

As of and for the year ended December 31, 2021

**DEFINED BENEFIT PLAN**

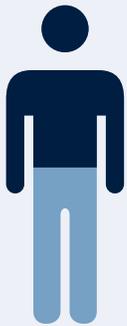
Traditional Pension

**Defined Benefit Plan**



**\$34.0 million**

FY 2022-23 Administrative Budget



In 2021 SERS retired **4,841** members and welcomed **9,065** new members

**68.6%** funded  
**\$16.5** billion unfunded liability

paid more than **\$3.7 billion** in pension benefits

**\$39.9** billion in assets

**101** employers

**51%** of SERS active employees belong to post-Act 120 classes of service

SERS Fund 2021 Investment Return **17.2%**

**134,360** retirees & beneficiaries

**97,857** active members

average retired member **73** years old receives **\$30,712** per year at full retirement

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

**DEFINED CONTRIBUTION PLAN**

Investment Option

**Defined Contribution Plan**



**\$4.4 million**

FY 2022-23 Administrative Budget

**\$1.7 million** distributions/withdrawals

**\$75.1** million in assets

**18,707** accounts

**101** employers

**Contributions** participant \$17.4 million employer \$11.6 million

**DEFERRED COMPENSATION PLAN**

Supplemental Benefit

**Deferred Compensation Plan**



**\$1.5 million**

FY 2022-23 Administrative Budget (majority of plan costs paid by plan participants)

**\$294 million** distributions/withdrawals

**\$4.8** billion in assets

**57,554** accounts

**76** eligible employers

**Participant Contributions** \$174 million

**SERS 2022 Supplemental Budget Book**



SERS.pa.gov | 1.800.633.5461

Data throughout is estimated/unaudited

February 28, 2022

Honorable Stan Saylor  
Majority Chairman  
House Appropriations Committee  
245 Main Capitol  
Harrisburg, PA 17120-2094

Honorable Patrick M. Browne  
Majority Chairman  
Senate Appropriations Committee  
281 Main Capitol  
Harrisburg, PA 17120-3016

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

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

Chairmen and Members of the Appropriations Committee:

I am pleased to present you with this financial overview for the Pennsylvania State Employees' Retirement System for FY 2022-23. For the coming fiscal year, SERS proposes a \$34.0 million administrative budget for our Defined Benefit Plan, funded from member and employer contributions and investment earnings.

As we enter our 99<sup>th</sup> year of existence, it is a time of both change and continuity. Last year brought changes in key leadership roles at SERS. In December, Joseph A. Torta was named Executive Director. Though new to this role, Joe has more than 32 years with SERS. He started out working in a regional field office, meeting one-on-one with our members and participants to assist them with their retirement issues and concerns, and most recently was Deputy Executive Director for Member and Participant Services. Earlier, in July, James G. Nolan was named Chief Investment Officer. Jim had served as Deputy CIO since coming to SERS in 2015, and as Acting CIO on several occasions.

The past year, 2021, brought an array of economic challenges, many stemming from the ongoing COVID pandemic, as well as supply chain woes and growing inflation concerns. Thanks in part to our investment strategy and updated asset allocation targets that continue to be refined, SERS finished 2021 in positive territory.

During 2021, SERS experienced investment gains of approximately 17.2% for our Defined Benefit Plan, more than double the fund's assumed rate of return. Thanks to these positive returns, six years of full funding from the General Assembly, the receipt of approximately \$825 million from the Pennsylvania State System of Higher Education's prepayment of its unfunded liabilities (made possible by Act 2019-105), and ongoing efforts to implement efficiencies and transparency across SERS, we continue to progress toward our long-term goal of eliminating our unfunded liability.

SERS expects to receive nearly \$2.1 billion (33.81% of payroll) from commonwealth employers in our Defined Benefit Plan during the current fiscal year. While these significant contribution amounts will continue through the next decade, large annual increases have peaked following significant steps by the Governor and legislature over the past decade to fully fund the actuarially determined contributions.

This year SERS will serve nearly 238,000 members and participants, and administer more than 57,000 Deferred Compensation Plan accounts. In 2021, the average retiree who worked to full retirement age was 73 years old and received an average pension annuity of \$30,712. In 2021, SERS paid out more than \$3.7 billion pension benefit payments to the commonwealth's retirees and their beneficiaries, of which nearly \$3.4 billion was paid to members living in Pennsylvania.

We remain committed to preparing our members and participants to achieve financial success and security in retirement.

Sincerely,



David R. Fillman  
Chairman

# SERS 2022 SUPPLEMENTAL BUDGET BOOK

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# SERS Organization

# SERS ORGANIZATION

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## 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 \$45 billion in assets held in trust for nearly 238,000 members and participants, as of December 31, 2021. SERS also administers more than 57,000 accounts on behalf of those who participate in the supplemental Deferred Compensation Plan.

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 2021, the agency made the following changes:

- **Selected New Leadership in Two Key Positions**  
During 2021, the agency experienced changes in two leadership positions– the Executive Director and Chief Investment Officer.

In December, the board selected Deputy Executive Director Joseph A. Torta as Executive Director to replace the retiring Terrill (Terri) Sanchez. Joe has 32 years of experience with SERS, focusing on member and participant services.

# SERS ORGANIZATION

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## Agency Description

In July, the board named Acting Chief Investment Officer James G. Nolan to the position permanently, filling the vacancy after prior CIO Seth Kelly resigned the position. Jim served as Deputy Chief Investment Officer since arriving at SERS in 2015 and as acting CIO on several occasions.

- **Became a Hybrid On-site/Telework Employer**

In September 2021, the agency became a hybrid on-site/telework employer. The move was planned to build on the productivity experienced during the temporary emergency telework days of the COVID-19 pandemic, increase employee morale, and expand the agency's pool of potential hires for most positions to beyond the Harrisburg area. The hybrid on-site/telework structure was built on the Office of Administration's Telework guidelines, detailed in Management Directive 505.36, and SERS policies.

- **Expanded the Board Education Policy**

In February 2021, the board amended the *Board Education Policy* to reflect additional training requirements enacted by state Act 2020-128. Beginning in 2022, all board members are required to complete an additional two hours of training for a total of 10 hours of mandatory training in investment strategies, actuarial cost analysis, asset allocation, risk assessment and retirement portfolio management, in addition to the one hour of required ethics training. In addition, board members appointed to serve on the Audit, Risk and Compliance Committee on or after February 24, 2021, must complete 16 hours of training in risk assessments, internal controls and auditing standards.

- **Conducted Board Fiduciary and Self-Assessment Review**

In December 2020, the board engaged Funston Advisory Services LLC to review the board's performance in four task areas (non-economic investment requirements, the asset liability matching process, legislative positioning: reactive and proactive, and investment manager selection/due diligence/monitoring/termination) and to assist the board in its review and assessment of its performance and identify subject areas that may be appropriate for educational/training sessions. Funston issued a final report in April 2021, detailing the results of the reviews. This work continues the board's focus on governance and followed an initial review of the board's policies and governance structure conducted in late 2015. A full report on that initial governance review was issued in March 2016.

- **Expanded Diversity, Equity and Inclusion Efforts**

SERS leadership has expanded diversity, equity, and inclusion (DEI) efforts at the agency – both in terms of working with nontraditional investment managers, and in recruiting professional staff, with the goal of attracting more candidates representing diverse communities.

As part of this effort, the Investment Office is leveraging ties with organizations such as Fairview Capital Partners, Inc., a minority/woman-owned private equity fund manager, and other entities, to identify strategies for increasing SERS' visibility within DEI communities.

We also are reaching out to key resources such as Cheyney University, business executives, state agency leaders, and representatives of other organizations to gather knowledge and expertise to help us target diverse candidates.

# SERS ORGANIZATION

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## Mission, Vision, Strategic Priorities & Guiding Principles

In the fall of 2020, SERS adopted a new strategic plan to guide the agency's work through fiscal year (FY) 2022-23. 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

# SERS ORGANIZATION

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## Services & Operations

The approximately 200 employees who work for SERS share a singular focus: serving SERS' members and participants. Some SERS employees serve members by investing and overseeing nearly \$45 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 quarter 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

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## 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 (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 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 division 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

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## 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 contracting, purchasing, leasing, facilities management, safety and security, continuity of operations, printing, mailing, fleet management, records retention, 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 12/31/21

<sup>1/</sup>The Chief Compliance Officer is housed administratively in the Chief Counsel's Office.

# SERS ORGANIZATION

## Proposed FY 2022-23 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 2022-23 Administrative Budget

	Rebudget FY 2018-19	Rebudget FY 2019-20	Rebudget FY 2020-21	Rebudget FY 2021-22	Budget Request
<b>Personnel Services</b>	\$17,084,000 <sup>1/</sup>	\$18,380,500	\$19,030,000	\$20,529,514	\$21,871,000
<b>Operational</b>					
Travel	65,800	90,000	115,050	122,350	129,050
Training	138,550	103,300	167,500	216,350	320,368
Communication Services	471,500 <sup>1/</sup>	548,000	659,100	518,985	505,125
Consultants - Non EDP	820,000 <sup>1/</sup>	1,053,500	1,301,200	1,090,000	995,000
Legal Services/Fees	521,100 <sup>1/</sup>	755,500	525,500	280,500	255,500
Specialized Services	1,571,400 <sup>1/</sup>	1,221,600	912,300	1,118,165	1,774,422
Advertising	8,000	8,000	5,000	5,000	5,000
IT Consulting	4,353,000 <sup>1/</sup>	4,228,000	2,451,100	4,046,674	3,327,100
Contracted Maintenance Non-IT	65,400	47,300	58,000	60,500	60,500
Hardware/Software and Maintenance	1,610,250	1,639,000	2,068,900	1,792,838	1,857,920
Real Estate	1,926,250 <sup>1/</sup>	1,971,000	1,772,500	1,994,500	1,758,580
Vehicles	25,000	26,800	29,100	30,400	30,400
Office Equipment	215,800 <sup>1/</sup>	159,400	376,000	170,950	149,000
Other Rentals/Leases	6,300	4,000	10,000	10,000	10,050
Office Supplies	117,050 <sup>1/</sup>	106,000	84,350	81,400	119,900
Educational Supplies	82,000 <sup>1/</sup>	1,700	500	3,000	3,600
Motorized Equipment Maintenance	4,000	6,000	10,100	10,100	10,600
Postage	610,500 <sup>1/</sup>	595,500	595,500	718,391	587,150
Freight	3,200	4,000	2,700	2,750	4,000
Printing	209,600 <sup>1/</sup>	132,000	150,200	142,050	131,150
Subscriptions & Licensing	43,900	58,100	57,500	179,250	117,547
Membership Dues	27,900	37,900	53,700	74,713	90,305
Conference Expenses	16,500	31,900	12,000	15,320	12,320
Insurance, Surety, & Fidelity Bonds	13,000	13,000	13,000	13,000	5,000
Treasury Services	1,475,500	1,500,000	0	0	0
Other Operational	530,500	336,000	1,485,200	972,300	1,047,413
<b>Total Operational</b>	14,932,000	14,677,500	12,916,000	13,669,486	13,307,000
<b>Fixed Assets</b>	250,000	250,000	250,000	370,000	370,000
<b>Less Directed Commissions</b>	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000
<b>Total Annual Budget</b>	<b>\$30,766,000</b>	<b>\$31,808,000</b>	<b>\$30,696,000</b>	<b>\$33,069,000</b>	<b>\$34,048,000</b>

<sup>1/</sup>Figures include amounts needed to implement the defined benefit portion of Act 2017-5.

# SERS ORGANIZATION

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## Proposed FY 2022-23 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 2021-22 Budget	FY 2022-23 Budget
<b>Beginning Balance</b>	<b>\$3,681,844</b>	<b>\$2,231,844</b>
Directed Commission Revenue	50,000	100,000
<b>Total Available</b>	<b>3,731,844</b>	<b>2,331,844</b>
Directed Commission Expense	1,500,000	1,500,000
<b>Ending Balance</b>	<b>\$2,231,844</b>	<b>\$831,844</b>

# SERS ORGANIZATION

## Proposed FY 2022-23 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 2022-23 Investment Budget

	Rebudget FY 2018-19	Rebudget FY 2019-20	Rebudget FY 2020-21	Rebudget FY 2021-22	Budget Request
<b>Personnel Services</b>	\$4,786,000	\$4,601,000	\$4,894,000	\$5,176,919	\$5,289,000
<b>Operational</b>					
Travel	202,200	302,500	309,000	156,400	151,116
Training	45,900	61,100	72,200	64,060	65,800
Consultants - Non EDP	3,753,600	4,162,500	4,095,000	3,890,000	4,300,400
Legal Services/Fees	300,000	200,000	280,000	80,000	120,000
Specialized Services	1,000	214,000	98,400	93,600	254,467
Advertising	24,000	34,000	15,000	15,000	10,000
IT Consulting	0	0	129,200	135,607	98,767
Hardware/Software and Maintenance	312,700	2,700	2,700	189,081	404,000
Real Estate	0	0	28,000	31,000	177,920
Vehicles	0	0	1,200	1,000	0
Office Equipment	0	0	37,500	5,500	2,500
Office Supplies	1,500	1,700	1,600	1,800	800
Printing	1,000	1,000	1,000	600	400
Subscriptions & Licensing	644,700	1,434,200	1,410,900	1,632,480	637,780
Membership Dues	66,900	66,800	56,300	57,052	59,950
Conference Expenses	2,500	2,500	0	3,100	3,100
Other Operational Expenses	0	0	0	79,500	54,000
<b>Total Operational</b>	5,356,000	6,483,000	6,538,000	6,435,780	6,341,000
<b>Total Annual Budget</b>	<b>\$10,142,000</b>	<b>\$11,084,000</b>	<b>\$11,432,000</b>	<b>\$11,612,699</b>	<b>\$11,630,000</b>

# SERS ORGANIZATION

## Proposed FY 2022-23 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 2022-23 Defined Contribution Plan Budget

	Rebudget FY 2018-19 <sup>1/</sup>	Rebudget FY 2019-20	Rebudget FY 2020-21	Rebudget FY 2021-22	Budget Request
<b>Personnel Services</b>	\$2,782,000	\$2,357,000	\$2,081,000	\$2,256,000	\$2,387,000
<b>Operational</b>					
Travel	0	12,400	25,700	8,000	4,391
Training	0	8,500	12,200	12,500	1,200
Communication Services	0	0	5,400	1,015	375
Consultants - Non EDP	287,500	125,000	122,000	96,500	98,384
Legal Services/Fees	193,000	200,000	150,000	100,000	100,000
Specialized Services	1,230,000	541,000	1,219,000	1,290,000	1,415,000
Advertising	0	0	2,000	0	0
IT Consulting	100,000	100,000	280,000	357,513	56,000
Telecom - Voice - Services	2,500	0	0	0	0
Hardware/Software and Maintenance	0	0	27,900	32,162	108,080
Facilities and Equipment	0	0	100	0	0
Real Estate	56,000	148,700	180,000	78,000	133,920
Office Equipment	0	0	25,900	3,250	0
Office Supplies	0	0	10,300	3,250	9,600
Educational Supplies	0	0	100	0	0
Postage	125,000	101,000	250,000	30,000	13,350
Freight	0	0	100	0	0
Printing	125,000	48,100	52,700	25,000	2,800
Subscriptions & Licensing	0	0	200	0	0
Membership Dues	0	0	4,600	4,810	900
Conference Expenses	0	1,300	2,500	0	0
Insurance, Surety, & Fidelity Bonds	0	0	100,000	100,000	100,000
Other Operational	0	209,000	5,300	0	0
<b>Total Operational</b>	2,119,000	1,495,000	2,476,000	2,142,000	2,044,000
<b>Total Annual Budget</b>	<b>\$4,901,000</b>	<b>\$3,852,000</b>	<b>\$4,557,000</b>	<b>\$4,398,000</b>	<b>\$4,431,000</b>

<sup>1/</sup>Figures include amounts needed to implement the defined contribution portion of Act 2017-5.

# SERS ORGANIZATION

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## Proposed FY 2022-23 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 2022-23 Deferred Compensation Plan Budget

	Budget Request
<b>Personnel Services</b>	\$1,190,000
<b>Operational</b>	
Travel	2,058
Training	600
Consultants - Non EDP	155,342
Legal Services/Fees	15,000
Specialized Services	25,000
Printing	20,000
Other Operational	45,000
<b>Total Operational</b>	263,000
<b>Total Annual Budget</b>	<b>\$1,453,000</b>

# SERS ORGANIZATION

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## Legislation

### Legislation Enacted During 2021

#### **Act 2021-59: Transferring Responsibilities from the Pennsylvania Board of Probation and Parole (PBPP) to the Department of Corrections (DOC)**

Signed into law on June 30, 2021, Act 2021-59 amended provisions of the Judicial Code and the Prisons and Parole Code to transfer and shift responsibilities from the PBPP to the DOC. Among other things, State parole agents would be appointed, employed, and supervised by the DOC, rather than the PBPP.

The definition of Enforcement Officer was amended in the State Employees' Retirement Code that allowed affected parole agents to maintain their age 50 or age 55 superannuation age and be immediately eligible for disability annuities.

#### **Act 2021-65: Updating Sunshine Act Requirements**

Signed into law on June 30, 2021, Act 2021-65 amended the Sunshine Act to require a public agency to post meeting agendas at the meeting location, at the agency's office location, and on the agency's website no later than 24 hours prior to a meeting, as well as prohibit an agency from taking official action on items not in the meeting agenda. SERS' Chief Counsel has determined that the agency's current practices are compliant with the legislation.

#### **Act 2021-73: Reporting of Rule Suspensions/Extensions Due to COVID-19**

Signed into law on September 30, 2021, Act 2021-73 requires state authorities to publish on their respective websites, a report concerning rules, statutes, and policies that were suspended as a result of the COVID-19 pandemic and the Governor's emergency declaration, and submit the report to the General Assembly no later than November 1, 2021. The report was to include a list of each suspension/extension along with a reference to the statute, order, rule, or regulation that was suspended and the date the suspension was terminated.



## Hybrid Plan



**12,988**  
hybrid members

**12,490**  
Class A-5

**498**  
Class A-6

**101**  
employers

# HYBRID PLAN

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## 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 Retirement. 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 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 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, 2021

<b>Participants</b>	12,988 total 12,490 A-5 Class of Service 498 A-6 Class of Service
<b>Assets</b>	see the <i>Defined Contribution Plan</i> and <i>Defined Benefit Plan</i> sections for the assets in each plan.
<b>Number of Employers</b>	101

**DEFINED  
CONTRIBUTION  
PLAN**

Investment Option

# Defined Contribution Plan

**\$1.7 million**

distributions/withdrawals  
in 2021

**\$75.1**

million in  
assets

**As of Dec 31, 2021**



**18,707**

accounts

**101**

employers

## Contributions

participant **\$17.4 million**  
employer **\$11.6 million**

## Total FY 2022-23 Planned Budget



**\$4.4 million**

**\$2.4  
million**

personnel

**\$2.0  
million**

operations

Excerpts from operations =

specialized services **\$1.4 million**

real estate **\$133,920**

hardware/software & maintenance **\$108,080**

legal services **\$100,000**

IT consulting-system upgrade **\$56,000**

postage **\$13,350**

# 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 Retirement. 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, 2021, participant accounts totaled \$75.1 million.

Plan administrative costs during 2021 were funded through a per-participant assessment charged to employers, which was lower than

the prior year's charge, as described below. As of December 31, 2021, the plan had approximately \$5.1 million available for plan administration.

As the plan becomes more established, we are working to identify potential cost-saving initiatives. During 2021, 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 2021, the plan experienced the following change:

- **Decreased Per-Participant Charge**  
The per-participant charge paid by employers in FY 2021-22 dropped by more than \$500 from the prior, inaugural fiscal year to \$165.64. Starting in FY 2020-21, employers pay an annual per-participant charge to cover the cost of plan administration. The charge is based on the cost of operating the plan and the total number of employees actively enrolled in the plan as of December 31, of the prior year. The decrease was achieved through:
  - Cost-saving initiatives resulting in a lower plan budget
  - Act 2020-94, which allowed us to use "unvested" employer contributions for plan administration. (If an employee leaves state employment before becoming "vested" in the plan – before working three years – the contributions their employer made toward their retirement account remain in the plan.)

# DEFINED CONTRIBUTION PLAN

## Plan Description

- Credit for projected FY 2020-21 surplus
- The increase in active participants (the plan opened to participants in 2019 and participation will continue to grow each year).

### Defined Contribution Plan Statistics

as of December 31, 2021

<b>Participants</b>	18,707 total accounts 13,441 participants contributing to the plan Hybrid Plan participants 12,988 Defined Contribution Plan participants 453 5,266 inactive accounts
<b>Assets</b>	\$75.1 million
<b>Number of Employers</b>	101
<b>Total Participant Mandatory Contributions</b>	\$17.4 million
<b>Total Employer Contributions</b>	\$11.6 million
<b>Total Rollovers into the Plan</b>	98 totaling \$4.0 million
<b>Total Rollovers Out of the Plan</b>	114 totaling \$856,000
<b>Total Distributions/Withdrawals</b>	620 totaling \$1.7 million
<b>Total Voluntary After-Tax Contributions</b>	\$828,000

# DEFINED CONTRIBUTION PLAN

## Participation, Assets, Performance, and Fund Expense

### Defined Contribution Plan Investment Options

Participation, Assets, Performance, and Fund Expense  
as of December 31, 2021

Fund Name	Participants	Fund Balance	Inception Date	Estimated Calendar Year, Net-of-Fees Returns					Max Total Investment Fund Expense <sup>1/</sup>
				1 Year	3 Year	5 Year	10 Year		
Post Retirement Date Fund	408	\$1,059,063	08-2005	6.96%	11.47%	8.05%	6.57%	0.0775%	
2025 Retirement Date Fund	841	3,077,116	07-2006	8.99	13.19	9.46	8.28	0.0775	
2030 Retirement Date Fund	1,426	5,866,372	08-2005	11.43	14.96	10.66	9.21	0.0775	
2035 Retirement Date Fund	1,767	7,758,015	07-2006	13.80	16.66	11.81	10.08	0.0775	
2040 Retirement Date Fund	1,732	7,046,524	08-2005	15.96	18.19	12.82	10.83	0.0775	
2045 Retirement Date Fund	1,815	7,799,267	07-2006	17.72	19.43	13.59	11.45	0.0775	
2050 Retirement Date Fund	2,071	8,788,739	09-2007	18.67	20.07	13.96	11.83	0.0775	
2055 Retirement Date Fund	2,316	8,819,763	05-2010	18.83	20.18	14.01	12.03	0.0775	
2060 Retirement Date Fund	2,807	8,458,562	11-2014	18.82	20.17	14.00	NA	0.0775	
2065 Retirement Date Fund	2,953	5,240,856	09-2019	18.77	NA	NA	NA	0.0775	
U.S. Large Company Stock Index Fund	704	2,968,439	12-1994	28.70	26.09	18.49	16.57	0.0150	
U.S. Small/Mid Company Stock Index Fund	205	669,099	08-1998	12.89	24.09	15.42	15.01	0.0250	
U.S. All Company Stock Index Fund	539	1,165,275	01-2011	25.61	25.72	17.91	16.28	0.0250	
Global Non-U.S. Stock Index Fund	543	1,580,504	03-2009	11.57	14.00	10.00	8.39	0.0550	
U.S. Bond Index Fund	484	762,610	02-1995	(1.65)	4.76	3.55	2.86	0.0250	
U.S. Short-Term Bond Index Fund	59	26,665	12-2017	(0.52)	2.27	NA	NA	0.0250	
U.S. Treasury Inflation Protected Security Index Fund <sup>2/</sup>	314	210,120	07-2007	5.87	8.40	NA	NA	0.0250	
Short-Term Investment Fund <sup>3/</sup>	258	3,709,609	10-1988	0.07	1.00	1.23	0.75	0.0000	
Charles Schwab Self-Directed Brokerage <sup>4/</sup>	19	88,112	NA	NA	NA	NA	NA	NA	

<sup>1/</sup>Maximum possible expense that can be charged.

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

<sup>3/</sup>Short-Term Investment Fund balance includes \$3.3 million in unvested employer contributions forfeited to the Plan.

<sup>4/</sup>For those in the Self-Directed Brokerage Option (SDB), the asset fee is assessed against the balance in the SDB but the actual deduction is prorated against the core investment options separately.

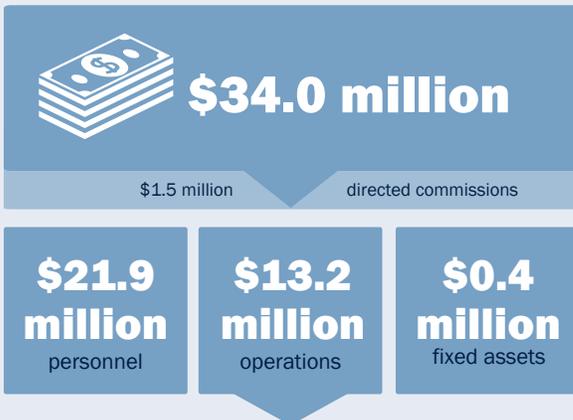
The Plan's monthly recordkeeping fee is \$4.65 per participant and is paid by plan employers in the form of an annual per-participant charge.

**DEFINED  
BENEFIT  
PLAN**

Traditional Pension

# Defined Benefit Plan

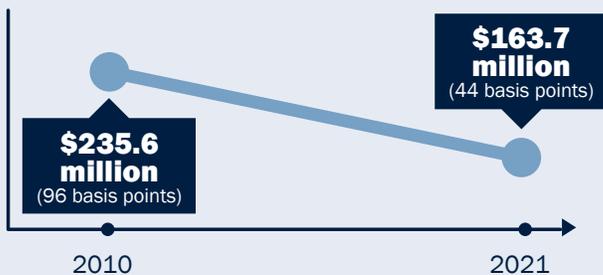
## Total FY 2022-23 Spending Request



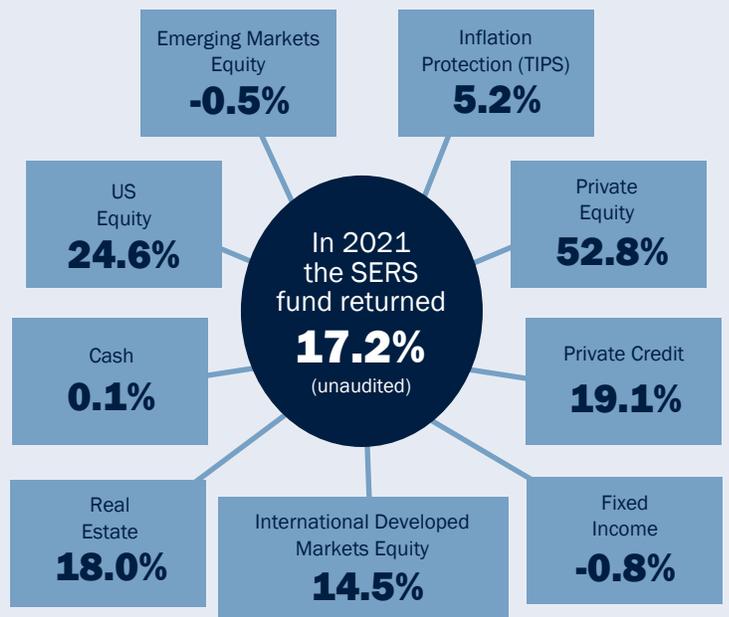
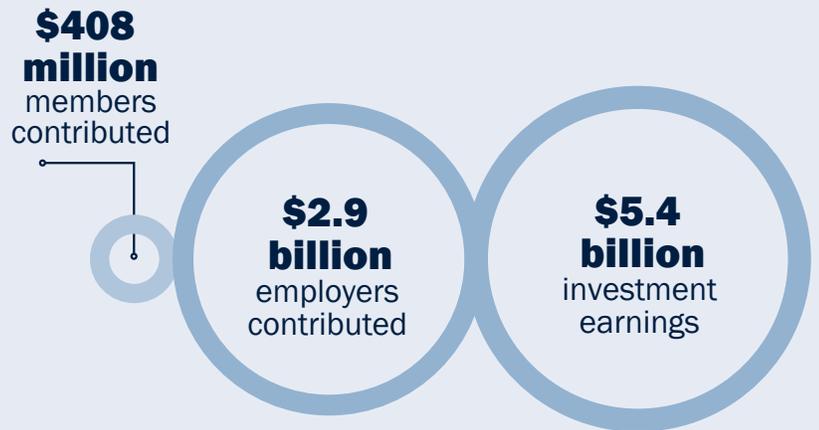
Excerpts from operations =

- IT consulting-system upgrade **\$3.3 million**
- hardware/software maintenance **\$1.9 million**
- real estate **\$1.8 million**
- postage **\$0.6 million**
- legal services **\$0.3 million**
- office equipment **\$0.1 million**

## SERS decreased manager fees and expenses



## 2021 Contributions to the SERS Fund

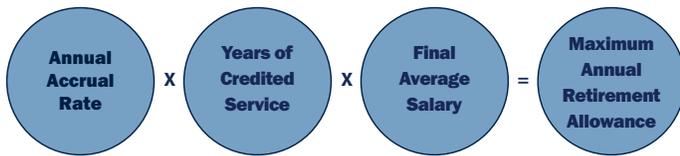


# DEFINED BENEFIT PLAN

## 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 2021-22, employers on average are contributing 33.81% 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 2021, the plan experienced the following changes:

- **Accepted \$825 Million Payment from PASSHE**

In April 2021, the Pennsylvania State System of Higher Education submitted a payment of \$825 million toward its total unfunded liability for the pension benefits of its employees. 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.

# DEFINED BENEFIT PLAN

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## Plan Description

The payment was made possible by Act 2019-105, that 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.

- **Adjusting the Normal Cost Calculation**

The “normal cost” of the pension benefit will be calculated slightly differently beginning with the 2021 actuarial valuation to be published in June 2022. Rather than basing it on the cost of the pension benefit earned by just the new members who entered the system that year, the normal cost will be based on the cost of the benefit earned by a blend of all active members in the system that year. As a result, a greater portion of the cost of benefits will be recognized in the “normal cost” rather than adding to the unfunded liability.

- **Worked to Convert Paper Benefit Payments to Electronic Payments**

In 2021, the agency adjusted internal processes to make it easier for retirees and other benefit recipients to designate an account to electronically receive their monthly benefit payments. The process changes were followed with an education campaign that included a letter sent to each member, survivor, and beneficiary who receives monthly benefit payments by paper check, newsletter article and website advertising promoting the change. As a result, 20% of all paper check recipients converted to electronic payments.

- **Amended the Investment Policy Statement**

Focusing on asset allocation policy, the board amended the *Defined Benefit Investment Policy Statement* three times during 2021.

In April, the board reduced the private equity target allocation, identified a total equity exposure target that considers both public and private equity allocations together, and added a micro-cap equity allocation to the statement.

In July, the board updated the policy target asset allocation.

In December, the board added criteria related to veteran-owned investment management firms within the Emerging Investment Manager Program.

- **Received Nearly Double the Number of Death Notifications**

During 2021, the agency received 4,715 annuitant death notifications, nearly twice the number received in 2020.

# DEFINED BENEFIT PLAN

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## Plan Description

### Defined Benefit Plan Statistics

As of December 31, 2021

<b>Members</b>	237,788 total 97,857 active contributing members Hybrid Plan 12,988 Defined Benefit Plan only 84,869 5,571 vested members not receiving benefits 134,360 retired members and beneficiaries
<b>Assets</b>	\$39.9 billion
<b>Number of Employers</b>	101
<b>Total Employee Contributions</b>	\$407.6 million
<b>Total Employer Contributions</b>	\$2.9 billion
<b>Total 2021 Benefit Payments</b>	\$3.7 billion



# Members

# DEFINED BENEFIT PLAN

## Members

### Total Active & Annuitant Members

Year Ending December 31	Total Members <sup>1/</sup>	Active Members	Annuitants & Beneficiaries
2021	232,217	97,857	134,360
2020	234,296	100,962	133,334
2019	235,581	102,850	132,731
2018	234,014	103,007	131,007
2017	232,451	102,978	129,473
2016	231,970	104,632	127,338
2015	229,714	105,025	124,689
2014	226,680	104,431	122,249
2013	225,238	105,186	120,052
2012	223,109	106,048	117,061

<sup>1/</sup>Totals do not include inactive members.

### Active Members: Age & Service

Average Age	46.6
Average Years of Service	11.8

### Total Annuitants & Beneficiaries: By Category

	2018	2019	2020	2021
Normal	65,968	67,307	68,105	69,231
Early	44,383	44,423	44,132	43,762
Disability	8,626	8,637	8,524	8,443
Beneficiary/Survivor	12,030	12,364	12,573	12,924

### Annuitants & Beneficiaries: Average Age

	2018	2019	2020	2021
Normal	72.4	72.5	72.6	72.7
Early	65.1	65.5	66.0	66.5
Disability	64.1	64.5	64.9	65.3
Beneficiary/Survivor	74.6	74.7	74.7	74.7

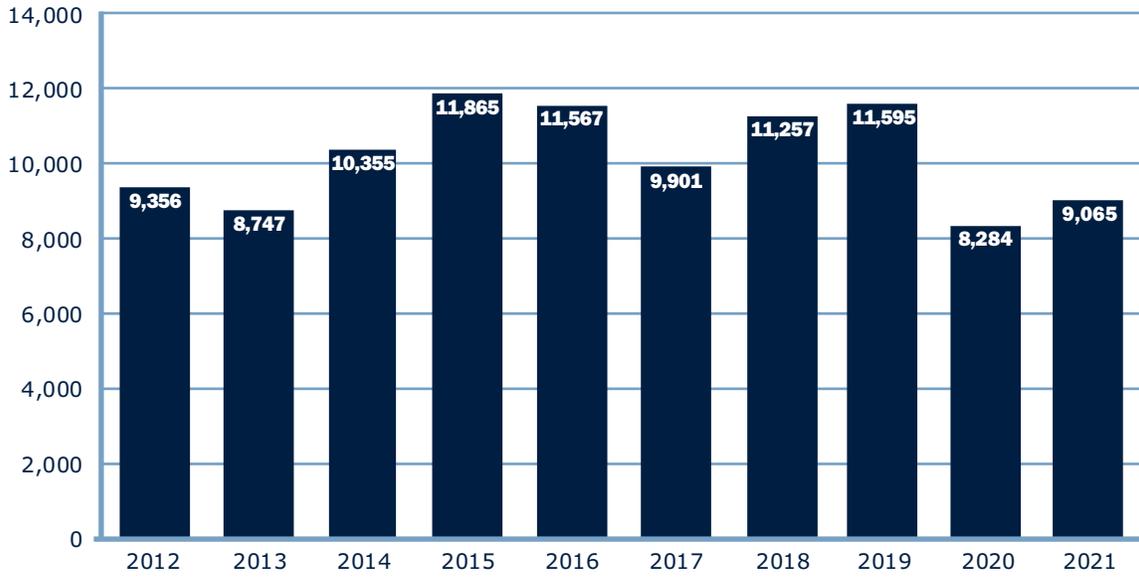
### Annuitants & Beneficiaries: Average Annual Pension

	2018	2019	2020	2021
Normal	\$28,880	\$29,440	\$30,050	\$30,712
Early	18,098	18,428	18,727	19,089
Disability	15,753	15,980	16,234	16,489
Beneficiary/Survivor	13,350	13,816	14,253	14,905

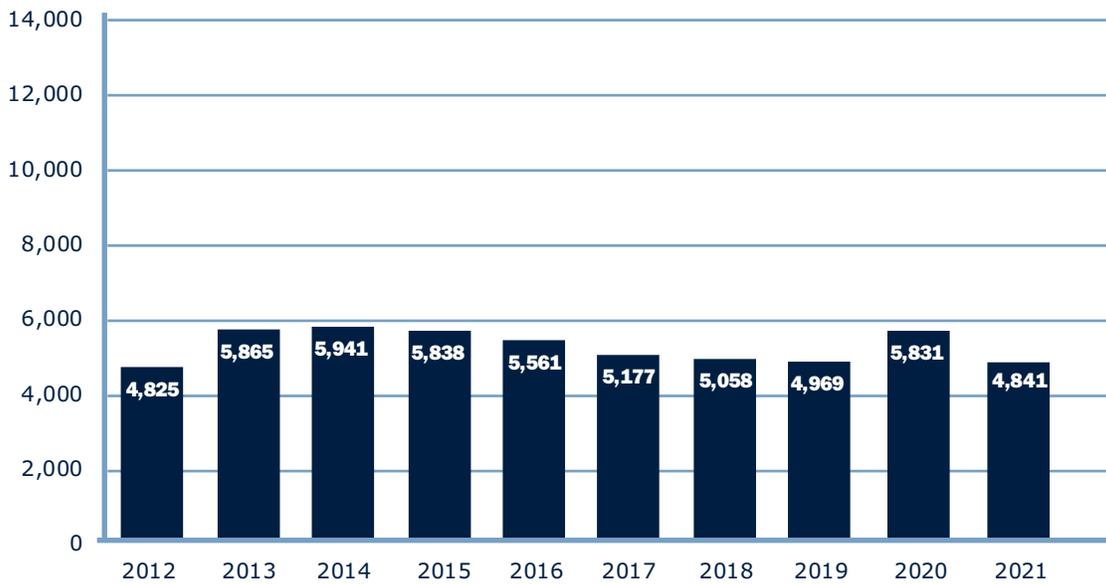
# DEFINED BENEFIT PLAN

## 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 2021-22, employers are contributing 33.81% 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.

### 2021 Overview

In 2021, SERS paid more than \$3.7 billion in benefit payments, approximately \$3.4 billion of which stayed in Pennsylvania. The average

annual pension paid to a retired member who worked to full retirement age was \$30,712.

### 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  
7%

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 2021, member contributions to SERS totaled an estimated \$408 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 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

# DEFINED BENEFIT PLAN

## SERS Fund | Funding Process

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.

### 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.

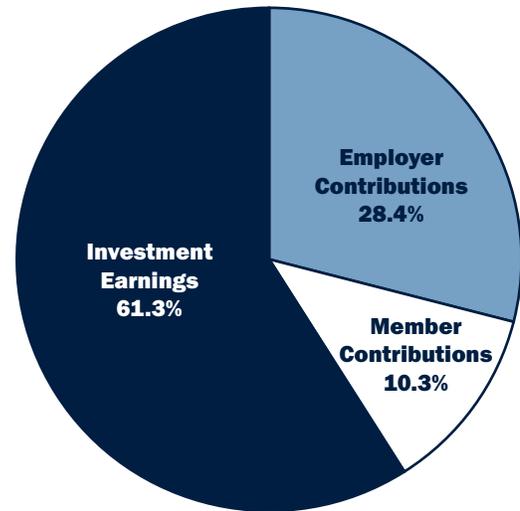
SERS strives to meet this objective by applying acceptable risk parameters and allocations to investments that are diversified by type, industry, quality, and geography.

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 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 2022, SERS is projected to pay out approximately

**SERS Funding Sources**  
(20-Year Cumulative History)



\$113 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, in July 2020, reduced the assumed rate of return from 7.125% to 7% effective with the December 31, 2020 actuarial valuation. In July 2021, the board left the rate unchanged. 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.

Factoring in the unprecedented market volatility and the precipitous market decline of 2008, the fund has achieved a 20-year rate of return of 7.7%, a 25-year rate of return of 8.0%, and an inception to date return of 9.8%. 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.

# DEFINED BENEFIT PLAN

## SERS Fund | Funding Process

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. To date, the shared risk provision has not been triggered.

### 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 33.81%.

The total dollars contributed by employers has grown significantly in recent years. In 1991, employer contributions totaled \$381 million. In 2021, that figure was approximately \$2.0 billion. This does not include the \$825 million prepayment of unfunded liability received from the Pennsylvania State System of Higher Education (PASSHE).

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. FY 2022-23 will be the 6<sup>th</sup> consecutive year that the commonwealth will pay the full actuarially required contributions.

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 for new SERS members in the current year (applied to all active members), referred to as the employer normal cost; and a contribution toward the unfunded liability. In FY 2021-22 the largest component of the 33.81% employer contribution rate is the 31.64% contribution necessary to pay this unfunded liability.

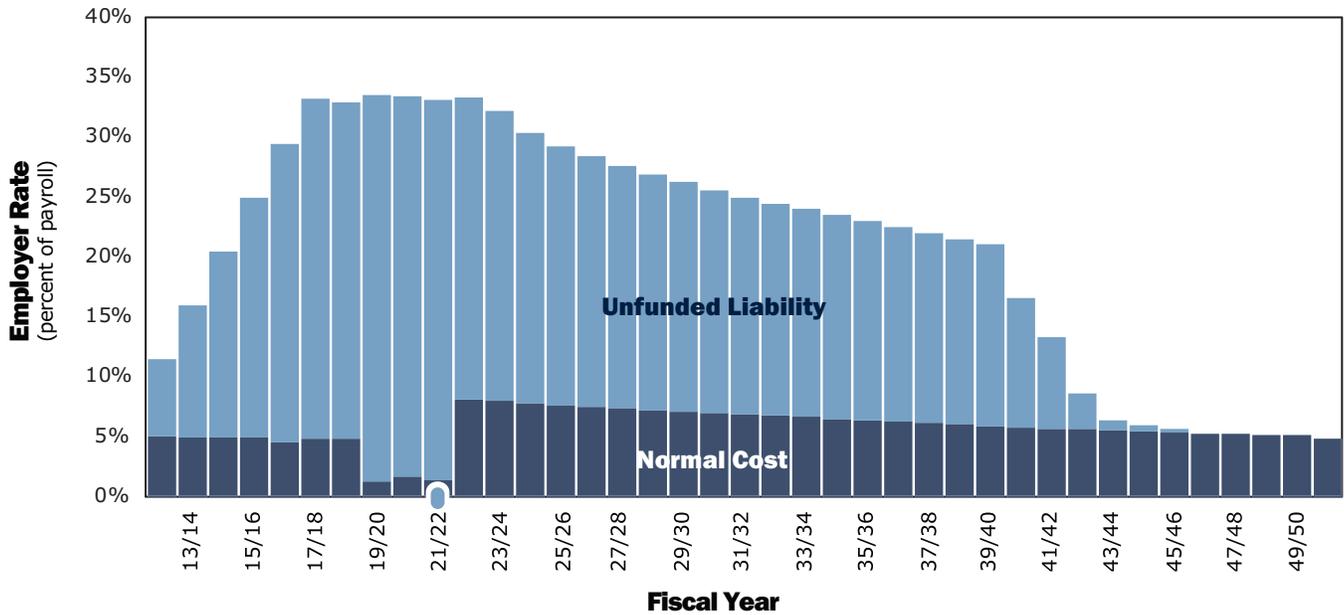
The employer normal cost is expressed as a percentage of payroll and is the amount employers would contribute to fully fund benefits if all actuarial assumptions were precisely met, including the fund earning its assumed rate of return. The normal cost of benefits from the 2020 Actuarial Valuation was 1.50% for newly hired members.

This calculation was based on a statutorily required modified entry-age funding method, calculating employer normal rates based upon the cost of new hires only. As part of Act 2017-5, beginning with the 2021 Actuarial Valuation (to be published in June 2022), the way the normal cost of the pension benefit is calculated will change to the traditional entry-age method. Instead of basing the calculation on the cost of the pension benefit earned by only the new members who entered the system that year, the normal cost will be based on the cost of the benefit earned by a blend of all active members in the system that year. As a result, a greater portion of the cost of benefits will be recognized in the normal cost rather than adding to the unfunded liability. This shift is projected to increase employer normal costs for FY 2022-23 above 8%. However, the actuarial change will reduce the unfunded liability, resulting in minimal impact to the total employer contribution rate.

# 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 nonpension obligations. The 33.68% projected employer contribution rate for FY 2022-23 does not include any projected plow-back savings.

However, plowback 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)
2021	\$3.8	68.6%	\$16.50	2022/23	\$6,887.9	33.68%	\$2,145.9
2022	3.9	71.8	14.98	2023/24	7,080.8	31.55	2,059.9
2023	4.0	76.4	12.70	2024/25	7,279.1	28.71	1,915.7
2024	4.1	79.8	11.01	2025/26	7,482.9	26.64	1,819.5
2025	4.2	82.5	9.64	2026/27	7,692.4	25.03	1,751.1
2026	4.3	83.9	8.99	2027/28	7,907.8	24.25	1,743.0
2027	4.4	85.1	8.36	2028/29	8,129.2	23.56	1,740.2
2028	4.5	86.3	7.76	2029/30	8,356.8	22.94	1,741.9
2029	4.6	87.5	7.15	2030/31	8,590.8	22.36	1,746.4
2030	4.7	88.6	6.51	2031/32	8,831.3	21.83	1,762.8
2031	4.8	89.9	5.83	2032/33	9,078.6	21.40	1,778.4
2032	4.8	91.2	5.09	2033/34	9,332.8	21.01	1,796.0
2033	4.9	92.6	4.30	2034/35	9,594.1	20.61	1,812.4
2034	5.0	94.1	3.44	2035/36	9,862.8	20.20	1,827.1
2035	5.0	95.7	2.51	2036/37	10,138.9	19.79	1,841.1
2036	5.0	97.4	1.50	2037/38	10,422.8	19.38	1,870.9
2037	5.1	99.3	0.41	2038/39	10,714.7	18.97	1,883.4
2038	5.2	101.3	(0.77)	2039/40	11,014.7	18.56	1,894.9
2039	5.2	103.5	(2.04)	2040/41	11,323.1	14.12	1,470.1
2040	5.3	105.0	(2.95)	2041/42	11,640.1	10.90	1,185.1
2041	5.4	106.1	(3.63)	2042/43	11,966.1	6.28	697.0
2042	5.4	106.6	(3.93)	2043/44	12,301.1	5.71	658.8
2043	5.5	106.7	(3.95)	2044/45	12,645.5	5.62	669.6
2044	5.6	106.7	(3.95)	2045/46	12,999.6	5.54	681.7
2045	5.7	106.6	(3.92)	2046/47	13,363.6	5.46	701.0
2046	5.8	106.3	(3.76)	2047/48	13,737.8	5.38	716.0
2047	5.9	106.0	(3.54)	2048/49	14,122.4	5.32	727.1
2048	6.0	105.6	(3.31)	2049/50	14,517.9	5.26	751.7
2049	6.1	104.7	(2.79)	2050/51	14,924.4	5.20	766.9
2050	6.3	103.7	(2.19)	2051/52	15,342.2	5.15	783.5

Data calculated assuming: a traditional entry-age funding method starting with the 2021 valuation year, level-dollar amortization, five-year smoothing of assets, 4.6% salary growth, 2.5% inflation, 17.2% investment return in CY 2021 with 7.0% 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 2021, SERS retired 4,841 members and added 9,065 new members. Currently, approximately 51.4% 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 benefitted 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.

The past year, 2021, brought an array of economic challenges, many of them a result of the continuing COVID pandemic, along with supply chain woes and growing inflation

# DEFINED BENEFIT PLAN

## SERS Fund | Actuarial Status

concerns. Thanks in part to our investment strategy and updated asset allocation targets that continue to be refined, SERS finished 2021 in positive territory. During 2021, SERS experienced investment gains of approximately 17.2% for our Defined Benefit Plan, more than double the fund’s annual assumed rate of return of 7%.

Thanks to these positive returns, six years of full funding from the General Assembly, the receipt of the \$825 million prepayment by the PASSHE for its unfunded liabilities (made possible by Act 2019-105), and ongoing efforts to implement efficiencies across SERS, we continue to make progress toward our long-term goal of eliminating our unfunded liability.

### 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 – 237,788 active, vested, and retired, as of December 31, 2021.

Many pension experts consider a funding ratio of 80% or better to be “healthy” for a pension system. Per a 2021 Wilshire report, Pennsylvania is among 68% of other state retirement systems that are currently below the 80% threshold. At the close of 2021, SERS’ estimated funded ratio was 68.6% (actuarial value) or 77.3% (market value). SERS projects reaching the 80% funded threshold in 2025.

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	
2021	68.6%	77.3%	\$16.5
2020	59.4	63.6	22.4

The 2021 estimated unfunded liability is \$16.5 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 7% effective in 2021 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<sup>1/</sup>

(\$ millions)

Calendar Year	Member Contributions	Investment Earnings	Employer Contributions	Benefits & Expenses	Fair (Market) Value
2012	\$348	\$2,794	\$566	\$(2,696)	\$25,389
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 <sup>2/</sup>	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 <sup>3/</sup>	408	5,375 <sup>4/</sup>	2,871	(3,762)	39,920
<b>10-Year Total</b>	<b>\$3,813</b>	<b>\$26,749</b>	<b>\$17,546</b>	<b>(\$32,517)</b>	

<sup>1/</sup>10-year net additions and deductions were \$15,591.

<sup>2/</sup>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.

<sup>3/</sup>2021 figures are unaudited.

<sup>4/</sup>Figure does not include 4th quarter earnings for all Private Equity, Private Credit, and Real Estate. Data not yet available.

# Investment Overview

# DEFINED BENEFIT PLAN

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## 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 December 8, 2021, 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 was designed to further mitigate risk, reduce external management fees, and simultaneously reduce exposure to less liquid non-traditional strategies, while meeting its long-term return assumption.

# DEFINED BENEFIT PLAN

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## 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, 2021)

Asset Class	Fair Value	% of Total Fund	10-Year Strategic Targets
Private Equity	\$6,263.8	15.7%	12.0%
Private Credit	1,036.5	2.6	4.0
Real Estate	2,870.3	7.2	7.0
U.S. Equity	12,430.5	31.1	31.0
International Developed Markets Equity	5,148.2	12.9	14.0
Emerging Markets Equity	1,488.7	3.7	5.0
Fixed Income	8,605.1	21.6	22.0
Inflation Protection (TIPS)	1,156.0	2.9	3.0
Cash	898.6	2.2	2.0
Legacy Hedge Funds	22.8	0.1	*
<b>Total Fund</b>	<b>\$39,920.5</b>	<b>100.0%</b>	<b>100.0%</b>

\*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	62
Private Credit	10
Real Estate	27
U.S. Equity	2
International Developed Markets Equity	9
Emerging Markets Equity	5
Fixed Income	8
Inflation Protection (TIPS)	3
Cash	1
Legacy Hedge Funds	5
<b>Total</b>	<b>132</b>

### Number of Investment Portfolios

Asset Class	Investment Portfolios
Private Equity	185
Private Credit	20
Real Estate	54
U.S. Equity	4
International Developed Markets Equity	9
Emerging Markets Equity	5
Fixed Income	15
Inflation Protection (TIPS)	3
Cash	1
Legacy Hedge Funds	5
<b>Total Portfolios</b>	<b>301</b>



# Performance

# DEFINED BENEFIT PLAN

## Performance

### Estimated Calendar Year, Net-of-Fees Returns<sup>4/</sup>

For the period ending December 31, 2021

Asset Class	1-Year Total Return	3-Year Total Return	5-Year Total Return	10-Year Total Return
Private Equity <sup>2/,5/</sup>	52.8%	25.6%	20.1%	15.0%
<i>Burgiss All Private Equity Custom Index<sup>3/,5/</sup></i>	38.5	18.9	17.8	15.1
<i>Global Equity +3%<sup>4/,5/</sup></i>	33.9	18.2	19.4	19.5
Private Credit <sup>5/,8/</sup>	19.1	12.6	NA	NA
<i>S&amp;P/LSTA Leveraged Loan Index +1%<sup>5/</sup></i>	9.4	5.2	NA	NA
Real Estate <sup>5/</sup>	18.0	10.2	5.9	7.7
<i>Real Estate Custom Benchmark<sup>5/,6/</sup></i>	17.5	7.3	6.9	9.4
<i>Consumer Price Index +3%<sup>5/</sup></i>	8.4	5.8	5.6	4.9
U.S. Equity	24.6	25.4	17.1	15.6
<i>Russell 3000 Index</i>	25.7	25.8	18.0	16.3
International Developed Markets Equity	14.5	15.9	11.3	9.1
<i>MSCI World ex U.S. IMI</i>	12.4	14.4	9.8	8.1
Emerging Markets Equity	-0.5	14.6	12.3	6.5
<i>MSCI Emerging Markets IMI</i>	-0.3	11.6	10.1	5.7
Fixed Income	-0.8	4.8	3.6	3.5
<i>Bloomberg Barclays U.S. Aggregate Bond Index</i>	-1.5	4.8	3.6	2.9
Inflation Protection (TIPS)	5.2	8.2	5.3	2.9
<i>Bloomberg Barclays U.S. TIPS Index</i>	6.0	8.4	5.3	3.1
Cash	0.1	1.0	1.3	0.9
<i>ICE BofAML U.S. 3-Month Treasury Bill Index</i>	0.1	1.0	1.1	0.6
<b>Total Fund<sup>7/</sup></b>	<b>17.2%</b>	<b>15.7%</b>	<b>11.2%</b>	<b>9.4%</b>
<b>Total Fund Custom Benchmark</b>	<b>17.5%</b>	<b>15.9%</b>	<b>11.8%</b>	<b>10.1%</b>
<b>Total Fund Custom Public Market Equivalent Benchmark</b>	<b>13.6%</b>	<b>14.4%</b>	<b>11.5%</b>	<b>10.4%</b>
<b>Total Fund 60/40 Index</b>	<b>10.0%</b>	<b>14.2%</b>	<b>10.1%</b>	<b>8.4%</b>

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

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

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

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

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

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

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

<sup>8/</sup>Private Credit has an inception date of December 1, 2017. As of December 31, 2021, extended period returns beyond three years are unavailable.

# DEFINED BENEFIT PLAN

## Performance

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

For the period ending June 30, 2021

Asset Class	1-Year Total Return	3-Year Total Return	5-Year Total Return	10-Year Total Return
Private Equity <sup>2/,5/</sup>	57.9%	20.2%	16.9%	12.9%
<i>Burgiss All Private Equity Custom Index<sup>3/,5/</sup></i>	42.4	16.9	16.3	13.6
<i>Global Equity +3%<sup>4/,5/</sup></i>	61.7	19.5	19.3	16.8
Private Credit <sup>5/,8/</sup>	24.6	13.2	NA	NA
<i>S&amp;P/LSTA Leveraged Loan Index +1%<sup>5/</sup></i>	21.7	5.2	NA	NA
Real Estate <sup>5/</sup>	11.8	4.4	3.9	6.9
<i>Real Estate Custom Benchmark<sup>5/,6/</sup></i>	5.5	4.8	5.4	8.7
<i>Consumer Price Index +3%<sup>5/</sup></i>	5.6	5.0	5.2	4.7
U.S. Equity	46.2	17.6	17.0	14.2
<i>Russell 3000 Index</i>	44.2	18.7	17.9	14.7
International Developed Markets Equity	36.5	9.5	11.8	7.1
<i>MSCI World ex U.S. IMI</i>	34.8	8.6	10.6	6.0
Emerging Markets Equity	46.0	14.2	15.5	4.9
<i>MSCI Emerging Markets IMI</i>	43.2	11.4	12.9	4.3
Fixed Income	2.8	4.8	3.4	3.5
<i>Bloomberg Barclays U.S. Aggregate Bond Index</i>	-0.3	5.3	3.0	3.4
Inflation Protection (TIPS)	6.4	6.4	4.2	2.7
<i>Bloomberg Barclays U.S. TIPS Index</i>	6.5	6.5	4.2	3.4
Cash	0.1	1.4	1.4	0.9
<i>ICE BofAML U.S. 3-Month Treasury Bill Index</i>	0.1	1.3	1.2	0.6
<b>Total Fund<sup>7/</sup></b>	<b>27.8%</b>	<b>11.0%</b>	<b>10.7%</b>	<b>8.3%</b>
<b>Total Fund Custom Benchmark</b>	<b>26.9%</b>	<b>12.1%</b>	<b>11.3%</b>	<b>9.2%</b>
<b>Total Fund Custom Public Market Equivalent Benchmark</b>	<b>26.0%</b>	<b>11.7%</b>	<b>11.5%</b>	<b>9.4%</b>
<b>Total Fund 60/40 Index</b>	<b>23.1%</b>	<b>11.1%</b>	<b>10.1%</b>	<b>7.5%</b>

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

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

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

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

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

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

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

<sup>8/</sup>Private Credit has an inception date of December 1, 2017. As of June 30, 2021, 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 <sup>1/</sup>
1992	\$12,453	7.4%
1993	13,701	13.2
1994	13,330	-1.1
1995	16,343	25.2
1996	18,492	15.4
1997	21,312	18.5
1998	24,123	16.3
1999	28,093	19.9
2000	27,880	2.2
2001	24,706	-7.9
2002	20,880	-10.9
2003	24,536	24.3
2004	26,641	15.1
2005	28,752	14.5
2006	32,053	16.4
2007	35,516	17.2
2008	22,796	-28.7
2009	24,662	9.1
2010	25,886	11.9
2011	24,377	2.7
2012	25,389	12.0
2013	27,394	13.6
2014	27,338	6.4
2015	26,055	0.4
2016	26,388	6.5
2017	29,405	15.1
2018	26,937	-4.6
2019	31,096	18.8
2020	35,028	11.1
2021 <sup>2/</sup>	39,920	17.2

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

<sup>2/</sup>2021 values are estimated and unaudited. Fund fair values for all Private Equity, Private Credit, and Real Estate investments are reported on a quarter-lagged, cash-flow adjusted basis.



# Fees & Expenses

# DEFINED BENEFIT PLAN

## Fees & Expenses

### Investment Expenses

Expense Category	Expenses
<b>Manager Fees and Expenses</b>	\$163,738,403
Personnel	3,808,699
Consultant	3,476,704
Custodian	1,195,924
Subscription and membership	548,850
Operational	137,418
<b>Total Investment Expenses</b>	<b>\$172,905,998</b>

### Consultant Expenses

Firm	Service Type	Expenses
<b>StepStone Group</b>	Private equity investments	\$1,974,999
<b>NEPC</b>	Real estate investments	534,419
<b>Fairview Capital Partners</b>	Investment portfolio management	450,068
<b>Callan LLC</b>	General investments	406,149
<b>Other</b>	Other	111,069
<b>Total Consultant Expenses</b>		<b>\$3,476,704</b>

### Manager Fees and Expenses

Asset Class	Fees/Expenses	Fees/Expenses <sup>1/</sup> (in basis points)
<b>Private Equity</b>	\$70,699,519	125.2
<b>Private Credit<sup>2/</sup></b>	26,202,545	178.9
<b>Real Estate</b>	35,308,669	130.8
<b>U.S. Equity</b>	4,221,114	4.2
<b>International Developed Markets Equity</b>	7,020,283	14.6
<b>Emerging Markets Equity</b>	8,611,644	58.6
<b>Fixed Income<sup>2/</sup></b>	10,290,974	11.3
<b>Inflation Protection (TIPS)</b>	1,353,244	10.4
<b>Legacy Hedge Funds</b>	30,411	12.4
<b>Total Manager Fees and Expenses</b>	<b>\$163,738,403</b>	<b>43.8</b>

<sup>1/</sup>The fees/expenses were divided by SERS total fund and asset class quarterly average values during calendar year 2021 to arrive at the basis point calculations.

<sup>2/</sup>On October 1, 2021, the Blackstone Keystone portfolio was moved from the Private Credit asset class to the Fixed Income asset class. The Blackstone Keystone manager fees and incentive fees for January through September 2021 (approximately \$8.4M) are included in the Private Credit asset class, while the manager fees and incentive fees for October through December 2021 (approximately \$2.8M) are included in the Fixed Income asset class.

# DEFINED BENEFIT PLAN

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## Fees & Expenses

### History of Manager Fees and Expenses

Calendar Year	Fees/Expenses	Fees/Expenses (in basis points)
2017	\$126,541,221	45.6
2018	124,427,862	43.3
2019	169,969,812	58.3 <sup>1/</sup>
2020	140,038,195	45.3
2021	163,738,403	43.8

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

# DEFINED BENEFIT PLAN

## Fees & Expenses

SERS employs outside investment managers for their investment expertise and services. 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.

### 2021 Manager Fees and Expenses Detail

Manager	City	State/Country	Fees/ Expenses <sup>1/</sup>
<b>Private Equity</b>			
ABRY Advanced Securities Fund	Boston	MA	(\$505)
ABRY Partners VI	Boston	MA	10,112
ABRY Partners VII	Boston	MA	74,778
ABRY Partners VIII	Boston	MA	39,840
ABRY Senior Equity II	Boston	MA	(5,980)
ADV Opportunities Fund I	Hong Kong	China	321,743
Advent International GPE VI-A	Boston	MA	48,153
Advent International GPE VII-B	Boston	MA	238,187
Advent International GPE VIII-B	Boston	MA	615,854
Advent Latin American Private Equity Fund IV	Boston	MA	(4,109)
Advent Latin American Private Equity Fund V	Boston	MA	89,805
Advent Latin American Private Equity Fund VI	Boston	MA	372,000
Altaris Health Partners V	New York	NY	1,816
Apollo Investment Fund IX	New York	NY	829,596
Ares PA Opportunities Fund - Special Situations	New York	NY	404,782
ASF VII B	New York	NY	480,546
ASF VII PA Co-Invest	New York	NY	59,904
ASF VIII B	New York	NY	1,000,000
Asia Alternatives Capital Partners II	San Francisco	CA	27,252
Asia Alternatives Capital Partners III	San Francisco	CA	173,843
Asia Alternatives Capital Partners V	San Francisco	CA	210,665
Audax Private Equity Fund VI	Boston	MA	(30,017)
Berkshire Fund VI	Boston	MA	(447)
Berkshire Fund VII	Boston	MA	50,506
Berkshire Fund VIII	Boston	MA	169,903
Blackstone Capital Partners VII	New York	NY	513,697
Blackstone Capital Partners VIII	New York	NY	1,050,000
Capvis Equity IV	Baar	Switzerland	607,040
Carlyle Energy Mezzanine Opportunities Fund	New York	NY	21,434
Centerbridge Capital Partners I	New York	NY	(6,497)
Centerbridge Capital Partners III	New York	NY	(20,359)
Clearlake Capital Partners IV	Santa Monica	CA	61,025
Clearlake Capital Partners V	Santa Monica	CA	309,504
Clearlake Capital Partners VI	Santa Monica	CA	(334,036)

# DEFINED BENEFIT PLAN

## Fees & Expenses

### 2021 Manager Fees and Expenses Detail (continued)

Manager	City	State/Country	Fees/ Expenses <sup>1/</sup>
<b>Private Equity (continued)</b>			
CVC Capital Partners VII	London	United Kingdom	\$1,129,211
CVC Capital Partners VIII	New York	NY	512,044
Dover Street VII	Boston	MA	30,000
Eureka Growth Capital III	Yardley	PA	168,361
Francisco Partners III	San Francisco	CA	72,620
Francisco Partners IV	San Francisco	CA	231,933
FSN Capital IV	Oslo	Norway	217,638
FSN Capital V	Saint Helier-Jersey	United Kingdom	1,172,357
GTCR Fund XI	Chicago	IL	156,241
GTCR Fund XII	Chicago	IL	477,889
H.I.G. Bayside Debt & LBO Fund II	London	United Kingdom	112,625
H.I.G. Bayside Loan Opp. Fund III	London	United Kingdom	385,886
H.I.G. Bayside Loan Opp. Fund IV	London	United Kingdom	119,640
H.I.G. Brazil and Latin America Partners	Rio de Janeiro	Brazil	1,135,069
H.I.G. Europe Capital Partners II	Miami	FL	766,543
H.I.G. Growth Buyouts & Equity Fund II	Miami	FL	190,780
Hahn & Company II	Seoul	Korea	909,989
Hahn & Company III	Seoul	Korea	1,125,000
Hahn & Company III - Supplemental Fund	Seoul	Korea	152,737
HarbourVest PA Co-Investment Fund	Boston	MA	560,246
HarbourVest Partners VIII	Boston	MA	227,376
Hellman & Friedman Capital Partners IX	San Francisco	CA	252,837
Hellman & Friedman Capital Partners VIII	San Francisco	CA	309,064
Hellman & Friedman Capital Partners X	San Francisco	CA	705,141
HIPEP V-Asia Pacific & Rest of World	Boston	MA	22,500
Horizon Impact Fund	Chicago	IL	203,125
Horizon Impact Fund B	Boston	MA	595,084
Incline Equity Partners III	Pittsburgh	PA	(128,507)
Insight Partners XII	New York	NY	458,688
Insight Venture Partners IX	New York	NY	746,237
Insight Venture Partners VII	New York	NY	(10,122)
Insight Venture Partners VIII	New York	NY	267,397
Insight Venture Partners X	New York	NY	1,583,656
Insight Venture Partners XI	New York	NY	1,055,185
JMI Equity Fund VII	Baltimore	MD	10,043
JMI Equity Fund VIII	Baltimore	MD	364,500
Keystone Legacy Fund	West Hartford	CT	2,367,327
KPS Special Situations Fund V	New York	NY	(64,407)
KPS Special Situations Mid-Cap Fund	New York	NY	183,157

# DEFINED BENEFIT PLAN

## Fees & Expenses

### 2021 Manager Fees and Expenses Detail (continued)

Manager	City	State/Country	Fees/ Expenses <sup>1/</sup>
<b>Private Equity (continued)</b>			
LBC Credit Partners III	Philadelphia	PA	\$147,916
Lexington Capital Partners V	New York	NY	(6,751)
Lightspeed India Partners I	New Delhi	India	375,000
Lightspeed Venture Partners VIII	Menlo Park	CA	165,184
LLR Equity Partners III	Philadelphia	PA	(18,147)
LLR Equity Partners IV	Philadelphia	PA	223,205
LLR Equity Partners V	Philadelphia	PA	1,033,175
LLR Equity Partners VI	Philadelphia	PA	1,107,875
Meritech Capital Partners IV	Palo Alto	CA	30,058
Meritech Capital Partners V	Palo Alto	CA	377,256
Neuberger Berman PA Co-Investment Fund	New York	NY	268,690
Newbridge Asia IV	San Francisco	CA	52
NewSpring Growth Capital III	King of Prussia	PA	117,390
NGP XII	Irving	TX	1,026,475
Oaktree Opportunities Fund IX	Los Angeles	CA	491,563
Oaktree Power Opportunities Fund III	Los Angeles	CA	514
OCM Opportunities Fund VIII	Los Angeles	CA	(1,967)
OCM Opportunities Fund VIII b	Los Angeles	CA	73,064
Permira Susquehanna Opportunities - Buyout	New York	NY	101,259
Permira VI	London	United Kingdom	528,904
Permira VII	New York	NY	1,172,368
Primavera Capital Fund II	Hong Kong	China	821,263
Primavera Capital Fund III	Grand Cayman	Cayman Islands	1,301,896
Providence Strategic Growth Europe	New York	NY	2,911,159
Providence Strategic Growth II	Providence	RI	470,008
Providence Strategic Growth III	Providence	RI	594,973
Providence Strategic Growth IV	New York	NY	1,127,473
PSG V	Boston	MA	620,879
Ridgemont Equity Partners II	Charlotte	NC	411,368
RRJ Capital Master Fund III	Hong Kong	China	287,356
Sentinel Capital Partners V	New York	NY	(16,824)
Silver Lake Partners V	Cupertino	CA	335,114
Sterling Group Partners IV	Houston	TX	72,995
T. Rowe Price Stock Distribution Account	Baltimore	MD	736,369
TCV X	Menlo Park	CA	1,493,750
TDR Capital IV	London	United Kingdom	1,673,548
Thoma Bravo Discover Fund III	San Francisco	CA	295,433
Thoma Bravo Fund XIII	San Francisco	CA	2
Thoma Bravo Fund XIV	San Francisco	CA	(1)
TSG8	San Francisco	CA	1,604,503

# DEFINED BENEFIT PLAN

## Fees & Expenses

### 2021 Manager Fees and Expenses Detail (continued)

Manager	City	State/Country	Fees/ Expenses <sup>1/</sup>
<b>Private Equity (continued)</b>			
Vista Equity Partners Fund VI	Oakland	CA	\$2,032,477
Vista Equity Partners Fund VII	Oakland	CA	1,106,016
Weathergage Venture Capital	Redwood City	CA	80,300
Weathergage Venture Capital II	Redwood City	CA	150,205
Wind Point Partners IX-A	Chicago	IL	1,023,810
Wind Point Partners VIII	Chicago	IL	265,745
<b>Private Equity Manager Fees</b>			<b>52,768,025</b>
<b>Private Equity Manager Expenses</b>			<b>17,931,494</b>
<b>Total Private Equity Manager Fees and Expenses</b>			<b>70,699,519</b>
<b>Private Credit<sup>2/</sup></b>			
Apollo Hybrid Value Fund	New York	NY	1,166,003
Ares PA Opportunities Fund - Direct Lending	New York	NY	82,893
Ares PA Opportunities Fund - Distressed Debt	New York	NY	758,700
Ares PA Opportunities Fund - Diversified Credit	New York	NY	56,583
Audax Direct Lending Solutions Fund-A	Boston	MA	1,263,909
Blackstone Keystone	New York	NY	8,408,822
Clearlake Opportunity Partners II	Santa Monica	CA	444,332
Glendon Opportunities Fund II	Santa Monica	CA	2,367,590
HPS Mezzanine Partners 2019	New York	NY	692,854
ICG Europe Fund VII	New York	NY	678,828
ICG Europe Mid-Market Fund	New York	NY	499,484
Permira Credit Solutions IV Master (Feeder) SCSp	New York	NY	724,733
Permira Susquehanna Opportunities - Credit	New York	NY	151,886
Sixth Street Opportunities Partners IV (A)	San Francisco	CA	751,367
Sixth Street TAO 4.0 (B)	San Francisco	CA	809,645
Sixth Street TAO Contingent (D)	San Francisco	CA	903,742
<b>Private Credit Manager Fees</b>			<b>19,761,371</b>
<b>Private Credit Manager Expenses</b>			<b>6,441,174</b>
<b>Total Private Credit Manager Fees and Expenses</b>			<b>26,202,545</b>

# DEFINED BENEFIT PLAN

## Fees & Expenses

### 2021 Manager Fees and Expenses Detail (continued)

Manager	City	State/Country	Fees/ Expenses <sup>1/</sup>
<b>Real Estate</b>			
Activum SG Fund VI	London	United Kingdom	\$1,040,873
Activum SG Fund VI Pennsylvania Side-Car	London	United Kingdom	51,167
Berwind Investment Partnership IX	Yardley	PA	14,270
Berwind Investment Partnership VI	Yardley	PA	3,029
Blackstone Property Partners	New York	NY	3,103,230
Blackstone Real Estate Partners VII	New York	NY	375,602
Blue Moon Senior Housing II	Boston	MA	627,132
Blue Moon Senior Housing II Sidecar	Boston	MA	145,379
CenterSquare Real Estate Securities	Plymouth Meeting	PA	1,179,485
C-III Recovery Fund III	New York	NY	1,336,550
Clerestory Small Cap Real Estate Fund I	New York	NY	2,066
Forest I.M.A.	Atlanta	GA	26,166
Hawkeye Scout Fund II	Austin	TX	229,634
Heitman America Real Estate Trust	Chicago	IL	798,402
Heitman I.M.A.	Chicago	IL	2,064,832
Henderson Park Enhanced Income Fund	London	United Kingdom	2,633,638
hotelAVE I.M.A.	Irvine	CA	394,118
LaSalle I.M.A.	Chicago	IL	1,291,683
LaSalle Takeover I.M.A.	Chicago	IL	4,230,668
Lowe GTO	Los Angeles	CA	(30,000)
Lubert Adler Fund VII	Philadelphia	PA	186,034
Mesirov Financial Real Estate Value Fund III	Chicago	IL	339,126
Oak Street Real Estate Capital Fund IV	Chicago	IL	805,410
Oak Street Real Estate Capital Fund V	Chicago	IL	204,831
Oak Street Real Estate Capital Net Lease Property Fund	Chicago	IL	2,314,258
Prudential Latin America Residential Fund III	Parsippany	NJ	4,296
Prudential Senior Housing Fund V	Parsippany	NJ	436,925
Prudential Senior Housing Fund VI	New York	New York	936,570
Rockpoint Finance Fund I	Dallas	TX	1,770
Rockpoint Real Estate Fund II	Dallas	TX	5,644
Rockpoint Real Estate Fund III	Dallas	TX	54,712
Rockpoint Real Estate Fund V	Dallas	TX	499,174
Rubicon First Ascent	San Francisco	CA	916,027
SRE Opportunity Fund III	Chicago	IL	750,000
SRE Opportunity Fund III Select	Chicago	IL	74,146
Starwood Fund VIII	Greenwich	CT	42,122
UBS Trumbull Property Fund	Stamford	CT	238,784
ValStone Opportunity Fund V	Birmingham	MI	228,865
Westbrook Fund V	Dallas	TX	(11,515)

# DEFINED BENEFIT PLAN

## Fees & Expenses

### 2021 Manager Fees and Expenses Detail (continued)

Manager	City	State/Country	Fees/ Expenses <sup>1/</sup>
<b>Real Estate (continued)</b>			
Westbrook Fund VII	Dallas	TX	\$36,808
Westbrook Fund VIII	Dallas	TX	40,155
<b>Real Estate Manager Fees</b>			<b>27,622,066</b>
<b>Real Estate Manager Expenses</b>			<b>7,686,603</b>
<b>Total Real Estate Manager Fees and Expenses</b>			<b>35,308,669</b>
<b>U.S. Equity</b>			
Emerald Asset Management	King of Prussia	PA	3,444,684
Mellon Investments Corporation Russell 1000	Pittsburgh	PA	506,311
Mellon Investments Corporation Russell 2000 Core	Pittsburgh	PA	119,904
Mellon Investments Corporation Russell 2000 Value	Pittsburgh	PA	150,215
<b>U.S. Equity Manager Fees</b>			<b>4,221,114</b>
<b>U.S. Equity Manager Expenses</b>			<b>0</b>
<b>Total U.S. Equity Manager Fees and Expenses</b>			<b>4,221,114</b>
<b>International Developed Markets Equity</b>			
BlackRock MSCI World ex U.S. Index	New York	NY	285,802
Harris Associates	Chicago	IL	1,234,880
Walter Scott & Partners Limited	Edinburgh	United Kingdom	2,998,592
Xponance	Philadelphia	PA	1,754,764
<b>International Developed Markets Equity Manager Fees</b>			<b>6,274,038</b>
<b>International Developed Markets Equity Manager Expenses</b>			<b>746,245</b>
<b>Total International Developed Markets Equity Manager Fees and Expenses</b>			<b>7,020,283</b>
<b>Emerging Markets Equity</b>			
BlackRock MSCI Emerging Markets Index	New York	NY	57,693
GlobeFlex Capital	San Diego	CA	855,435
Leading Edge Investment Advisors	San Francisco	CA	2,274,361
Macquarie Emerging Markets	Philadelphia	PA	2,535,020
Martin Currie Investment Management	Edinburgh	United Kingdom	2,606,822
<b>Emerging Markets Equity Manager Fees</b>			<b>8,329,331</b>
<b>Emerging Markets Equity Manager Expenses</b>			<b>282,313</b>
<b>Total Emerging Markets Equity Manager Fees and Expenses</b>			<b>8,611,644</b>
<b>Fixed Income<sup>2/</sup></b>			
BlackRock U.S. High Yield Bond Index	New York	NY	92,716
Blackstone Keystone	New York	NY	2,794,605
Brandywine Global	Philadelphia	PA	346,742
Eaton Vance	Boston	MA	315,077
Fidelity Institutional Asset Management	Boston	MA	1,852,429

# DEFINED BENEFIT PLAN

## Fees & Expenses

### 2021 Manager Fees and Expenses Detail (continued)

Manager	City	State/Country	Fees/ Expenses <sup>1/</sup>
<b>Fixed Income (continued)</b>			
Mellon HY Beta Fund	Pittsburgh	PA	\$177,762
Mellon Investments Corporation Bond Index	Pittsburgh	PA	374,083
Mellon Investments Corporation Intermediate Credit Bond Index	Pittsburgh	PA	128,164
Mellon Investments Corporation Intermediate Treasury Bond Index	Pittsburgh	PA	18,440
Mellon Investments Corporation Long Duration Bond Index	Pittsburgh	PA	59,123
Mellon Investments Corporation Long Term Credit Bond Index	Pittsburgh	PA	49,615
Mellon Investments Corporation Securitized Index	Pittsburgh	PA	49,950
PIMCO Core	Newport Beach	CA	1,355,826
PIMCO U.S. Treasuries	Newport Beach	CA	484,983
SEI Structured Credit Fund	Oaks	PA	1,074,536
Stone Harbor EMD	New York	NY	302,392
Stone Harbor HY	New York	NY	318,235
Taplin, Canida & Habacht (TCH)	Miami	FL	296,500
<b>Fixed Income Manager Fees</b>			<b>10,091,178</b>
<b>Fixed Income Manager Expenses</b>			<b>199,796</b>
<b>Total Fixed Income Manager Fees and Expenses</b>			<b>10,290,974</b>
<b>Inflation Protection (TIPS)</b>			
Brown Brothers Harriman	New York	NY	445,617
New Century Advisors	Chevy Chase	MD	305,326
NISA Investment Advisors	St. Louis	MO	602,301
<b>Inflation Protection (TIPS) Manager Fees</b>			<b>1,353,244</b>
<b>Inflation Protection (TIPS) Manager Expenses</b>			<b>0</b>
<b>Total Inflation Protection (TIPS) Manager Fees and Expenses</b>			<b>1,353,244</b>
<b>Legacy Hedge Funds<sup>3/</sup></b>			
Entrust Keystone	New York	NY	23,561
PAAMCO	Irvine	CA	6,537
Pine River Fund	Minnetonka	MN	313
<b>Legacy Hedge Funds Manager Fees</b>			<b>30,411</b>
<b>Legacy Hedge Funds Manager Expenses</b>			<b>0</b>
<b>Total Legacy Hedge Funds Manager Fees and Expenses</b>			<b>30,411</b>
<b>Total Manager Fees and Expenses</b>			<b>\$163,738,403</b>

<sup>1/</sup>Negative manager fees represent fees that were credited back to SERS, as well as accrual (estimate) true-ups or the write off of accrued amounts not expected to be realized.

<sup>2/</sup>On October 1, 2021, the Blackstone Keystone portfolio was moved from the Private Credit asset class to the Fixed Income asset class. The Blackstone Keystone manager fees and incentive fees for January through September 2021 are included in the Private Credit asset class, while the manager fees and incentive fees for October through December 2021 are included in the Fixed Income asset class.

<sup>3/</sup>Hedge fund managers in liquidation or liquidated.

# 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, 2021

(\$ millions)

	Unfunded Commitments	Fair Value	% of Total Fund
<b>Core Sub-Asset Classes</b>			
Buyouts	\$1,373.9	\$3,557.0	8.9%
Special Situations	499.4	612.7	1.5
Growth Equity	240.0	1,468.5	3.7
<b>Total Core Sub-Asset Classes</b>	<b>2,113.3</b>	<b>5,638.2</b>	<b>14.1</b>
<b>Non-Core Holdings<sup>1/</sup></b>			
Keystone Legacy Fund <sup>2/</sup>	107.8	625.6	1.6
<b>Total Private Equity</b>	<b>\$2,221.1</b>	<b>\$6,263.8</b>	<b>15.7%</b>

<sup>1/</sup>As of September 30, 2021 a total of 112 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.

<sup>2/</sup>Unfunded commitment as of September 30, 2021.

# 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, 2021, based on fair value, the program's exposure was:

By Fund Sub-Sector		By Geography <sup>2/</sup>		By Industry <sup>2/</sup>	
U.S. Buyout	36.8%	United States	63.8%	Information Technology	44.6%
Non-U.S. <sup>1/</sup>	32.1	China	6.9	Consumer Discretionary	13.0
U.S. Growth Equity	22.2	United Kingdom	5.1	Industrials	11.6
Distressed/Opportunistic	6.2	Germany	3.0	Health Care	11.3
Pennsylvania-Related	2.7	India	2.7	Financials	7.6
		South Korea	2.0	Telecommunication Services	4.5
		Brazil	1.6	Consumer Staples	2.7
		Rest of World	14.9	Materials	2.4
				Energy	1.3
				Real Estate	0.6
				Utilities	0.4

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

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

# 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 <sup>1/</sup>	Accumulated Capital Drawn	Accumulated Distributions <sup>2/</sup>
ABRY Partners IV	Small	3/30/2001	\$27,242,773	\$25,497,290	\$74,633,973
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	38,211,449	50,073,110
ABRY Partners VIII	Middle	5/5/2015	25,000,000	29,399,929	34,247,102
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	8,325,000
Advent International GPE VII-B	Global	12/6/2012	40,000,000	37,600,000	51,591,662
Advent Latin American Private Equity Fund VI	Small	8/13/2015	25,000,000	22,875,000	9,875,000
Advent International GPE VIII-B	Global	9/26/2016	50,000,000	47,450,001	33,785,258
Altaris Health Partners V	Middle	4/22/2021	50,000,000	12,112,813	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	50,639,656	8,616,095
Asia Alternatives Capital Partners	Fund of Funds	6/26/2007	25,000,000	25,218,098	43,154,070
Asia Alternatives Capital Partners II	Fund of Funds	3/7/2008	29,949,500	29,064,000	55,930,782
Asia Alternatives Korea Buyout Investors (Hahn & Co)	Fund of Funds	7/22/2011	7,000,000	8,836,636	12,677,843
Asia Alternatives Capital Partners III	Fund of Funds	8/3/2012	50,000,000	55,278,386	59,715,542
Penn Asia Investors	Fund of Funds	9/28/2012	133,000,000	116,735,488	82,578,319
Asia Alternatives Capital Partners V	Fund of Funds	10/5/2017	50,000,000	40,244,236	3,796,766
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	81,672,112
Audax Private Equity Fund V	Small	1/25/2016	50,000,000	44,365,789	36,554,300
Audax Private Equity Fund VI	Small	8/29/2019	75,000,000	42,870,593	10,529,467
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 <sup>1/</sup>	Accumulated Capital Drawn	Accumulated Distributions <sup>2/</sup>
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	247,269,589
Blackstone Capital Partners VII	Global	10/21/2016	50,000,000	52,380,613	19,394,022
Blackstone Capital Partners VIII	Global	2/22/2021	70,000,000	22,638,068	765,885
Capvis Equity IV	Small	1/30/2014	42,939,202	46,342,729	33,984,236
Carlyle Energy Mezzanine Opportunities Fund	Global	9/5/2012	50,000,000	65,376,555	32,552,667
Horizon Strategic Fund - Carlyle Group	Global	1/23/2014	100,000,000	105,935,485	98,122,266
CVC Capital Partners VII	Global	12/3/2018	92,742,361	59,640,429	5,453,903
CVC Capital Partners VIII	Global	*	56,815,355	0	0
Eureka II	Small	1/30/2006	20,000,000	21,906,935	22,842,724
Eureka Growth Capital III	Small	10/21/2013	20,000,000	15,767,810	15,886,883
Francisco Partners II	Global	7/10/2006	30,000,000	29,383,916	43,490,515
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	33,986,101
FSN Capital IV	Small	12/19/2013	37,951,258	38,520,666	57,696,748
FSN Capital V	Small	1/4/2017	80,254,095	79,942,235	17,943,794
Great Hill Equity Partners IV	Middle	9/8/2008	25,000,000	25,125,662	59,603,949
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	24,135,037	47,142,609
GTCR Fund XII	Middle	5/4/2018	32,500,000	26,781,388	6,409,717
H.I.G. Growth Buyouts & Equity Fund II	Small	7/20/2011	15,000,000	15,898,204	10,010,436
H.I.G. Europe Capital Partners II	Middle	1/10/2014	24,549,740	22,568,576	10,082,518
H.I.G. Brazil and Latin America Partners	Middle	8/12/2015	50,000,000	39,582,890	6,806,634
Hahn & Company II	Small	5/29/2015	50,000,000	55,204,131	19,951,404
Hahn & Company III	Middle	12/20/2018	56,250,000	23,665,391	83,933
Hahn & Company III - Supplemental Fund	Middle	12/20/2018	18,750,000	7,859,417	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	37,866,268
Horizon Impact Fund	Fund of Funds	10/24/2014	50,000,000	44,629,802	40,498,752
Horizon Impact Fund B	Fund of Funds	5/31/2017	100,000,000	69,250,000	990,000
HarbourVest PA Co-Investment Fund	Co-Investment	5/14/2020	200,000,000	112,325,000	0
Hellman & Friedman Capital Partners VI	Global	6/5/2007	125,000,000	119,913,412	222,910,013
Hellman & Friedman Capital Partners VIII	Global	9/1/2016	50,000,000	50,993,822	15,367,447
Hellman & Friedman Capital Partners IX	Global	1/1/2019	90,000,000	77,388,975	1,052,081
Hellman & Friedman Capital Partners X	Global	*	100,000,000	0	0
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	146,590,536	192,162,446

# DEFINED BENEFIT PLAN

## Assets | Private Equity

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

Active Buyout Funds Limited Partnership	Strategy/ Stage	SERS Initial Funding	Capital Committed <sup>1/</sup>	Accumulated Capital Drawn	Accumulated Distributions <sup>2/</sup>
LLR Equity Partners II	Small	1/29/2004	\$25,000,000	\$25,000,000	\$45,292,813
LLR Equity Partners III	Small	7/24/2008	30,000,000	29,108,722	63,935,615
LLR Equity Partners IV	Small	3/14/2014	50,000,000	45,485,764	79,921,635
LLR Equity Partners V	Small	3/21/2018	75,000,000	68,335,417	14,786,456
LLR Equity Partners VI	Small	5/13/2021	50,000,000	11,872,962	0
Madison Dearborn Capital Partners IV	Middle	4/2/2001	90,000,000	90,454,587	169,895,733
Madison Dearborn Capital Partners V	Middle	12/14/2006	63,817,077	71,556,584	114,081,412
Madison Dearborn Capital Partners VI	Middle	5/27/2008	50,000,000	53,246,680	109,967,326
NGP XII	Middle	11/14/2018	75,000,000	46,372,477	2,216,479
NGP Keystone	Co-Investment	*	25,000,000	0	0
Neuberger Berman PA Co-Investment Fund	Co-Investment	1/6/2021	200,000,000	51,397,159	0
OCM/GFI Power Opportunities Fund II	Large	5/9/2005	13,431,284	13,470,852	41,657,114
Oaktree Power Opportunities Fund III	Large	10/18/2010	25,000,000	19,267,532	28,705,640
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	136,368,331	138,422,695	208,443,061
Permira VI	Global	1/10/2017	56,809,657	51,150,582	14,437,612
Permira VII	Global	2/4/2020	77,242,464	44,306,666	0
Permira Susquehanna Opportunities - Buyout	Co-Investment	1/26/2021	40,000,000	19,356,856	0
Primavera Capital Fund II	Global	11/17/2015	50,000,000	55,692,341	20,050,451
Primavera Capital Fund III	Global	4/12/2019	75,000,000	76,262,950	590,988
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	54,609,457	73,429,802
Ridgmont Equity Partners II	Small	11/30/2015	50,000,000	50,971,205	44,045,212
Sentinel Capital Partners V	Middle	7/15/2014	10,000,000	10,185,984	13,545,296
Silver Lake Partners V	Global	6/12/2018	78,000,000	72,015,841	14,332,831
Sterling Group Partners IV	Small	6/15/2016	20,000,000	19,674,127	1,992,109
TDR Capital IV	Middle	11/16/2018	90,264,851	51,394,502	0
Thoma Bravo Fund XIII	Global	2/14/2019	75,000,000	82,149,247	38,622,739
Thoma Bravo Fund XIV	Global	4/15/2021	50,000,000	31,445,714	12
Thoma Bravo Discover Fund III	Middle	6/11/2021	20,000,000	9,679,359	0
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	86,585,520
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	27,774,733
TPG Partners VI	Global	5/22/2008	44,294,641	50,576,261	71,926,657

# DEFINED BENEFIT PLAN

## Assets | Private Equity

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

Active Buyout Funds Limited Partnership	Strategy/ Stage	SERS Initial Funding	Capital Committed <sup>1/</sup>	Accumulated Capital Drawn	Accumulated Distributions <sup>2/</sup>
TSG8	Large	1/3/2020	\$100,000,000	\$50,001,459	\$292,630
TSG9	Large	*	100,000,000	0	0
Vista Equity Partners Fund VI	Global	12/29/2016	150,000,000	175,393,961	121,236,809
Vista Equity Partners Fund VII	Global	2/13/2019	75,000,000	55,183,347	394,502
Wind Point Partners VIII	Small	9/14/2017	100,000,000	96,616,633	78,383,775
Wind Point Partners IX-A	Middle	2/26/2020	75,000,000	27,454,201	1,434,440
<b>Total Active Buyouts</b>			<b>\$6,260,902,864</b>	<b>\$5,175,741,410</b>	<b>\$5,469,362,318</b>

Cash flows as of September 30, 2021.

\*Not funded as of September 30, 2021.

<sup>1/</sup>Commitments as of December 31, 2021.

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

# 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 <sup>1/</sup>	Accumulated Capital Drawn	Accumulated Distributions <sup>2/</sup>
ABRY Mezzanine Partners	Mezzanine	3/15/2002	\$30,000,000	\$26,731,187	\$49,707,116
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	60,328,228	17,614,551
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	99,186,788
AXA Secondary Fund V B	Secondaries	6/19/2012	75,000,000	61,682,742	97,337,534
ASF VII B	Secondaries	2/19/2016	100,000,000	59,054,339	34,336,678
ASF VII PA Co-Invest	Secondaries	5/18/2016	50,000,000	28,529,951	11,976,048
ASF VIII B	Secondaries	6/13/2019	100,000,000	31,382,271	3,746,764
ASF VIII PA Co-Invest	Secondaries	3/12/2020	50,000,000	7,190,629	0
Ares PA Opportunities Fund - Special Situations	Distressed/ Turnaround	2/22/2021	100,000,000	31,456,946	0
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	37,456,270	26,650,600
Clearlake Capital Partners IV	Distressed/ Turnaround	9/1/2015	15,000,000	22,596,061	31,338,807
Clearlake Capital Partners V	Distressed/ Turnaround	2/1/2018	55,000,000	58,173,641	49,729,819
Clearlake Capital Partners VI	Distressed/ Turnaround	5/22/2020	60,000,000	40,832,783	2,052,484
Clearlake Capital Partners VII	Distressed/ Turnaround	*	100,000,000	0	0
Dover Street VII	Secondaries	7/2/2008	30,000,000	28,696,128	39,657,727
H.I.G. Bayside Debt & LBO Fund II	Distressed/ Turnaround	6/17/2008	30,000,000	31,448,253	48,426,444
H.I.G. Bayside Loan Opp. Fund III	Distressed/ Turnaround	6/12/2013	50,000,000	42,081,371	48,158,063
H.I.G. Bayside Loan Opp. Fund IV	Distressed/ Turnaround	1/16/2015	25,000,000	22,626,299	19,512,513

# 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 <sup>1/</sup>	Accumulated Capital Drawn	Accumulated Distributions <sup>2/</sup>
KPS Special Situations Fund IV	Distressed/ Turnaround	5/8/2014	\$25,000,000	\$23,523,004	\$18,323,423
KPS Special Situations Mid-Cap Fund	Distressed/ Turnaround	11/25/2019	25,000,000	9,938,873	0
KPS Special Situations Fund V	Distressed/ Turnaround	7/13/2020	75,000,000	26,983,503	1,488,047
LBC Credit Partners III	Mezzanine	3/4/2013	50,000,000	46,696,243	52,649,374
Lexington Capital Partners III	Secondaries	1/26/1999	35,000,000	34,516,449	43,363,378
Lexington Capital Partners V	Secondaries	1/17/2002	75,000,000	74,623,418	125,170,164
Lexington Capital Partners VI	Secondaries	10/21/2005	50,000,000	53,066,325	72,042,843
OCM Principal Opportunities Fund IV	Distressed/ Turnaround	1/24/2007	20,000,000	20,400,000	34,342,112
OCM Opportunities Fund VII	Distressed/ Turnaround	5/16/2007	40,000,000	40,000,000	54,845,803
OCM Opportunities Fund VII b	Distressed/ Turnaround	6/3/2008	40,000,000	36,000,000	62,303,999
OCM Opportunities Fund VIII	Distressed/ Turnaround	9/20/2010	12,500,000	12,583,425	18,155,981
OCM Opportunities Fund VIII b	Distressed/ Turnaround	8/22/2011	12,500,000	12,500,000	13,585,884
Oaktree Opportunities Fund IX	Distressed/ Turnaround	3/26/2013	50,000,000	50,000,000	31,588,063
Platinum Equity Capital Partners III	Distressed/ Turnaround	8/5/2013	50,000,000	47,092,256	85,033,070
RRJ Capital Master Fund III	Mezzanine	12/10/2015	50,000,000	47,219,242	44,122,781
<b>Total Active Special Situations</b>			<b>\$1,787,262,950</b>	<b>\$1,358,283,299</b>	<b>\$1,515,061,193</b>

Cash flows as of September 30, 2021.

\*Not funded as of September 30, 2021.

<sup>1/</sup>Commitments as of December 31, 2021.

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

# 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 <sup>1/</sup>	Accumulated Capital Drawn	Accumulated Distributions <sup>2/</sup>
Battery Ventures VIII	Venture Capital	8/13/2007	\$25,000,000	\$25,050,751	\$57,611,584
Battery Ventures VIII Side Car Fund	Venture Capital	8/29/2008	6,768,000	6,803,790	17,449,466
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	115,243,024
HarbourVest Partners VIII	Fund of Funds	10/5/2006	100,000,000	98,000,000	168,671,764
Insight Venture Partners VI	Medium	8/21/2007	30,000,000	32,244,177	81,709,725
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	53,016,419	106,952,239
Insight Venture Partners IX	Large	3/24/2015	50,000,000	52,784,788	43,214,042
Insight Venture Partners X	Large	4/17/2018	100,000,000	100,373,487	25,130,873
Insight Venture Partners XI	Large	3/25/2020	75,000,000	65,625,000	65,853
Insight Partners XII	Large	8/27/2021	50,000,000	9,395,615	0
JMI Equity Fund VI	Medium	6/27/2007	40,000,000	40,000,246	69,497,467
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	26,900,000	37,122,634
Lightspeed Venture Partners VII	Venture Capital	2/27/2006	18,000,000	18,000,000	52,755,264
Lightspeed Venture Partners VIII	Venture Capital	6/27/2008	15,000,000	15,000,000	35,218,970
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	19,700,000	43,659,998
Meritech Capital Partners V	Venture Capital	9/3/2014	23,000,000	21,965,000	86,769,643
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	34,372,267
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	47,061,881
NewSpring Growth Capital II	Small	4/20/2007	10,000,000	9,850,000	19,519,679

# 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 <sup>1/</sup>	Accumulated Capital Drawn	Accumulated Distributions <sup>2/</sup>
Providence Strategic Growth II	Small	12/7/2016	\$60,000,000	\$77,382,659	\$123,277,345
Providence Strategic Growth III	Small	7/26/2018	75,000,000	65,003,585	33,879,804
Providence Strategic Growth IV	Small	3/27/2020	75,000,000	49,297,101	24,068,374
Providence Strategic Growth Europe	Small	5/7/2021	74,086,106	26,875,765	2,143,410
PSG V	Small	*	50,000,000	0	0
PSG Europe II	Small	*	75,000,000	0	0
T. Rowe Price Stock Distribution Account <sup>3/</sup>	Various	1/3/2005	0	1,324,937,876	1,322,840,901
TCV X	Large	5/17/2019	75,000,000	52,864,047	0
Weathergage Venture Capital	Fund of Funds	6/26/2007	25,000,000	22,875,000	39,728,502
Weathergage Venture Capital II	Fund of Funds	6/29/2010	25,000,000	23,250,000	52,404,909
<b>Total Active Growth Equity</b>			<b>\$1,606,854,106</b>	<b>\$2,668,775,483</b>	<b>\$3,042,141,473</b>

Cash flows as of September 30, 2021.

\*Not funded as of September 30, 2021.

<sup>1/</sup>Commitments as of December 31, 2021.

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

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

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

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

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

Legacy Private Equity Funds Limited Partnership	Strategy/ Stage	SERS Initial Funding	Capital Committed <sup>1/</sup>	Accumulated Capital Drawn	Accumulated Distributions <sup>2/</sup>
Keystone Legacy Non-Core Fund <sup>3/</sup>	Various	7/1/2018	\$4,045,261,270	\$4,053,065,431	\$5,398,281,454
<b>Total Legacy Private Equity</b>			<b>\$4,045,261,270</b>	<b>\$4,053,065,431</b>	<b>\$5,398,281,454</b>

Cash flows as of September 30, 2021.

<sup>1/</sup>Commitments as of September 30, 2021.

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

<sup>3/</sup>As of September 30, 2021 a total of 112 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 | Private Credit

### Objective

The objective of Private Credit is to achieve a return in excess of the S&P/LSTA Leveraged Loan Index plus 100 basis points over 10-year periods (annualized, net of fees).

### Structure

Private Credit investments are non-traditional investments made in the form of closed-end limited partnership structures organized to invest in a diverse set of strategies including direct lending, diversified credit, and distressed debt.

Direct lending funds will lend money to privately held firms, often as part of a private

equity leveraged buyout transaction. These loans will be predominantly medium-duration, floating rate, and senior in the capital structure.

Diversified credit funds may invest in various credit strategies including specialty lending, niche credit opportunities, mezzanine and other debt securities, credit derivatives, structured credit and structured equity.

Distressed debt funds will invest in the credit securities of distressed companies or companies in need of restructuring. Private Credit funds are less liquid than public fixed income with investment horizons of five years or more.

### Private Credit

as of December 31, 2021

(\$ millions)

Sub-Asset Class	Unfunded Commitments	Fair Value	% of Total Fund
Direct Lending	\$220.3	\$331.2	0.8%
Distressed Debt	144.7	283.7	0.7
Diversified Credit	434.9	421.6	1.1
<b>Total Private Credit</b>	<b>\$799.9</b>	<b>\$1,036.5</b>	<b>2.6%</b>

# DEFINED BENEFIT PLAN

## Assets | Private Credit

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.

### Private Credit Committed, Drawn, and Distributed

Active Private Credit Funds	Strategy/ Stage	SERS Initial Funding	Capital Committed <sup>1/</sup>	Accumulated Capital Drawn	Accumulated Distributions <sup>2/</sup>
<b>Direct Lending</b>					
Ares PA Opportunities Fund - Direct Lending	Direct Lending	*	\$100,000,000	\$0	\$0
Audax Direct Lending Solutions Fund-A	Direct Lending	10/26/2018	100,000,000	73,800,242	22,684,759
Brightwood Capital Fund IV	Direct Lending	4/24/2018	100,000,000	100,000,000	29,380,621
HPS Mezzanine Partners 2019	Direct Lending	11/16/2020	75,000,000	59,690,274	6,836,684
ICG North American Private Debt Fund II	Direct Lending	2/27/2019	50,000,000	20,992,733	8,875,024
Permira Credit Solutions IV Master (Feeder) SCSp	Direct Lending	9/26/2019	75,000,000	42,273,096	5,225,367
Permira Susquehanna Opportunities - Credit	Direct Lending	4/7/2021	60,000,000	8,591,409	0
<b>Total Direct Lending</b>			<b>560,000,000</b>	<b>305,347,754</b>	<b>73,002,455</b>
<b>Distressed Debt</b>					
Ares PA Opportunities Fund - Distressed Debt	Distressed Debt	12/20/2019	100,000,000	60,863,972	2,724,300
Ares PA Opportunities Fund - Distressed Debt II	Distressed Debt	*	100,000,000	0	0
Glendon Opportunities Fund II	Distressed Debt	10/18/2019	150,000,000	97,500,000	0
Sixth Street Opportunities Partners IV (A)	Distressed Debt	1/25/2019	50,000,000	30,881,161	3,729,515
Sixth Street Opportunities Partners V	Distressed Debt	*	50,000,000	0	0
<b>Total Distressed Debt</b>			<b>450,000,000</b>	<b>189,245,133</b>	<b>6,453,815</b>
<b>Diversified Credit</b>					
Apollo Hybrid Value Fund	Diversified Credit	12/24/2018	100,000,000	117,937,614	51,842,199
Ares PA Opportunities Fund - Diversified Credit	Diversified Credit	12/15/2020	100,000,000	18,023,498	250,335
Clearlake Opportunity Partners II	Diversified Credit	8/30/2019	75,000,000	19,063,943	209,533
Clearlake Opportunities Partners III	Diversified Credit	*	75,000,000	0	0
ICG Europe Fund VII	Diversified Credit	8/24/2018	92,200,321	64,726,228	3,922,740

# DEFINED BENEFIT PLAN

## Assets | Private Credit

### Private Credit Committed, Drawn, and Distributed (continued)

Active Private Credit Funds	Strategy/ Stage	SERS Initial Funding	Capital Committed <sup>1/</sup>	Accumulated Capital Drawn	Accumulated Distributions <sup>2/</sup>
<b>Diversified Credit (continued)</b>					
ICG Europe Mid-Market Fund	Diversified Credit	4/8/2020	\$76,098,357	\$24,003,141	\$821
Sixth Street TAO 4.0 (B)	Diversified Credit	11/9/2017	100,000,000	83,384,036	27,283,464
Sixth Street TAO Contingent (D)	Diversified Credit	4/16/2020	150,000,000	59,419,801	14,722,467
<b>Total Diversified Credit</b>			<b>768,298,678</b>	<b>386,558,261</b>	<b>98,231,559</b>
<b>Total Private Credit</b>			<b>\$1,778,298,678</b>	<b>\$881,151,148</b>	<b>\$177,687,829</b>

Cash flows as of September 30, 2021.

\*Not funded as of September 30, 2021.

<sup>1/</sup>Commitments as of December 31, 2021.

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

# 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 (90% NCREIF Fund Index – Open End Diversified Core Equity (“NFI-ODCE”) / 10% FTSE NAREIT U.S. Real Estate Index) 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, 2021  
(\$ millions)

Sub-Asset Class	Fair Value	% of Total Fund
Core/Core Plus <sup>1/</sup>	\$1,182.6	3.0%
Value Add/Oppportunistic Funds <sup>2/</sup>	666.9	1.7
Value Add/Oppportunistic SMA	639.7	1.6
Real Estate Securities	380.9	0.9
Legacy Real Assets	0.2	0.0
<b>Total Real Estate</b>	<b>\$2,870.3</b>	<b>7.2%</b>

<sup>1/</sup>As of September 30, 2021, unfunded commitments are \$80.0 million.

<sup>2/</sup>As of September 30, 2021, unfunded commitments are \$405.9 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 <sup>1/</sup>	Accumulated Capital Drawn	Accumulated Distributions
<b>Core/Core Plus Real Estate</b>					
Blackstone Property Partners	Diversified	2017	\$300,000,000	\$300,000,000	\$1,744,007
Heitman America Real Estate Trust	Diversified	2007	100,000,000	100,000,000	88,601,388
Henderson Park Enhanced Income Fund	Diversified	2019	332,284,402	289,645,303	20,486,992
Oak Street Real Estate Capital Net Lease Property Fund	Diversified	2019	300,000,000	262,646,005	19,301,968
UBS Trumbull Property Fund	Diversified	1988	25,558,525	25,558,525	119,096,384
<b>Total Core/Core Plus Real Estate</b>			<b>1,057,842,927</b>	<b>977,849,833</b>	<b>249,230,739</b>
<b>Value Add/Oppportunistic Funds</b>					
Activum SG Fund VI	Diversified	2019	58,632,953	29,617,142	0
Activum SG Fund VI Pennsylvania Side-Car	Diversified	2021	58,357,902	25,970,267	0
AG Asia Realty Fund	Diversified	2007	25,000,000	23,500,000	25,375,000
Berwind Investment Partnership VI	Diversified	2002	24,543,712	24,543,712	42,799,870
Berwind Investment Partnership VII	Diversified	2005	25,000,000	25,000,000	17,310,299
Berwind Investment Partnership VIII	Diversified	2007	15,588,238	14,912,018	20,049,072
Berwind Investment Partnership IX	Diversified	2012	25,000,000	24,303,409	38,042,815
Blackstone Real Estate Partners IV	Diversified	2003	25,000,000	25,000,000	40,652,252
Blackstone Real Estate Partners V	Diversified	2006	50,000,000	47,912,974	97,456,278
Blackstone Real Estate Partners VI	Diversified	2007	75,000,000	71,319,075	152,115,861
Blackstone Real Estate Partners VII	Diversified	2011	75,000,000	66,586,912	95,919,003
Blue Moon Senior Housing II	Senior Housing	2020	50,000,000	23,818,566	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	70,791,746	487,912
Clerestory Small Cap Real Estate Fund I	Diversified	2010	18,000,000	15,228,956	15,131,513
Colony Investors VIII	Diversified	2007	22,500,000	21,655,800	7,962,017
Hawkeye Scout Fund I	Diversified	2009	75,000,000	75,000,000	117,006,454
Hawkeye Scout Fund II	Diversified	2016	30,000,000	30,000,000	605,865
LEM Multifamily Fund VI	Multifamily	*	75,000,000	0	0
Lubert Adler Fund VII	Diversified	2014	25,000,000	23,445,446	8,170,946

# DEFINED BENEFIT PLAN

## Assets | Real Estate

### Real Estate (continued)

Active Fund/Manager	Asset Type	SERS Initial Funding	Capital Committed <sup>1/</sup>	Accumulated Capital Drawn	Accumulated Distributions
<b>Value Add/Oppportunistic Funds (continued)</b>					
Mesirow Financial Real Estate Value Fund III	Diversified	2018	\$25,647,559	\$25,647,559	\$1,379,881
Oak Street Real Estate Capital Fund IV	Diversified	2017	100,000,000	100,000,000	73,726,505
Oak Street Real Estate Capital Fund V	Diversified	2020	50,000,000	12,660,000	2,095,389
Prudential Latin America Residential Fund III	Multifamily	2008	29,654,968	24,708,749	13,444,991
Prudential Senior Housing Fund IV	Senior Housing	2011	22,089,297	20,799,516	37,819,119
Prudential Senior Housing Fund V	Senior Housing	2015	50,000,000	41,137,690	3,216,633
Prudential Senior Housing Fund VI	Senior Housing	2019	100,000,000	22,255,983	0
Rockpoint Finance Fund I	Diversified	2007	2,527,500	2,527,500	2,538,994
Rockpoint Real Estate Fund II	Diversified	2005	34,138,784	34,138,784	30,679,156
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	40,642,661	15,270,212
Rubicon First Ascent	Office	2021	30,000,000	1,500,000	0
Rubicon First Ascent Sidecar	Office	*	20,000,000	0	0
SRE Opportunity Fund III	Diversified	2017	50,000,000	30,000,000	13,000,000
SRE Opportunity Fund III Select	Diversified	2017	50,000,000	20,750,000	16,539,717
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	71,083,420
ValStone Opportunity Fund V	Diversified	2014	14,663,402	14,663,402	6,689,834
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	37,571,397
Westbrook Fund VII	Diversified	2007	50,000,000	50,000,000	52,787,877
Westbrook Fund VIII	Diversified	2009	50,000,000	50,000,000	63,418,319
<b>Total Value Add/Oppportunistic Funds</b>			<b>1,876,977,202</b>	<b>1,396,073,281</b>	<b>1,319,726,228</b>
<b>Value Add/Oppportunistic SMA<sup>2/</sup></b>					
Heitman I.M.A.	Diversified	1988	NA	813,635,039	1,122,259,873
hotelAVE I.M.A.	Hotel	2018	NA	62,048,685	20,191,396
LaSalle I.M.A.	Diversified	1994	NA	454,256,376	778,848,456
LaSalle Takeover I.M.A.	Diversified	2018	NA	264,793,478	34,593,427
<b>Total Value Add/Oppportunistic SMA</b>			<b>NA</b>	<b>1,594,733,578</b>	<b>1,955,893,152</b>

# DEFINED BENEFIT PLAN

## Assets | Real Estate

### Real Estate (continued)

Active Fund/Manager	Asset Type	SERS Initial Funding	Capital Committed <sup>1/</sup>	Accumulated Capital Drawn	Accumulated Distributions
<b>Legacy Real Assets<sup>2/</sup></b>					
Forest I.M.A.	Timberland	1992	NA	\$124,231,969	\$242,967,376
<b>Total Legacy Real Assets</b>			<b>NA</b>	<b>124,231,969</b>	<b>242,967,376</b>
<b>Real Estate Securities<sup>2/</sup></b>					
CenterSquare Real Estate Securities	Diversified	2002	NA	183,616,773	36,168,336
<b>Total Real Estate Securities</b>			<b>NA</b>	<b>183,616,773</b>	<b>36,168,336</b>
<b>Total Active Real Estate</b>			<b>\$2,934,820,129</b>	<b>\$4,276,505,434</b>	<b>\$3,803,985,831</b>

Cash flows as of September 30, 2021.

\*Not funded as of September 30, 2021.

<sup>1/</sup>Commitments as of December 31, 2021.

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

# 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 (78% Russell 1000 Index / 16% Russell 2000 Index / 6% Russell Microcap 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, 2021  
(\$ millions)

Manager	Investment Style	Fair Value as of 12/31/21 <sup>1/</sup>
<b>U.S. Large/Mid Cap</b>		
Mellon Investments Corporation Russell 1000	U.S. Large Cap Equity	\$9,713.3
<b>Total U.S. Large/Mid Cap</b>		<b>9,713.3</b>
<b>U.S. Small Cap</b>		
Emerald Asset Management	U.S. Small Cap Growth Equity	641.4
Mellon Investments Corporation Russell 2000 Core	U.S. Small Cap Equity	1,297.8
Mellon Investments Corporation Russell 2000 Value	U.S. Small Cap Value Equity	778.0
<b>Total U.S. Small Cap</b>		<b>2,717.2</b>
<b>Total U.S. Equity</b>		<b>\$12,430.5</b>

<sup>1/</sup>Includes 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, 2021

(\$ millions)

Manager	Investment Style	Fair Value as of 12/31/21 <sup>1/</sup>
Artisan Partners - Global ex U.S.	Global ex-U.S. growth	\$0.6
BlackRock MSCI World ex U.S. Index	World ex-U.S. Equity	3,913.2
Harris Associates	World ex-U.S. Small Cap Equity	147.1
Mellon Investments Corporation MSCI World ex U.S. Index	MSCI World ex-U.S. Index	2.3
Morgan Stanley Investment Management Limited-developed ex U.S.	EAFE value	0.3
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	821.1
Xponance	International Small Cap Equity	261.8
<b>Total International Developed Markets Equity</b>		<b>\$5,148.2</b>

<sup>1/</sup>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, 2021

(\$ millions)

Manager	Investment Style	Fair Value as of 12/31/21 <sup>1/</sup>
BlackRock MSCI Emerging Markets Index	Emerging Markets Equity	\$210.3
GlobeFlex Capital	Emerging Markets Small Cap Equity	137.2
Leading Edge Investment Advisors	Emerging Markets Equity	268.5
Macquarie Emerging Markets	Emerging Markets Equity	416.1
Martin Currie Investment Management	Emerging Markets Equity	456.6
<b>Total Emerging Markets Equity</b>		<b>\$1,488.7</b>

<sup>1/</sup>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 and income to meet the fund's obligations. It is expected that the returns from the Fixed Income allocation will meet or exceed its benchmark (Bloomberg Barclays 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, 2021  
(\$ millions)

Manager	Investment Style	Fair Value as of 12/31/21 <sup>1/</sup>
<b>Intermediate Treasury</b>		
Mellon Investments Corporation Intermediate Treasury Bond Index	U.S. Intermediate Treasuries	\$285.4
<b>Total Intermediate Treasury</b>		<b>285.4</b>
<b>Long Duration</b>		
Mellon Investments Corporation Long Duration Bond Index	U.S. Long Duration Treasuries	688.5
Mellon Investments Corporation Long Term Credit Bond Index	U.S. Long Duration Credit	675.1
<b>Total Long Duration</b>		<b>1,363.6</b>
<b>Securitized</b>		
Mellon Investments Corporation Securitized Index	U.S. Securitized	702.9
<b>Total Securitized</b>		<b>702.9</b>
<b>Intermediate Credit</b>		
Mellon Investments Corporation Intermediate Credit Bond Index	U.S. Intermediate Credit	2,023.3
<b>Total Intermediate Credit</b>		<b>2,023.3</b>
<b>High Yield</b>		
BlackRock U.S. High Yield Bond Index	U.S. High Yield	123.6
Mellon HY Beta Fund	U.S. High Yield	252.8
Fidelity Institutional Asset Management	Commercial Mortgage-Backed Securities	339.4
<b>Total High Yield</b>		<b>715.8</b>

# DEFINED BENEFIT PLAN

## Assets | Fixed Income

### Fixed Income (continued)

Manager	Investment Style	Fair Value as of 12/31/21 <sup>1/</sup>
<b>Core Fixed Income<sup>2/</sup></b>		
Mellon Investments Corporation Bond Index	U.S. Aggregate Bond	\$1,756.1
PIMCO Core	U.S. Aggregate Bond	589.2
<b>Total Core Fixed Income</b>		<b>2,345.3</b>
<b>Opportunistic Fixed Income<sup>2/</sup></b>		
Blackstone Keystone	Fund-of-Funds	1,012.1
Brandywine Global	Global Sovereign Credit	0.1
SEI Structured Credit Fund	High Yield Bank Loans	54.3
Stone Harbor HY	Global High Yield	0.7
<b>Total Opportunistic Fixed Income</b>		<b>1,067.2</b>
<b>Nominal US Treasuries<sup>2/</sup></b>		
PIMCO U.S. Treasuries	U.S. Treasuries	101.6
<b>Total Nominal US Treasuries</b>		<b>101.6</b>
<b>Total Fixed Income</b>		<b>\$8,605.1</b>

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

<sup>2/</sup>During 2021, the Fixed Income Portfolio was transitioning from the asset allocation structure as outlined in the SERS December 4, 2019 IPS. The assets listed in the sub-asset classes Opportunistic Fixed Income, Core Fixed Income, and Nominal U.S. Treasuries will continue to transition to the current asset allocation structure as outlined in this section through 2022.

# 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 Barclays 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, 2021  
(\$ millions)

Manager	Investment Style	Fair Value as of 12/31/21 <sup>1/</sup>
Brown Brothers Harriman	U.S. TIPS	\$520.6
New Century Advisors	Global TIPS	138.4
NISA Investment Advisors	U.S. TIPS	497.0
<b>Total Inflation Protection (TIPS)</b>		<b>\$1,156.0</b>

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

# DEFINED BENEFIT PLAN

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## 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, 2021  
(\$ millions)

Manager	Investment Style	Fair Value as of 12/31/21 <sup>1/</sup>
PA State Treasury (STIF)	Cash	\$898.6
<b>Total Cash</b>		<b>\$898.6</b>

<sup>1/</sup>Includes securities and cash, which the manager had available for 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, 2021

(\$ millions)

Manager	Investment Style	Fair Value as of 12/31/21 <sup>1/</sup>
Arden	Fund-of-Funds	\$1.7
Entrust Keystone	Fund-of-Funds	1.0
Legacy Hedge Funds	Fund-of-Funds	17.2
Luxor Capital Partners	Direct Hedge Fund	1.9
Morgan Stanley Alternative Investment Partners	Fund-of-Funds	1.0
<b>Total Legacy Hedge Funds</b>		<b>\$22.8</b>

<sup>1/</sup>Includes 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, 2021, was approximately \$874.3 million, or 2.2% of the SERS Fund.

### Pennsylvania Investments by Asset Class

(\$ millions)

Asset Class	Total PA Fair Value
Private Equity <sup>1/</sup>	\$85.5
U.S. Equity	325.3
Real Estate <sup>1/</sup>	393.0
Fixed Income	70.5
<b>Total Pennsylvania Investments</b>	<b>\$874.3</b>

<sup>1/</sup>Private Equity and Real Estate are valued as of September 30, 2021.

### 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 over \$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, 2021, SERS' active Private Equity managers held investments in 39 Pennsylvania-based companies. SERS' pro-rata investment value in these companies is approximately \$85.5 million. This equates to 1.4% 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 175 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 \$325 million invested in stocks of Pennsylvania-based companies, as of December 31, 2021. These securities are held in SERS' various externally managed global public equity portfolios.

### Pennsylvania Investments - U.S. Equity

(\$ millions)

Manager	Fair Value
<b>Emerald Advisers</b>	\$25.6
<b>Mellon Investments Corporation</b>	299.7
<b>Total Pennsylvania Investments - U.S. Equity</b>	<b>\$325.3</b>

SERS had approximately \$71 million invested in fixed income securities issued by Pennsylvania-based companies, as of December 31, 2021. These securities are held in SERS' various externally managed bond portfolios.

### Pennsylvania Investments - Fixed Income

(\$ millions)

Manager	Fair Value
<b>Mellon Investments Corporation</b>	\$70.5
<b>Total Pennsylvania Investments - Fixed Income</b>	<b>\$70.5</b>

SERS had approximately \$899 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, 2021, the SERS real estate portfolio contained approximately 220 private real estate investments located in Pennsylvania, totaling 9.8 million square feet of office, retail, warehouse, and mixed-use space, 1,167 apartment, hotel, student housing, and senior housing units, and 2,809 self-storage units.

The gross fair value of the real estate assets located in Pennsylvania totaled approximately \$3.2 billion, of which SERS ownership share was approximately \$383 million.

In addition to the above, SERS owned approximately \$10 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, 2021.

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 Credit, Private Equity or Real Estate portfolio as of December 31, 2021.

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

Firm	Status	SERS Assets Under Management
<b>GlobeFlex Capital</b>	Minority/Woman-Owned	\$137 million market value
<b>Leading Edge Investment Advisors</b>	Minority-Owned	\$269 million market value
<b>New Century Advisors</b>	Woman-Owned	\$138 million market value
<b>Xponance</b>	Minority/Woman-Owned	\$262 million market value

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

Firm	Status	SERS Committed Capital
<b>Asia Alternatives Capital Partners</b>	Minority/Woman-Owned	\$295 million
<b>Avenue Capital Group<sup>1/</sup></b>	Woman-Owned	\$20 million
<b>Brightwood Capital</b>	Minority-Owned	\$100 million
<b>Blue Moon Capital Partners</b>	Woman-Owned	\$100 million
<b>Clearlake Capital Partners</b>	Minority-Owned	\$380 million
<b>Fairview Capital Partners</b>	Minority/Woman-Owned	*
<b>hotelAVE</b>	Woman-Owned	NA
<b>Hawkeye Partners<sup>1/</sup></b>	Woman-Owned	\$105 million
<b>Insight Venture Partners<sup>1/</sup></b>	Minority-Owned	\$375 million
<b>Rubicon Point Partners</b>	Minority/Woman-Owned	\$50 million
<b>Thoma Bravo<sup>1/</sup></b>	Minority-Owned	\$145 million
<b>TSG Consumer Partners<sup>1/</sup></b>	Woman-Owned	\$200 million
<b>Vista Equity Partners<sup>1/</sup></b>	Minority-Owned	\$225 million
<b>Weathergaze Capital<sup>1/</sup></b>	Woman-Owned	\$50 million
<b>Wind Point Partners<sup>1/</sup></b>	Minority-Owned	\$175 million

<sup>1/</sup>Minority/Woman-owned firm identified by SERS' consultants with less than a majority of minority/woman ownership.

\*The Keystone Legacy Fund is a special purpose vehicle to manage SERS' remaining 112 non-core funds as of September 30, 2021, 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 2021, 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 \$179,382 for the year. It is estimated this year that SERS' Equity managers directed approximately 3% of their trades through minority/woman-owned brokerage firms. Fixed Income managers traded a combined \$53.6 million of securities through minority/woman-owned brokerage firms.

Firm	Minority/ Woman-Owned Commissions
Guzman & Company	\$10,252
Loop Capital	51,273
Mischler Financial Group	5,356
North South Capital	6,463
Sturdivant & Company	54,586
Telsey Advisory	2,431
The Fig Group	49,021
<b>Total Minority/Woman-Owned Commissions</b>	<b>\$179,382</b>

**DEFERRED  
COMPENSATION  
PLAN**

Supplemental Benefit

# Deferred Compensation Plan

**\$294 million**

distributions/withdrawals  
in 2021

**\$4.8**

billion in  
assets

**As of Dec 31, 2021**



**57,554**

accounts

**76**

eligible employers

## Participant Contributions

\$174 million

## Total FY 2022-23 Planned Budget



**\$1.5 million**

**\$1.2  
million**

personnel

**\$0.3  
million**

operations

Excerpts from operations =

consultants - non EDP **\$155,342**

specialized services **\$25,000**

printing **\$20,000**

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

# DEFERRED COMPENSATION PLAN

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## 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 Retirement. 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 2021, 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 and new plan administration fee structure. Additionally, the board approved establishing a formal fee policy. More information about these changes can be found in the [Recent Changes section](#).

# DEFERRED COMPENSATION PLAN

## Plan Description

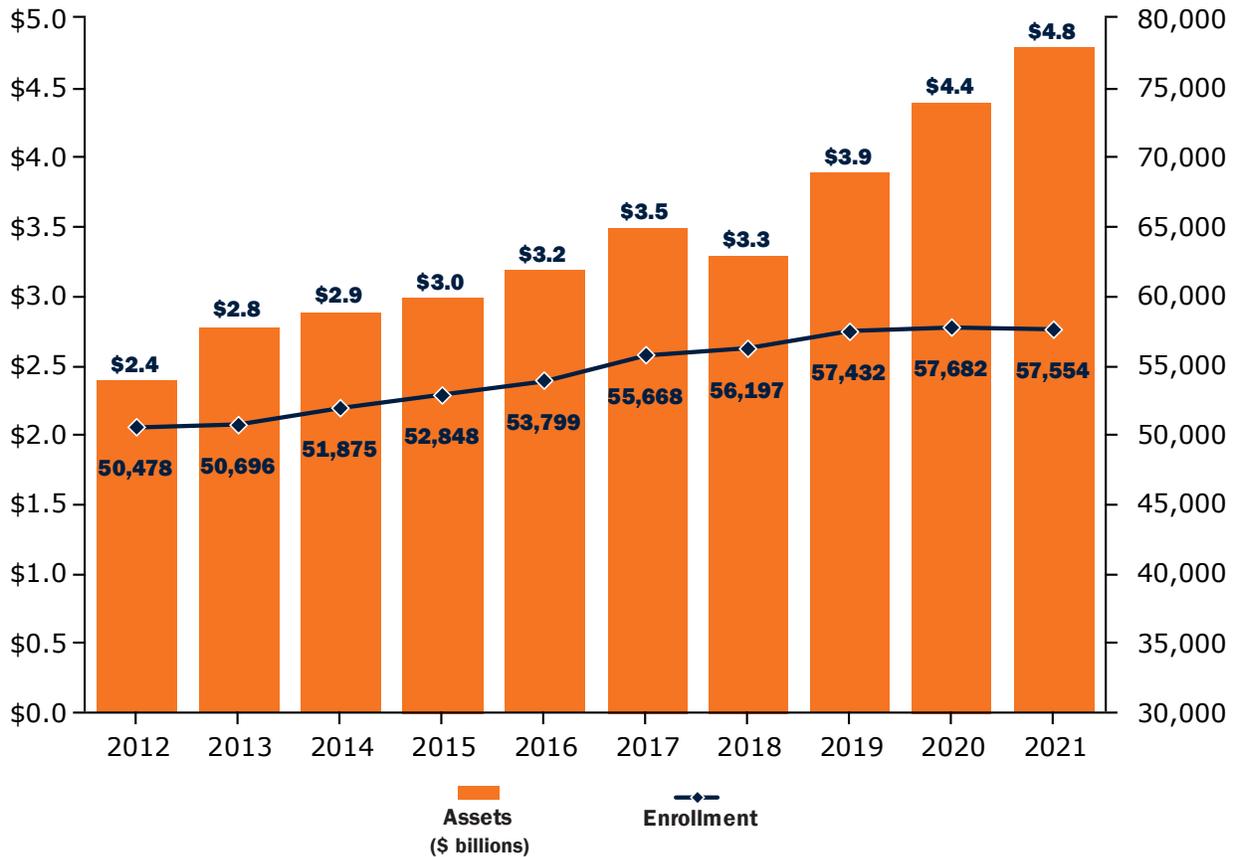
### Growth of Deferred Comp

In 2021, more than 57,000 participants had a total of approximately \$4.8 billion invested in deferred comp.

As of December 31, 2021, there were 33,538 active and 24,016 inactive participants in

deferred comp. From 2012 to 2021, annual deferrals have ranged from \$122 million to \$174 million per year and the total fund value grew from approximately \$2.4 billion to approximately \$4.8 billion.

### Deferred Comp Assets & Enrollment



# DEFERRED COMPENSATION PLAN

## Plan Description

### Recent Changes

#### Adjusted Plan Fees and Expenses

In March 2021, the board approved establishing a formal fee policy and fee and expense changes for the plan. The fee and expense changes were effective July 1, 2021.

- Reduced the current third-party administrator/recordkeeping fee from \$4.95 to \$4.65 per month
- Assessed a separate plan administration fee on accounts with balances of more than \$5,000:
  - \$1 flat fee per month; plus
  - 0.02% of account value annually, to be withheld on a monthly basis, not to exceed \$50 annually

### Deferred Compensation Plan Statistics

as of December 31, 2021

<b>Participants</b>	57,554 total accounts 33,538 actively contributing participants
<b>Assets</b>	\$4.8 billion
<b>Eligible Employers</b>	76
<b>Total Participant Contributions</b>	\$174 million
<b>Total Rollovers Into the Plan</b>	707 totaling \$66 million
<b>Total Rollovers Out of the Plan</b>	1,539 totaling \$176 million
<b>Total Distributions/Withdrawals</b>	27,584 totaling \$294 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, 2021

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	35,482	\$1,187,129,307	12-2003	1.65%	2.18%	2.15%	2.28%	0.2560% <sup>1/</sup>	
Post Retirement Date Fund	4,087	266,563,489	08-2005	6.96	11.47	8.05	6.57	0.0775 <sup>2/</sup>	
2025 Retirement Date Fund	2,843	170,571,661	07-2006	8.99	13.19	9.46	8.28	0.0775 <sup>2/</sup>	
2030 Retirement Date Fund	3,270	163,401,172	08-2005	11.43	14.96	10.66	9.21	0.0775 <sup>2/</sup>	
2035 Retirement Date Fund	3,343	139,016,587	07-2006	13.80	16.66	11.81	10.08	0.0775 <sup>2/</sup>	
2040 Retirement Date Fund	2,673	87,172,042	08-2005	15.96	18.19	12.82	10.83	0.0775 <sup>2/</sup>	
2045 Retirement Date Fund	2,427	69,210,414	07-2006	17.72	19.43	13.59	11.45	0.0775 <sup>2/</sup>	
2050 Retirement Date Fund	1,955	42,986,823	09-2007	18.67	20.07	13.96	11.83	0.0775 <sup>2/</sup>	
2055 Retirement Date Fund	1,090	14,496,974	05-2010	18.83	20.18	14.01	12.03	0.0775 <sup>2/</sup>	
2060 Retirement Date Fund	582	5,230,362	11-2014	18.82	20.17	14.00	NA	0.0775 <sup>2/</sup>	
2065 Retirement Date Fund	202	4,457,050	09-2019	18.77	NA	NA	NA	0.0775 <sup>2/</sup>	
U.S. Large Company Stock Index Fund	35,558	1,398,226,360	12-1994	28.70	26.09	18.49	16.57	0.0150 <sup>2/</sup>	
U.S. Small/Mid Company Stock Index Fund	29,161	550,037,749	08-1998	12.89	24.09	15.42	15.01	0.0250 <sup>2/</sup>	
Global Non-U.S. Stock Index Fund	19,058	182,982,265	03-2009	11.57	14.00	10.00	8.39	0.0550 <sup>2/</sup>	
U.S. Bond Index Fund	21,909	241,977,584	02-1995	(1.65)	4.76	3.55	2.86	0.0250 <sup>2/</sup>	
Short-Term Investment Fund	17,090	86,919,545	10-1988	0.07	1.00	1.23	0.75	0.0000	
Charles Schwab Self-Directed Brokerage <sup>3/</sup>	3,276	187,625,000	NA	NA	NA	NA	NA	NA	

<sup>1/</sup>The Stable Value Fund expense will fluctuate very little based on the balance of the fund.

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

<sup>3/</sup>For those in the Self-Directed Brokerage Option (SDB), the asset fee is assessed against the balance in the SDB but the actual deduction is prorated against the core investment options separately.

The Plan's monthly recordkeeping fee is \$4.65 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.