*  
Kutztown University Student Services, Inc.  
Legislative Budget and Finance Committee\*  
Legislative Data Processing Center\*  
Legislative Reference Bureau\*  
Lehigh Carbon Community College\*  
Liquor Control Board\*  
Local Government Commission\*  
Luzerne County Community College\*  
Mansfield University 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 Governor\*  
Office of the Lieutenant Governor\*  
Patient Safety Authority\*  
Pennsylvania College of Technology\*  
Pennsylvania Convention Center Authority\*  
Pennsylvania Emergency Management Agency\*  
Pennsylvania Gaming Control Board\*  
Pennsylvania Health Care Cost Containment Council\*  
Pennsylvania Higher Education Assistance Agency\*  
Pennsylvania Highlands Community College  
Pennsylvania Housing Finance Agency  
Pennsylvania Infrastructure Investment Authority\*  
Pennsylvania Municipal Retirement System\*  
Pennsylvania Parole Board\*  
Pennsylvania Port Authority\*  
Pennsylvania State Employees' Retirement System\*  
Pennsylvania State Police\*  
Pennsylvania State Senate\*  
Pennsylvania State University\*  
Pennsylvania Treasury\*  
Pennsylvania Turnpike Commission\*  
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  
State System of Higher Education\*  
Susquehanna River Basin Commission\*  
Thaddeus Stevens College of Technology\*  
West Chester University Student Services, Inc.\*  
Westmoreland County Community College\*

<sup>1/</sup>The membership includes 35 employers and the commonwealth is classified as its largest employer. The commonwealth is comprised of 64 agencies and when everything is evaluated separately, the Defined Benefit Plan has a total of 98 participating employers/agencies.

\*These employers currently have active participants in the Defined Contribution Plan.



**State Employees' Retirement System**

30 N 3rd St, Suite 150

Harrisburg, PA 17101-1716

1.800.633.5461

[www.SERS.pa.gov](http://www.SERS.pa.gov)