

As of and for the year ended December 31, 2022

DEFINED BENEFIT PLAN

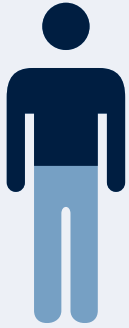
Traditional Pension

Defined Benefit Plan



\$35.7 million

FY 2023-24 Administrative Budget



In 2022 SERS retired **5,227** members and welcomed **10,898** new members

69.4% funded
\$16.4 billion unfunded liability

paid approximately **\$3.9 billion** in pension benefits

\$33.7 billion in assets

101 employers

55% of SERS active employees belong to post-Act 120 classes of service

SERS Fund 2022 Investment Return **-12.2%**

135,647 retirees & beneficiaries

96,395 active members

average retired member **73** years old receives **\$31,331** per year at full retirement

average active member **47** years old **12** years of service

DEFINED CONTRIBUTION PLAN

Investment Option

Defined Contribution Plan



\$5.3 million

FY 2023-24 Administrative Budget

\$3.0 million distributions/withdrawals

\$103.3 million in assets

25,306 accounts

101 employers

Contributions participant \$26.2 million employer \$16.6 million

DEFERRED COMPENSATION PLAN

Supplemental Benefit

Deferred Compensation Plan



\$1.8 million

FY 2023-24 Administrative Budget (majority of plan costs paid by plan participants)

\$320 million distributions/withdrawals

\$4.1 billion in assets

56,752 accounts

76 eligible employers

Participant Contributions \$177 million

SERS 2023 Supplemental Budget Book

February 16, 2023

Honorable Matthew D. Bradford
Democratic Chairman
House Appropriations Committee
512 E. Main Capitol
Harrisburg, PA 17120-2070

Honorable Scott Martin
Republican Chairman
Senate Appropriations Committee
281 Main Capitol
Harrisburg, PA 17120-3016

Honorable Seth Grove
Republican Chairman
House Appropriations Committee
245 Main Capitol
Harrisburg, PA 17120-2094

Honorable Vincent J. Hughes
Democratic Chairman
Senate Appropriations Committee
545 Main Capitol
Harrisburg, PA 17120-3007

Chairmen and Members of the Appropriations Committees:

I am pleased to present you with supplemental budget information for the Pennsylvania State Employees' Retirement System (SERS) for FY 2023-24. These materials provide an in-depth analysis and details regarding SERS' request for spending authority, its operations, and its investment portfolio. I trust this information will be useful in the deliberations related to the development and passage of the FY 2023-24 commonwealth budget.

This year, 2023, is an especially auspicious time for SERS, as it marks the 100th anniversary of the agency's establishment, under the authority of Act 331 (Public Law 858), signed into law by Governor Gifford Pinchot on June 27, 1923.

Since that time, 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. At times, the challenges have been significant – the Great Depression, World War II, the Energy Crisis of the mid-1970s, the Dot-Com Bubble of the late 1990s, the Great Recession of 2008, and, most recently, the stock market decline of 2022, which, thanks to a variety of factors – most notably the war in Ukraine, high rates of inflation, and chronic supply chain issues – saw its worst calendar year performance since 2008. Thankfully, these challenges have been rare anomalies in the history of the agency.

Today, despite these challenges, SERS remains a strong and viable retirement system.

As we enter 2023, we remain committed to the legacy of those who came before us in providing high quality service in meeting the needs and expectations of our members and participants, who can be assured that their retirement system is administered well, and that staff carefully manages the funds entrusted to the board.

As of December 31, 2022, the value of the SERS fund was \$33.7 billion, with an estimated calendar year return of approximately -12.2%, net of fees.

For FY 2023-24, SERS proposes a \$35.7 million spending authority, which is drawn from SERS funds, not general government operating accounts, for administration of the Defined Benefit Plan, \$5.3 million for the Defined Contribution Plan, and \$1.8 million for the Deferred Compensation Plan.

SERS expects to receive nearly \$2.1 billion (34.16% of payroll) from commonwealth employers during this fiscal year. The largest component of that rate, 25.78%, was necessary to pay the unfunded liability.

This year SERS will serve nearly 240,000 members and participants, and administer more than 56,000 Deferred Compensation Plan accounts. In 2022, the average retiree who worked to full retirement age was 73 years old and received an average pension annuity of \$31,331. The pension system paid out approximately \$3.9 billion in pension benefit payments in 2022, of which approximately \$3.5 billion was paid to members living in Pennsylvania.

Thanks to sound management, our continuing efforts to achieve greater efficiencies in both financial and administrative processes, and consistent full funding from the General Assembly in recent years, we continue to progress toward our long-term goal of eliminating our unfunded liability.

We are committed to doing our best and we thank you for your continued support.

Sincerely,



David R. Fillman
Chairman

SERS 2023 SUPPLEMENTAL BUDGET BOOK

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SERS Organization

SERS ORGANIZATION

Agency Description

Established in 1923, SERS is one of the nation's oldest and largest statewide retirement plans for public employees. SERS is responsible for administering nearly \$38 billion in assets held in trust for nearly 240,000 members and participants, as of December 31, 2022.

Most state employees are required to participate in a SERS-administered retirement plan, as directed by the State Employees' Retirement Code. SERS is responsible for administering the Retirement Code in accordance with the expressed intent of the General Assembly and bears a fiduciary obligation to plan beneficiaries, including state employees and retirees.

State law provides that the administration of the SERS benefit plans and the fiduciary responsibility for their management be vested in an 11-member board. The management of SERS is the responsibility of the executive director who employs the staff needed to administer all SERS retirement plans and, with the approval of the board, contracts for professional services.

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

- **Hybrid Plan** – is a combination of two Internal Revenue Code-defined plans – a traditional pension or 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 involves only voluntary employee contributions.

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 A-6 class of service or the Defined Contribution 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.

Each plan is described in greater detail, including participation, asset value, and contribution rates, in the following sections.

Recent Changes

In 2022, the agency made the following changes:

- **New Deputy Executive Director of Office of Member and Participant Services**
In June, 2022, the agency hired Brenda Cunard as Deputy Executive Director of Member and Participant Services. Brenda was a retirement counselor in SERS' Pittsburgh Regional Office from 2008-2013, where she provided one-on-one counseling in a multi-county area for retiring members regarding retirement benefits, and assisted active members

SERS ORGANIZATION

Agency Description

and annuitants on legislation, provisions, rules and regulations of the State Employees' Retirement Code. Prior to rejoining SERS, she served as a retirement communications manager at PSERS, since August 2016, managing a staff of professionals responsible for the communication of retirement benefit information and counseling in six of PSERS' regional offices.

- **New E-Signature Document Management Platform**

Beginning in early 2022, the agency began using a new cloud-based E-signature and document management platform that lets multiple users access and sign a wide array of important papers. The platform, named DocuSign, also gives users the ability to quickly check a document's status, send reminders, view audit trails, and securely store important documents online. Making these documents electronically accessible, shareable, trackable, and secure, will help to ease the burden of paperwork that can be so complex and time-consuming.

- **New Strategic Planning Initiative**

Beginning in November, 2022, SERS launched an ambitious initiative as part of the strategic planning process to transform SERS into a digital workplace

with the aim of reducing the use of paper in business operations wherever practicable. The underlying premise is that creating a more streamlined workflow and having access to important information across the enterprise through electronic data will help to improve efficiencies and customer service at SERS. It will also serve to expand telework capabilities to more business processes in more business areas, as well as serve as an additional layer of insulation against business disruptions brought on by another pandemic shutdown or some other event.

- **Agency-Wide Policy and Process Initiative**

Throughout 2022, SERS engaged in an agency-wide policy and process initiative to update existing, and draft new, policies and processes in order to document our internal controls and operational practices. Policies and processes support a sound internal control structure and assist employees (especially those new to SERS) in performing their job responsibilities accurately and efficiently. To aid employees with this critical work, SERS' Chief Compliance Officer held educational sessions and distributed written materials about policies, processes, and PolicyTech, our central repository for SERS policy and process documents.

SERS ORGANIZATION

Mission, Vision, Strategic Priorities & Guiding Principles

In the fall of 2020, SERS adopted a new strategic plan to guide the agency's work through June 30, 2023. This plan lays out the following mission, vision, strategic priorities, and guiding principles.

Mission

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

Vision

SERS' vision is to become fully funded and the recognized leader among pension organizations providing innovative, best-in-class services and products to our customers and stakeholders.

Strategic Priorities

- Modernize Systems
- Leverage External Engagement
- Invest Efficiently and Accountably
- Improve Member and Participant Experiences
- Cultivate Workforce Transformation

Guiding Principles

- Demonstrate Integrity
- Develop and Empower Employees
- Focus on the Customer Experience
- Fulfill Fiduciary Obligations
- Lead Innovation and Improvement
- Learn from Mistakes
- Safeguard Information, Facilities, and Staff
- Share Knowledge
- Think Strategically

The SERS Board and staff currently are working on a new, four-year strategic plan framework with a target date of July 1, 2023 for implementation.

SERS ORGANIZATION

Services & Operations

The approximately 220 employees who currently work for SERS share a singular focus: serving SERS' members and participants. Some SERS employees serve members by investing and overseeing nearly \$38 billion in plan assets. Other SERS employees serve members by ensuring that every payment is made correctly and on time. Still others audit and account for plan assets, provide key membership data, or answer member and participant questions in person or over the phone.

Some work is behind-the-scenes, while other work touches members and participants more directly.

Examples of services offered to active and vested members and participants include:

- Issuing annual statements that present a snapshot of each of the member's and participant's SERS plans in one document
- Offering individual and group educational sessions about retirement benefits
- Helping with the purchase of service, change of beneficiaries, etc.
- Calculating retirement, disability, and vesting estimates
- Providing one-on-one counseling for those leaving state service
- Walking members step-by-step through their benefit application process

Examples of services offered to retired members include:

- Issuing annual statements and tax forms
- Providing income tax withholding, direct deposit, address change, and other forms, as requested, as well as assistance in filling out and submitting forms, as needed
- Processing changes to retiree health coverage
- Helping members understand the implications of pension changes related to marriage, divorce, or death
- Tracking and reissuing pension payments
- Assisting spouses, children, and other survivors upon the death of a SERS member or participant

SERS ORGANIZATION

Services & Operations

Approximately a fifth of SERS employees are wholly dedicated to providing services to members and participants through a network of regional offices statewide, including:

Bensalem Regional Office. Serving retired members who live and active members who work in Berks, Bucks, Chester, Delaware, Lancaster, Montgomery, and Philadelphia counties.

Harrisburg Regional Office. Serving retired members who live and active members who work in Adams, Cumberland, Dauphin, Lebanon, Perry, and York counties.

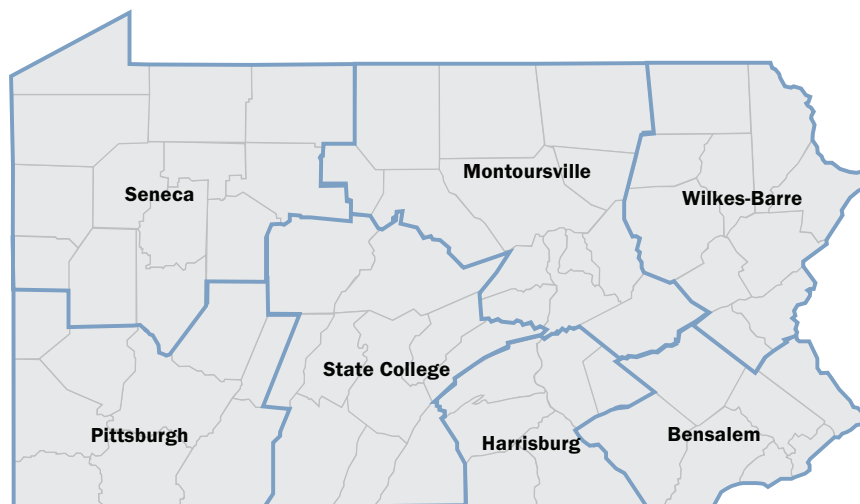
Montoursville Regional Office. Serving retired members who live and active members who work in Bradford, Cameron, Clinton, Columbia, Lycoming, Montour, Northumberland, Potter, Schuylkill, Snyder, Sullivan, Tioga, and Union counties.

Pittsburgh Regional Office. Serving retired members who live and active members who work in Allegheny, Beaver, Western Cambria, Fayette, Greene, Indiana, Somerset, Washington, and Westmoreland counties.

Seneca Regional Office. Serving retired members who live and active members who work in Armstrong, Butler, Clarion, Crawford, Elk, Erie, Forest, Jefferson, Lawrence, McKean, Mercer, Venango, and Warren counties.

State College Office. Serving retired members who live and active members who work in Bedford, Blair, Eastern Cambria, Centre, Clearfield, Franklin, Fulton, Huntingdon, Juniata, and Mifflin counties.

Wilkes-Barre Regional Office. Serving retired members who live and active members who work in Carbon, Lackawanna, Lehigh, Luzerne, Monroe, Northampton, Pike, Susquehanna, Wayne, and Wyoming counties.



SERS ORGANIZATION

Services & Operations

To achieve its mission overall, SERS is organized into the following business units.

The **Executive Office** provides strategic leadership and administrative oversight of agency operations. The Executive Director (Board Secretary) is expressly charged with statutorily prescribed duties including review and analysis of legislation, maintaining files and records required for actuarial evaluations, and responding to information inquiries and requests from press, commonwealth officials, state employees and the general public, among others. The executive office directly serves the State Employees' Retirement Board, including facilitating communications, and managing meetings and documentation.

The **Communications and Policy Office**, a component of the executive office, engages with the General Assembly and Administration, as well as other key stakeholders, on legislation and other policy-related matters; administers the agency's right-to-know program; serves as liaison to the media; develops educational materials in print and electronic format about SERS retirement plans and the agency; works with the third-party administrator to market the Deferred Compensation Plan; manages the agency's internet and intranet sites and social media accounts; administers two e-mail accounts to help members and participants who have questions and to help the public engage with agency leadership; works with industry and thought leaders at the state and national levels to share best practices, common concerns, developing issues, and new solutions; and provides an array of communications support to the agency.

The **Office of Member and Participant Services** provides direct assistance to SERS active, vested, and retired members and participants, as well as their families. It conducts individual and group educational sessions statewide. The office also supports SERS employers and processes member and

participant enrollments, retirements, status changes, payments, and a host of other transactions. This office is divided into two main bureaus, the **Bureau of Benefit Administration** and the **Bureau of Member and Participant Services**.

The **Investment Office** works closely with the State Employees' Retirement Board to oversee investments in SERS' retirement plans. The office recommends and implements investment policies; manages the strategic asset allocation; monitors fund cash flow, investment managers, fund risks, and performance; and researches and recommends investment opportunities. The office also maintains a high level of expertise related to the analysis of capital and global markets.

The **Office of Financial Management** is responsible for the accounting and financial reporting associated with SERS' retirement plans. It ensures the appropriate accounting controls exist and the financial statements for each plan are presented in accordance with generally accepted accounting principles. It administers all financial transactions, including member and participant payments; member, participant, and employer contributions; investment purchases, sales and other activity; and oversees the budgeting and expense monitoring for all funds.

The **Internal Audit Office** tests business processes and internal controls to confirm that they are adequate and operating properly to ensure vigilant stewardship of SERS funds. It performs on-site audits of investment consultants and managers, as deemed necessary. The office also coordinates independent, external audits of SERS on an annual basis and performs special projects at the direction of the State Employees' Retirement Board and the Audit, Risk, and Compliance Committee.

SERS ORGANIZATION

Services & Operations

The **Chief Counsel's Office** advises the State Employees' Retirement Board on matters related to member appeals and administrative hearings, securities actions and litigation matters, the administration of SERS' retirement plans, and other general legal issues for which the board requests advice. In addition, the office reviews, negotiates, assists in drafting, and finalizes all investment contracts, as well as other general business contracts. The office also provides legal support related to legislative drafting, right-to-know requests, and member transactions.

- The **Chief Compliance Officer** is housed administratively in the Chief Counsel's Office. The Chief Compliance Officer manages SERS Compliance Program to ensure that the SERS Board, senior management, and SERS' employees follow governing laws and regulations, as well as all board and SERS policies and procedures. SERS Chief Compliance Officer also ensures that behavior throughout the agency meets the highest standards of ethics and integrity required by SERS and the Commonwealth of Pennsylvania.

The **Office of Administration** is responsible for overseeing all administrative support functions for the agency which includes information technology, telecommunications, human resources, strategic planning and

project management, board education, and board governance. The office is comprised of the following:

- The **Bureau of Information Technology** administers the agency's computing and telecommunications architecture. It ensures the performance and security of complex applications and databases, which contain sensitive personal and financial information and are relied upon to manage member and participant accounts, process payments, and account for funds. The bureau also links the regional offices, develops applications to provide members and participants with online access to SERS information, and provides user support.
- The **Human Resources Office** is responsible for the development, implementation, and administration of agency personnel policies involving such areas as employee relations, staffing, compensation, classification, training, and time administration.
- The **Operations Office** provides a variety of agency support functions including contracting, purchasing, leasing, facilities management, safety and security, continuity of operations, printing, mailing, fleet management, records retention, and surplus.

SERS ORGANIZATION

Services & Operations



As of 12/31/22

SERS ORGANIZATION

Proposed FY 2023-24 Budget

The budget includes the costs to administer SERS' defined benefit pension plan. The plan receives revenue from employee contributions, employer contributions, and income derived from its investment portfolio. Funds in the plan

are used to pay retirement, disability, and death benefits to members and their beneficiaries, as well as the associated costs of administration. These funds are appropriated annually by the general assembly.

Proposed FY 2023-24 Administrative Budget

	Rebudget FY 2019-20	Rebudget FY 2020-21	Rebudget FY 2021-22	Rebudget FY 2022-23	Budget Request
Personnel Services	\$18,380,500	\$19,030,000	\$20,529,514	\$19,828,000	\$21,142,000
Operational					
Travel	90,000	115,050	122,350	128,651	182,000
Training	103,300	167,500	216,350	320,368	267,440
Communication Services	548,000	659,100	518,985	505,125	538,136
Consultants - Non EDP	1,053,500	1,301,200	1,090,000	995,000	1,350,000
Legal Services/Fees	755,500	525,500	280,500	255,500	270,500
Specialized Services	1,221,600	912,300	1,118,165	1,774,422	2,010,450
Advertising	8,000	5,000	5,000	5,000	8,000
IT Consulting	4,228,000	2,451,100	4,046,674	3,770,499	4,344,600
Contracted Maintenance Non-IT	47,300	58,000	60,500	60,500	72,100
Hardware/Software and Maintenance	1,639,000	2,068,900	1,792,838	2,257,920	2,093,883
Real Estate	1,971,000	1,772,500	1,994,500	2,358,580	1,513,625
Vehicles	26,800	29,100	30,400	30,400	60,500
Office Equipment	159,400	376,000	170,950	149,000	171,200
Other Rentals/Leases	4,000	10,000	10,000	10,050	10,050
Office Supplies	106,000	84,350	81,400	119,900	75,435
Educational Supplies	1,700	500	3,000	3,600	4,175
Motorized Equipment Maintenance	6,000	10,100	10,100	10,600	10,000
Postage	595,500	595,500	718,391	587,150	568,292
Freight	4,000	2,700	2,750	4,000	4,000
Printing	132,000	150,200	142,050	131,150	137,610
Subscriptions & Licensing	58,100	57,500	179,250	117,547	95,600
Membership Dues	37,900	53,700	74,713	90,305	94,525
Conference Expenses	31,900	12,000	15,320	12,320	44,625
Insurance, Surety, & Fidelity Bonds	13,000	13,000	13,000	5,000	5,000
Treasury Services	1,500,000	0	0	0	0
Other Operational	336,000	1,485,200	972,300	1,647,413	1,484,254
Total Operational	14,677,500	12,916,000	13,669,486	15,350,000	15,416,000
Fixed Assets	250,000	250,000	370,000	370,000	650,000
Less Directed Commissions	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000
Total Annual Budget	\$31,808,000	\$30,696,000	\$33,069,000	\$34,048,000	\$35,708,000

SERS ORGANIZATION

Proposed FY 2023-24 Budget

Directed commissions are reimbursements to SERS for a portion of the fee paid to a broker for executing a trade on behalf of SERS.

Directed commissions are included as part of the administrative budget as augmenting revenue and are not appropriated.

Directed Commission Revenue & Expense

	FY 2022-23 Budget	FY 2023-24 Budget
Beginning Balance	\$3,739,643	\$2,339,643
Directed Commission Revenue	100,000	50,000
Total Available	3,839,643	2,389,643
Directed Commission Expense	1,500,000	1,500,000
Ending Balance	\$2,339,643	\$889,643

SERS ORGANIZATION

Proposed FY 2023-24 Budget

This budget includes the investment related expenses associated with the defined benefit pension plan's investment portfolio.

These expenses are netted from investment earnings and are not appropriated.

Proposed FY 2023-24 Investment Budget

	Rebudget FY 2019-20	Rebudget FY 2020-21	Rebudget FY 2021-22	Rebudget FY 2022-23	Budget Request
Personnel Services	\$4,601,000	\$4,894,000	\$5,176,919	\$5,381,000	\$5,972,000
Operational					
Travel	302,500	309,000	156,400	150,228	114,700
Training	61,100	72,200	64,060	65,800	62,500
Consultants - Non EDP	4,162,500	4,095,000	3,890,000	4,300,400	4,175,374
Legal Services/Fees	200,000	280,000	80,000	120,000	120,000
Specialized Services	214,000	98,400	93,600	254,467	395,476
Advertising	34,000	15,000	15,000	10,000	15,000
IT Consulting	0	129,200	135,607	98,767	150,000
Hardware/Software and Maintenance	2,700	2,700	189,081	313,000	154,000
Real Estate	0	28,000	31,000	177,920	179,000
Vehicles	0	1,200	1,000	0	1,000
Office Equipment	0	37,500	5,500	2,500	3,000
Office Supplies	1,700	1,600	1,800	800	800
Printing	1,000	1,000	600	400	400
Subscriptions & Licensing	1,434,200	1,410,900	1,632,480	637,780	553,310
Membership Dues	66,800	56,300	57,052	59,950	23,840
Conference Expenses	2,500	0	3,100	3,100	3,100
Other Operational Expenses	0	0	79,500	53,888	54,500
Total Operational	6,483,000	6,538,000	6,435,780	6,249,000	6,006,000
Total Annual Budget	\$11,084,000	\$11,432,000	\$11,612,699	\$11,630,000	\$11,978,000

SERS ORGANIZATION

Proposed FY 2023-24 Budget

This budget includes the costs to administer SERS' Defined Contribution Plan, which opened for enrollment on January 1, 2019. The Defined Contribution Plan receives revenue from employee contributions, employer contributions, employer funding, and income derived from its investment portfolio. Funds in this plan are used to pay benefits to participants and their beneficiaries, as well as administrative costs.

All fees, costs, and expenses of administering the plan were paid by commonwealth appropriations until FY 2020-21. At that time, a per-participant assessment was implemented and charged to employers to cover these administrative costs. Additionally, Act 2020-94, which was passed in fall 2020, allows the plan to retain all unvested employer contributions after June 30, 2020, and use them to help pay administrative costs.

Proposed FY 2023-24 Defined Contribution Plan Budget

	Rebudget FY 2019-20	Rebudget FY 2020-21	Rebudget FY 2021-22	Rebudget FY 2022-23	Budget Request
Personnel Services	\$2,357,000	\$2,081,000	\$2,256,000	\$2,417,000	\$2,782,000
Operational					
Travel	12,400	25,700	8,000	4,391	4,000
Training	8,500	12,200	12,500	1,200	1,200
Communication Services	0	5,400	1,015	375	48,864
Consultants - Non EDP	125,000	122,000	96,500	98,384	97,000
Legal Services/Fees	200,000	150,000	100,000	100,000	100,000
Specialized Services	541,000	1,219,000	1,290,000	1,385,000	1,845,000
Advertising	0	2,000	0	0	0
IT Consulting	100,000	280,000	357,513	56,000	62,000
Hardware/Software and Maintenance	0	27,900	32,162	108,080	102,116
Facilities and Equipment	0	100	0	0	0
Real Estate	148,700	180,000	78,000	133,920	133,847
Office Equipment	0	25,900	3,250	0	0
Office Supplies	0	10,300	3,250	9,600	4,365
Educational Supplies	0	100	0	0	0
Postage	101,000	250,000	30,000	13,350	19,708
Freight	0	100	0	0	0
Printing	48,100	52,700	25,000	2,800	10,000
Subscriptions & Licensing	0	200	0	0	0
Membership Dues	0	4,600	4,810	900	900
Conference Expenses	1,300	2,500	0	0	0
Insurance, Surety, & Fidelity Bonds	0	100,000	100,000	100,000	100,000
Other Operational	209,000	5,300	0	0	0
Total Operational	1,495,000	2,476,000	2,142,000	2,014,000	2,529,000
Total Annual Budget	\$3,852,000	\$4,557,000	\$4,398,000	\$4,431,000	\$5,311,000

SERS ORGANIZATION

Proposed FY 2023-24 Budget

This budget includes the administrative costs to administer SERS' Deferred Compensation Plan. The Deferred Compensation Plan enables eligible employees to voluntarily defer a portion

of their compensation into a supplementary retirement savings plan. Administrative costs are primarily covered by participants through a fee assessment on their account.

Proposed FY 2023-24 Deferred Compensation Plan Budget

	Rebudget FY 2022-23	Budget Request
Personnel Services	\$1,190,000	\$1,565,000
Operational		
Travel	2,058	2,000
Training	600	600
Consultants - Non EDP	155,342	155,000
Legal Services/Fees	15,000	15,000
Specialized Services	25,000	25,000
Printing	20,000	10,000
Other Operational	45,000	40,000
Total Operational	263,000	247,600
Total Annual Budget	\$1,453,000	\$1,812,600

SERS ORGANIZATION

Legislation

Legislation Enacted During 2022

Act 2022-38: Empowering the PA National Guard to Provide Cybersecurity Support

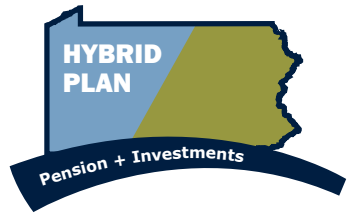
Signed into law on July 7, 2022, Act 2022-38 amended Title 51 to modify the authorized missions of the Pennsylvania National Guard to support State and local governments and designated critical infrastructure with cybersecurity functional support and nongovernmental and educational institutions with cyber training or exercises and perform other necessary military duties to the extent that money is appropriated and available for special State duty.

Act 2022-132: Russia and Belarus Divestiture

Signed into law on November 3, 2022, Act 2022-132 (formerly H.B. 2447) established the Russia and Belarus Divestiture Act in response to Russia's illegal invasion of the sovereign nation of Ukraine. The Act provides for divestiture by the State Treasurer, the State Employees' Retirement System, the Public School Employees' Retirement System, and the Pennsylvania Municipal Retirement System of investments in entities doing business in Russia and Belarus.

Act 2022-151: Update to Breach of Personal Information Act

Signed into law on November 3, 2022, Act 2022-151 (formerly S.B. 696), amends the Breach of Personal Information Notification Act, further providing for title of act, for definitions and for notification of breach; and prohibiting employees of the Commonwealth from using non-secured internet connections. The Act provides increased security for the protection of "personal information" and "medical information," as well as a robust mandate to encrypt personal information being transferred via electronic messaging.



Hybrid Plan



17,124
hybrid members

16,475
Class A-5

649
Class A-6

101
employers

HYBRID PLAN

Plan Description

The default retirement plan for most new state employees is the Hybrid Plan A-5 class of service that launched January 1, 2019, as established by Act 2017-5.

In this plan, a portion of the employee's retirement benefit comes from a defined benefit pension plan, which provides guaranteed monthly payments for life based on a calculation, and a portion comes from a defined contribution investment plan, which provides income in retirement based on the balance in the employee's personal investment account. Employers and employees both contribute to this plan.

The SERS Board administers the SERS pension fund, that provides the guaranteed monthly payments in retirement. The board also selects the investment options and contracts through a competitive bid with the third-party administrator of the defined contribution investment plan, currently Empower. For more information on the personal investment plan portion of the benefit, its investment options, or the third-party administrator, see the [Defined Contribution Plan section](#).

There are two classes of service in this plan, the A-5 and A-6 classes of service. The class of service defines the mandatory employee and employer contribution rates and how quickly the pension portion of the retirement benefit grows each year. For more information on the pension plan, including the benefit calculation, see the [Defined Benefit Plan section](#).

The pension portion of the hybrid benefit grows at a slower rate than the traditional pension-only plan - at either 1.25% or 1% of the employee's final average salary for each year they work, compared to between 2% and 4% in the traditional pension-only plan. The growth or

"accrual" rate is determined by the employee's class of service in the pension system:

A-5 Class of Service

Participants in the Hybrid Plan A-5 class of service contribute a total of 8.25% of their pay toward their retirement benefit, which is split between the two plans, with 5% going toward the traditional pension plan and 3.25% going toward the investment plan. Participants may make additional voluntary contributions toward the investment plan.

The amount employers contribute toward the pension portion of the benefit is actuarially calculated each year based on the assets and liabilities of the SERS pension fund. Employers also contribute an amount equal to 2.25% of the employee's pay toward the investment plan portion of the retirement benefit.

The pension portion of the benefit is guaranteed to grow by 1.25% of the employee's final average salary for each year they work.

A-6 Class of Service

Participants in the Hybrid Plan A-6 class of service contribute a total of 7.5% of their pay toward their retirement benefit, which is split between the two plans, with 4% going toward the traditional pension plan and 3.5% going toward the investment plan. Participants may make additional voluntary contributions toward the investment plan.

The amount employers contribute toward the pension portion of the benefit is actuarially calculated each year based on the assets and liabilities of the SERS pension fund.

HYBRID PLAN

Plan Description

Employers also contribute an amount equal to 2% of the employee’s pay toward the investment plan portion of the retirement benefit.

The pension portion of the benefit is guaranteed to grow by 1% of the employee’s final average salary for each year they work.

The employee is eligible for monthly pension payments, or “vested” in the pension system, after working 10 years and they are eligible for

distribution of the employer contributions toward their investment account after working three years. Employee contributions are immediately vested and eligible for distribution upon retirement.

While new employees are automatically enrolled in the Hybrid Plan, A-5 class of service, they have the option to elect either the A-6 class of service or to forgo the traditional pension component altogether and participate exclusively in the Defined Contribution Plan.

Hybrid Plan Statistics

as of December 31, 2022

Participants	17,124 total 16,475 A-5 Class of Service 649 A-6 Class of Service
Assets	see the <i>Defined Contribution Plan</i> and <i>Defined Benefit Plan</i> sections for the assets in each plan.
Number of Employers	101

**DEFINED
CONTRIBUTION
PLAN**

Investment Option

Defined Contribution Plan

As of and for the year ended December 31, 2022

\$3.0 million

distributions/withdrawals
in 2022

\$103.3

million in
assets



25,306

accounts

101

employers

Contributions

participant **\$26.2 million**
employer **\$16.6 million**

Total FY 2023-24 Planned Budget



\$5.3 million

**\$2.8
million**

personnel

**\$2.5
million**

operations

Excerpts from operations =

specialized services **\$1.8 million**

real estate **\$133,847**

hardware/software & maintenance **\$102,116**

legal services **\$100,000**

IT consulting **\$62,000**

postage **\$19,708**

DEFINED CONTRIBUTION PLAN

Plan Description

While the Hybrid Plan A-5 class of service is the default plan for most new state employees, they have the option to forgo the traditional pension component of those plan options and participate exclusively in the Defined Contribution Plan.

Employees in the Defined Contribution Plan contribute 7.5% of their pay and their employer contributes an amount equal to 3.5% of the employee's pay toward the employee's investment account.

The employee is eligible for distribution of the employer contributions, or is "vested" in this plan, after working three years. Employee contributions are immediately vested and eligible for distribution upon retirement.

In this plan, the amount of money an employee has for retirement is based on the balance in the employee's personal investment account.

The SERS Board selects the investment options offered through this plan, contracts with investment managers, and contracts through a competitive bid with the third-party administrator of the plan, currently Empower. Empower maintains participant records, carries out investment transactions on behalf of the participants, and counsels participants.

Investment options comprise a series of target date funds that include a post-retirement date fund, equity funds, fixed income funds, a money market fund, and a self-directed brokerage option.

On December 31, 2022, participant accounts totaled \$103.3 million.

Plan administrative costs during 2022 were funded using unvested employer contributions from terminated employees and a per-participant assessment charged to employers, which was lower than the prior year's charge, as described in this section.

As the plan becomes more established, we are working to identify potential cost-saving initiatives. During 2022, staff continued examining internal and third-party administrator processes to find efficiencies and see where costs could be reduced and/or services improved.

Recent Changes

In 2022, the plan experienced the following changes:

- **Decreased Per-Participant Charge**
During FY 2022-23, employers paid \$95.86 for each of their employees in the plan, a decrease of approximately \$70 from the prior year. The charge covers the cost of plan administration and is based on the cost of operating the plan and the total number of employees actively enrolled in the plan as of Dec. 31, of the prior year. The decrease was mainly due to:
 - Act 2020-94, which allowed us to use "unvested" employer contributions for plan administration. Employees are "vested" in the Defined Contribution Plan after working three years. If an employee leaves state employment before they are vested, the contributions their employer or employers made toward their personal investment account stay in the plan as "unvested" contributions.
 - Credit for projected current fiscal year surplus
 - The increase in the number of active participants in the retirement plan that opened to participants in 2019

DEFINED CONTRIBUTION PLAN

Plan Description

- Began Publishing Investment Manager Evaluation Lists Online**
 Each quarter, our general investment consultant prepares a list of the plan’s investment managers identified as experiencing quantitative or qualitative pattern changes worthy of greater review by SERS’ investment office and external investment consultants. While placement of an investment manager on the list does not automatically serve as evidence of a problem with the manager, it indicates that staff and consultants are more closely monitoring the manager. We began posting the quarterly lists on the agency’s public website so that plan

participants can be aware of our increased monitoring of managers and generally, why. You can view the list at <https://www.sers.pa.gov/DefinedContributionPlan-Investing.html>.

- Modernizing Employer Contribution Payments**
 Working to streamline the payment process and increase payment security, staff collaborated with a number of participating employers that submitted participant contributions by paper checks and converted the checks to electronic payments. Staff continue progressing on this initiative.

Defined Contribution Plan Statistics

as of and for the year-ended December 31, 2022

Participants	25,306 total accounts 17,711 participants contributing to the plan Hybrid Plan participants 17,124 Defined Contribution Plan participants 587 7,595 inactive accounts
Assets	\$103.3 million
Number of Employers	101
Total Participant Mandatory Contributions	\$24.8 million
Total Voluntary After-Tax Contributions	\$1.4 million
Total Employer Contributions	\$16.6 million
Total Rollovers into the Plan	178 totaling \$5.0 million
Total Rollovers Out of the Plan	200 totaling \$1.1 million
Total Distributions/Withdrawals	1,211 totaling \$3.0 million

DEFINED CONTRIBUTION PLAN

Participation, Assets, Performance, and Fund Expense

Defined Contribution Plan Investment Options

Participation, Assets, Performance, and Fund Expense

as of December 31, 2022

Fund Name	Participants	Fund Balance	Inception Date	Estimated Calendar Year, Net-of-Fees Returns					Max Total Investment Fund Expense ^{1/}
				1 Year	3 Year	5 Year	10 Year		
Post Retirement Date Fund	515	\$1,469,918	08-2005	(14.63%)	0.74%	2.68%	4.02%	0.0775%	
2025 Retirement Date Fund	1,052	3,972,636	07-2006	(15.23)	1.20	3.18	5.29	0.0775	
2030 Retirement Date Fund	1,853	9,261,669	08-2005	(15.97)	1.87	3.78	5.99	0.0775	
2035 Retirement Date Fund	2,305	9,243,344	07-2006	(16.67)	2.50	4.35	6.66	0.0775	
2040 Retirement Date Fund	2,356	10,552,325	08-2005	(17.35)	3.04	4.83	7.22	0.0775	
2045 Retirement Date Fund	2,483	10,841,016	07-2006	(17.89)	3.53	5.21	7.68	0.0775	
2050 Retirement Date Fund	2,722	11,702,247	09-2007	(18.20)	3.79	5.40	7.94	0.0775	
2055 Retirement Date Fund	3,107	11,918,863	05-2010	(18.27)	3.85	5.44	8.06	0.0775	
2060 Retirement Date Fund	3,651	11,291,321	11-2014	(18.28)	3.84	5.43	NA	0.0775	
2065 Retirement Date Fund	4,425	8,236,654	09-2019	(18.30)	3.77	NA	NA	0.0775	
U.S. Large Company Stock Index Fund	999	4,081,906	12-1994	(18.12)	7.67	9.43	12.57	0.0150	
U.S. Small/Mid Company Stock Index Fund	251	766,890	08-1998	(26.13)	3.26	5.06	9.74	0.0250	
U.S. All Company Stock Index Fund	738	1,465,625	01-2011	(19.23)	7.13	8.73	12.11	0.0250	
Global Non-U.S. Stock Index Fund	754	2,165,623	03-2009	(15.92)	0.30	1.14	3.95	0.0450	
U.S. Bond Index Fund	678	1,069,413	02-1995	(12.94)	(2.71)	0.02	1.02	0.0200	
U.S. Short-Term Bond Index Fund	299	130,477	12-2017	(3.69)	(0.32)	0.91	NA	0.0200	
U.S. Treasury Inflation Protected Security Index Fund ^{2/}	440	335,887	07-2007	(11.76)	1.22	2.11	NA	0.0200	
Short-Term Investment Fund ^{3/}	136	4,592,993	10-1988	1.59	0.77	1.34	0.89	0.0000	
Charles Schwab Self-Directed Brokerage ^{4/}	34	156,694	NA	NA	NA	NA	NA	NA	

^{1/}Maximum possible expense that can be charged.

^{2/}There was a break in the return history of the TIPS fund between 2010 and 2017, since there were no participants during that time.

^{3/}Short-Term Investment Fund balance includes \$3.8 million in unvested employer contributions forfeited to the Plan.

^{4/}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.

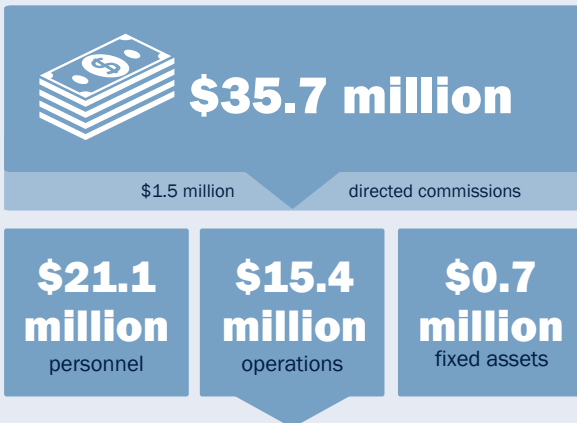
The Plan's monthly recordkeeping fee is \$4.55 per participant and is paid by plan employers in the form of an annual per-participant charge.

**DEFINED
BENEFIT
PLAN**

Traditional Pension

Defined Benefit Plan

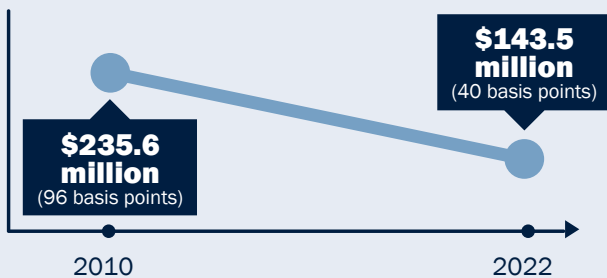
Total FY 2023-24 Planned Budget



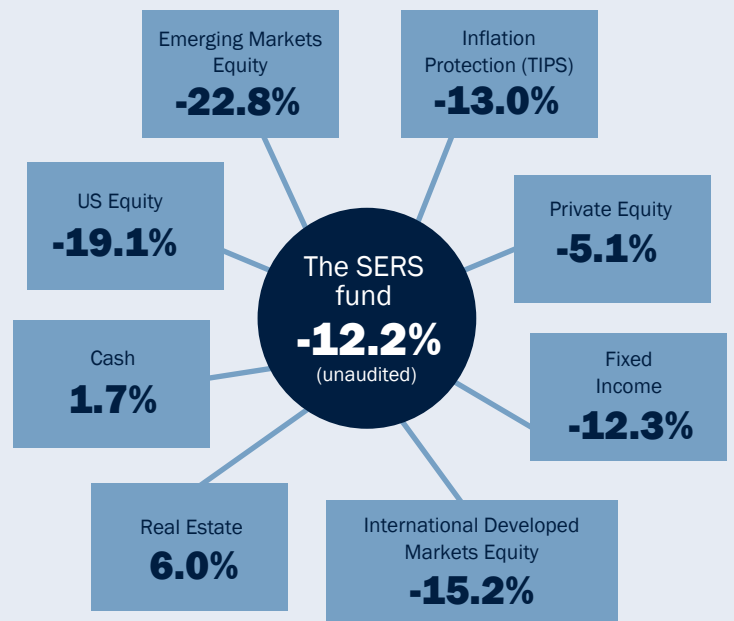
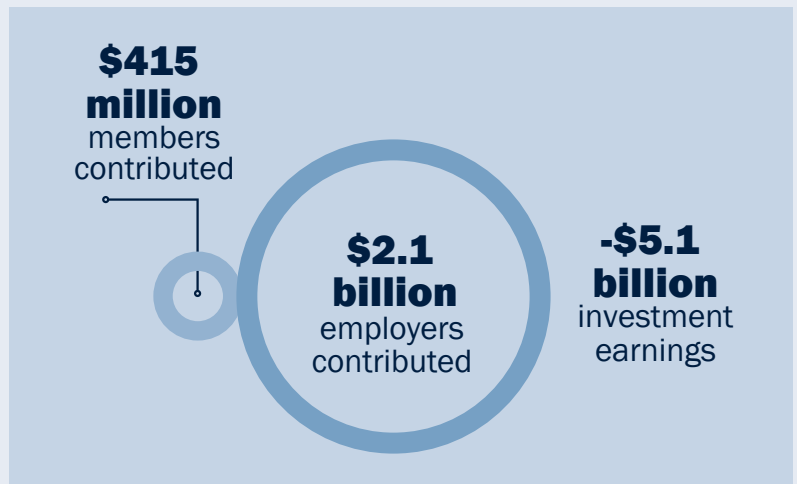
Excerpts from operations =

- IT consulting-system upgrade **\$4.3 million**
- hardware/software maintenance **\$2.1 million**
- real estate **\$1.5 million**
- postage **\$0.6 million**
- legal services **\$0.3 million**
- office equipment **\$0.2 million**

SERS decreased manager fees and expenses



2022 Contributions to the SERS Fund

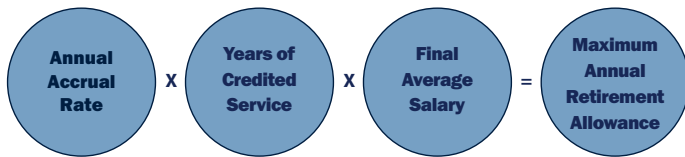


DEFINED BENEFIT PLAN

Plan Description

Employees initially hired before January 1, 2019, or into certain law enforcement and security positions after that date, are enrolled in the Defined Benefit Plan, which is a traditional pension plan.

This plan features guaranteed monthly payments for life based on a calculation that considers the employee's years of service and salary:



The economic engine of the Defined Benefit Plan is the SERS Fund, which is professionally managed by SERS and detailed in this section.

Both the employee and their employer contribute toward the Defined Benefit Plan.

The employee contributes a certain percentage of their pay, determined by their class of service in the pension system. The percentages are set by law in the State Employees' Retirement Code and are generally fixed except for a shared-risk/shared-gain provision. For employees hired after December 31, 2010, if SERS investments fail to achieve the assumed rate of return over a number of years; or conversely, if SERS investments outperform the assumed rate of return over a number of years, the employee's contribution rate could change by no more than 3% over/under the base rate for their class of service in the pension system. While contribution rates vary with the vast majority contributing between 5% and 9.3%, most employees contribute 6.25% of their pay toward their pension.

Employers contribute a percentage of their payroll as actuarially calculated each year based on the assets and liabilities of the SERS Fund.

For FY 2022-23, employers on average are contributing 34.16% of payroll toward their employees' pensions.

SERS invests the contributions to achieve returns to help ensure sufficient funds are available to make required payments to current and future retirees.

Most employees hired after December 31, 2010, are eligible for monthly pension payments, or "vested" in the pension system, after working 10 years.

If employees retire before they reach their full SERS retirement age – either age 50, 55, 60, 65, or 67 depending on their class of service in the system – their pension is reduced for early retirement.

The Defined Benefit Plan also features a disability benefit for employees who become unable to perform their job because of injury or illness and qualify, based on years of service and a review by an independent medical examiner.

Recent Changes

In 2022, the plan experienced the following changes:

- **Began Divesting of Russia and Belarus-Related Investments**
On March 4, 2022, the SERS Board moved to cease making any Russia and Belarus-related investments and to divest all such investments in the portfolio, as prudent and within a reasonable time. The board's action was supported by state law with passage of Act 2022-132 on November 3, 2022.
- **Lowered Investment Return Assumption**
On June 10, 2022, the SERS Board approved a reduction in the investment return assumption from 7% to 6.875% to be effective with the Dec. 31, 2022, actuarial valuation of the system. The eighth of a percentage point reduction reflects a long-term target to be achieved over the next 20 to 30 year period.

DEFINED BENEFIT PLAN

Plan Description

- **Adjusted the Normal Cost Calculation**

Beginning with the 2021 actuarial valuation published in June 2022, the “normal cost” of the pension benefit is based on the cost of the benefit earned by a blend of all active members in the system that year. Prior to that date, the calculation was based on the cost of the benefit earned by only the new members who entered the system that year. As a result, the normal cost of the benefit increased from 1.5% to 8.32% of payroll, as a greater portion of the cost of benefits will be recognized each year rather than being financed over time by adding to the unfunded liability.

- **Began Publishing Investment Manager Evaluation Lists Online**

Each quarter, our general investment consultant prepares a list of the plan’s investment managers identified as experiencing quantitative or qualitative pattern changes worthy of greater review by SERS’ investment office and external

investment consultants. While placement of an investment manager on the list does not automatically serve as evidence of a problem with the manager, it indicates that staff and consultants are more closely monitoring the manager. We began posting the quarterly lists on the agency’s public website so that plan participants can be aware of our increased monitoring of managers and generally, why. You can view the list at <https://www.sers.pa.gov/Investments.html>.

- **Modernizing Employer Contribution Payments**

Working to streamline the payment process and increase payment security, staff collaborated with a number of participating employers that submitted member contributions by paper checks and converted the checks to electronic payments. Staff continue progressing on this initiative.

DEFINED BENEFIT PLAN

Plan Description

Defined Benefit Plan Statistics

as of and for the year-ended December 31, 2022

Members	239,230 total 96,395 active contributing members Hybrid Plan 17,124 Defined Benefit Plan only 79,271 7,188 inactive members not receiving benefits 135,647 retired members and beneficiaries
Assets	\$33.7 billion
Number of Employers	101
Total Employee Contributions	\$415.0 million
Total Employer Contributions	\$2.1 billion
Total Benefit Payments	\$3.9 billion



Members

DEFINED BENEFIT PLAN

Members

Total Active & Annuitant Members

Year Ending December 31	Total Members	Active Members	Inactive Members	Annuitants & Beneficiaries
2022	239,230	96,395	7,188	135,647
2021	239,454	97,857	7,237	134,360
2020	241,152	100,962	6,856	133,334
2019	242,333	102,850	6,752	132,731
2018	241,044	103,007	7,030	131,007
2017	239,266	102,978	6,815	129,473
2016	239,104	104,632	7,134	127,338
2015	236,632	105,025	6,918	124,689
2014	233,734	104,431	7,054	122,249
2013	231,633	105,186	6,395	120,052

Active Members: Age & Service

Average Age	46.5
Average Years of Service	11.7

Total Annuitants & Beneficiaries: By Category

	2019	2020	2021	2022
Normal	67,307	68,105	69,231	70,485
Early	44,423	44,132	43,762	43,497
Disability	8,637	8,524	8,443	8,338
Beneficiary/Survivor	12,364	12,573	12,924	13,328

Annuitants & Beneficiaries: Average Age

	2019	2020	2021	2022
Normal	72.5	72.6	72.7	72.8
Early	65.5	66.0	66.5	66.9
Disability	64.5	64.9	65.3	65.6
Beneficiary/Survivor	74.7	74.7	74.7	74.7

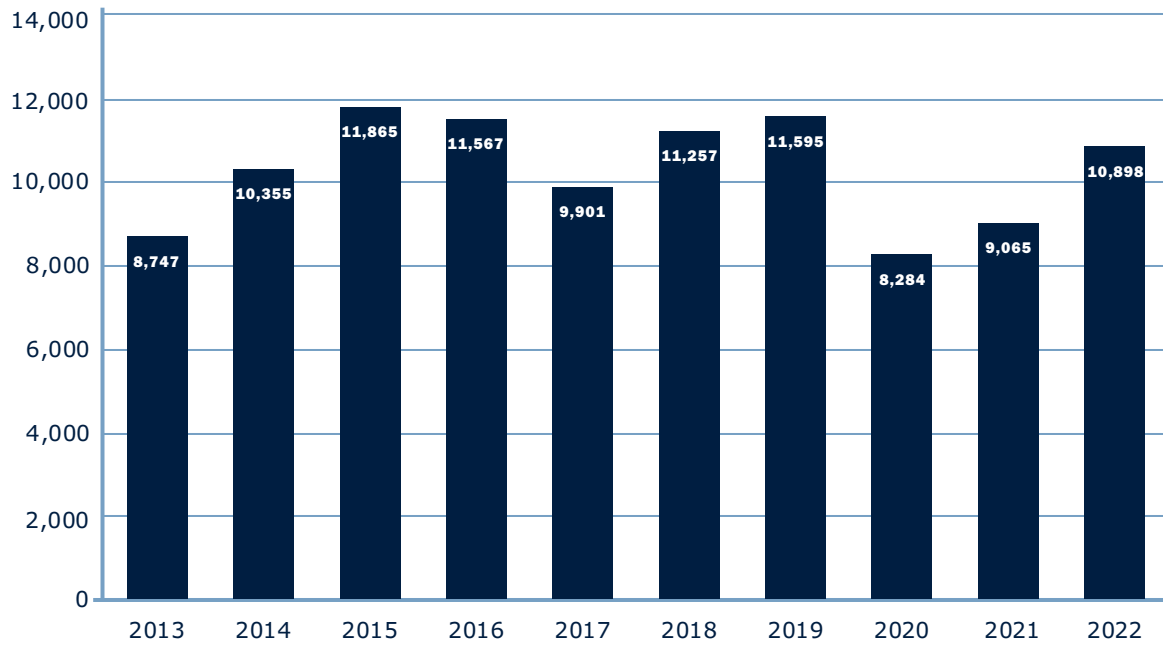
Annuitants & Beneficiaries: Average Annual Pension

	2019	2020	2021	2022
Normal	\$29,440	\$30,050	\$30,712	\$31,331
Early	18,428	18,727	19,090	19,334
Disability	15,980	16,234	16,489	16,780
Beneficiary/Survivor	13,816	14,253	14,905	15,323

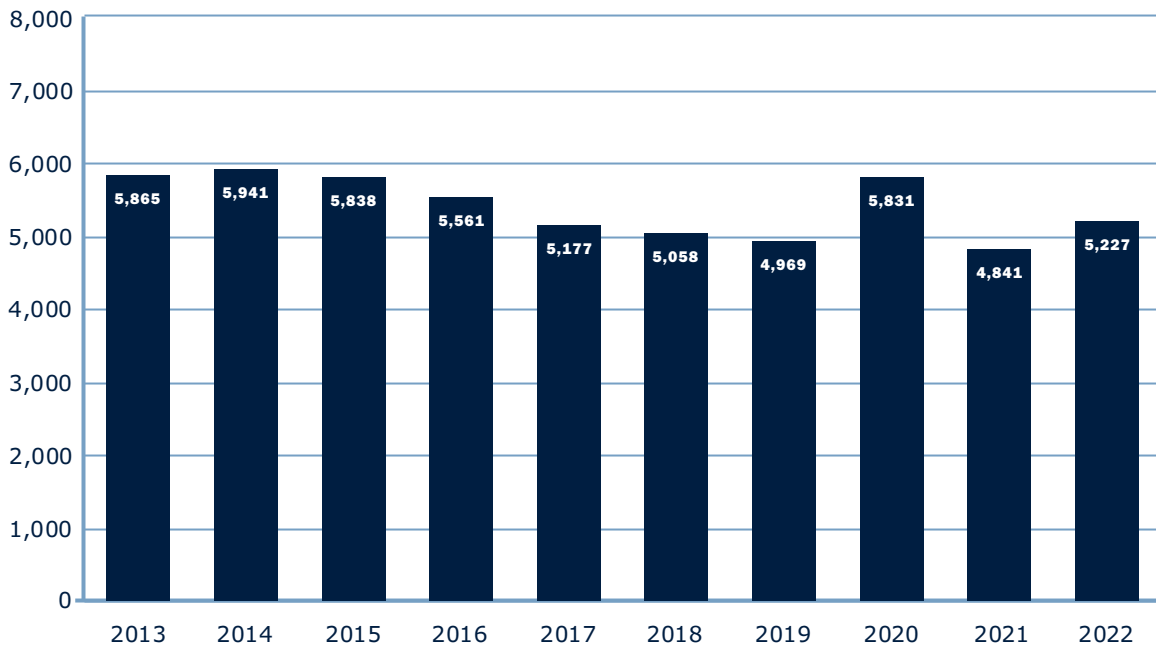
DEFINED BENEFIT PLAN

Members

New Member Enrollments



Normal, Early, & Disability Retirements





SERS Fund

DEFINED BENEFIT PLAN

SERS Fund | Funding Process

Defined Benefit Plan

The Pennsylvania State Employees' Retirement System currently administers four retirement plans that contribute to the financial security of the commonwealth's public workforce following retirement. Most state employees are required to participate in Pennsylvania's Defined Benefit Plan, although nearly all employees hired after January 1, 2019 may elect to choose a defined contribution only option.

Employees who are eligible to participate in the Defined Benefit Plan may choose to supplement their retirement savings by also voluntarily participating in the Deferred Compensation Plan. The economic engine of the Defined Benefit Plan is the SERS Fund, which is reviewed in depth in this section. Details about the [Deferred Compensation Plan](#) are provided in the last section of this book.

In the Defined Benefit Plan, both the employer and the member pay a certain percentage of the member's salary to the SERS Fund for as long as the member works for the commonwealth. For FY 2022-23, employers are contributing 34.16% of payroll and most members are paying 6.25%. SERS invests this money to achieve returns to ensure sufficient funds are available to make payments to current and future retirees.

When members meet certain milestones, such as working a specific number of years or reaching a certain age, they become eligible to receive monthly retirement payments for the rest of their lives. The payment amount is based on a formula that includes the member's length of service, age, compensation over a period of time, and an accrual rate, or multiplier that is determined by the General Assembly.

2022 Overview

In 2022, SERS paid close to \$3.9 billion in benefit payments, approximately \$3.5 billion of which stayed in Pennsylvania. The average

annual pension paid to a retired member who worked to full retirement age was \$31,331.

Determining Adequate Funding for a Defined Benefit Plan

Defined benefit plans are long-term propositions. When underlying principles remain intact, defined benefit plans offer efficient, stable, and sustainable models for growing assets and delivering benefits through complete economic cycles. A common element of these plans is that employee and employer contributions invested throughout the member's working career provide sufficient funding to pay for that member's expected lifetime retirement benefit.

Because a defined benefit plan guarantees a monthly payment to every retiree for life, it is impossible to develop precise, before-the-fact costs and cash flows for the plan. The number of people paying into the plan, the amount they earn, how long they work, the number of people retiring, the age at which each person retires, and how long each retiree lives are among the myriad factors that vary from day-to-day, month-to-month, and year-to-year.

Funding Process

Actuarial science is used to develop accurate predictions. It applies available data to a number of interrelated mathematical and statistical methods and uses investment and financial practices to forecast uncertain future events.

SERS' actuary conducts an in-depth investigation and analysis - known as an experience study - every five years. The actuary uses actual and expected experience and data to set economic and demographic assumptions. Economic assumptions include rates of investment return, salary growth, and inflation.

DEFINED BENEFIT PLAN

SERS Fund | Funding Process

Demographic assumptions include workforce, disability, and mortality trends. SERS' actuary delivered its most recent experience study in 2020. It is available at SERS.pa.gov. In addition to the five-year experience study, the investment rate of return assumption is reviewed every year.

The selection of economic and demographic assumptions used is generally guided by the Actuarial Standards Board. In SERS' case, some very important funding method requirements – such as the length of time over which investment gains and losses are recognized – are set by Pennsylvania law. SERS' actuary recommends and SERS Board approves all assumptions.

Each year, SERS' actuarial firm uses the most recent active member and retiree demographic data to determine total expected future obligations. The actuary then compares those obligations to the expected value of the fund's assets, based on current audited financial statements and future economic assumptions.

This calculation is factored in with the statutorily set member contribution rate and the assumed investment rate of return as the basis for calculating how much employers need to contribute in order to fully fund their employees' retirement benefits.

Current Key Actuarial Assumptions

long-term investment return effective with 2021 valuation
7.0%

long-term investment return effective with 2022 valuation
6.875%

rate of inflation
2.5%

average salary growth
4.6%

Defined benefit plans are designed to remain stable by receiving three regular funding streams – member contributions, investment earnings, and employer contributions.

What is an unfunded liability?

An unfunded liability – also commonly called an unfunded actuarial liability or UAL – is the degree to which the current and projected liabilities exceed the current and projected assets of a defined benefit plan.

In other words, it is the difference between what the commonwealth's defined benefit plan is legally obligated to pay and what assets have been set aside to make those payments.

Member Contributions

Active members pay a certain percentage of their pay toward their retirement benefit. While different classes of membership pay different rates, most members currently pay 6.25% of their pay. The percentage is set by statute and the rate typically does not change from year to year. Members' contributions are withheld from their paychecks and sent directly from their employer to SERS. In 2022, member contributions to SERS totaled an estimated \$415 million.

Courts have ruled that public retirement benefits may not be changed retroactively or prospectively in any way that may be a "net detriment" to current employees. "Net detriment" has been interpreted as a reduction in benefits already earned, and/or as an increase in member contributions required to maintain such benefits.

There are some instances, however, in which member contributions can increase. For example, Pennsylvania's Act 2010-120 introduced a "risk sharing" provision whereby if

DEFINED BENEFIT PLAN

SERS Fund | Funding Process

there is a multi-year period of investment returns below the assumed rate and if employers have met their contribution obligations to the pension system, the contributions paid by those who entered SERS membership on or after January 1, 2011, could increase. In addition, Act 2017-5 created new classes that have shared gain and loss, and adjusted Act 2010-120 classes to add a shared gain provision. The result is that all classes with shared risk are treated similarly. To date, the shared risk provision has not been triggered for Act 2010-120 classes. However, preliminary estimates of 2022 investment returns suggest shared risk may be triggered for the Act 2017-15 membership classes.

Investment Earnings

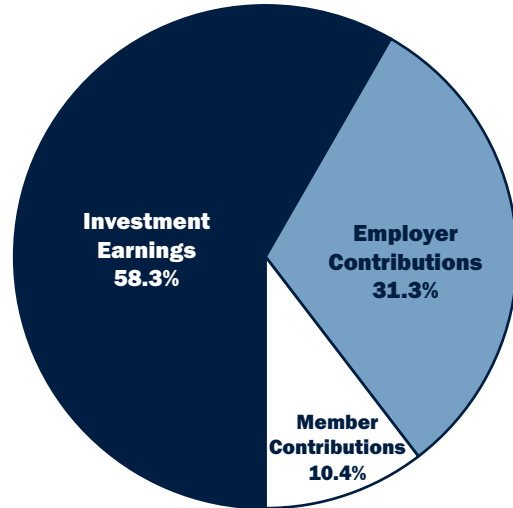
SERS' overall investment objective is to assure adequate fund reserves at the least cost to commonwealth citizens and to protect against the erosion of principal by inflation. SERS seeks to provide investment earnings that meet, or preferably exceed, the assumed rate of return over complete economic cycles.

SERS strives to meet this objective by applying acceptable risk parameters and allocations to investments that are diversified by type, industry, quality, and geography.

Investment earnings can vary widely from year to year; the SERS Fund, for example, produced an approximate 25% return in 2003 and experienced more than a 28% loss in 2008's worldwide downturn.

For funding valuation purposes in order to minimize volatility, Pennsylvania law requires that the differences between actual performance and the assumed rate of return be recognized over a five-year period at a rate of 20% per year—a concept often referred to as "smoothing." SERS examines and sets its assumed rate of return each year based on global market dynamics, investment performance, and other considerations. For

SERS Funding Sources
(20-Year Cumulative History)



example, in 2009, SERS reduced its assumed rate of return from 8.5% to 8%, largely as a result of 2008's global economic collapse.

As a result of SERS' nearly 100 years of operation and the trend of people living longer, the system consistently has more retired members than active members. In 2023, SERS is projected to pay out approximately \$118 million more each month than it takes in through member and employer contributions.

As a normal outcome of a maturing pension system, the liquidity needs of its fund increase requiring ongoing rebalancing of assets. In recognition of a changing market environment and a desire to provide an opportunity to reduce risk while maintaining the potential for achieving a reasonable long-term rate of investment return, the SERS Board, on June 10, 2022, reduced the assumed rate of return from 7.0% to 6.875% effective with the December 31, 2022 actuarial valuation. Lowering the assumed rate of return has implications for the employer contribution rate, as discussed below. For 13 of the last 20 years, SERS has exceeded its assumed rate of return.

DEFINED BENEFIT PLAN

SERS Fund | Funding Process

Factoring in the unprecedented market volatility and the precipitous market decline of 2008, the fund has achieved a 20-year rate of return of 7.6%, a 25-year rate of return of 6.7%, and an inception to date return of 9.2%. SERS reports its returns net-of-fees. This demonstrates that the long-horizon approach to investing members' money continues to provide the fund with stable returns over time.

The "shared risk" provision, as previously discussed, is designed to moderate the need for future employer rate increases that may be prompted by investment underperformance. As noted, depending on final 2022 results, the shared risk provision may be triggered for Act 2017-5 membership classes.

Employer Contributions

Employer contributions make up the final portion of SERS' overall funding. The employer contribution rate is calculated by an independent actuary, taking into account member contributions, demographic activity, investment earnings, and future liabilities. Because it is highly unlikely that every assumption could be correct, the Pennsylvania State Employees' Retirement Code requires SERS to adjust the employer contribution rate each year based on actual experience and investment performance.

Based on the actuary's recommendation, the SERS Board annually certifies an employer contribution rate. The rate has fluctuated dramatically over the years: in 1981 the rate was approximately 18%, but from 2001 to 2003 it was 0%. The rate for the current fiscal year is 34.16%.

The total dollars contributed by employers has grown significantly in recent years. In 1992, employer contributions totaled \$319 million. In 2022, that figure was approximately \$2.1 billion.

FY 2017-18 was the first year since contribution rates were mandated through Act 2010-120 that rate collars were no longer needed and the commonwealth paid the full actuarially required contribution. Since then (and in keeping with pension and actuarial best practices) the commonwealth has paid the full actuarially required contributions on a regular basis.

According to the Governor's Budget Office, SERS' employers under the Governor's jurisdiction paid less than half of the employers' total—about 40%—from the general fund. About 52% was paid from special and federal funds, and about 8% was provided from non-state agency employers.

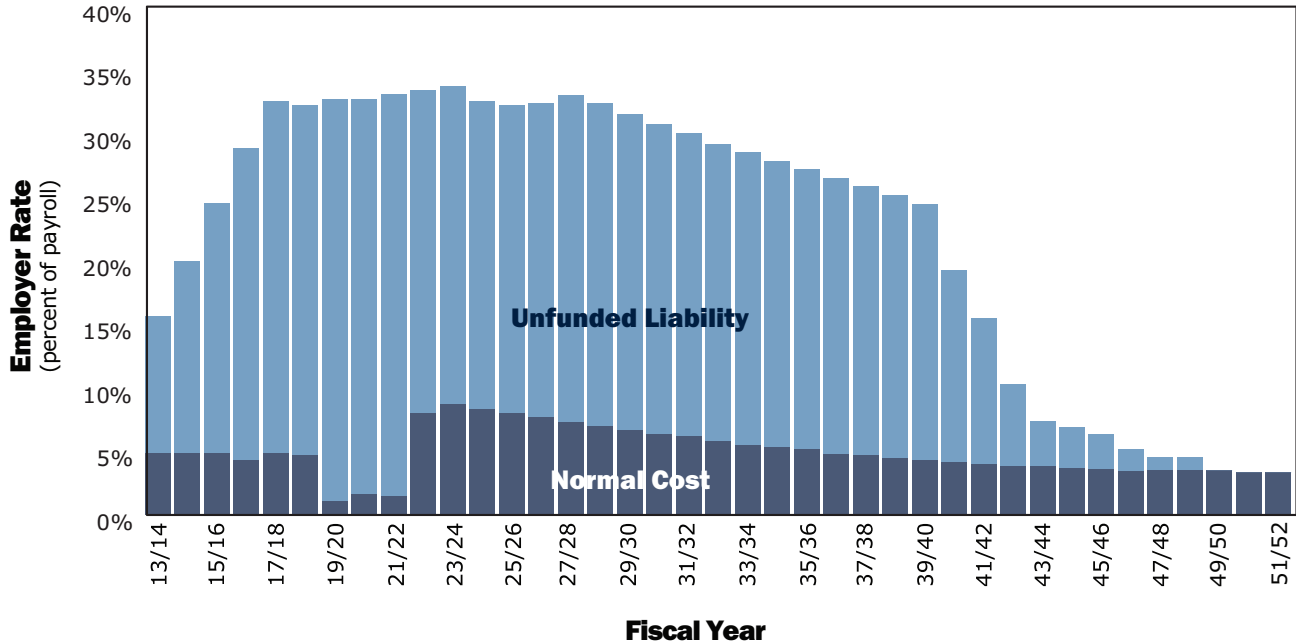
The employer contribution rate has two major parts: the cost of the benefit earned by all active SERS members in the current year (referred to as the employer normal cost), and a contribution toward the unfunded liability. In FY 2022-23 the largest component of the 34.16% employer contribution rate is the 25.78% contribution necessary to pay this unfunded liability.

The employer normal cost is expressed as a percentage of payroll and is the amount employers would contribute to fully fund benefits if all actuarial assumptions were precisely met, including the fund earning its assumed rate of return. The normal cost of benefits from the 2021 Actuarial Valuation was 8.32%.

DEFINED BENEFIT PLAN

SERS Fund | Funding Process

SERS Employer Rate as a Percent of Payroll



It should be noted that Act 2017-5 included a savings “plow-back” provision requiring that the annual savings achieved through SERS’ benefit changes flow back into the system rather than to other non-pension obligations. The 34.44% projected employer contribution rate for FY 2023-24 does not include any projected plow-back savings.

However, plow-back contributions, currently calculated to range from 0.10% to 0.93% of payroll, are expected in 10 of the next 20 fiscal years and will work to accelerate the system's return to fully funded status.

DEFINED BENEFIT PLAN

SERS Fund | Funding Process

Projected Payout, Funding Status & Employer Contributions

Valuation Year Ended Dec 31	CY Payout	CY Funding Status			FY Employer Contribution		
	Benefits & Expenses (\$ billions)	Funded Ratio	Unfunded Liability (\$ billions)	Fiscal Year	Expected FY Payroll (\$ millions)	Employer Contribution Rate	Expected FY Contribution (\$ millions)
2022	\$3.9	69.4%	\$16.35	2023/24	\$6,889.2	34.44%	\$2,198.8
2023	4.0	71.0	15.70	2024/25	7,015.3	33.39	2,168.6
2024	4.1	71.4	15.64	2025/26	7,148.0	33.02	2,186.8
2025	4.1	71.1	15.93	2026/27	7,288.4	33.08	2,236.9
2026	4.2	69.6	16.88	2027/28	7,431.9	33.87	2,343.1
2027	4.3	70.8	16.32	2028/29	7,577.4	33.09	2,333.5
2028	4.4	72.0	15.69	2029/30	7,726.1	32.30	2,321.6
2029	4.4	73.4	14.99	2030/31	7,877.1	31.50	2,307.0
2030	4.5	74.9	14.20	2031/32	8,033.1	30.68	2,300.9
2031	4.6	76.5	13.32	2032/33	8,197.2	29.94	2,290.3
2032	4.6	78.2	12.38	2033/34	8,371.0	29.23	2,282.6
2033	4.6	80.0	11.37	2034/35	8,555.2	28.52	2,275.5
2034	4.7	81.9	10.29	2035/36	8,747.7	27.80	2,267.8
2035	4.7	83.9	9.13	2036/37	8,948.4	27.10	2,260.6
2036	4.7	86.1	7.89	2037/38	9,157.5	26.40	2,270.1
2037	4.8	88.4	6.54	2038/39	9,375.3	25.70	2,261.8
2038	4.8	91.0	5.10	2039/40	9,596.7	25.02	2,253.3
2039	4.8	93.7	3.57	2040/41	9,822.4	19.76	1,813.6
2040	4.8	95.8	2.35	2041/42	10,058.9	15.84	1,512.6
2041	4.8	97.6	1.33	2042/43	10,304.5	10.45	1,024.1
2042	4.8	98.8	0.67	2043/44	10,553.5	7.60	760.7
2043	4.8	99.5	0.29	2044/45	10,804.0	7.10	728.4
2044	4.8	100.1	(0.06)	2045/46	11,060.3	6.56	689.6
2045	4.8	100.7	(0.39)	2046/47	11,325.1	5.33	577.6
2046	4.8	101.1	(0.63)	2047/48	11,599.0	4.70	524.5
2047	4.7	101.5	(0.81)	2048/49	11,881.3	4.58	524.1
2048	4.7	101.8	(0.99)	2049/50	12,169.3	3.54	422.7
2049	4.7	102.0	(1.08)	2050/51	12,463.6	3.51	432.0
2050	4.7	102.1	(1.16)	2051/52	12,767.3	3.49	442.0
2051	4.7	102.3	(1.24)	2052/53	12,922.1	3.99	512.7

Data calculated assuming: a traditional entry-age funding method, level-dollar amortization, five-year smoothing of assets, 4.6% salary growth, 2.5% inflation, actual investment return in CY 2022 with 6.875% assumed return thereafter, 6.25% pre Act 2017-5 employee contribution, 8.25% Act 2017-5 employee contribution for hybrid class A-5, 7.5% Act 2017-5 employee contribution for both hybrid class A-6 and Defined Contribution Plan only election.

DEFINED BENEFIT PLAN

SERS Fund | Actuarial Status

Restoring SERS Defined Benefit Plan Funding

The SERS funded ratio is expected to improve as those who entered SERS membership before January 2011 retire and post-January 2011 members continue to grow in number. In 2022, SERS retired 5,227 members and added 10,898 new members. Currently, approximately 55.0% of SERS' active members belong to the post Act 2010-120 classes of service.

Act 2010-120 projected savings of approximately \$1.5 billion over 30 years by reducing the retirement benefit accrual rate, increasing the normal retirement age, eliminating the lump sum withdrawal option, extending the vesting period from five years to 10 years and including other provisions for those who entered SERS membership on or after January 1, 2011. One aspect of Act 2010-120 is that retirement provisions for legislators elected after December 1, 2010, were reduced and made consistent with those of most rank-and-file employees. Act 2010-120 also recognized the need to steadily increase employer contributions to fully fund their obligations. To ensure predictability and to moderate overall budget impacts, the general assembly set rate collars for increased employer contribution rates.

Now that SERS employers are paying the full "uncollared" contribution amount, plus making extra "plowback" contributions to return Act 2017-5 savings, the impact on paying down the liability is dramatic. This funding is crucial for the overall long-term health of the pension system.

On November 27, 2019, Governor Wolf signed Act 2019-105, which allows eligible employers to enter into an agreement with the SERS Board to make a one-time, lump-sum payment of between 75% to 100% of their unfunded liability.

Penn State University was the first eligible employer to take advantage of the legislation. Following a successful bond issuance, Penn State submitted a payment of \$1.06 billion that was received by SERS on April 30, 2020. In return, the university will receive an annual credit against their contributions for 30 years, beginning with FY 2020-21. The credit totals nearly \$93 million for twenty years and then decreases over the final 10 years beginning at nearly \$73 million and ending at approximately \$2 million in FY 2049-50.

In April 2021, the Pennsylvania State System of Higher Education (PASSHE) submitted a payment of \$825 million toward its unfunded liability. In return, the education system will receive an annual credit against its contributions for 30 years, beginning with FY 2021-22. The credit totals nearly \$80 million for 10 years, more than \$69 million for six years, more than \$52 million for four years and then decreases over the remaining 10 years beginning at more than \$22 million in 2041 and ending at approximately \$3 million in FY 2050-51.

Both Penn State and PASSHE are expected to experience significant cost savings as a result of their lump-sum payments. SERS benefited from these lump-sum payments by experiencing an immediate reduction in its unfunded liability and an increase in its funded ratio. The long-term impacts on the system, however, are dependent on how future actual investment returns compare to the assumed rate of returns in effect at the time of each agreement. The lump-sum payments exclusively benefit Penn State and PASSHE and do not directly impact the contributions paid by other employers in the pension plan.

Act 2019-105 has a built-in time limit. Agreements must be entered into by December 31, 2024, and lump sum payments must be made by May 1, 2025.

DEFINED BENEFIT PLAN

SERS Fund | Actuarial Status

The past year, 2022, brought an array of economic challenges, including the worst stock market performance since the Great Recession of 2008, high rates of inflation, chronic supply chain issues, and the war in Ukraine – whose impact has rippled through many sectors of the global economy.

Like many public pension funds, SERS’ investment returns in 2022 fell short of expectations. During 2022, SERS saw investment losses of approximately -12.2% for our Defined Benefit Plan, which was short of the fund’s annual assumed rate of return of 7%, that was in place during the year. Nevertheless, in 2023 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 in 2022, ongoing efforts to implement efficiencies across SERS, and continued payment of the full annual actuarially required funding amount by the General Assembly.

Current Funded Position of SERS Defined Benefit Plan

The funded position of a defined benefit plan is measured by its funded ratio, which is the actuarially calculated value of assets divided by the actuarially calculated sum of retirement benefits earned by all existing SERS members – 239,230 active, vested, and retired, as of December 31, 2022.

Many pension experts consider a funding ratio of 80% or better to be “healthy” for a pension system. Per a 2022 Wilshire report, Pennsylvania is among 44% of other state retirement systems that are currently below the 80% threshold. At the close of 2022, SERS’ estimated funded ratio was 69.4% (actuarial value) or 64.9% (market value). SERS projects reaching the 80% funded threshold in 2033.

SERS funded ratio has varied significantly over time. In 1984, it dipped below 60%. By 2001, however, it had climbed back to well over 100%.

Recent funded ratios include:

SERS Funded Status

Year	Funded Ratio		Unfunded Actuarial Liability (\$ billions)
	Actuarial Value	Market Value	
2022	69.4%	64.9%	\$16.4
2021	69.6	76.0	\$16.1

The 2022 estimated unfunded liability is \$16.4 billion, which is expected to decline as the required contribution payments are maintained.

Factors influencing the unfunded liability have been building over time, including but not limited to:

- Sustained periods of employer contributions below normal costs: 1992 through 2009
- Losses that neutralized past investment gains used to justify the low employer contributions: -10.9% in 2002 and -28.7% in 2008
- Benefit increases – including cost of living adjustments and increased accrual rates – without providing sufficiently off-setting funding streams: Act 2001-9 and Act 2002-38
- Legislatively mandated actuarial changes that extended the time over which liabilities be paid or artificially suppressed employer contribution rates: Act 2003-40 and Act Act 2010-120
- Gradual reductions in assumed rates of return over the past several years, from 8.5% in 2008 to 6.875% effective in the 2022 actuarial valuation to reflect changing market conditions
- Cumulative negative impact of the above on the overall size of the fund and its ability to realize the full actuarial effect of investment returns in positive-earning years

DEFINED BENEFIT PLAN

SERS Fund | Actuarial Status

Additions and Deductions to Fiduciary Net Position^{1/}

(\$ millions)

Calendar Year	Member Contributions	Investment Earnings	Employer Contributions	Benefits & Expenses	Fair (Market) Value
2013	\$352	\$3,724	\$795	(\$2,866)	\$27,394
2014	366	1,462	1,084	(2,968)	27,338
2015	372	88	1,360	(3,103)	26,055
2016	375	1,587	1,622	(3,251)	26,388
2017	383	4,066	1,898	(3,330)	29,405
2018 ^{2/}	394	(1,442)	2,049	(3,421)	26,937
2019	405	5,175	2,115	(3,536)	31,096
2020	410	3,920	3,186	(3,584)	35,028
2021	405	5,682	2,871	(3,755)	40,231
2022 ^{3/}	415	(5,095) ^{4/}	2,054	(3,905)	33,700
10-Year Total	\$3,877	\$19,167	\$19,034	(\$33,719)	

^{1/}10-year net additions and deductions were \$8,359.

^{2/}The Governmental Accounting Standards Board (GASB) issued GASB Statement No. 75, Accounting and Financial Reporting for Postemployment Benefits Other Than Pensions (OPEB) (GASB 75). This required SERS to record its proportionate share of net OPEB liability, (\$48), resulting in restated beginning balance of \$29,357.

^{3/}2022 figures are estimated and unaudited.

^{4/}Figure does not include 4th quarter earnings for all Private Equity, Legacy Private Credit, and Real Estate. Data not yet available.



Investment Overview

DEFINED BENEFIT PLAN

Investment Overview

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 5, 2022, 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 investor 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 increase 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.

DEFINED BENEFIT PLAN

Investment Overview

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' target 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 general investment consultant, establishes a target rate of return. Achieving, or exceeding this target rate of return is the primary investment performance objective of SERS' Investment Office to help meet the desired funded status.

Asset Allocation Trend

Prudent Investor Investment Standards

The board's investment authority is governed by the prudent investor standard as set forth in Title 71, Pennsylvania Consolidated Statutes, Section 5931(a). Enactment of the prudent investor standard in Act 1994-29 and subsequent asset/liability studies completed by SERS' general investment consultant and the SERS investment staff are the foundation of

SERS' investment strategy. With prudent investor investment authority, SERS is able to pursue a broader array of investment opportunities that enhance the ability to achieve reasonable rates of return while maintaining risk at acceptable levels.

Total Fund Asset Allocation

The board accepts asset allocation as the primary determinant of the system's long-term contributor to investment return and risk. Asset allocation is substantially more influential than individual mandates deployed within asset classes, managers selected to implement the mandates, or tactical asset allocation decisions. Among the factors that the board considers in developing the policy target asset allocation are the following:

- Achieve SERS' investment return assumption over the long-term, net of fees, within risk and investment management fee levels deemed prudent by the board.
- Maintain a level of liquid assets with a low correlation to the U.S. equity markets to pay retirement benefits and covenants during prolonged periods of market decline and potential state budgetary constraints.

In addition, SERS' asset allocation structure was developed by considering the Fund's liabilities, benefits policy, funding policy, and each asset class' expected return, volatility, and correlation with other asset classes. Investment Office Staff, in consultation with the board and general investment consultant, combined asset classes in the most optimal structure to provide the highest expected return for a given level of risk, subject to implementation, liquidity, diversification, and cost constraints.

DEFINED BENEFIT PLAN

Investment Overview

Investment Program Summary

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.

Asset Allocation

(\$ millions as of December 31, 2022)

Asset Class	Fair Value	% of Total Fund	10-Year Strategic Targets
Private Equity	\$6,537.2	19.4%	16.0%
Real Estate	2,943.4	8.7	7.0
U.S. Equity	10,413.3	30.9	31.0
International Developed Markets Equity	4,367.6	13.0	14.0
Emerging Markets Equity	1,148.7	3.4	5.0
Fixed Income	6,304.8	18.7	22.0
Inflation Protection (TIPS)	1,005.9	3.0	3.0
Cash	575.5	1.7	2.0
Legacy Private Credit	386.4	1.2	*
Legacy Hedge Funds	16.7	—	**
Total Fund	\$33,699.5	100.0%	100.0%

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

**Legacy Hedge Funds asset class is in liquidation.

DEFINED BENEFIT PLAN

Investment Overview

Number of Investment Managers by Asset Class

Asset Class	Investment Managers
Private Equity	67
Real Estate	26
U.S. Equity	2
International Developed Markets Equity	9
Emerging Markets Equity	5
Fixed Income	7
Inflation Protection (TIPS)	3
Cash	1
Legacy Private Credit	6
Legacy Hedge Funds	3
Total	129

Number of Investment Portfolios

Asset Class	Investment Portfolios
Private Equity	203
Real Estate	50
U.S. Equity	4
International Developed Markets Equity	9
Emerging Markets Equity	5
Fixed Income	10
Inflation Protection (TIPS)	3
Cash	1
Legacy Private Credit	7
Legacy Hedge Funds	3
Total Portfolios	295



Performance

DEFINED BENEFIT PLAN

Performance

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

For the period ending December 31, 2022

Asset Class	1-Year Total Return	3-Year Total Return	5-Year Total Return	10-Year Total Return
Private Equity ^{2/,5/}	-5.1%	19.8%	16.1%	13.2%
<i>Burgiss All Private Equity Custom Index^{3/,5/}</i>	-1.8	15.4	14.0	13.5
<i>Global Equity +3%^{4/,5/}</i>	-15.5	9.4	11.0	14.1
Real Estate ^{5/}	6.0	8.5	6.7	7.3
<i>Real Estate Custom Benchmark^{5/,6/}</i>	17.4	11.4	9.2	9.8
<i>Consumer Price Index +3%^{5/}</i>	11.2	8.0	6.8	5.5
U.S. Equity	-19.1	7.0	8.1	11.4
<i>Russell 3000 Index</i>	-19.2	7.1	8.8	12.1
<i>S&P 1500 Index</i>	-17.8	7.6	9.2	12.4
International Developed Markets Equity	-15.2	2.1	2.4	5.5
<i>MSCI World ex U.S. IMI</i>	-15.3	1.1	1.6	4.7
Emerging Markets Equity	-22.8	-1.5	-0.5	2.2
<i>MSCI Emerging Markets IMI</i>	-19.8	-1.8	-1.1	1.6
Fixed Income	-12.3	-2.7	—	1.2
<i>Bloomberg U.S. Aggregate Bond Index</i>	-13.0	-2.7	—	1.1
Inflation Protection (TIPS)	-13.0	0.5	1.6	1.0
<i>Bloomberg U.S. TIPS Index</i>	-11.9	1.2	2.1	1.1
Cash	1.7	0.8	1.4	1.0
<i>ICE BofAML U.S. 3-Month Treasury Bill Index</i>	1.5	0.7	1.3	0.8
Legacy Private Credit ^{5/,8/}	8.0	10.6	NA	NA
<i>S&P/LSTA Leveraged Loan Index +1%^{5/}</i>	-1.5	3.3	NA	NA
Total Fund^{7/}	-12.2%	4.6%	5.3%	6.8%
Total Fund Custom Benchmark	-11.8%	5.6%	6.1%	7.6%
Total Fund Custom Public Market Equivalent Benchmark	-13.7%	3.6%	5.0%	7.2%
Total Fund 60/40 Index	-16.0%	1.6%	3.3%	5.4%

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

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

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

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

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

^{6/}Calculated monthly using beginning of the month asset class weights applied to each corresponding primary benchmark return. The real estate custom benchmark consists of 90% NCREIF ODCE Index (1 Qtr lag) and 10% FTSE NAREIT Index (unlagged).

^{7/}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.

^{8/}Legacy Private Credit performance is included in the total fund starting at the composite's true inception date, 07/01/2022. The history is calculated and shown for informational purposes.

DEFINED BENEFIT PLAN

Performance

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

For the period ending June 30, 2022

Asset Class	1-Year Total Return	3-Year Total Return	5-Year Total Return	10-Year Total Return
Private Equity ^{2/,5/}	22.8%	23.6%	19.2%	14.1%
<i>Burgiss All Private Equity Custom Index^{3/,5/}</i>	17.2	19.1	17.1	14.5
<i>Global Equity +3%^{4/,5/}</i>	13.0	19.8	17.7	17.0
Private Credit ^{5/,8/}	12.7	12.5	NA	NA
<i>S&P/LSTA Leveraged Loan Index +1%^{5/}</i>	4.3	5.3	NA	NA
Real Estate ^{5/}	17.3	10.0	7.0	7.7
<i>Real Estate Custom Benchmark^{5/,6/}</i>	24.9	10.5	8.8	9.8
<i>Consumer Price Index +3%^{5/}</i>	11.5	7.2	6.4	5.3
U.S. Equity	-14.5	9.3	9.8	11.9
<i>Russell 3000 Index</i>	-13.9	9.8	10.6	12.6
<i>S&P 1500 Index</i>	-11.0	10.3	10.9	12.8
International Developed Markets Equity	-17.0	2.7	3.1	6.3
<i>MSCI World ex U.S. IMI</i>	-17.7	1.7	2.6	5.5
Emerging Markets Equity	-28.6	1.9	2.9	3.7
<i>MSCI Emerging Markets IMI</i>	-24.8	1.2	2.3	3.2
Fixed Income	-9.4	-1.0	0.9	2.0
<i>Bloomberg U.S. Aggregate Bond Index</i>	-10.3	-0.9	0.9	1.5
Inflation Protection (TIPS)	-6.5	2.4	2.8	1.6
<i>Bloomberg U.S. TIPS Index</i>	-5.1	3.0	3.2	1.7
Cash	0.2	0.7	1.2	0.9
<i>ICE BofAML U.S. 3-Month Treasury Bill Index</i>	0.2	0.6	1.1	0.6
Total Fund^{7/}	-5.7%	6.8%	7.0%	7.4%
Total Fund Custom Benchmark	-5.7%	7.5%	7.5%	8.1%
Total Fund Custom Public Market Equivalent Benchmark	-8.0%	6.4%	6.9%	8.0%
Total Fund 60/40 Index	-13.9%	3.5%	4.7%	6.0%

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

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

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

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

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

^{6/}Calculated monthly using beginning of the month asset class weights applied to each corresponding primary benchmark return. The real estate custom benchmark consists of 90% NCREIF ODCE Index (1 Qtr lag) and 10% FTSE NAREIT Index (unlagged).

^{7/}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.

^{8/}Private Credit has an inception date of December 1, 2017. As of June 30, 2022, extended period returns beyond three years are unavailable.

DEFINED BENEFIT PLAN

Performance

Pension Fund Values and Annual Return

(\$ millions)

Year Ended	Pension Fund Fair Value	Annual Total Pension Fund Rate of Return ^{1/}
1993	\$13,701	13.2%
1994	13,330	-1.1
1995	16,343	25.2
1996	18,492	15.4
1997	21,312	18.5
1998	24,123	16.3
1999	28,093	19.9
2000	27,880	2.2
2001	24,706	-7.9
2002	20,880	-10.9
2003	24,536	24.3
2004	26,641	15.1
2005	28,752	14.5
2006	32,053	16.4
2007	35,516	17.2
2008	22,796	-28.7
2009	24,662	9.1
2010	25,886	11.9
2011	24,377	2.7
2012	25,389	12.0
2013	27,394	13.6
2014	27,338	6.4
2015	26,055	0.4
2016	26,388	6.5
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 ^{2/}	33,700	-12.2

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

^{2/}2022 values are estimated and unaudited. Fund fair values for all Private Equity, Real Estate, and Legacy Private Credit investments are reported on a quarter-lagged, cash-flow adjusted basis.



Fees & Expenses

DEFINED BENEFIT PLAN

Fees & Expenses

SERS' assets are managed by external investment managers hired by the SERS Board. SERS incurs various investment expenses associated with operating the defined benefit pension plan's investment portfolio. These costs include manager fees and manager expenses, as well as consultant, personnel, custodian, subscription, membership, and operational expenses not attributable to a specific asset class.

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 revenue 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.

The 2022 information in all tables below is estimated due to SERS' year-end occurring on December 31, 2022. This, along with the fact that private market investments report on a quarter-lagged basis, limits the information available as of the time this publication was prepared.

Investment Expenses

(\$ thousands for the year ended December 31, 2022)

Expense Category	Expenses
Manager Fees and Expenses	\$143,530
Investment professional personnel	4,611
Investment consultants	3,309
Custodian	999
Subscriptions and memberships	520
Operational	149
Total Investment Expenses	\$153,118

Consultant Expenses

(\$ thousands for the year ended December 31, 2022)

Firm	Service Type	Expenses
StepStone Group	Private equity investments	\$1,975
NEPC	Real estate investments	535
Callan	General investments	415
Fairview Capital Partners	Investment portfolio management	272
Other	Other	112
Total Consultant Expenses		\$3,309

DEFINED BENEFIT PLAN

Fees & Expenses

Cost Savings Initiatives

Since 2010, SERS has worked to reduce investment manager fees by approximately 58% from 95.9 basis points in 2010 to 40.1 basis points in 2022. Additionally, over the past several years, SERS has reduced its active

exposure across multiple asset classes and increased commitments to side-car and co-investments in the private market asset classes, which contributed to the trend of lowering investment costs. SERS continues to focus on negotiating lower fees with managers.

Manager Fees and Expenses

(\$ thousands for the year ended December 31, 2022)

Asset Class	Fees/Expenses	Fees/Expenses ^{1/} (in basis points)
Private Equity ^{2/}	\$75,694	119.6
Real Estate	30,825	106.0
U.S. Equity	2,745	2.5
International Developed Markets Equity	6,178	13.9
Emerging Markets Equity	6,875	55.5
Fixed Income	9,481	12.8
Inflation Protection (TIPS)	1,116	10.5
Legacy Private Credit ^{2/}	10,614	129.9
Legacy Hedge Funds	2	0.0
Total Manager Fees and Expenses	\$143,530	40.1

^{1/}The fees/expenses were divided by SERS total fund and asset class quarterly average values during calendar year 2022 to arrive at the basis point calculations.

^{2/}Effective July 1, 2022, thirteen funds were moved from the Private Credit asset class to the Private Equity asset class. The remaining funds were moved to Legacy Private Credit.

History of Manager Fees and Expenses

Calendar Year	Fees/Expenses ^{1/}	Fees/Expenses (in basis points)
2018	\$124,427,862	43.3
2019	169,969,812	58.3 ^{2/}
2020	140,038,195	45.3
2021	163,242,575	43.6
2022	143,530,000	40.1

^{1/}The current year manager fees/expenses total is an unaudited estimate based on the best data available at the time of publication of the Budget Book. The prior year totals were restated from estimates to actual amounts based upon finalization of the figures for SERS audited financial statements.

^{2/}Fees include approximately \$19 million in real estate incentive fees that were earned over a multi-year period but recorded in 2019.

DEFINED BENEFIT PLAN

Fees & Expenses

Annual Investment Managers 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.

The table below is a summary of SERS' most current Annual Investment Managers Fees and Expenses Report which shows managers' fees, expenses, and share of profits (carried interest paid). Carried Interest is the profit that investment managers, also known as general partners, are allocated from the total profits on the investments made in private market investment vehicles. SERS' share of profit in the private market investments (Real Estate, Private Credit, and Private Equity) are also included in the table.

Investment Managers Fees and Expenses Summary

For the year ended December 31, 2021

Asset Class	Managers Fees	Managers Operating Expenses	Total Managers Fees and Operating Expenses	Total Profits including Carried Interest	Managers Share of Profits (Carried Interest)	SERS' Share of Profits
Real Estate	\$27,776,004	\$7,446,177	\$35,222,181	\$512,594,945	\$3,743,379	\$508,851,567
Private Credit	19,931,435	6,521,007	26,452,441	171,586,883	6,133,565	165,453,318
Private Equity	51,654,353	18,311,209	69,965,562	2,104,196,990	164,315,392	1,939,881,599
Public Markets	30,374,036	1,228,354	31,602,390	NA	NA	NA
Total	\$129,735,828	\$33,506,747	\$163,242,574	\$2,788,378,818	\$174,192,335	\$2,614,186,484

Starting with the most recent report, SERS will begin submitting the report to the General Assembly as a supplement to this publication. It is important to note that SERS voluntarily produces this report. However, there have been several proposals offered during recent legislative sessions that would make providing this information mandatory.

Change in Disclosure from Prior Budget Book Publications

Historically, this section of the Budget Book has included a detailed listing of manager fees and expenses. As mentioned above, due to timing issues, amounts were heavily estimated and therefore sometimes different from data included in SERS' audited financial statements or the new Annual Investment Managers Fees and Expenses Report. Starting with the 2023 Supplemental Budget Book, these detailed estimates are not being included but are replaced by the more useful, accurate, and detailed information found in the Annual Investment Managers Fees and Expenses Report.

Assets

DEFINED BENEFIT PLAN

Assets | Private Equity

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, 2022

(\$ millions)

	Unfunded Commitments	Fair Value	% of Total Fund
Core Sub-Asset Classes			
Buyouts	\$1,432.9	\$3,566.2	10.6%
Special Situations	931.3	1,558.3	4.6
Growth Equity	264.7	1,194.0	3.5
Total Core Sub-Asset Classes	2,628.9	6,318.5	18.7
Non-Core Holdings^{1/}			
Keystone Legacy Fund ^{2/}	47.9	218.7	0.7
Total Private Equity	\$2,676.8	\$6,537.2	19.4%

^{1/}As of September 30, 2022 a total of 53 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.

^{2/}Unfunded commitment as of September 30, 2022.

DEFINED BENEFIT PLAN

Assets | Private Equity

Portfolio Exposure

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

As of September 30, 2022, based on fair value, the program's exposure was:

By Fund Sub-Sector		By Geography ^{2/}		By Industry ^{2/}	
U.S. Buyout	35.3%	United States	68.8%	Information Technology	36.5%
Non-U.S. ^{1/}	29.1	United Kingdom	5.6	Financials	13.5
Distressed/Oppportunistic	17.5	Germany	3.3	Consumer Discretionary	11.6
U.S. Growth Equity	15.9	China	2.4	Industrials	10.8
Pennsylvania-Related	2.2	India	2.0	Health Care	10.7
		South Korea	1.7	Telecommunication Services	4.8
		Brazil	1.4	Energy	4.5
		Rest of World	14.8	Consumer Staples	3.0
				Materials	2.2
				Utilities	1.4
				Real Estate	1.0

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

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

DEFINED BENEFIT PLAN

Assets | Private Equity

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 ^{1/}	Accumulated Capital Drawn	Accumulated Distributions ^{2/}
ABRY Partners V	Small	7/29/2005	\$45,000,000	\$41,752,543	\$84,778,199
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	38,327,711	51,418,870
ABRY Partners VIII	Middle	5/5/2015	25,000,000	29,797,547	37,018,048
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	8,774,997
Advent International GPE VII-B	Global	12/6/2012	40,000,000	38,400,000	61,725,466
Advent Latin American Private Equity Fund VI	Small	8/13/2015	25,000,000	23,250,000	12,292,073
Advent International GPE VIII-B	Global	9/26/2016	50,000,000	50,000,000	36,531,240
Altaris Health Partners V	Middle	4/22/2021	50,000,000	23,839,919	0
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	70,250,764	22,684,071
Asia Alternatives Capital Partners	Fund of Funds	6/26/2007	25,000,000	25,218,098	43,740,125
Asia Alternatives Capital Partners II	Fund of Funds	3/7/2008	29,949,500	29,086,059	63,934,436
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	55,461,442	70,160,481
Penn Asia Investors	Fund of Funds	9/28/2012	133,000,000	124,541,781	98,797,916
Asia Alternatives Capital Partners V	Fund of Funds	10/5/2017	50,000,000	45,956,059	6,615,201
Audax Private Equity Fund	Small	5/25/2000	35,000,000	36,839,098	56,057,910
Audax Private Equity Fund II	Small	6/17/2005	25,000,000	25,517,152	46,325,622
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	66,216,789
Audax Private Equity Fund VI	Small	8/29/2019	75,000,000	63,039,819	34,866,104
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

DEFINED BENEFIT PLAN

Assets | Private Equity

Buyouts Committed, Drawn, and Distributed (continued)

Active Buyout Funds Limited Partnership	Strategy/ Stage	SERS Initial Funding	Capital Committed ^{1/}	Accumulated Capital Drawn	Accumulated Distributions ^{2/}
Blackstone Capital IV	Global	2/26/2003	\$69,379,875	\$69,119,097	\$193,120,867
Blackstone Capital Partners V	Global	5/30/2006	150,000,000	150,111,788	250,429,596
Blackstone Capital Partners VII	Global	10/21/2016	50,000,000	52,833,582	25,941,485
Blackstone Capital Partners VIII	Global	2/22/2021	70,000,000	32,001,958	1,321,314
Capvis Equity IV	Small	1/30/2014	43,132,946	46,342,729	33,984,236
Carlyle Energy Mezzanine Opportunities Fund	Global	9/5/2012	50,000,000	65,562,454	35,193,274
Horizon Strategic Fund - Carlyle Group	Global	1/23/2014	100,000,000	106,487,031	139,026,602
CVC Capital Partners VII	Global	12/3/2018	91,543,991	83,206,244	11,464,344
CVC Capital Partners VIII	Global	12/13/2021	53,868,033	17,893,108	0
Eureka II	Small	1/30/2006	20,000,000	21,906,935	23,150,416
Eureka Growth Capital III	Small	10/21/2013	20,000,000	15,893,523	40,332,770
Francisco Partners II	Global	7/10/2006	30,000,000	29,383,916	48,613,520
Francisco Partners III	Global	10/17/2011	20,000,000	20,514,684	58,281,352
Francisco Partners IV	Global	4/15/2015	25,000,000	24,656,280	48,419,069
Francisco Partners VII	Global	*	100,000,000	0	0
Francisco Partners Agility III	Middle	*	30,000,000	0	0
Francisco Partners Sidecar	Co-Investment	*	50,000,000	0	0
FSN Capital IV	Small	12/19/2013	38,026,457	38,520,666	82,280,821
FSN Capital V	Small	1/4/2017	80,526,702	82,318,034	23,602,863
Great Hill Equity Partners IV	Middle	9/8/2008	25,000,000	25,125,662	60,470,403
GTCR VIII	Middle	7/7/2003	75,000,000	69,393,599	120,471,948
GTCR Fund XI	Middle	9/2/2014	25,000,000	24,249,240	47,807,055
GTCR Fund XII	Middle	5/4/2018	32,500,000	32,302,193	19,642,335
H.I.G. Growth Buyouts & Equity Fund II	Small	7/20/2011	15,000,000	16,437,126	18,130,531
H.I.G. Europe Capital Partners II	Middle	1/10/2014	24,436,963	22,568,576	17,832,358
H.I.G. Brazil and Latin America Partners	Middle	8/12/2015	50,000,000	51,442,736	13,658,868
Hahn & Company II	Small	5/29/2015	50,000,000	56,147,396	57,500,334
Hahn & Company III	Middle	12/20/2018	56,250,000	34,265,266	3,225,355
Hahn & Company III - Supplemental Fund	Middle	12/20/2018	18,750,000	16,519,660	57,377
HarbourVest IPEP III	Fund of Funds	6/30/1998	40,000,000	39,400,000	61,092,165
HIPEP V-Asia Pacific & Rest of World	Fund of Funds	5/9/2006	30,000,000	28,245,316	38,492,130
Horizon Impact Fund	Fund of Funds	10/24/2014	50,000,000	42,649,604	59,093,766
Horizon Impact Fund B	Fund of Funds	5/31/2017	100,000,000	85,000,000	24,255,000
HarbourVest PA Co-Investment Fund	Co-Investment	5/14/2020	200,000,000	139,275,000	3,300,000
Hellman & Friedman Capital Partners VI	Global	6/5/2007	125,000,000	119,913,412	225,852,507
Hellman & Friedman Capital Partners VIII	Global	9/1/2016	50,000,000	51,265,986	26,777,195
Hellman & Friedman Capital Partners IX	Global	1/1/2019	90,000,000	89,035,742	3,017,970
Hellman & Friedman Capital Partners X	Global	11/24/2021	100,000,000	54,509,574	0
Hellman & Friedman Capital Partners XI	Global	*	100,000,000	0	0

DEFINED BENEFIT PLAN

Assets | Private Equity

Buyouts Committed, Drawn, and Distributed (continued)

Active Buyout Funds Limited Partnership	Strategy/ Stage	SERS Initial Funding	Capital Committed ^{1/}	Accumulated Capital Drawn	Accumulated Distributions ^{2/}
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	65,168,492
LLR Equity Partners IV	Small	3/14/2014	50,000,000	45,485,764	94,788,431
LLR Equity Partners V	Small	3/21/2018	75,000,000	72,090,002	23,739,486
LLR Equity Partners VI	Small	5/13/2021	50,000,000	26,747,962	0
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	53,258,583	112,050,064
NGP XII	Middle	11/14/2018	75,000,000	53,541,498	19,311,606
NGP Keystone	Co-Investment	11/1/2021	25,000,000	10,150,000	0
Neuberger Berman PA Co-Investment Fund	Co-Investment	1/6/2021	200,000,000	70,743,110	10,474,930
Oaktree Power Opportunities Fund III	Large	10/18/2010	25,000,000	19,267,532	29,090,735
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	218,052,206
Permira IV	Global	12/14/2006	136,401,782	138,422,695	208,443,061
Permira VI	Global	1/10/2017	56,456,336	51,674,024	28,972,718
Permira VII	Global	2/4/2020	75,792,183	66,838,715	5,589,425
Permira Susquehanna Opportunities - Buyout	Co-Investment	1/26/2021	40,000,000	18,557,655	0
Primavera Capital Fund II	Global	11/17/2015	50,000,000	56,553,845	20,617,133
Primavera Capital Fund III	Global	4/12/2019	75,000,000	78,937,325	9,423,349
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	76,267,775
Ridgmont Equity Partners II	Small	11/30/2015	50,000,000	50,971,205	51,472,519
Sentinel Capital Partners V	Middle	7/15/2014	10,000,000	10,106,202	16,933,051
Sentinel Capital Partners VII	Large	*	100,000,000	0	0
Sentinel Junior Capital II	Middle	*	25,000,000	0	0
Silver Lake Partners V	Global	6/12/2018	78,000,000	77,305,381	22,053,745
Sterling Group Partners IV	Small	6/15/2016	20,000,000	20,059,401	16,321,713
TDR Capital IV	Middle	11/16/2018	86,989,447	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	47,072,121	12
Thoma Bravo Discover Fund III	Middle	6/11/2021	20,000,000	18,488,934	0
Thoma Bravo Fund XV	Global	6/10/2022	100,000,000	30,592,141	2,113
Thoma Bravo Discover Fund IV	Middle	*	50,000,000	0	0
Thoma Bravo Sidecar	Co-Investment	*	50,000,000	0	0

DEFINED BENEFIT PLAN

Assets | Private Equity

Buyouts Committed, Drawn, and Distributed (continued)

Active Buyout Funds Limited Partnership	Strategy/ Stage	SERS Initial Funding	Capital Committed ^{1/}	Accumulated Capital Drawn	Accumulated Distributions ^{2/}
TPG Partners IV	Global	12/29/2003	\$27,907,484	\$27,981,463	\$58,314,713
Newbridge Asia IV	Global	9/27/2005	40,000,000	38,903,378	87,467,582
TPG Partners V	Global	6/27/2006	88,831,038	92,531,812	130,072,991
TPG Asia V	Global	2/19/2008	22,500,000	21,964,311	28,780,401
TPG Partners VI	Global	5/22/2008	44,294,641	50,576,261	72,434,127
TSG8	Large	1/3/2020	100,000,000	71,652,621	708,467
TSG9	Large	*	100,000,000	0	0
Veritas Capital Fund VIII	Global	*	100,000,000	0	0
Veritas Capital Fund VIII Sidecar	Co-Investment	*	25,000,000	0	0
Vista Equity Partners Fund VI	Global	12/29/2016	150,000,000	187,372,613	151,993,242
Vista Equity Partners Fund VII	Global	2/13/2019	75,000,000	60,246,141	589,405
Wind Point Partners VIII	Small	9/14/2017	100,000,000	98,328,319	105,528,717
Wind Point Partners IX-A	Middle	2/26/2020	75,000,000	65,582,341	1,434,440
Total Active Buyouts			\$6,826,466,333	\$5,542,098,418	\$5,769,642,074

Cash flows as of September 30, 2022.

*Not funded as of September 30, 2022.

^{1/}Commitments as of December 31, 2022.

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

DEFINED BENEFIT PLAN

Assets | Private Equity

The Capital Committed column represents total dollars allocated from SERS to each limited partnership. Accumulated Capital Drawn is the portion of SERS' capital commitments drawn by the general partner to be invested with

underlying portfolio companies along with any reinvested capital. The Accumulated Distributions column shows the value of capital and profits returned to SERS.

Special Situations Committed, Drawn, and Distributed

Active Special Situations Funds Limited Partnership	Strategy/ Stage	SERS Initial Funding	Capital Committed ^{1/}	Accumulated Capital Drawn	Accumulated Distributions ^{2/}
ABRY Senior Equity II	Mezzanine	7/27/2006	\$30,000,000	\$28,388,642	\$45,127,413
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	61,566,351	34,879,744
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	65,938,925	46,531,810
ASF VII PA Co-Invest	Secondaries	5/18/2016	50,000,000	30,376,259	25,049,900
ASF VIII B	Secondaries	6/13/2019	100,000,000	47,817,186	8,803,917
ASF VIII PA Co-Invest	Secondaries	3/12/2020	50,000,000	23,388,233	2,445,110
ASF IX B	Secondaries	*	100,000,000	0	0
ASF IX B Sidecar	Secondaries	*	50,000,000	0	0
Ares PA Opportunities Fund - Distressed Debt	Distressed/ Turnaround	12/20/2019	200,000,000	115,407,537	12,425,293
Ares PA Opportunities Fund - Diversified Credit	Distressed/ Turnaround	12/15/2020	100,000,000	32,110,485	795,306
Ares PA Opportunities Fund - Special Situations	Distressed/ Turnaround	2/22/2021	100,000,000	80,858,200	10,623,117
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	39,046,310	34,171,080
Clearlake Capital Partners IV	Distressed/ Turnaround	9/1/2015	15,000,000	23,358,908	35,754,798
Clearlake Capital Partners V	Distressed/ Turnaround	2/1/2018	55,000,000	77,646,490	96,626,029
Clearlake Opportunities Partners II	Distressed/ Turnaround	8/30/2019	75,000,000	35,498,908	13,071,618
Clearlake Capital Partners VI	Distressed/ Turnaround	5/22/2020	60,000,000	60,712,437	5,025,825
Clearlake Capital Partners VII	Distressed/ Turnaround	4/26/2022	100,000,000	34,482,593	2,434
Clearlake Opportunities Partners III	Distressed/ Turnaround	*	75,000,000	0	0
Glendon Opportunities Fund II	Distressed/ Turnaround	10/18/2019	150,000,000	120,000,000	0

DEFINED BENEFIT PLAN

Assets | Private Equity

Special Situations Committed, Drawn, and Distributed (continued)

Active Special Situations Funds Limited Partnership	Strategy/ Stage	SERS Initial Funding	Capital Committed ^{1/}	Accumulated Capital Drawn	Accumulated Distributions ^{2/}
H.I.G. Bayside Debt & LBO Fund II	Distressed/ Turnaround	6/17/2008	\$30,000,000	\$31,448,253	\$49,922,160
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	40,749,123
HPS Mezzanine Partners 2019	Mezzanine	11/16/2020	75,000,000	70,351,768	13,665,301
ICG Europe Fund VII	Mezzanine	8/24/2018	90,127,911	69,909,022	14,310,490
ICG Europe Mid-Market Fund	Mezzanine	4/8/2020	73,380,097	38,689,381	821
KPS Special Situations Fund IV	Distressed/ Turnaround	5/8/2014	25,000,000	23,664,899	24,498,289
KPS Special Situations Mid-Cap Fund	Distressed/ Turnaround	11/25/2019	25,000,000	13,549,226	1,815,403
KPS Special Situations Fund V	Distressed/ Turnaround	7/13/2020	75,000,000	42,261,702	2,093,983
LBC Credit Partners III	Mezzanine	3/4/2013	50,000,000	46,696,243	53,797,275
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	73,712,907
OCM Opportunities Fund VII	Distressed/ Turnaround	5/16/2007	40,000,000	40,000,000	54,885,803
OCM Opportunities Fund VII b	Distressed/ Turnaround	6/3/2008	40,000,000	36,000,000	62,318,740
OCM Opportunities Fund VIII	Distressed/ Turnaround	9/20/2010	12,500,000	12,583,425	18,176,218
OCM Opportunities Fund VIII b	Distressed/ Turnaround	8/22/2011	12,500,000	12,500,000	14,285,884
Oaktree Opportunities Fund IX	Distressed/ Turnaround	3/26/2013	50,000,000	50,000,000	36,583,854
Platinum Equity Capital Partners III	Distressed/ Turnaround	8/5/2013	50,000,000	47,112,591	88,903,502
RRJ Capital Master Fund III	Mezzanine	12/10/2015	50,000,000	50,952,419	45,549,274
Sixth Street TAO 4.0 (B)	Distressed/ Turnaround	11/9/2017	100,000,000	91,934,516	43,479,252
Sixth Street Opportunities Partners IV (A)	Distressed/ Turnaround	1/25/2019	50,000,000	40,045,949	5,821,838
Sixth Street TAO Contingent (D)	Distressed/ Turnaround	4/16/2020	150,000,000	85,198,554	16,717,554
Sixth Street Opportunities Partners V	Distressed/ Turnaround	6/7/2022	50,000,000	10,857,933	6,132
Total Active Special Situations			\$3,075,770,958	\$2,212,746,079	\$1,702,651,743

Cash flows as of September 30, 2022.

*Not funded as of September 30, 2022.

^{1/}Commitments as of December 31, 2022.

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

DEFINED BENEFIT PLAN

Assets | Private Equity

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 ^{1/}	Accumulated Capital Drawn	Accumulated Distributions ^{2/}
Battery Ventures VIII	Venture Capital	8/13/2007	\$25,000,000	\$25,050,751	\$60,396,581
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	117,075,996
HarbourVest Partners VIII	Fund of Funds	10/5/2006	100,000,000	98,000,000	175,678,948
Insight Venture Partners VII	Large	4/27/2011	20,000,000	22,129,992	53,076,524
Insight Venture Partners VIII	Large	7/10/2013	50,000,000	54,316,419	112,350,209
Insight Venture Partners IX	Large	3/24/2015	50,000,000	52,784,788	54,495,120
Insight Venture Partners X	Large	4/17/2018	100,000,000	102,723,487	43,430,287
Insight Partners XI	Large	3/25/2020	75,000,000	72,975,000	133,132
Insight Partners XII	Large	8/27/2021	50,000,000	29,539,234	13,043
JMI Equity Fund VI	Medium	6/27/2007	40,000,000	40,000,246	70,593,347
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	27,275,000	47,848,119
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	36,819,713
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	44,043,149
Meritech Capital Partners V	Venture Capital	9/3/2014	23,000,000	22,310,000	147,276,664
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

DEFINED BENEFIT PLAN

Assets | Private Equity

Growth Equity Committed, Drawn, and Distributed (continued)

Active Growth Equity Funds Limited Partnership	Strategy/ Stage	SERS Initial Funding	Capital Committed ^{1/}	Accumulated Capital Drawn	Accumulated Distributions ^{2/}
Providence Strategic Growth II	Small	12/7/2016	\$60,000,000	\$78,342,165	\$125,642,940
Providence Strategic Growth III	Small	7/26/2018	75,000,000	67,313,012	68,736,745
Providence Strategic Growth IV	Small	3/27/2020	75,000,000	56,559,825	35,816,731
Providence Strategic Growth Europe	Small	5/7/2021	71,531,229	51,661,879	4,449,647
PSG V	Small	12/23/2021	50,000,000	17,121,360	1,272,118
PSG Europe II	Small	*	69,722,216	0	0
T. Rowe Price Stock Distribution Account ^{3/}	Various	1/3/2005	0	1,403,870,495	1,463,316,881
TCV X	Large	5/17/2019	75,000,000	56,289,972	0
Weathergag Venture Capital	Fund of Funds	6/26/2007	25,000,000	22,875,000	45,461,479
Weathergag Venture Capital II	Fund of Funds	6/29/2010	25,000,000	23,250,000	54,829,514
Total Active Growth Equity			\$1,569,021,445	\$2,803,492,600	\$3,291,305,405

Cash flows as of September 30, 2022.

*Not funded as of September 30, 2022.

^{1/}Commitments as of December 31, 2022.

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

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

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 ^{1/}	Accumulated Capital Drawn	Accumulated Distributions ^{2/}
Keystone Legacy Non-Core Fund ^{3/}	Various	7/1/2018	\$1,556,558,167	\$1,561,943,600	\$1,824,623,019
Total Legacy Private Equity			\$1,556,558,167	\$1,561,943,600	\$1,824,623,019

Cash flows as of September 30, 2022.

^{1/}Commitments as of September 30, 2022.

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

^{3/}As of September 30, 2022 a total of 53 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.

DEFINED BENEFIT PLAN

Assets | Real Estate

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 5-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, 2022
(\$ millions)

Sub-Asset Class	Fair Value	% of Total Fund
Core/Core Plus ^{1/}	\$1,301.2	3.9%
Value Add/Oppportunistic Funds ^{2/}	790.9	2.3
Value Add/Oppportunistic SMA	560.3	1.7
Real Estate Securities	290.5	0.8
Legacy Real Assets	0.5	0.0
Total Real Estate	\$2,943.4	8.7%

^{1/}As of September 30, 2022, unfunded commitments are \$21.4 million.

^{2/}As of September 30, 2022, unfunded commitments are \$481.3 million.

DEFINED BENEFIT PLAN

Assets | Real Estate

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 ^{1/}	Accumulated Capital Drawn	Accumulated Distributions
Core/Core Plus Real Estate					
Blackstone Property Partners	Diversified	2017	\$300,000,000	\$300,000,000	\$9,748,156
Heitman America Real Estate Trust	Diversified	2007	100,000,000	100,000,000	94,568,377
Henderson Park Enhanced Income Fund	Diversified	2019	340,291,953	318,867,566	65,810,167
Oak Street Real Estate Capital Net Lease Property Fund	Diversified	2019	309,743,743	309,743,743	31,612,627
UBS Trumbull Property Fund	Diversified	1988	25,558,525	25,558,525	125,194,232
Total Core/Core Plus Real Estate			1,075,594,221	1,054,169,834	326,933,559
Value Add/Oppportunistic Funds					
Activum SG Fund VI	Diversified	2019	56,361,791	48,293,986	0
Activum SG Fund VI Pennsylvania Side-Car	Diversified	2021	53,544,144	32,672,729	0
AG Asia Realty Fund	Diversified	2007	25,000,000	23,500,000	27,487,500
Berwind Investment Partnership VI	Diversified	2002	24,543,712	24,543,712	44,831,120
Berwind Investment Partnership VII	Diversified	2005	25,000,000	25,000,000	17,497,341
Berwind Investment Partnership IX	Diversified	2012	25,000,000	24,303,409	40,087,976
Blackstone Real Estate Partners IV	Diversified	2003	25,000,000	25,000,000	40,994,391
Blackstone Real Estate Partners V	Diversified	2006	50,000,000	47,912,974	100,208,300
Blackstone Real Estate Partners VI	Diversified	2007	75,000,000	71,319,075	153,141,400
Blackstone Real Estate Partners VII	Diversified	2011	75,000,000	66,651,613	119,944,217
Blackstone Real Estate Partners X	Diversified	*	75,000,000	0	0
Blue Moon Senior Housing II	Senior Housing	2020	50,000,000	28,354,119	0
Blue Moon Senior Housing II Sidecar	Senior Housing	2020	50,000,000	29,287,411	0
C-III Recovery Fund III	Diversified	2017	100,000,000	86,316,255	8,072,741
Colony Investors VIII	Diversified	2007	22,500,000	21,655,800	8,350,233
Hawkeye Scout Fund II	Diversified	2016	30,000,000	30,000,000	605,865
LEM Multifamily Fund VI	Multifamily	2022	75,000,000	11,250,000	554,348
Lubert Adler Fund VII	Diversified	2014	25,000,000	24,375,000	13,463,917
Mesirow Financial Real Estate Value Fund III	Multifamily	2018	25,647,559	25,647,559	7,229,822
Oak Street Real Estate Capital Fund IV	Diversified	2017	100,000,000	100,000,000	110,140,777
Oak Street Real Estate Capital Fund V	Diversified	2020	50,000,000	27,460,000	7,234,372

DEFINED BENEFIT PLAN

Assets | Real Estate

Real Estate (continued)

Active Fund/Manager	Asset Type	SERS Initial Funding	Capital Committed ^{1/}	Accumulated Capital Drawn	Accumulated Distributions
Value Add/Oppportunistic Funds (continued)					
Oak Street Real Estate Fund VI	Diversified	*	\$75,000,000	\$0	\$0
Prudential Senior Housing Fund V	Senior Housing	2015	45,727,881	41,137,690	4,886,698
Prudential Senior Housing Fund VI	Senior Housing	2019	100,000,000	55,508,772	0
Rockpoint Real Estate Fund II	Diversified	2005	34,138,784	34,138,784	31,202,182
Rockpoint Real Estate Fund III	Diversified	2007	50,632,887	46,391,722	68,151,141
Rockpoint Real Estate Fund V	Diversified	2015	50,000,000	41,336,913	25,396,310
Rubicon First Ascent	Office	2021	30,000,000	5,679,551	0
Rubicon First Ascent Sidecar	Office	2022	20,000,000	4,852,389	0
SRE Opportunity Fund III	Diversified	2017	50,000,000	34,313,561	13,863,561
SRE Opportunity Fund III Select	Diversified	2017	50,000,000	29,537,500	18,329,003
Starwood Fund VI	Diversified	2001	50,000,000	50,000,000	51,927,126
Starwood Fund VII	Diversified	2006	35,000,000	35,000,000	27,295,581
Starwood Fund VIII	Diversified	2009	50,000,000	45,356,281	72,256,025
ValStone Opportunity Fund V	Diversified	2014	14,663,402	14,663,402	9,029,834
Westbrook Fund V	Diversified	2004	25,000,000	25,000,000	52,005,779
Westbrook Fund VI	Diversified	2006	35,000,000	35,000,000	38,837,150
Westbrook Fund VII	Diversified	2007	50,000,000	50,000,000	56,575,755
Westbrook Fund VIII	Diversified	2009	50,000,000	50,000,000	63,418,319
Total Value Add/Oppportunistic Funds			1,852,760,160	1,371,460,207	1,233,018,784
Value Add/Oppportunistic SMA^{2/}					
Heitman I.M.A.	Diversified	1988	NA	813,635,039	1,230,476,873
hotelAVE I.M.A.	Hotel	2018	NA	63,048,685	20,191,396
LaSalle I.M.A.	Diversified	1994	NA	457,193,866	778,848,456
LaSalle Takeover I.M.A.	Diversified	2018	NA	273,818,219	172,440,449
Total Value Add/Oppportunistic SMA			NA	1,607,695,809	2,201,957,174
Legacy Real Assets^{2/}					
Forest I.M.A.	Timberland	1992	NA	124,231,969	247,882,576
Total Legacy Real Assets			NA	124,231,969	247,882,576
Real Estate Securities^{2/}					
CenterSquare Real Estate Securities	Diversified	2002	NA	183,616,773	36,168,336
Total Real Estate Securities			NA	183,616,773	36,168,336
Total Active Real Estate			\$2,928,354,381	\$4,341,174,592	\$4,045,960,429

Cash flows as of September 30, 2022.

*Not funded as of September 30, 2022.

^{1/}Commitments as of December 31, 2022.

^{2/}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.

DEFINED BENEFIT PLAN

Assets | U.S. Equity

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 (90% Russell 1000 Index / 10% Russell 2000 Index) over 5-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, 2022
(\$ millions)

Manager	Investment Style	Fair Value
U.S. Large/Mid Cap		
Mellon Investments Corporation Russell 1000	U.S. Large Cap Equity	\$9,349.4
Total U.S. Large/Mid Cap		9,349.4
U.S. Small Cap		
Emerald Asset Management	U.S. Small Cap Growth Equity	335.1
Mellon Investments Corporation Russell 2000 Core	U.S. Small Cap Equity	407.2
Mellon Investments Corporation Russell 2000 Value	U.S. Small Cap Value Equity	321.6
Total U.S. Small Cap		1,063.9
Total U.S. Equity		\$10,413.3

¹Includes securities and cash, which the manager had available for investment.

DEFINED BENEFIT PLAN

Assets | International Developed Markets Equity

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 5-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, 2022

(\$ millions)

Manager	Investment Style	Fair Value
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	3,371.5
Harris Associates	World ex-U.S. Small Cap Equity	126.0
Mellon Investments Corporation MSCI World ex U.S. Index	MSCI World ex-U.S. Index	2.1
Morgan Stanley Investment Management Limited-developed ex U.S.	EAFE value	0.2
Northern Trust - Equity	Transition	1.1
Templeton Investment Counsel - Global ex U.S.	Global ex-U.S. value	0.7
Walter Scott & Partners Limited	Global Equity	662.9
Xponance	International Small Cap Equity	202.5
Total International Developed Markets Equity		\$4,367.6

⁴/Includes securities and cash, which the manager had available for investment.

DEFINED BENEFIT PLAN

Assets | Emerging Markets Equity

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 5-year periods (annualized, net of fees).

Structure

Emerging Markets Equity investments are traditional equity investments 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, 2022

(\$ millions)

Manager	Investment Style	Fair Value
BlackRock MSCI Emerging Markets Index	Emerging Markets Equity	\$167.9
GlobeFlex Capital	Emerging Markets Small Cap Equity	121.4
Leading Edge Investment Advisors	Emerging Markets Equity	214.8
Macquarie Emerging Markets	Emerging Markets Equity	308.3
Martin Currie Investment Management	Emerging Markets Equity	336.3
Total Emerging Markets Equity		\$1,148.7

^{1/}Includes securities and cash, which the manager had available for investment.

DEFINED BENEFIT PLAN

Assets | Fixed Income

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 5-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, 2022
(\$ millions)

Manager	Investment Style	Fair Value
Core Fixed Income		
Mellon Investments Corporation Bond Index	U.S. Aggregate Bond	\$3,858.9
PIMCO Core	U.S. Aggregate Bond	511.2
Total Core Fixed Income		4,370.1
Nominal US Treasuries		
Mellon Investments Corporation Intermediate Treasury Bond Index	U.S. Intermediate Treasuries	263.1
Mellon Investments Corporation Long Duration Bond Index	U.S. Long Duration Treasuries	485.2
PIMCO U.S. Treasuries	U.S. Treasuries	85.9
Total Nominal US Treasuries		834.2
Opportunistic Fixed Income		
Blackstone Keystone	Fund-of-Funds	854.4
Total Opportunistic Fixed Income		854.4
Legacy Fixed Income		
Brandywine Global	Global Sovereign Credit	0.1
Fidelity Institutional Asset Management	Commercial Mortgage-Backed Securities	245.2
SEI Structured Credit Fund	High Yield Bank Loans	0.5
Stone Harbor HY	Global High Yield	0.3
Total Legacy Fixed Income		246.1
Total Fixed Income		\$6,304.8

⁴Includes securities and cash, which the manager had available for investment.

DEFINED BENEFIT PLAN

Assets | Inflation Protection (TIPS)

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 5-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, 2022
(\$ millions)

Manager	Investment Style	Fair Value
Brown Brothers Harriman	U.S. TIPS	\$459.9
New Century Advisors	Global TIPS	108.1
NISA Investment Advisors	U.S. TIPS	437.9
Total Inflation Protection (TIPS)		\$1,005.9

⁴Includes securities and cash, which the manager had available for investment.

DEFINED BENEFIT PLAN

Assets | Cash

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, 2022
(\$ millions)

Manager	Investment Style	Fair Value
PA State Treasury (STIF)	Cash	\$575.5
Total Cash		\$575.5

⁴Includes securities and cash, which the manager had available for investment.

DEFINED BENEFIT PLAN

Assets | Legacy Private Credit

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.

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.

Structure

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

Status

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

Legacy Private Credit

as of December 31, 2022
(\$ millions)

Sub-Asset Class	Unfunded Commitments	Fair Value	% of Total Fund
Total Legacy Private Credit	\$174.4	\$386.4	1.2%

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 ^{1/}	Accumulated Capital Drawn	Accumulated Distributions ^{2/}
Apollo Hybrid Value Fund	Diversified Credit	12/24/2018	\$100,000,000	\$130,370,471	\$82,506,269
Ares PA Opportunities Fund - Direct Lending	Direct Lending	10/12/2021	100,000,000	62,801,102	0
Audax Direct Lending Solutions Fund-A	Direct Lending	10/26/2018	100,000,000	91,068,458	49,376,700
Brightwood Capital Fund IV	Direct Lending	4/24/2018	100,000,000	100,000,000	36,851,306
ICG North American Private Debt Fund II	Direct Lending	2/27/2019	50,000,000	35,200,737	11,863,206
Permira Credit Solutions IV Master (Feeder) SCSp	Direct Lending	9/26/2019	75,000,000	54,466,899	11,510,367
Permira Susquehanna Opportunities - Credit	Direct Lending	4/7/2021	60,000,000	12,287,712	539,209
Total Active Legacy Private Credit Funds			\$585,000,000	\$486,195,379	\$192,647,057

Cash flows as of September 30, 2022.

^{1/}Commitments as of December 31, 2022.

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

DEFINED BENEFIT PLAN

Assets | Legacy Hedge Funds

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, 2022
(\$ millions)

Manager	Investment Style	Fair Value
Entrust Keystone	Fund-of-Funds	\$0.3
Legacy Hedge Funds	Fund-of-Funds	14.5
Luxor Capital Partners	Direct Hedge Fund	1.9
Total Legacy Hedge Funds		\$16.7

⁴Includes securities and cash, which the manager had available for investment.



Pennsylvania Investments

DEFINED BENEFIT PLAN

Pennsylvania Investments

Pennsylvania Investments

The board, employees of SERS, and agents of the board stand in a fiduciary relationship to the members and beneficiaries of the system regarding the investments and disbursements of the SERS Fund. Subject to prudent investor investment responsibilities contained in the Retirement Code and the Fiscal Code, the board has exclusive control and management of the SERS Fund and full power to invest the assets of the SERS Fund (the board adopted a formal *Statement of Investment Policy* in 1979).

Where investment characteristics are equivalent, the Retirement Code and the board's current policy favor investments that have a positive impact on the economy of Pennsylvania.

Although the board's fiduciary duty is to SERS members and beneficiaries, investments in Pennsylvania provide an ancillary and subordinate benefit to the state's economy. The investment policy acknowledges that such benefit, derived from investments in Pennsylvania-based companies or firms employing Pennsylvanians, should be considered after other primary fiduciary investment characteristics are satisfied.

Fair value of Pennsylvania investments as of December 31, 2022, was approximately \$608.2 million.

Pennsylvania Investments by Asset Class

(\$ millions)

Asset Class	Total PA Fair Value
Private Equity ^{1/}	\$78.3
U.S. Equity	274.1
Real Estate ^{1/}	229.7
Fixed Income	26.1
Total Pennsylvania Investments	\$608.2

^{1/}Private Equity and Real Estate are valued as of September 30, 2022.

Private Equity

SERS' Private Equity program dates back to 1985. Initially the program targeted a 1% allocation to growth equity with a focus to invest with managers located in Pennsylvania or with managers who had Pennsylvania investment mandates. Over its life, the program has grown to include national and international based private equity, special situation, and growth equity managers. Since inception, SERS' Private Equity program has made commitments of approximately \$1.3 billion to 66 limited partnerships based in Pennsylvania. In addition, the number of non-Pennsylvania based managers investing in companies that impact the state comprises a meaningful portion of the program.

As of September 30, 2022, SERS' active Private Equity managers held investments in 26 Pennsylvania-based companies. SERS' pro-rata investment value in these companies is approximately \$78.3 million. This equates to 1.2% of the Private Equity program fair value and does not include investments headquartered outside of Pennsylvania that may have impactful operations within the state.

U.S. Equity and Fixed Income

SERS maintains a universe of institutionally investable Pennsylvania-based companies. The PA-based company universe is comprised of 166 institutionally investable publicly traded corporations which:

- Name their headquarters as Pennsylvania and have Pennsylvania employees or operations
- Have Pennsylvania-based employment exceeding 25% of total corporate employment

DEFINED BENEFIT PLAN

Pennsylvania Investments

SERS had approximately \$274 million invested in stocks of Pennsylvania-based companies, as of December 31, 2022. These securities are held in SERS' various externally managed global public equity portfolios.

Pennsylvania Investments - U.S. Equity

(\$ millions)

Manager	Fair Value
Emerald Advisers	\$27.7
Mellon Investments Corporation	237.3
Walter Scott	\$9.1
Total Pennsylvania Investments - U.S. Equity	\$274.1

SERS had approximately \$26 million invested in fixed income securities issued by Pennsylvania-based companies, as of December 31, 2022. These securities are held in SERS' various externally managed bond portfolios.

Pennsylvania Investments - Fixed Income

(\$ millions)

Manager	Fair Value
Mellon Investments Corporation	\$25.9
PIMCO	0.2
Total Pennsylvania Investments - Fixed Income	\$26.1

SERS had approximately \$576 million invested in the Pennsylvania Treasury Department's short-term investment pool.

Real Estate

In 1987, SERS began investing directly in the Pennsylvania commercial real estate market and subsequently established two separate account real estate portfolios managed by Heitman Capital Management and Grosvenor Investment Management, whose portfolio is now managed by LaSalle Investment Management and reported as a part of the LaSalle Takeover Account. In addition, SERS has invested as a limited partner in several real estate funds, which have acquired, and currently hold, numerous properties in Pennsylvania. All of the above noted investments are reflected in the data below.

As of September 30, 2022, the SERS real estate portfolio contained approximately 58 private real estate investments located in Pennsylvania, totaling 9.5 million square feet of office, retail, warehouse, and mixed-use space, 755 apartment, hotel, student housing, and senior housing units, and 4,559 self-storage units.

The gross fair value of the real estate assets located in Pennsylvania totaled approximately \$1.8 billion, of which SERS ownership share was approximately \$223 million.

In addition to the above, SERS owned approximately \$6.7 million worth of PA-based assets in publicly traded real estate investment trusts.

Minority/Woman-Owned Firms

DEFINED BENEFIT PLAN

Minority/Woman-Owned Firms

Minority/Woman-Owned Investment Managers

The board defines “diverse investment manager” as an investment management firm owned and/or controlled by a majority of persons who are women and/or minorities.

The board encourages the use of diverse investment managers in managing SERS' assets, encompassing all asset classes, within the bounds of financial and fiduciary prudence, and to take affirmative steps to remove any barriers to the full participation in investment opportunities. SERS believes that professionals and decision-makers who come from diverse backgrounds contribute different points of view

that enhance organizational quality and economic performance.

The firms listed in Table 1 classify themselves as minority and/or woman-owned firms and were under contract with SERS to provide investment management services within SERS' Equity or Fixed Income portfolio as of December 31, 2022.

The firms listed in Table 2 were recognized by SERS' consultants or self-reported as minority and/or woman-owned firms and were under contract with SERS to provide investment management services within SERS' Private Equity, Real Estate or Legacy Private Credit portfolio as of December 31, 2022.

Table 1
Minority/Women-Owned Firms Within SERS Equity & Fixed Income Portfolios

Firm	Status	SERS Assets Under Management
GlobeFlex Capital	Minority/Woman-Owned	\$121 million market value
Leading Edge Investment Advisors	Minority-Owned	\$215 million market value
New Century Advisors	Woman-Owned	\$108 million market value
Xponance	Minority/Woman-Owned	\$203 million market value

Table 2
Minority/Women-Owned Firms Within SERS Private Equity, Real Estate & Legacy Private Credit Portfolios

Firm	Status	SERS Committed Capital
Asia Alternatives Capital Partners	Minority/Woman-Owned	\$295 million
Brightwood Capital	Minority-Owned	\$100 million
Blue Moon Capital Partners	Woman-Owned	\$100 million
Clearlake Capital Partners^{1/}	Minority-Owned	\$380 million
Fairview Capital Partners	Minority/Woman-Owned	*
hotelAVE	Woman-Owned	NA
Hawkeye Partners^{1/}	Woman-Owned	\$30 million
Rubicon Point Partners	Minority/Woman-Owned	\$50 million
Thoma Bravo^{1/}	Minority-Owned	\$345 million
TSG Consumer Partners^{1/}	Minority-Owned	\$200 million
Veritas Capital Partners^{1/}	Minority-Owned	\$125 million
Vista Equity Partners^{1/}	Minority-Owned	\$225 million
Weathergage Capital^{1/}	Woman-Owned	\$50 million

^{1/}Minority/Woman-owned firm identified by SERS' consultants with less than a majority or minority/woman ownership.

*The Keystone Legacy Fund is a special purpose vehicle to manage SERS' remaining 53 non-core funds as of September 30, 2022, which includes Buyouts, Special Situations, and Growth Equity.

DEFINED BENEFIT PLAN

Minority/Woman-Owned Firms

Minority/ Woman-Owned Brokers Brokerage Commissions

The table below lists the minority/woman-owned brokerage firms utilized by SERS' external investment managers during calendar year 2022, as reported to SERS by SERS' external investment managers.

The board seeks to have managers direct trades through minority/woman-owned firms and reserves the right to establish proposed

trading targets. However, the responsibility for the selection and use of minority brokerage firms is delegated to the investment managers. Minority/woman-owned brokerage firms' commissions totaled \$119,833 for the year. It is estimated this year that SERS' Equity managers directed approximately 2% of their trades through minority/woman-owned brokerage firms. Fixed Income managers traded a combined \$378.3 million of securities through minority/woman-owned brokerage firms.

Firm	Minority/ Woman-Owned Commissions
Academy Securities	\$1,887
Guzman & Company	14,238
Loop Capital	28,845
Mischler Financial Group	10,473
North South Capital	20,779
Sturdivant & Company	38,393
Telsey Advisory	5,218
Total Minority/Woman-Owned Commissions	\$119,833



Deferred Compensation Plan

As of and for the year ended December 31, 2022

\$320 million

distributions/withdrawals
in 2022

\$4.1

billion in
assets



56,752

accounts

76

eligible employers

Participant Contributions

\$177 million

Total FY 2023-24 Planned Budget



\$1.8 million

**\$1.6
million**

personnel

**\$0.2
million**

operations

Excerpts from operations =

consultants - non EDP **\$155,000**

specialized services **\$25,000**

printing **\$10,000**

legal services/fees **\$15,000**

DEFERRED COMPENSATION PLAN

Plan Description

Most state employees are eligible to participate in the voluntary Deferred Compensation Plan, commonly referred to as “deferred comp.” The plan allows participants to have some of their pay automatically deducted on a before- and/or after-tax basis and invested for retirement.

Participants can contribute as little as \$5 or 0.5% of pay each pay period and as much as the annual IRS contribution limits.

Participants are eligible for withdrawals or distribution of their deferred comp account when they retire, leave state employment, die, suffer an unforeseeable emergency as defined by the Internal Revenue Code, or to purchase service credit in the SERS Defined Benefit Plan.

Established by Act 1987-81, this voluntary supplemental investment plan was established as a trust and is administered in accordance with Internal Revenue Code 457(b). The plan allows participants the flexibility to make traditional before-tax and Roth after-tax contributions.

The SERS Board selects the investment options offered through this plan, contracts with investment managers, and contracts through a competitive bid with the third-party administrator of the plan, currently Empower. Empower maintains participant records, carries out investment transactions on behalf of the participants, counsels participants, and markets the plan.

Investment options comprise a series of target date funds that include a post-retirement date fund, equity funds, fixed income funds, a money market fund, and a self-directed brokerage option.

A majority of the cost of administering the deferred comp plan is borne by participants. During 2022, staff continued examining internal and third-party administrator processes to find efficiencies and see where costs could be reduced and/or services improved. The work resulted in a reduced recordkeeping fee described in the [Recent Changes section](#).

DEFERRED COMPENSATION PLAN

Plan Description

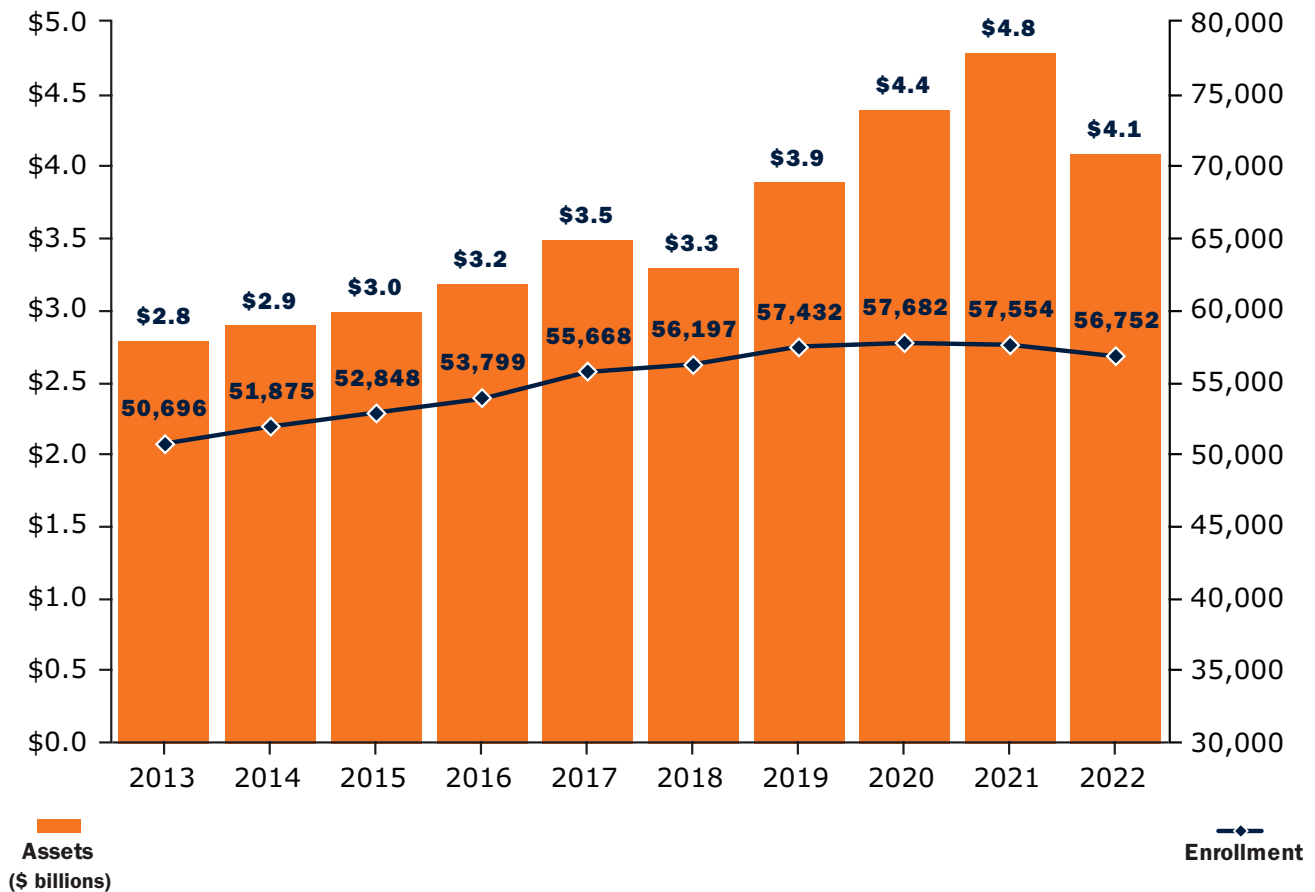
Growth of Deferred Comp

In 2022, more than 56,000 participants had a total of approximately \$4.1 billion invested in deferred comp.

As of December 31, 2022, there were 32,272 active and 24,480 inactive participants in

deferred comp. From 2013 to 2022, annual deferrals have ranged from \$127 million to \$177 million per year and the total fund value grew from approximately \$2.8 billion to approximately \$4.1 billion.

Deferred Comp Assets & Enrollment



DEFERRED COMPENSATION PLAN

Plan Description

Recent Changes

In 2022, the plan experienced the following changes:

Reduced Recordkeeping Fee

- On July 1, 2022, the recordkeeping fee paid by plan participants dropped from \$4.65 to \$4.55 per month. The fee helps pay for plan administration services provided by the plan's third-party administrator, Empower. It helps pay for costs associated with administering the participants' online accounts; plan specialists who field participants' questions, including the specialists who can provide investment counseling; and "back office" staff who update and verify account activity, handle regular filings in compliance with federal investment service regulations, and manage a number of other tasks.

Began Publishing Investment Manager Evaluation Lists Online

- Each quarter, our general investment consultant prepares a list of the plan's investment managers identified as experiencing quantitative or qualitative pattern changes worthy of greater review by SERS' investment office and external investment consultants. While placement of an investment manager on the list does not automatically serve as evidence of a problem with the manager, it indicates that staff and consultants are more closely monitoring the manager. We began posting the quarterly lists on the agency's public website so that plan participants can be aware of our increased monitoring of managers and generally, why. You can view the list at sers.pa.gov/DeferredCompensationPlan-Investing.html

Deferred Compensation Plan Statistics

as of and for the year-ended December 31, 2022

Participants	56,752 total accounts 32,272 actively contributing participants
Assets	\$4.1 billion
Eligible Employers	76
Total Participant Contributions	\$177 million
Total Rollovers Into the Plan	650 totaling \$56 million
Total Rollovers Out of the Plan	1,745 totaling \$198 million
Total Distributions/Withdrawals	28,621 totaling \$320 million

DEFERRED COMPENSATION PLAN

Participation, Assets, Performance, and Fund Expense

Deferred Compensation Plan Investment Options

Participation, Assets, Performance, and Fund Expense
as of December 31, 2022

Fund Name	Participants	Fund Balance	Inception Date	Estimated Calendar Year, Net-of-Fees Returns					Max Total Investment Fund Expense
				1 Year	3 Year	5 Year	10 Year		
Stable Value Fund	35,214	\$1,180,750,128	12-2003	1.73%	1.89%	2.12%	2.14%	0.2520% ^{1/}	
Post Retirement Date Fund	3,769	210,416,638	08-2005	(14.63)	0.74	2.68	4.02	0.0775 ^{2/}	
2025 Retirement Date Fund	2,587	135,338,060	07-2006	(15.23)	1.20	3.18	5.29	0.0775 ^{2/}	
2030 Retirement Date Fund	3,020	129,067,552	08-2005	(15.97)	1.87	3.78	5.99	0.0775 ^{2/}	
2035 Retirement Date Fund	3,228	114,356,957	07-2006	(16.67)	2.50	4.35	6.66	0.0775 ^{2/}	
2040 Retirement Date Fund	2,603	73,003,480	08-2005	(17.35)	3.04	4.83	7.22	0.0775 ^{2/}	
2045 Retirement Date Fund	2,461	59,706,928	07-2006	(17.89)	3.53	5.21	7.68	0.0775 ^{2/}	
2050 Retirement Date Fund	1,996	37,897,076	09-2007	(18.20)	3.79	5.40	7.94	0.0775 ^{2/}	
2055 Retirement Date Fund	1,153	13,888,250	05-2010	(18.27)	3.85	5.44	8.06	0.0775 ^{2/}	
2060 Retirement Date Fund	616	5,390,397	11-2014	(18.28)	3.84	5.43	NA	0.0775 ^{2/}	
2065 Retirement Date Fund	253	4,219,359	09-2019	(18.30)	3.77	NA	NA	0.0775 ^{2/}	
U.S. Large Company Stock Index Fund	35,198	1,138,993,725	12-1994	(18.12)	7.67	9.43	12.57	0.0150 ^{2/}	
U.S. Small/Mid Company Stock Index Fund	28,749	371,662,489	08-1998	(26.13)	3.26	5.06	9.74	0.0250 ^{2/}	
Global Non-U.S. Stock Index Fund	19,491	171,081,645	03-2009	(15.92)	0.30	1.14	3.95	0.0450 ^{2/}	
U.S. Bond Index Fund	21,821	197,818,916	02-1995	(12.94)	(2.71)	0.02	1.02	0.0200 ^{2/}	
Short-Term Investment Fund	17,550	96,846,484	10-1988	1.59	0.77	1.34	0.89	0.0000	
Charles Schwab Self-Directed Brokerage ^{3/}	3,254	143,184,718	NA	NA	NA	NA	NA	NA	

^{1/}The Stable Value Fund expense will fluctuate very little based on the balance of the fund.

^{2/}Maximum possible expense that can be charged.

^{3/}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.

In addition, the Plan charges an admin fee for accounts with a balance greater than \$5,000:

- \$1.00 flat fee per month; plus
- 0.02% of account value annually, to be withheld on a monthly basis, not to exceed \$50 annually