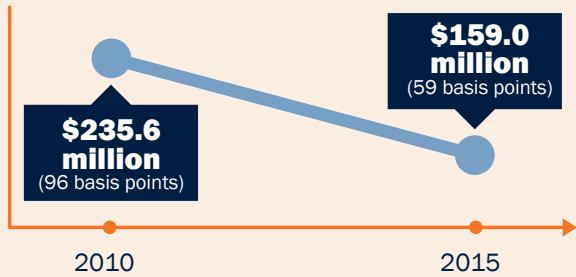


SERS decreased investment fees



In 2015 SERS retired **5,420** members and welcomed **11,865** new members

SERS paid nearly **\$3.1 billion** in benefits in 2015

27% of SERS active employees belong to post-Act 120 classes of service

As of Dec 31, 2015 SERS had

105,025
active members

124,689
annuitants

2015 contributions to the SERS Fund



Approximate Total Contributions = \$1.7 billion

Total FY 16/17 Spending Request



\$24.8 million

\$1.5 million

directed commissions

\$17.4 million
personnel

\$8.6 million
operations

\$0.3 million
fixed assets

Samples from operations =

real estate **\$1.7 million**

IT hardware/software **\$1.5 million**

treasury services **\$1.1 million**

postage **\$0.3 million**

legal services **\$0.3 million**

office equipment **\$0.09 million**

SERS average active member

46 years old

12 years of service

SERS average retired member

72 years old

receives **\$27,042** per year

Global Public Equity **-1.8%**

Alternative Investments **7.5%**

Liquidity Reserve **0.7%**

Diversifying Assets **0.1%**

In 2015 the SERS fund returned **0.5%** (unaudited)

Real Assets **-1.5%**

Fixed Income **-0.7%**

Data throughout is estimated/unaudited

SERS 2016 Supplemental Budget Book

February 26, 2016

Honorable William F. Adolph, Jr.
Majority Chairman
House Appropriations Committee
245 Main Capitol
Harrisburg, PA 17120

Honorable Joseph F. Markosek
Minority Chairman
House Appropriations Committee
512 E. Main Capitol
Harrisburg, PA 17120

Gentlemen and Members of the Appropriations Committee:

Enclosed please find detailed information about the Pennsylvania State Employees' Retirement System's operations, investments, and request for spending authority. My hope is that the information within will be useful in your deliberations related to the development and passage of the FY 2016-17 commonwealth budget. For FY 2016-17 SERS proposes a \$24.8 million spending authority, which is drawn from SERS funds, not general government operating accounts.

By way of background, I present key facts about SERS. This year SERS will serve approximately 235,000 active, vested, and retired members. The average retiree who has worked to full retirement age received an average annual annuity of \$27,042. The system paid out nearly \$3.1 billion dollars in 2015, of which approximately \$2.8 billion – more than 90% – was paid to members who live within Pennsylvania.

Our unaudited 2015 investment returns were 0.5%, which helped stabilize the fund during what was a very turbulent year in the financial markets. We continue to rein in administrative costs and maximize results for our members, and since 2010, we have reduced investment management fees by more than \$76 million. SERS estimated funded ratio for 2015 was 58.9%.

For the FY 2016-17, the employer contribution rate as set under Act 2010-120 is expected to be 29.5% of payroll, yielding approximately \$1.8 billion in contributions of which 43% originates from the general fund from employers under the Governor's jurisdiction.

Pennsylvania's State Employees' Retirement System remains one of the top-performing pension funds in the country. Our commitment to our members and the taxpayers of Pennsylvania remains to employ a prudent investment policy that will ensure that meaningful retirement benefits will be available to those employees that have given their careers to serving the people of Pennsylvania. It has been, and will continue to be, our honor to do so with the help and support of the members of this committee, as well as the entire General Assembly.

SERS budget hearing before the House will be March 7th at 10:00 a.m. If you have questions, comments, or concerns before then, please do not hesitate to call David E. Durbin, SERS Executive Director, at 717.787.9657 or e-mail at DDurbin@pa.gov.

Sincerely,



David R. Fillman
Chairman

SERS 2016 SUPPLEMENTAL BUDGET BOOK

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30 N. 3rd Street, Suite 150
Harrisburg, PA 17101
www.SERS.pa.gov
1.800.633.5461

SERS Organization

SERS ORGANIZATION

Mission, Vision & Guiding Principles

Established in 1923, SERS is one of the nation's oldest and largest statewide retirement plans for public employees, with approximately 235,000 members. SERS is among the largest of public and corporate pension funds, with assets of approximately \$25.8 billion as of December 31, 2015.

SERS is responsible for administering the State Employees' 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 Fund and the fiduciary responsibility for its management be vested in an 11-member board. The management of SERS is the responsibility of the executive director who, with the approval of the board, contracts for professional services and employs the staff needed to operate the system.

Mission

The mission of SERS is to provide retirement benefits and services to our members through sound administration and prudent investments.

Vision

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

Guiding Principles

- Demonstrate integrity
- Develop and empower employees
- Focus on customer service
- Fulfill fiduciary obligations
- Lead innovation and improvement
- Learn from mistakes
- Safeguard information, facilities, and staff
- Share knowledge
- Think strategically

SERS ORGANIZATION

Services & Operations

The nearly 200 professionals who work for the State Employees' Retirement System share a singular focus: serving SERS members. Some SERS professionals serve members by investing and overseeing approximately \$25.8 billion. Other SERS professionals serve members by ensuring that every monthly payment is made correctly and on time. Still others audit and account for each penny, provide online information, or answer members' questions in person or over the phone.

Some work is behind-the-scenes, while other work touches members more directly. Examples of services offered to active and vested members include:

- Issuing annual statements of account
- 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 retirement experience

Examples of services offered to retired members include:

- Issuing annual statements of account 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 implications of and, if necessary, effecting pension changes related to marriage, divorce, or death
- Tracking and reissuing payments, if necessary
- Assisting spouses, children, and other survivors upon the death of a SERS member

SERS ORGANIZATION

Services & Operations

Approximately a quarter of SERS professionals are wholly dedicated to direct member services through a network of field offices statewide, including:

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

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

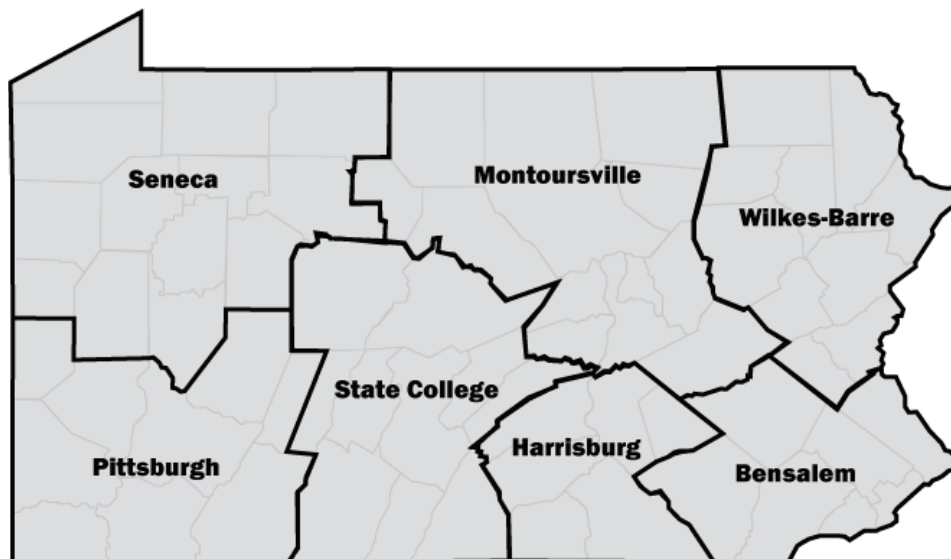
Montoursville Regional Counseling Center. Serving retired members who live and active members who work in Bradford, Cameron, Clinton, Columbia, Lycoming, Montour, Northumberland, Potter, Schuylkill, Snyder, Sullivan, Tioga, and Union counties.

Pittsburgh Regional Counseling Center. 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 Counseling Center. 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 Regional Counseling Center. 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 Counseling Center. Serving retired members who live and active members who work in Carbon, Lackawanna, Lehigh, Luzerne, Monroe, Northampton, Pike, Susquehanna, Wayne, and Wyoming counties.



SERS ORGANIZATION

Services & Operations

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

The **executive office** provides strategic leadership and administrative oversight of agency operations. It 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, works with the General Assembly on policy-related matters; administers the agency's right-to-know program; serves as liaison to the media; and offers an array of communications support to the agency.

The **office of member services** provides direct assistance to SERS active, vested, and retired members as well as their families. It conducts individual and group educational sessions statewide. The office also supports SERS employers and processes member enrollments, retirements, status changes, payments, and a host of other transactions.

The **investment office** works closely with the State Employees' Retirement Board to manage the SERS Fund. It establishes and implements investment policies; sets the strategic asset allocation; monitors fund cash flow, composition, and performance; and researches, recommends, and supervises investment managers, among other tasks. The office also maintains deep and current expertise related to the capital and global markets.

The **office of finance and administration** maintains accounting controls and oversees all SERS funds. It administers all transactions including, for example, member payments; member and employer contributions; investment purchases and sales; and operational expenses. The office also manages facilities and procurement, and oversees the deferred compensation program.

The **internal audit division** 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 audit committee.

The **legal office** advises the State Employees' Retirement Board on matters related to member appeals and administrative hearings, securities actions and litigation matters, 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.

SERS ORGANIZATION

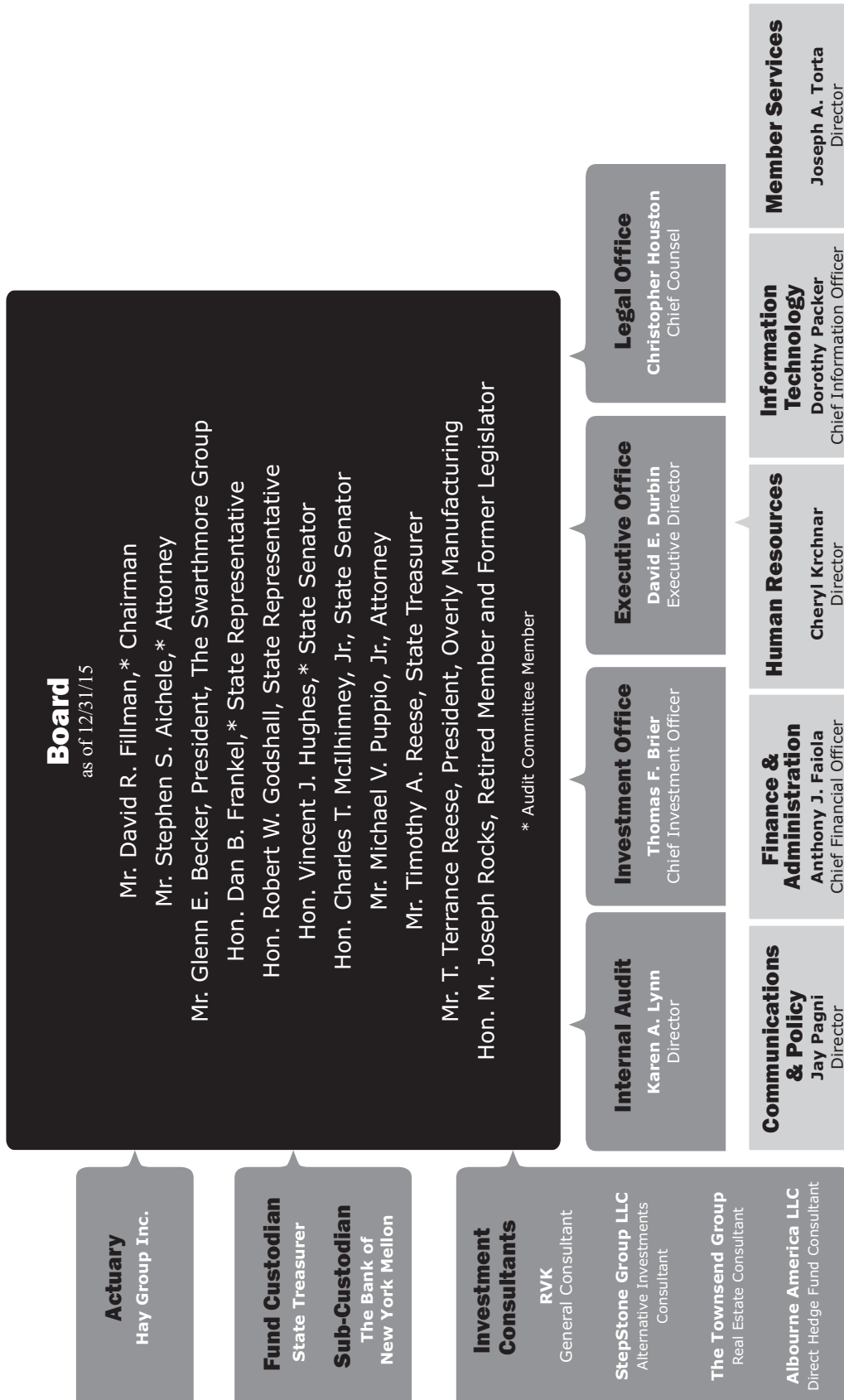
Services & Operations

The **office of information technology** administers the agency's computing infrastructure. It ensures the performance and security of complex databases, which contain sensitive personal and financial information and are relied upon to track investments, process payments, and account for funds. The office also links the regional field offices, develops applications to provide members with online access to SERS information, and provides user support.

The **human resources division** recruits, hires, trains, supports, and assesses the performance of SERS professionals. It offers workforce planning, professional development programs, and labor relations services. The division also facilitates annual financial disclosure and ethics processes for SERS board members and staff.

SERS ORGANIZATION

Services & Operations



SERS ORGANIZATION

Proposed FY 2016-2017 Administrative Budget

	Rebudget 2012-2013	Rebudget 2013-2014	Rebudget 2014-2015	Rebudget 2015-2016	Budget Request
Personnel Services	\$16,820,129	\$14,368,800 ^{1/}	\$15,909,014 ^{1/}	\$16,934,000 ^{1/}	\$17,432,183 ^{1/}
Operational					
Travel	183,600	36,000 ^{1/}	50,050 ^{1/}	56,400 ^{1/}	54,300 ^{1/}
Training	90,500	66,600 ^{1/}	153,258 ^{1/}	116,950 ^{1/}	125,606 ^{1/}
Communication Services	378,500	353,500	428,200	418,400	472,500
Consultants - Non EDP	396,500	367,600	385,600	401,600	349,600
Legal Services/Fees	175,500	423,800	282,500	386,000	280,000
Specialized Services	421,700	304,200	404,100	455,670	495,550
Advertising	20,000	10,000	20,000	5,000	8,000
IT Consulting	947,500	1,138,200	964,600	1,200,000	1,620,100
Contracted Maintenance Non-IT	52,800	44,800	39,300	41,300	49,300
Hardware/Software and Maintenance	1,084,800	1,325,400	1,334,900	1,071,160	1,518,496
Real Estate	1,770,800	1,886,000	1,842,789	1,680,091	1,710,091
Vehicles	44,900	27,000	31,700	25,600	23,000
Office Equipment	68,000	75,500	68,100	94,600	90,300
Other Rentals/Leases	18,600	2,700	3,600	3,600	3,600
Office Supplies	84,900	86,900	86,800	107,000	89,205
Educational Supplies	1,700	5,800	500	3,140	2,200
Motorized Equipment Maintenance	10,900	2,600	8,500	3,500	3,500
Postage	294,700	500,000	196,500	352,100	346,500
Freight	3,200	3,000	3,600	3,500	3,500
Printing	226,200	118,600	226,439	157,100	176,400
Subscriptions & Investment Licensing	115,000	114,500	65,250	35,590	58,350
Membership Dues	59,500	15,100 ^{1/}	23,900 ^{1/}	26,000 ^{1/}	25,545 ^{1/}
Conference Expenses	7,400	0	9,700	8,400	8,600
Insurance, Surety & Fidelity Bonds	13,000	13,000	13,000	13,000	13,000
Other Operational	1,449,191	1,062,200	1,001,100	1,393,299	1,104,574
Total Operational	7,919,391	7,983,000	7,643,986	8,059,000	8,631,817
Fixed Assets	120,000	150,000	250,000	250,000	250,000
Less Directed Commissions	1,200,000	1,500,000	1,500,000	1,500,000	1,500,000
Total Annual Budget	\$23,659,520	\$21,001,800	\$22,303,000	\$23,743,000	\$24,814,000

^{1/}Investment related expenditures previously included in these line items are accounted for as non-appropriated expenditures and reported as investment expenditures.

SERS ORGANIZATION

Proposed FY 2016-2017 Administrative Budget

Directed Commission Revenue & Expense

	FY 2015-16 Budget	FY 2016-17 Budget
Beginning Balance	\$3,470,208	\$2,070,208
Directed Commission Revenue	100,000	100,000
Total Available	3,570,208	2,170,208
Directed Commission Expense	1,500,000	1,500,000
Ending Balance	\$2,070,208	\$670,208

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

SERS ORGANIZATION

Legislation

Legislation Enacted During 2015

On December 28, 2015, Governor Tom Wolf signed Act 2015-93, which instituted several technical, tax-related requirements for SERS and is part of Pennsylvania's ongoing efforts to maintain the Retirement Code's compliance with federal and state laws, including the Internal Revenue Code. Many of these technical changes are transparent to SERS members, and most of the other changes affect only a few state employees. Most importantly, the passage of this legislation ensures that state employees continue to enjoy the benefits of their retirement accounts remaining tax-deferred until they leave state service and begin receiving a pension.

Summary of Key Changes

- Retiree return to service rules, allowing annuitants to return to active service in limited circumstances, are structured to satisfy federal requirements
- Minimum vesting standards are established in the event SERS pension plan is closed
- Benefit limits for higher salaried or longer service employees and the handling of pickup contributions
- Maximum contribution and minimum distribution rules, and death benefit parameters
- Coordination of retirement benefits between SERS and PSERS to ensure that any combined benefit does not exceed the IRS maximum distribution limit

SERS Members

SERS MEMBERS

Demographics as of December 31

Total Active & Annuitant Members

Year Ending December 31	Total Members ^{1/}	Active Members	Annuitants & Beneficiaries
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
2011	222,363	107,021	115,342
2010	220,968	109,255	111,713
2009	219,746	110,107	109,639
2008	219,012	110,866	108,146
2007	216,740	109,610	107,130
2006	213,032	110,972	102,060

^{1/}Totals do not include inactive members.

Active Members: Age & Service

Average Age	46.4
Average Years of Service	12.0

Total Annuitants & Beneficiaries: By Category

	2012	2013	2014	2015
Normal	57,439	59,020	60,228	61,753
Early	41,181	42,078	42,683	43,272
Disability	8,053	8,258	8,417	8,512
Beneficiary/Survivor	10,388	10,696	10,921	11,152

Annuitants & Beneficiaries: Average Age

	2012	2013	2014	2015
Normal	72.5	72.4	72.4	72.3
Early	63.2	63.4	63.7	64.0
Disability	62.1	62.4	62.7	63.0
Beneficiary/Survivor	74.8	74.7	74.7	74.6

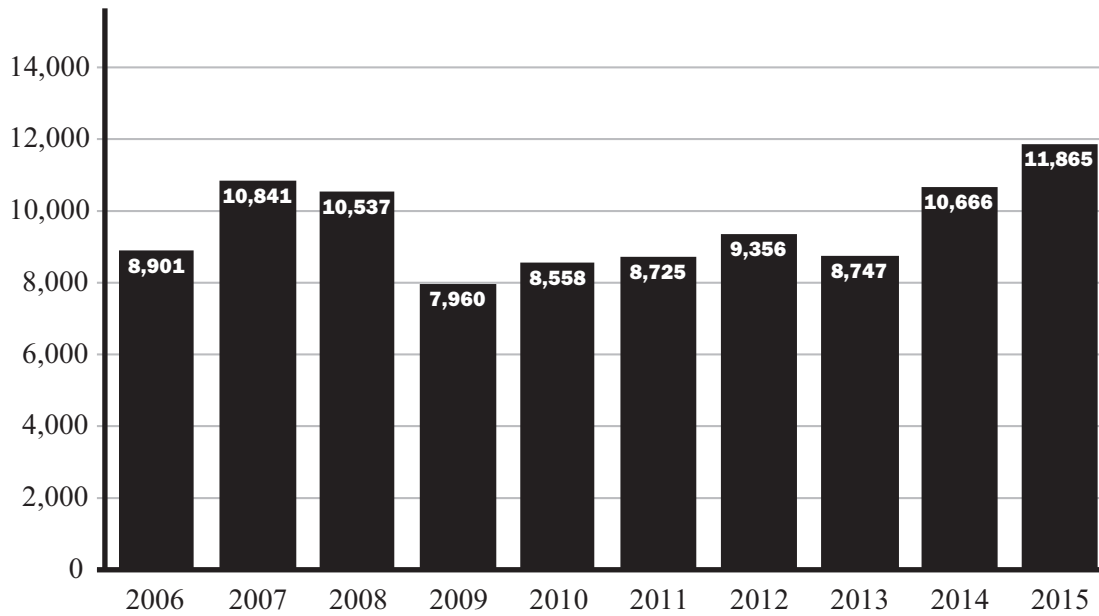
Annuitants & Beneficiaries: Average Annual Pension

	2012	2013	2014	2015
Normal	\$25,083	\$25,839	\$26,426	\$27,042
Early	16,027	16,333	16,604	16,934
Disability	14,291	14,573	14,797	15,020
Beneficiary/Survivor	10,940	11,386	11,651	12,007

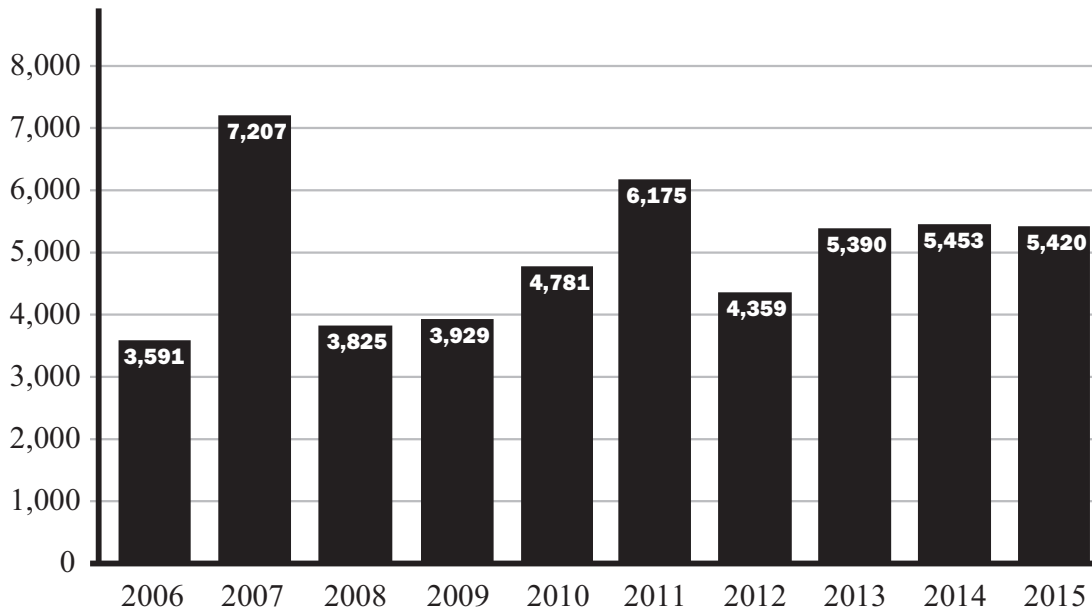
SERS MEMBERS

Demographics as of December 31

New Member Enrollments



Normal & Early Retirements



SERS Fund

SERS FUND

Funding Process

Defined Benefit Plan

The Pennsylvania State Employees' Retirement System administers two retirement plans to help safeguard the financial security of the commonwealth's public workforce in its retirement years. Most state employees are required to participate in Pennsylvania's defined benefit plan. 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 program.

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 program are provided in the last section of this book.

In the defined benefit plan, both the employer and the employee pay a certain percentage of the employee's salary to the SERS Fund for as long as the employee works for the commonwealth. For FY 2015/16, employers are contributing 25% (per current legislative mandates) of payroll and most employees are paying 6.25%. SERS invests this money to achieve returns to help ensure sufficient funds are available to make payments to current and future retirees. In 2015, SERS earned an estimated 0.5% return on its investments.

When employees meet certain milestones—working a specific number of years to achieve vesting, for example—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 employee's length of service, age, compensation over a period of time, and an accrual rate, or multiplier that is determined by the General Assembly.

In 2015, SERS made approximately \$3.1 billion in benefit payments, approximately \$2.8 billion of which stayed in Pennsylvania. The average annual pension paid to a retired state employee who worked to full retirement age was \$27,042.

Determining Adequate Funding for a Defined Benefit Plan

A defined benefit plan operates on a sound basis when the funds on hand, current and expected future contributions, and investment earnings are sufficient to cover the value of all promised benefits.

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 standard feature of these types of plans is that employee and employer contributions invested throughout an employee's working career provide sufficient funding to pay for that particular employee'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

SERS FUND

Funding Process

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.

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 study uncertain future events.

SERS actuarial firm conducts an in-depth investigation and analysis—known as an experience study—of real-world economic and demographic data every five years. Economic assumptions include rates of investment return and salary growth, for example, which are significantly impacted by inflation. Demographic assumptions include workforce, disability, and mortality trends. SERS last experience study was delivered in early 2011, and is available at SERS.pa.gov. SERS will be delivering the results of its next experience study later this year.

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.

Current Key Actuarial Assumptions

7.5%
long-term
investment return

6.1%
average salary growth

2.75%
rate of inflation

The selection of economic and demographic assumptions used is generally guided by the Actuarial Standards Board. In SERS case, some very important assumptions—such as the length of time over which investment gains and losses are recognized—are set by Pennsylvania law.

Each year, SERS actuarial firm uses the most recent employee 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 employee 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.

Funding Sources & Trends

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

SERS FUND

Funding Process

Employee Contributions

Active employees pay a certain percentage of their pay toward their retirement benefit. While different classes of employees pay different rates, most employees currently pay 6.25% of their pay. Employees' contributions are withheld from their paychecks and sent directly from their employer to SERS. The percentage is set by statute and the rate does not change from year to year. In 2015, employee contributions to SERS totaled \$371 million.

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

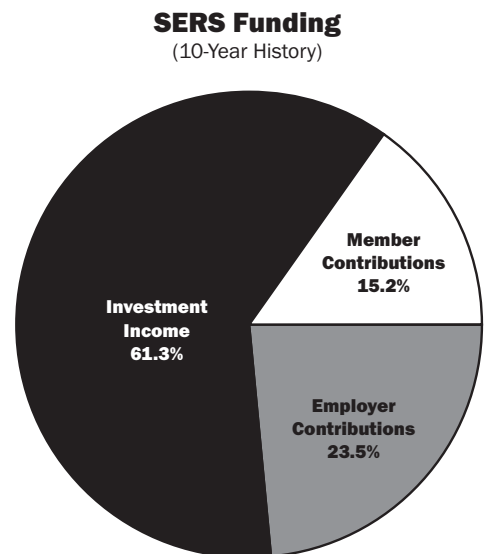
There are some instances, however, in which employee contributions can increase. For example, Pennsylvania’s Act 2010-120 introduced a “risk sharing” provision that allows for an increase in contributions of employees generally hired on or after January 1, 2011, if there is a multi-year period of investment returns below the assumed rate and if employers have met their contribution obligations to the pension system. An increased employee “shared risk contribution” can be established every three years beginning in 2014. The additional contribution cannot increase by more than 0.5% in any three-year period, and cannot exceed 2% in total.

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.



SERS FUND

Funding Process

As a result of SERS 90+ years of operation and the trend of people living longer, the system now has more retired members than active members. In 2016, SERS is projected to pay out approximately \$96 million more each month than it takes in through employee and employer contributions.

As a normal consequence of SERS greater maturity, the liquidity needs of the fund increase and require an ongoing rebalancing of assets. In recognition of this fact and in acknowledgement of continuing economic challenges, SERS again reduced its assumed rate of return in 2012; this time, from 8% to 7.5%. This change has significant implications for the employer contribution rate, as discussed below.

Public Pension Fund Assumed Rates of Return

(National Association of State Retirement Administrators, 2016)

Rate	# of Plans Using Rate
< 7.00%	7
7.00%	5
7.01% - 7.50%	44 (SERS)
7.51% - 7.99%	33
8.00%	33
8.01% - 8.49%	3
8.50%	1

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 7.6% and a 30-year return of 8.9%. 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 footing.

The "shared risk" provision of Act 2010-120, 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. The next potential shared-risk increase could occur in 2017.

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 employee 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.

The employer normal cost is expressed as a percentage of payroll and is the amount employers would contribute if all actuarial assumptions were precisely correct, including the fund earning exactly its assumed rate of return. The normal cost of benefits as of the 2014 actuarial valuation was 4.95%.

SERS FUND

Funding Process

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 2001-03 it was 0%. A rate can only be certified at 0% when fund assets and investment earnings are predicted to more than cover the normal cost of benefits earned in any given year. When the contribution rate is less than the normal cost or as low as 0% of payroll, employers can redirect money to other purposes.

The total dollars contributed by employers has varied from year to year. In 1985, employer contributions totaled \$460 million, in 2015 that figure was nearly \$1.4 billion.

According to the Budget Office, SERS employers under the Governor’s jurisdiction paid less than half of the employers’ total—about 43%—from general funds. About 22% came from special funds; about 17% came from federal funds; and about 18% came from other sources.

The employer contribution rate has two parts: the cost of the benefit for new SERS members in the current year (as applied to all active members) and a contribution toward the unfunded liability. When SERS reduced its assumed rate of return from 8.0% to 7.5% in 2012, the change increased the unfunded liability by approximately \$2.1 billion.

The FY 2016-17 employer contribution is currently legislated to be 29.5% of payroll with increases capped at 4.5% each year until no longer needed. If the contribution were not legislatively capped, the total rate would be 31.9% – about 4.95% to fund the benefits of new SERS members in the current year normal cost and about 26.95% to pay toward the unfunded liability.

To translate the 4.5% increase into dollars, projections suggest that the increase in employer contributions will be \$325 million next year. Looking at the relative sizes of the current-year and unfunded liability components discussed above, clearly the unfunded liability is driving employer contribution rate increases. In addition, because the employer rate will remain below the actuarially required rate until at least 2016, SERS unfunded liability will continue to grow in the near term. The rate of growth will slow as the annual employer rate rises.

Long-Term Snapshot

	1985	2015
Employer Rate	13.09%	25.01%
Employer Contributions	\$460 million	\$1.4 billion
Employee Rate	5.00%	6.25%
Employee Contributions	\$133 million	\$371 million
Active Employees	111,000	105,000
Annuitants	64,000	125,000

SERS FUND

Funding Process

Projected Payout, Funding Status & Employer Contributions

Assuming entry-age funding method, level-dollar amortization, five-year smoothing of assets, Act 2010-120 collars, 6.1% salary growth, 2.75% inflation, 0.5% investment return in CY 2015 with 7.5% return thereafter, 6.25% employee contribution.

Valuation Year Ended Dec 31	CY Payout	CY Funding Status ^{1/}		Fiscal Year	Expected FY Payroll (\$ millions)	FY Employer Contribution	
	Benefits & Expenses (\$ billions)	Funded Ratio	Unfunded Liability (\$ billions)			Employer Contribution Rate	Expected FY Contribution (\$ millions)
2015	\$3.2	58.9%	\$18.79	2016/17	\$6,205.3	29.50%	\$1,830.6
2016	3.2	59.7	18.79	2017/18	6,394.6	31.45	2,011.0
2017	3.3	60.6	18.74	2018/19	6,589.6	30.96	2,040.1
2018	3.4	60.8	18.97	2019/20	6,790.6	30.87	2,096.2
2019	3.5	61.3	19.10	2020/21	6,997.7	30.67	2,146.0
2020	3.6	62.4	18.84	2021/22	7,211.2	30.03	2,165.8
2021	3.8	63.6	18.55	2022/23	7,431.1	29.41	2,185.2
2022	3.9	64.8	18.21	2023/24	7,657.8	28.78	2,204.0
2023	4.0	66.0	17.83	2024/25	7,891.3	28.16	2,222.1
2024	4.1	67.3	17.41	2025/26	8,132.0	27.55	2,240.2
2025	4.2	68.6	16.95	2026/27	8,380.0	26.95	2,258.7
2026	4.3	69.9	16.45	2027/28	8,635.6	26.38	2,277.7
2027	4.4	71.2	15.91	2028/29	8,899.0	25.81	2,297.2
2028	4.5	72.6	15.33	2029/30	9,170.4	25.27	2,317.4
2029	4.6	74.0	14.70	2030/31	9,450.1	24.74	2,338.1
2030	4.7	75.5	14.01	2031/32	9,738.4	24.23	2,359.5
2031	4.8	77.1	13.27	2032/33	10,035.4	23.73	2,381.6
2032	4.8	78.7	12.48	2033/34	10,341.5	23.25	2,404.4
2033	4.9	80.4	11.61	2034/35	10,656.9	22.78	2,427.8
2034	5.0	82.1	10.68	2035/36	10,981.9	22.33	2,452.0
2035	5.1	84.0	9.67	2036/37	11,316.9	21.89	2,477.0
2036	5.2	85.9	8.58	2037/38	11,662.0	21.46	2,502.8
2037	5.3	88.0	7.40	2038/39	12,017.7	21.05	2,529.3
2038	5.3	90.1	6.13	2039/40	12,384.3	20.64	2,556.7
2039	5.4	92.4	4.76	2040/41	12,762.0	16.54	2,110.6
2040	5.5	94.1	3.76	2041/42	13,151.2	13.57	1,784.5
2041	5.6	95.3	3.03	2042/43	13,552.3	10.25	1,389.6
2042	5.7	95.9	2.66	2043/44	13,965.7	8.21	1,145.9
2043	5.8	96.2	2.53	2044/45	14,391.6	7.98	1,148.7
2044	5.9	96.4	2.42	2045/46	14,830.6	7.69	1,140.9

^{1/}Figures are based on 2014 actuarial funding valuation.

SERS FUND

Actuarial Status

Restoring SERS Defined Benefit Plan Funding

The SERS unfunded liability is growing slower than it otherwise would have due to Act 2010-120, which 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 other provisions for employees hired on or after January 1, 2011. One aspect of Act 2010-120 is that retirement provisions for legislators elected after December 1, 2010, were reduced and made consistent with those of most rank-and-file employees.

It will, however, take considerable time to realize benefits from the lower costs. SERS funded ratio will improve as employees hired before January 2011 retire and post-January 2011 hires begin to fill employee ranks in greater proportion. In 2015, SERS retired 5,420 state employees and added 11,865 new members. Currently, approximately 27% of SERS active members belong to the post Act 2010-120 classes of service.

Act 2010-120 also recognized the need for greater rates of employer funding and does allow employer contributions to increase over time. To ensure predictability and to moderate overall budget impacts, the General Assembly set forth measured intervals for increased employer contribution rates.

Because the employer rate remains below actual cost for a number of years, SERS unfunded liability will continue to grow in the near term. As the employer rate increases, however, its impact on paying down the liability is dramatic. Such funding is among the most crucial components of the overall, long-term stability of the pension system.

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—approximately 235,000 active, vested, and retired employees.

In general, a funding ratio of 80% or better is considered “healthy” for a pension system. Per a 2015 Wilshire report, Pennsylvania is among 52 out of 92 other state retirement systems that are currently below the 80% threshold. At the close of 2015, SERS estimated funded ratio was 58.9% (actuarial value) or 57.2% (market value).

SERS FUND

Actuarial Status

SERS funded ratio has varied significantly over time. In 1984, it dipped below 60%, as it is now. By 2001, however, it had climbed back to well over 100%. Recent funded ratios include:

	Actuarial Value	Fair (Market) Value
1995	102.9%	108.9%
2000	132.4	141.5
2005	92.9	99.6
2010	75.2	66.1
2015 ^{1/}	58.9	57.2

^{1/}2015 values are projected.

The 2015 estimated unfunded liability is \$18.8 billion. The liability will continue to grow in the near term, however, as employer contribution rates are suppressed by Pennsylvania law.

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 2010-120
- Cumulative negative impact of the above on the overall size of the fund and its ability to realize investment returns in positive-earning years

SERS FUND

Actuarial Status

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

(\$ millions)

Calendar Year	Member Contributions	Investment Earnings	Employer Contributions	Benefits & Expenses	Fair (Market) Value
2006	\$318	\$4,730	\$196	(\$1,943)	\$32,053
2007	334	5,246	244	(2,361)	35,516
2008	337	(11,061)	235	(2,231)	22,796
2009	349	3,561	253	(2,297)	24,662
2010	349	3,076	273	(2,474)	25,886
2011	351	480	392	(2,732)	24,377
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 ^{2/}	371	13 ^{3/}	1,359	(3,236)	25,845
10-Year Total	\$3,475	\$14,025	\$5,397	(\$25,804)	

^{1/}10-year net additions and deductions were (\$2,907).

^{2/}2015 figures are unaudited.

^{3/}Figure does not include 4th quarter earnings for all Alternative Investments and the Private Energy, Non-Core Real Estate, and Core Real Estate portions of Real Assets. Data not yet available.

SERS Fund

Overview

SERS FUND

Investment Program | Overview

Investment Policy

The SERS Board originally adopted a formal *Statement of Investment Policy* (policy) in 1979. It has been revised periodically to reflect and incorporate legislative changes governing investments and amendments to policies and procedures guiding the investment of the defined benefit portfolio. The policy was last amended in January 2016.

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

The major elements of the policy are:

- The assets of the SERS Fund will be managed with the primary objectives of the payment of benefit obligations to participants in the plans as well as to maximize return with acceptable risk considerations and sufficient liquidity so that employer contributions can be minimized.
- The SERS Fund's overall investment objective is to provide a total rate of return, over full economic cycles, which achieves SERS long-term actuarially assumed rate of return consistent with the board's tolerance for risk.
- The board's investment authority is governed by the prudent investor standard as set forth in Title 71, Pennsylvania Consolidated Statutes, Section 5931(a).
- The members of the board, employees of the board, and agents thereof shall stand in a fiduciary relationship to the members of the system regarding the investments and disbursements of any of the 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 FUND

Investment Program | Overview

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

Investment Objectives

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

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

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

SERS FUND

Investment Program | Overview

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 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. An asset/liability study demonstrated that the prudent application of this expanded authority should result in a more efficient portfolio that better serves the needs of SERS.

Total Fund Asset Allocation

SERS develops a biennial strategic investment plan which provides direction for the SERS investment program. The *2014-2015 Strategic Investment Plan* will be implemented over a 10-year period. The fund's asset allocation strategy will evolve over this timeframe through a series of interim targets until the long-term target for each asset class is achieved.

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 govern the investment of SERS assets. SERS investment plan is reviewed and updated biennially for strategic asset allocation purposes, as well as for diversification needs within each asset class.

Asset Allocation

(\$ millions as of December 31, 2015)

Asset Class	Market Exposure	% of Total Fund	Long-Term 10-Year Strategic Target
Alternative Investments	\$4,598.9	17.8%	15.0%
Global Public Equity	10,046.4	38.9	40.0
Real Assets	3,537.2	13.7	17.0
Diversifying Assets	1,673.3	6.5	10.0
Fixed Income	4,285.2	16.5	15.0
Liquidity Reserve	1,704.0	6.6	3.0
Total Fund	\$25,845.0	100.0%	100.0%

Investment Program | Overview

Number of Investment Managers

Asset Class	Investment Managers
Alternative Investments	148
Global Public Equity	15
Real Assets	36
Diversifying Assets	14
Fixed Income	15
Liquidity Reserve	3
Total Managers	231

Number of Investment Portfolios

Asset Class	Investment Portfolios
Alternative Investments	341
Global Public Equity	18
Real Assets	72
Diversifying Assets	16
Fixed Income	18
Liquidity Reserve	5
Total Portfolios	470

SERS Fund

Performance

SERS FUND

Investment Program | Performance

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

For the period ending December 31, 2015

Asset Class	1-Year Total Return	3-Year Total Return	5-Year Total Return	10-Year Total Return
Alternative Investments ^{2/, 5/}	7.5%	11.1%	11.5%	10.7%
<i>Burgiss All Private Equity Custom Index</i> ^{3/, 5/}	10.2	14.0	13.4	11.6
<i>Russell 3000 Index + 3%</i> ^{4/, 5/}	2.5	15.9	16.7	10.1
Global Public Equity	-1.8	8.6	7.0	4.5
<i>MSCI ACW Investable Market Index (Net)</i>	-2.2	7.9	6.1	5.0
Real Assets ^{5/}	-1.5	4.2	5.4	4.2
<i>Real Assets Custom Benchmark</i> ^{5/}	1.5	5.3	6.9	4.1
<i>Consumer Price Index + 3%</i>	3.8	4.0	4.6	4.9
Diversifying Assets	0.1	5.9	4.8	NA
<i>DA Custom Index</i> ^{6/}	-0.9	8.0	6.8	NA
Fixed Income	-0.7	1.0	3.8	5.3
<i>Barclays U.S. Aggregate Bond Index</i>	0.5	1.4	3.2	4.5
Liquidity Reserve	0.7	0.5	0.4	1.6
<i>BofA ML 3 Month U.S. T-Bill Index</i>	0.1	0.1	0.1	1.2
Total Fund	0.5%	6.7%	6.9%	5.2%
<i>Total Fund Custom Benchmark</i>	1.2%	6.9%	7.1%	6.3%
<i>Total Fund Custom Public Market Equivalent Benchmark</i>	0.6%	7.7%	7.9%	6.7%

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

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

^{3/}The Burgiss All Private Equity Custom Index is intended to compare the program's performance to its peers.

^{4/}The Russell 3000 Index + 3% is a long-term benchmark by which SERS measures its private market performance. Shorter term variances (1-year and 3-year) can be pronounced due to the nature of private assets and are not as relevant for benchmark purposes.

^{5/}Alternative Investments, its corresponding benchmarks, the Private Energy, Non-Core Real Estate, Core Real Estate, and REITs sections of Real Assets, and the corresponding Real Assets Custom Benchmark are reported on a quarter lagged basis.

^{6/}Beginning April 2014, the DA Custom Index is comprised of the HFRI Fund-of-Funds Strategic Index consistent with board approval of the 2014-2015 Strategic Investment Plan which establishes this index as the appropriate benchmark for Diversifying Assets with regard to its composition and objectives.

SERS FUND

Investment Program | Performance

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

For the period ending June 30, 2015

Asset Class	1-Year Total Return	3-Year Total Return	5-Year Total Return	10-Year Total Return
Alternative Investments ^{2/, 5/}	7.3%	10.7%	12.3%	11.8%
<i>Burgiss All Private Equity Custom Index</i> ^{3/, 5/}	8.9	13.0	13.5	12.2
<i>Russell 3000 Index + 3%</i> ^{4/, 5/}	15.7	19.9	18.2	11.6
Global Public Equity	2.0	14.3	13.0	6.1
<i>MSCI ACW Investable Market Index (Net)</i>	0.8	13.3	12.2	6.7
Real Assets ^{5/}	0.8	6.6	8.4	6.4
<i>Real Assets Custom Benchmark</i> ^{5/}	2.5	8.1	10.2	5.5
<i>Consumer Price Index + 3%</i>	3.1	4.4	4.9	5.1
Diversifying Assets	5.5	9.3	6.7	NA
<i>DA Custom Index</i> ^{6/}	4.6	11.5	8.2	NA
Fixed Income	1.1	3.0	5.4	5.6
<i>Barclays U.S. Aggregate Bond Index</i>	1.9	1.8	3.3	4.4
Liquidity Reserve	0.7	0.5	0.4	1.8
<i>BofA ML 3 Month U.S. T-Bill Index</i>	0.0	0.1	0.1	1.4
Total Fund	2.9%	9.5%	9.7%	6.5%
<i>Total Fund Custom Benchmark</i>	2.9%	9.5%	9.8%	7.5%
<i>Total Fund Custom Public Market Equivalent Benchmark</i>	4.6%	10.7%	10.9%	8.0%

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

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

^{3/}The Burgiss All Private Equity Custom Index is intended to compare the program's performance to its peers.

^{4/}The Russell 3000 Index + 3% is a long-term benchmark by which SERS measures its private market performance. Shorter term variances (1-year and 3-year) can be pronounced due to the nature of private assets and are not as relevant for benchmark purposes.

^{5/}Alternative Investments, its corresponding benchmarks, the Private Energy, Non-Core Real Estate, Core Real Estate, and REITs sections of Real Assets, and the corresponding Real Assets Custom Benchmark are reported on a quarter lagged basis.

^{6/}Beginning April 2014, the DA Custom Index is comprised of the HFRI Fund-of-Funds Strategic Index consistent with board approval of the 2014-2015 Strategic Investment Plan, which establishes this index as the appropriate benchmark for Diversifying Assets with regard to its composition and objectives.

SERS FUND

Investment Program | Performance

Fund Value & Annual Return

Year End	SERS Fund Fair Value (\$ millions)	Annual Total Fund Rate of Return ^{1/}
1986	\$7,120	15.2%
1987	7,367	3.3
1988	8,312	12.8
1989	9,785	17.8
1990	9,886	1.0
1991	11,940	22.6
1992	12,453	7.4
1993	13,701	13.2
1994	13,330	-1.1
1995	16,343	25.2
1996	18,492	15.4
1997	21,312	18.5
1998	24,123	16.3
1999	28,093	19.9
2000	27,880	2.2
2001	24,706	-7.9
2002	20,880	-10.9
2003	24,536	24.3
2004	26,641	15.1
2005	28,752	14.5
2006	32,053	16.4
2007	35,516	17.2
2008	22,796	-28.7
2009	24,662	9.1
2010	25,886	11.9
2011	24,377	2.7
2012	25,389	12.0
2013	27,394	13.6
2014	27,338	6.4
2015 ^{2/}	25,845	0.5

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

^{2/}2015 values are estimated and unaudited. Fund fair values for all Alternative Investments sub-asset classes and the Private Energy, Non-Core Real Estate, Core Real Estate, and REITs sub-asset classes of Real Assets are reported on a quarter lagged basis.

SERS Fund

Expenses & Fees

SERS FUND

Investment Program | Expenses & Fees

Investment Expenses

Expense Category	Expenses
Manager	\$158,978,110
Consultant	3,899,583
Personnel	3,144,385
Custodian	1,307,233
Subscription and membership	242,078
Legal	56,918
Operational	49,617
Total Investment Expenses	\$167,677,924

Consultant Expenses

Firm	Service Type	Expenses ^{1/}
StepStone Group	Alternative investments	\$1,975,000
RVK	General investments	605,996
The Townsend Group	Real estate investments	537,890
Albourne America	Direct hedge fund investments	400,000
GCM Customized Investment Group	Investment portfolio management	241,397
Institutional Shareholders Services	Proxy services	92,300
Abel/Noser	Transaction cost analysis	47,000
Total Consultant Expenses		\$3,899,583

^{1/} The Hay Group, SERS actuary, was paid approximately \$532,000 and is not included in the table above because it is considered an administrative expense.

Manager Investment Expenses

Asset Class	Fees/Expenses	Fees/Expenses ^{2/} (in basis points)
Alternative Investments	\$70,286,175	140.5
Global Public Equity	24,026,268	24.1
Real Assets	36,699,850	92.9
Diversifying Assets	16,249,462	94.6
Fixed Income	11,157,267	25.5
Liquidity Reserve	559,088	3.3
Total Manager Investment Expenses	\$158,978,110	59.1

^{2/} The fees/expenses were divided by SERS total fund and asset class quarterly average values during calendar year 2015 to arrive at the basis point calculations.

History of Manager Investment Expenses

Calendar Year	Fees/Expenses	Fees/Expenses (in basis points)
2011	\$197,264,476	77.3
2012	186,025,370	75.1
2013	175,099,249	68.2
2014	177,383,430	64.8
2015	158,978,110	59.1

SERS FUND

Investment Program | Expenses & Fees

SERS employs outside investment managers for their investment expertise. The managers of the SERS investment portfolio are paid through non-budget appropriation. Their fees 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 paid.

2015 Manager Investment Expenses Detail

Manager	City	State/Country	Fees/ Expenses
Alternative Investments			
Abingworth Bioventures V	London	United Kingdom	\$566,998
ABRY Mezzanine Partners	Boston	MA	1,582
ABRY Partners IV	Boston	MA	52,128
ABRY Partners VI	Boston	MA	56,762
ABRY Partners VII	Boston	MA	531,177
ABRY Partners VIII	Boston	MA	582,586
ABRY Senior Equity II	Boston	MA	48,202
ABS Capital Partners V	Baltimore	MD	117,278
ABS Capital Partners VI	Baltimore	MD	474,973
Adams Capital Management III	Sewickley	PA	11,160
ADV Opportunities Fund I	Hong Kong	China	1,560,440
Advent International GPE VI-A	Boston	MA	344,040
Advent International GPE VII-B	Boston	MA	545,978
Advent Latin American Private Equity Fund IV	Boston	MA	258,188
Advent Latin American Private Equity Fund V	Boston	MA	194,089
Advent Latin American Private Equity Fund VI	Boston	MA	377,285
AG Capital Recovery Partners V	New York	NY	40,476
Alloy Ventures 2002	Palo Alto	CA	104,016
Alloy Ventures 2005	Palo Alto	CA	336,861
Alpha Private Equity Fund 4	Paris	France	328
Alpha Private Equity Fund 5	Paris	France	251,228
APAX Europe VI	London	United Kingdom	59,720
APAX Europe VII	London	United Kingdom	203,003
Artiman Ventures II	Palo Alto	CA	237,498
Artiman Ventures III	Palo Alto	CA	295,205
Asia Alternatives Capital Partners	San Francisco	CA	99,834
Asia Alternatives Capital Partners II	San Francisco	CA	211,077
Asia Alternatives Capital Partners III	San Francisco	CA	189,493
Asia Pacific Growth Fund III	San Francisco	CA	15,000
Austin Ventures IX	Austin	TX	229,227
Avenue Asia Special Situations Fund IV	New York	NY	112,301
Avenue Special Situations Fund VI	New York	NY	48,591

SERS FUND

Investment Program | Expenses & Fees

2015 Manager Investment Expenses Detail (continued)

Manager	City	State/Country	Fees/ Expenses
Alternative Investments (continued)			
AXA Secondary Fund III	Paris	France	\$19,500
AXA Secondary Fund III-2	Paris	France	11,193
AXA Secondary Fund IV	Paris	France	196,173
AXA Secondary Fund V B	Paris	France	750,000
Bain Capital Asia Fund	Boston	MA	166,726
Bain Capital Europe III	Boston	MA	914,087
Bain Capital Fund VIII-E	Boston	MA	142,493
Bain Capital Fund IX	Boston	MA	774,472
Bain Capital Fund X	Boston	MA	1,555,331
Bain Capital IX Coinvestment Fund	Boston	MA	171,236
Bain Capital X Coinvestment Fund	Boston	MA	19,072
Baring India Private Equity Fund III Limited	Port Lewis	Mauritius	72,223
Baring Vostok Private Equity Fund IV	Guernsey	Channel Islands	255,257
Battery Ventures VIII	Waltham	MA	559,498
Battery Ventures VIII Side Car Fund	Waltham	MA	139,652
BC European Capital VIII	London	United Kingdom	283,222
BC European Capital IX	London	United Kingdom	293,585
Berkshire Fund VI	Boston	MA	14,724
Berkshire Fund VII	Boston	MA	301,850
Berkshire Fund VIII	Boston	MA	595,733
Birchmere Ventures III	Pittsburgh	PA	28,339
Blackstone Capital Partners V	New York	NY	9,390
Brait IV	Grand Cayman	Cayman Islands	247,297
Brynwood Partners VI	Greenwich	CT	139,723
Capvis Equity IV	Baar	Switzerland	904,256
Care Capital Investments III	Princeton	NJ	190,645
Centerbridge Capital Partners I	New York	NY	60,710
Centerbridge Capital Partners III	New York	NY	306,987
Cerberus Institutional Partners Series Three	New York	NY	53,126
Cerberus Institutional Partners Series Four	New York	NY	231,300
Charterhouse Capital Partners VIII	London	United Kingdom	154,195
Charterhouse Capital Partners IX	London	United Kingdom	245,263
Chequers Capital XV	Paris	France	296,056
CID Greater China Venture Capital Fund II	Taipei	Taiwan	193,392
Clearlake Capital Partners IV	Santa Monica	CA	101,725
Clearstone Venture Partners III-A	Santa Monica	CA	296,759
Clessidra Capital Partners II	Milan	Italy	20,474
CVI Global Value Fund	Grand Cayman	Cayman Islands	157,532
Devon Park Bioventures	Wayne	PA	122,899
Dover Street VII	Boston	MA	375,000

SERS FUND

Investment Program | Expenses & Fees

2015 Manager Investment Expenses Detail (continued)

Manager	City	State/Country	Fees/ Expenses
Alternative Investments (continued)			
Draper Fisher Jurvetson VII	Menlo Park	CA	\$ 137,166
Draper Triangle Ventures III	Pittsburgh	PA	200,000
Elevation Partners	Menlo Park	CA	11,320
Eureka II	Yardley	PA	111,825
Eureka Growth Capital III	Yardley	PA	386,857
Excelsior Capital Asia Partners III	Hong Kong	China	150,572
Francisco Partners II	San Francisco	CA	188,705
Francisco Partners III	San Francisco	CA	96,203
Francisco Partners IV	San Francisco	CA	218,984
Frazier Healthcare V	Seattle	WA	95,944
FSN Capital IV	Oslo	Norway	880,661
Great Hill Equity Partners III	Boston	MA	424,687
Great Hill Equity Partners IV	Boston	MA	413,663
GTCR VIII	Chicago	IL	209,622
GTCR IX	Chicago	IL	139,904
GTCR XI	Chicago	IL	312,947
H.I.G. Bayside Debt & LBO Fund II	London	United Kingdom	190,239
H.I.G. Bayside Loan Opportunity Fund III	London	United Kingdom	1,000,000
H.I.G. Bayside Loan Opportunity Fund IV	London	United Kingdom	375,000
H.I.G. Brazil and Latin America Partners	Rio de Janeiro	Brazil	625,000
H.I.G. Europe Capital Partners II	Miami	FL	694,336
H.I.G. Growth Buyouts & Equity Fund II	Miami	FL	1,050,000
Hahn & Company II	Seoul	Korea	942,255
Halpern Denny Fund III	Boston	MA	2,589
HarbourVest IPEP IV	Boston	MA	46,228
HarbourVest Partners VII	Boston	MA	499,715
HarbourVest Partners VIII	Boston	MA	975,000
HIPEP V-Asia Pacific & Rest of World	Boston	MA	242,732
Healthcare Ventures VIII	Princeton	NJ	476,126
Hellman & Friedman Capital Partners VI	San Francisco	CA	195,312
Highland Capital Partners VII	Lexington	MA	619,112
Highland Consumer Fund I	Lexington	MA	455,128
Horizon Impact Fund - BAML	Chicago	IL	126,729
Incline Equity Partners III	Pittsburgh	PA	197,742
Insight Venture Partners VI	New York	NY	268,107
Insight Venture Partners VII	New York	NY	307,628
Insight Venture Partners VIII	New York	NY	878,002
Insight Venture Partners IX	New York	NY	810,455
InterMedia Partners VII	New York	NY	223,641

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Investment Program | Expenses & Fees

2015 Manager Investment Expenses Detail (continued)

Manager	City	State/Country	Fees/ Expenses
Alternative Investments (continued)			
InterWest Partners IX	Menlo Park	CA	\$455,530
InterWest Partners X	Menlo Park	CA	644,134
Invemed Catalyst Fund	New York	NY	11,647
IP III	Bellevue	WA	27,774
IP IV	Bellevue	WA	106,303
J.H. Whitney VII	Stamford	CT	216,359
JMI Equity Fund V	Baltimore	MD	23,233
JMI Equity Fund VI	Baltimore	MD	518,587
JMI Equity Fund VII	Baltimore	MD	194,027
JMI Equity Fund VIII	Baltimore	MD	91,250
JP Morgan U.S. Corp Finance Investors II	New York	NY	226,819
JP Morgan Venture Capital Investors	New York	NY	386,388
JP Morgan Venture Capital Investors II	New York	NY	491,222
JP Morgan Venture Capital Investors III	New York	NY	854,468
Kelso VIII	New York	NY	956,916
Knightsbridge Venture Capital VI	Bartlesville	OK	140,000
KPS Special Situations Fund IV	New York	NY	186,608
LBC Credit Partners III	Philadelphia	PA	625,000
Lexington Capital Partners VI	New York	NY	234,398
Lightspeed India Partners I	New Delhi	India	170,250
Lightspeed Venture Partners VII	Menlo Park	CA	275,425
Lightspeed Venture Partners VIII	Menlo Park	CA	398,450
LLR Equity Partners II	Philadelphia	PA	59,636
LLR Equity Partners III	Philadelphia	PA	377,658
LLR Equity Partners IV	Philadelphia	PA	1,000,000
Madison Dearborn Capital Partners V	Chicago	IL	143,869
Madison Dearborn Capital Partners VI	Chicago	IL	335,719
Meridian Venture Partners II	Radnor	PA	613,204
Meritech Capital Partners III	Palo Alto	CA	448,197
Meritech Capital Partners IV	Palo Alto	CA	405,000
Meritech Capital Partners V	Palo Alto	CA	517,800
Morgenthaler Partners VIII	Menlo Park	CA	209,607
Morgenthaler Partners IX	Menlo Park	CA	444,408
Motion II B	London	United Kingdom	123,680
New Enterprise Associates 11	Baltimore	MD	159,929
New Enterprise Associates 12	Baltimore	MD	288,429
New York Life Capital Partners III	New York	NY	164,976
New York Life Capital Partners IV	New York	NY	251,752
Newbridge Asia IV	San Francisco	CA	23,804

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Investment Program | Expenses & Fees

2015 Manager Investment Expenses Detail (continued)

Manager	City	State/Country	Fees/ Expenses
Alternative Investments (continued)			
NewSpring Growth Capital II	King of Prussia	PA	\$128,126
NewSpring Growth Capital III	King of Prussia	PA	437,500
Nordic Capital VI	Stockholm	Sweden	72,586
Nordic Capital VII	Stockholm	Sweden	881,564
Novitas Capital III	King of Prussia	PA	32,897
Oak Investment Partners XI	Westport	CT	148,083
Oak Investment Partners XII	Westport	CT	569,809
Oaktree Opportunities Fund VIII	Los Angeles	CA	94,461
Oaktree Opportunities Fund VIIIb	Los Angeles	CA	171,774
Oaktree Opportunities Fund IX	Los Angeles	CA	800,041
OCM Opportunities Fund V	Los Angeles	CA	41,870
OCM Opportunities Fund VI	Los Angeles	CA	100,435
OCM Opportunities Fund VII	Los Angeles	CA	171,903
OCM Opportunities Fund VIIIb	Los Angeles	CA	83,886
OCM Principal Opportunities Fund IV	Los Angeles	CA	102,400
Palamon European Equity	London	United Kingdom	8,799
Palamon European Equity II	London	United Kingdom	202,464
Patriot Financial Partners	Philadelphia	PA	326,870
Permira IV	London	United Kingdom	542,248
Pitango Venture Capital Fund IV	Herzliya	Israel	108,624
Pitango Venture Capital Fund V	Herzliya	Israel	456,710
Platinum Equity Capital Partners III	Beverly Hills	CA	1,546,486
PNC Equity Partners II	Pittsburgh	PA	49,326
Polaris Venture Partners V	Waltham	MA	873,499
Primavera Capital Fund II	Hong Kong	China	413,699
Providence Equity Partners V	Providence	RI	82,820
Providence Equity Partners VI	Providence	RI	151,515
Quaker BioVentures	Philadelphia	PA	40,144
Quaker BioVentures II	Philadelphia	PA	333,060
RRJ Capital Master Fund III	Hong Kong	China	14,946
Sankaty Credit Opportunities III	Boston	MA	346,621
Sankaty Credit Opportunities IV	Boston	MA	234,330
SCP Private Equity Partners II	Wayne	PA	80,768
Segulah IV	Jersey	Channel Islands	210,323
Sentinel Capital Partners V	New York	NY	27,036
ShoreView Capital Partners II	Minneapolis	MN	385,260
Siguler Guff BRIC Opportunities Fund	New York	NY	33,389
Siguler Guff BRIC Opportunities Fund II	New York	NY	167,864
Sofinnova Venture Partners VII	San Francisco	CA	175,292

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Investment Program | Expenses & Fees

2015 Manager Investment Expenses Detail (continued)

Manager	City	State/Country	Fees/ Expenses
Alternative Investments (continued)			
Sterling Capital Partners I	Northbrook	IL	\$104,675
Sterling Capital Partners III	Northbrook	IL	290,175
Summit Partners Private Equity Fund VII	Boston	MA	1,115,468
Summit Partners Venture Capital Fund II	Boston	MA	223,546
T. Rowe Price Stock Distribution Account	Baltimore	MD	510,567
TA X	Boston	MA	830,561
Templeton Strategic Emerging Markets Fund III	Fort Lauderdale	FL	975,609
Three Arch Partners IV	Portola Valley	CA	151,229
TL Ventures V	Wayne	PA	132,648
TPG Asia V	Fort Worth	TX	97,639
TPG Partners V	Fort Worth	TX	128,034
TPG Partners VI	Fort Worth	TX	31,193
Versa Capital Partners	Philadelphia	PA	228,436
Versa Capital Partners II	Philadelphia	PA	61,436
Vestar Capital Partners V	New York	NY	232,385
W Capital Partners II	New York	NY	107,243
Weathergage Venture Capital	Redwood City	CA	225,000
Weathergage Venture Capital II	Redwood City	CA	312,500
Weston Presidio V	Boston	MA	301,538
Worldview Technology Partners IV	San Mateo	CA	6,082
Yucaipa American Alliance Fund II	Los Angeles	CA	206,395
Alternative Investments Manager Fees			64,432,198
Alternative Investments Manager Expenses			5,853,977
Total Alternative Investments Manager Investment Expenses			70,286,175
Global Public Equity			
Artisan Partners - Global ex U.S.	Milwaukee	WI	2,674,661
Ashmore EMM	Arlington	VA	686,006
BlackRock/Emerging Markets Index Non-Lendable Fund	San Francisco	CA	138,101
Cornerstone Growth	Edina	MN	707,644
Delaware Investment Advisers	Philadelphia	PA	956,414
Diamond Hill Concentrated	Columbus	OH	840,393
Emerald Advisers - PA Companies	Lancaster	PA	2,131,690
Epoch Value	New York	NY	1,660,085
GlobeFlex Capital	San Diego	CA	474,404
Harris Associates	Chicago	IL	3,508,632
Iridian Asset Management	Westport	CT	1,966,827
Martin Currie Investment Management	Edinburgh	United Kingdom	898,850
Mellon Capital Management MSCI World ex U.S. Index	Pittsburgh	PA	301,459
Mellon Capital Management - PA Companies	Pittsburgh	PA	335,832

SERS FUND

Investment Program | Expenses & Fees

2015 Manager Investment Expenses Detail (continued)

Manager	City	State/Country	Fees/ Expenses
Global Public Equity (continued)			
Mellon Capital Management Russell 1000 Growth Index	Pittsburgh	PA	\$31,273
Mellon Capital Management Russell 1000 Index	Pittsburgh	PA	242,858
Morgan Stanley Investment Management Limited-developed ex U.S.	London	United Kingdom	1,650,665
Templeton Investment Counsel - Global ex U.S.	Fort Lauderdale	FL	1,961,384
Walter Scott & Partners Limited	Edinburgh	United Kingdom	2,697,298
Global Public Equity Manager Fees			23,864,476
Global Public Equity Manager Expenses			161,792
Total Global Public Equity Manager Investment Expenses			24,026,268
Real Assets			
AG Asia Realty Fund	New York	NY	112,348
BAAM Commodities	New York	NY	3,297,472
Berwind Investment Partnership V	Yardley	PA	7,410
Berwind Investment Partnership VI	Yardley	PA	18,506
Berwind Investment Partnership VII	Yardley	PA	194,248
Berwind Investment Partnership VIII	Yardley	PA	266,949
Berwind Investment Partnership IX	Yardley	PA	233,243
Blackstone Real Estate Partners VI	New York	NY	364,743
Blackstone Real Estate Partners VII	New York	NY	917,211
Carlyle Energy Mezz Opp Fund	New York	NY	744,527
CBRE Clarion Real Estate Securities	Radnor	PA	1,106,081
CenterSquare Real Estate Securities	Plymouth Meeting	PA	320,579
Clerestory Small Cap Fund I	New York	NY	69,940
Colony Investors VIII	Los Angeles	CA	200,255
Denham Commodity VI	Boston	MA	1,007,814
Energy Spectrum Partners V	Dallas	TX	41,367
Fidelity Real Estate Opportunistic Income Fund	Smithfield	RI	480,558
Fillmore West Fund	San Francisco	CA	105,108
First Reserve Fund XI	Greenwich	CT	246,435
First Reserve Fund XII	Greenwich	CT	309,351
Forest I.M.A.	Atlanta	GA	918,924
GRIP I	Philadelphia	PA	551
Harvest Fund MLP	Wayne	PA	1,180,796
Hawkeye Scout Fund I	Austin	TX	164,144
Hawkeye Scout Fund II	Austin	TX	275,372
Heitman America Real Estate Trust	Chicago	IL	520,031
Heitman I.M.A.	Chicago	IL	1,421,444
Kayne Anderson MLP	Los Angeles	CA	1,453,951
LaSalle I.M.A.	Baltimore	MD	2,910,388
LEM Real Estate High-Yield Debt Fund III	Philadelphia	PA	375,000

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Investment Program | Expenses & Fees

2015 Manager Investment Expenses Detail (continued)

Manager	City	State/Country	Fees/ Expenses
Real Assets (continued)			
Lime Rock Partners IV	Westport	CT	\$177,539
Lime Rock Partners V	Westport	CT	372,229
Lowe GTO	Los Angeles	CA	2,472,230
Lowe I.M.A.	Los Angeles	CA	5,762,252
Lubert Adler Fund V	Philadelphia	PA	84,812
Lubert Adler Fund VI	Philadelphia	PA	68,414
Oaktree Power Opportunities Fund III	Los Angeles	CA	247,862
OCM/GFI Power Opportunities Fund II	Los Angeles	CA	12,299
Prudential Latin America Residential Fund III	Parsippany	NJ	325,480
Prudential Latin America Retail Fund I	Parsippany	NJ	374,998
Prudential Senior Housing Fund IV	Parsippany	NJ	320,389
Prudential Senior Housing Fund V	Parsippany	NJ	390,411
Rockpoint Finance Fund I	Dallas	TX	13,438
Rockpoint Real Estate Fund II	Dallas	TX	58,512
Rockpoint Real Estate Fund III	Dallas	TX	121,797
Rockpoint Real Estate Fund V	Dallas	TX	369,593
SFC Energy Partners I	Denver	CO	108,579
SFC Energy Partners II	Denver	CO	496,414
Starwood Fund VII	Greenwich	CT	142,453
Starwood Fund VIII	Greenwich	CT	286,289
UBS Trumbull Property Fund	Hartford	CT	685,106
UBS Trumbull Property Income Fund	Hartford	CT	483,619
ValStone Opportunity Fund V	Birmingham	MI	228,654
Wellington DIH	Boston	MA	2,385,339
Westbrook Fund V	Dallas	TX	152,811
Westbrook Fund VI	Dallas	TX	115,217
Westbrook Fund VII	Dallas	TX	251,961
Westbrook Fund VIII	Dallas	TX	264,074
Real Assets Manager Fees			36,037,517
Real Assets Manager Expenses			662,333
Total Real Assets Manager Investment Expenses			36,699,850
Diversifying Assets			
Arden Keystone	New York	NY	451,323
Blackstone Keystone	New York	NY	10,315,428
Entrust Keystone	New York	NY	2,056,865
Hoplite Partners	New York	NY	581,948
Luxor Capital Partners	New York	NY	360,547
Mesirow Financial	Chicago	IL	1,153,640

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Investment Program | Expenses & Fees

2015 Manager Investment Expenses Detail (continued)

Manager	City	State/Country	Fees/ Expenses
Diversifying Assets (continued)			
MKP Opportunity Fund	New York	NY	\$254,764
PAAMCO	Irvine	CA	91,448
Pine River Fund	Minnetonka	MN	314,937
Rock Creek	Washington	DC	55,358
Samlyn Onshore Fund	New York	NY	412,225
Stelliam Fund	New York	NY	200,979
Total Diversifying Assets Manager Investment Expenses			16,249,462
Fixed Income			
Brandywine Global	Philadelphia	PA	726,533
Brown Brothers Harriman	New York	NY	254,513
MacKay Shields Core	New York	NY	472,332
Mellon Capital Management Barclays Aggregate Index	Pittsburgh	PA	290,203
New Century Advisors	Chevy Chase	MD	264,618
NISA Custom TIPS Intermediate	St. Louis	MO	460,924
PIMCO Core	Newport Beach	CA	435,532
PIMCO U.S. Treasuries	Newport Beach	CA	267,972
Pyramis Global Advisors	Boston	MA	1,980,140
SEI Structured Credit Fund	Oaks	PA	2,186,043
Stone Harbor Emerging Market Debt	New York	NY	502,831
Stone Harbor High Yield	New York	NY	784,116
Taplin, Canida & Habacht (TCH)	Miami	FL	447,925
UBS Core Bond	Chicago	IL	233,715
W.R. Huff	Morristown	NJ	196
Waterfall Asset Management	New York	NY	1,583,644
Wellington U.S. Treasuries	Boston	MA	265,902
Fixed Income Manager Fees			11,157,139
Fixed Income Manager Expenses			128
Total Fixed Income Manager Investment Expenses			11,157,267
Liquidity Reserve			
PNC Short Duration	Pittsburgh	PA	350,733
StoneRidge Short Duration	Malvern	PA	208,355
Total Liquidity Reserve Manager Investment Expenses			559,088
Total Manager Investment Expenses			\$158,978,110

SERS Fund

Portfolio Snapshots

SERS FUND

Investment Program | Portfolio Snapshot | Alternative Investments

Asset Class Description

The Alternative Investments program includes SERS Fund assets held in partnerships that pursue private market strategies in private equity, special situations, and venture capital with investments typically made over a multi-year period and which offer premium returns to compensate for illiquidity.

Role in the SERS Fund

The program seeks high, long-term capital appreciation to enhance total SERS Fund returns with an investment return horizon that is typically seven or more years.

Portfolio Exposure

The Alternative Investments program is well diversified by sub-sector, geography, and industry focus. As of September 30, 2015, based on fair value, the program's exposure was:

By Fund Sub-Sector		By Geography ^{2/}		By Industry ^{2/}	
U.S. Private Equity	34.9%	United States	69.2%	Financials	25.8%
Non-U.S. ^{1/}	23.9	China	5.4	Information Technology	21.5
U.S. Venture Capital	22.3	United Kingdom	5.3	Consumer Discretionary	16.8
Distressed/Oppportunistic	12.7	Germany	1.6	Health Care	14.6
Pennsylvania-Related	6.2	Canada	1.4	Industrials	8.7
		France	1.3	Energy	4.9
		Italy	1.1	Consumer Staples	2.9
		Rest of World	14.7	Materials	2.7
				Telecommunication Services	1.2
				Utilities	0.9

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

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

SERS FUND

Investment Program | Portfolio Snapshot | Alternative Investments

Benchmarks

The program's objective is to generate investment returns that exceed the total return of public equity markets by at least 3% and that exceed the mean return for the asset class over a seven- to 10-year period.

Performance is measured relative to the following benchmarks:

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

Alternative Investments

as of December 31, 2015

Sub-Asset Class	Unfunded Commitments (\$ millions)	Fair Value (\$ millions)	% of Total Fund
Private Equity	\$1,088.8	\$2,616.9	10.1%
Special Situations	288.8	753.5	2.9
Venture Capital	147.7	1,228.5	4.8
Total Alternative Investments	\$1,525.3	\$4,598.9	17.8%

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Investment Program | Portfolio Snapshot | Alternative Investments

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 Equity Committed, Drawn, and Distributed

Active Private Equity Funds Limited Partnership	Strategy/Stage	SERS Initial Funding	Capital Committed ^{1/}	Accumulated Capital Drawn	Accumulated Distributions ^{2/}
1. ABRY Partners IV	Middle	03/30/2001	\$35,000,000	\$25,444,662	\$52,812,428
ABRY Partners V	Middle	07/29/2005	45,000,000	41,625,575	81,197,347
ABRY Partners VI	Middle	03/26/2008	50,000,000	59,301,733	80,688,631
ABRY Partners VII	Middle	08/10/2011	30,000,000	36,019,542	12,916,353
ABRY Partners VIII	Middle	05/05/2015	25,000,000	7,795,584	770,986
2. ABS Capital Partners IV	Growth Equity	10/13/2000	35,000,000	30,984,280	66,247,486
ABS Capital Partners V	Growth Equity	11/14/2005	20,000,000	19,704,037	28,659,162
ABS Capital Partners VI	Growth Equity	03/13/2009	40,000,000	38,372,783	14,075,882
3. Advent Latin American Private Equity Fund IV	Middle	08/02/2007	30,000,000	29,297,073	29,465,921
Advent International GPE VI-A	Large	07/07/2008	35,000,000	33,763,830	27,926,940
Advent Latin American Private Equity Fund V	Middle	05/17/2010	15,000,000	13,155,000	2,355,000
Advent International GPE VII-B	Large	12/06/2012	40,000,000	28,400,000	4,799,752
Advent Latin American Private Equity Fund VI	Middle	05/11/2015	25,000,000	2,000,000	0
4. Alpha Private Equity Fund 4	Small	05/15/2002	26,508,000	35,605,050	77,986,040
Alpha Private Equity Fund 5	Small	04/01/2006	57,796,800	65,860,055	78,388,189
5. APAX Excelsior VI	Small	07/03/2000	35,000,000	34,151,324	56,091,968
APAX Europe V	Mega	04/27/2001	53,262,000	70,406,088	150,017,403
APAX Europe VI	Mega	05/19/2005	76,349,190	76,478,697	99,562,744
APAX Europe VII	Mega	06/27/2007	132,170,235	138,120,563	108,073,027
6. Apollo Investment Fund IV	Mega	09/30/1998	75,000,000	74,838,620	124,791,970
Apollo Investment Fund V	Mega	08/23/2001	50,000,000	44,948,713	121,848,314
Apollo Investment Fund VI	Mega	07/19/2006	40,000,000	38,908,796	50,854,006
7. Asia Alternatives Capital Partners	Fund of Funds	06/26/2007	50,000,000	24,717,140	21,644,324
Asia Alternatives Capital Partners II	Fund of Funds	03/07/2008	50,000,000	26,760,125	11,595,135
Asia Alternatives Korea Buyout Investors (Hahn & Co)	Small	07/22/2011	7,000,000	7,735,675	1,834,396
Asia Alternatives Capital Partners III	Fund of Funds	08/03/2012	50,000,000	35,725,698	8,327,308
Penn Asia Investors	Fund of Funds	09/28/2012	83,000,000	35,406,865	6,188,843
8. Asia Pacific Growth Fund III	Growth Equity	09/28/1999	15,000,000	15,334,963	15,580,729
9. Audax Private Equity Fund	Middle	05/25/2000	35,000,000	36,839,098	55,479,437
Audax Private Equity Fund II	Middle	06/17/2005	25,000,000	25,517,169	42,679,093
Audax Private Equity Fund III	Middle	11/07/2007	37,000,000	40,942,126	40,803,897
Audax Private Equity Fund V	Middle	*	50,000,000	0	0

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Investment Program | Portfolio Snapshot | Alternative Investments

Private Equity Committed, Drawn, and Distributed (continued)

Active Private Equity Funds Limited Partnership	Strategy/Stage	SERS Initial Funding	Capital Committed ^{1/}	Accumulated Capital Drawn	Accumulated Distributions ^{2/}
10. Bain Capital Fund VII	Mega	07/06/2000	\$25,000,000	\$25,000,000	\$47,998,008
Bain Capital Fund VIII-E	Mega	12/15/2004	12,144,000	13,438,216	15,494,080
Bain Capital Fund IX	Mega	04/10/2006	75,000,000	75,216,743	100,307,583
Bain Capital IX Coinvestment Fund	Mega	04/20/2006	15,000,000	15,468,923	21,059,588
Bain Capital Asia Fund	Middle	10/18/2007	12,000,000	11,430,000	8,921,175
Bain Capital Fund X	Mega	01/15/2008	90,000,000	87,255,000	56,459,016
Bain Capital Europe III	Mega	07/10/2008	72,432,276	65,751,447	25,401,241
Bain Capital X Coinvestment Fund	Mega	07/28/2008	5,000,000	1,225,000	708,402
11. Baring Vostok Private Equity Fund IV	Middle	03/10/2008	30,000,000	29,762,078	9,210,189
Baring India Private Equity Fund III Limited	Small	10/10/2008	5,000,000	5,013,642	1,066,510
12. BC European Capital VII	Large	07/28/2000	32,658,500	37,921,761	96,576,440
BC European Capital VII Top Up	Large	07/02/2001	10,046,300	12,351,504	32,386,202
BC European Capital VIII	Large	12/13/2005	98,107,500	97,538,004	91,828,071
BC European Capital IX	Large	09/16/2011	26,472,535	19,573,324	3,919,847
13. Berkshire Fund VI	Middle	07/11/2002	20,000,000	18,828,770	38,856,970
Berkshire Fund VII	Middle	11/15/2006	32,000,000	31,197,916	34,391,370
Berkshire Fund VIII	Middle	08/25/2011	30,000,000	20,100,066	543,427
14. Blackstone Communications Partners I	Mega	08/29/2000	25,000,000	25,110,848	27,605,755
Blackstone Capital IV	Mega	02/26/2003	75,000,000	68,894,116	168,235,277
Blackstone Capital Partners V	Mega	05/30/2006	150,000,000	149,522,744	157,404,861
Blackstone Capital Partners VII	Mega	*	50,000,000	0	0
15. Brait IV	Small	12/11/2006	25,000,000	21,926,276	2,873,282
16. Brynwood Partners V	Small	07/31/2005	10,000,000	10,491,974	18,777,863
Brynwood Partners VI	Small	10/13/2009	10,000,000	10,901,079	12,062,446
17. Capvis Equity IV	Middle	01/30/2014	49,855,591	14,158,563	0
18. Charterhouse Capital Partners VII	Middle	01/17/2003	55,482,500	54,972,470	103,970,347
Charterhouse Capital Partners VIII	Middle	04/19/2006	74,636,149	72,831,664	54,740,073
Charterhouse Capital Partners IX	Middle	04/28/2009	66,385,000	58,665,385	50,647,085
19. Chequers Capital XV	Middle	07/05/2006	31,133,996	32,668,266	39,945,160
20. Clayton Dubilier & Rice VI	Middle	12/31/1998	50,000,000	36,437,713	57,754,625
21. Clearlake Capital Partners IV	Middle	09/01/2015	15,000,000	648,462	0
22. Clessidra Capital Partners II	Middle	11/05/2008	25,631,168	17,599,252	20,338,232
23. Code Hennessy & Simmons III	Middle	09/30/1997	40,000,000	38,724,000	56,329,887
Code Hennessy & Simmons IV	Middle	09/16/1999	100,000,000	100,000,000	156,498,466
Code Hennessy & Simmons V	Middle	11/10/2005	50,000,000	53,741,751	72,150,500
24. DLJ Merchant Banking Fund II	Large	03/31/1997	75,000,000	83,303,289	106,211,436
25. Elevation Partners	Middle	11/10/2005	35,000,000	31,022,483	47,214,491
26. Eureka II	Growth Equity	01/30/2006	20,000,000	19,030,710	14,626,130
Eureka Growth Capital III	Growth Equity	10/21/2013	20,000,000	6,181,740	3,982,122

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Private Equity Committed, Drawn, and Distributed (continued)

	Active Private Equity Funds Limited Partnership	Strategy/Stage	SERS Initial Funding	Capital Committed ^{1/}	Accumulated Capital Drawn	Accumulated Distributions ^{2/}
27.	Excelsior Capital Asia Partners III	Small	08/17/2006	\$25,000,000	\$24,882,637	\$12,550,708
28.	Francisco Partners	Middle	07/27/2000	50,000,000	47,732,638	54,306,406
	Francisco Partners II	Middle	07/10/2006	30,000,000	28,127,870	32,695,480
	Francisco Partners III	Middle	10/17/2011	20,000,000	18,070,000	1,919,238
	Francisco Partners IV	Middle	04/15/2015	25,000,000	6,187,500	0
29.	FSN Capital IV	Middle	12/19/2013	46,049,703	24,962,856	3,892,055
30.	Great Hill Equity Partners	Middle	04/12/1999	30,000,000	30,000,000	30,444,856
	Great Hill Equity Partners II	Middle	03/28/2001	35,000,000	35,063,336	76,975,735
	Great Hill Equity Partners III	Middle	03/07/2006	35,000,000	35,000,000	39,987,500
	Great Hill Equity Partners IV	Middle	09/08/2008	25,000,000	24,525,662	23,725,662
31.	Gryphon Partners II	Small	11/03/1999	35,000,000	34,700,788	41,953,023
	Gryphon Partners III	Small	09/08/2004	30,000,000	37,599,444	49,184,852
32.	GTCR VI	Middle	09/30/1998	50,000,000	50,000,000	43,229,799
	GTCR VII	Middle	03/15/2000	55,000,000	50,074,671	121,784,179
	GTCR VIII	Middle	07/07/2003	75,000,000	69,393,599	113,622,031
	GTCR IX	Middle	12/01/2006	50,000,000	46,666,718	74,010,289
	GTCR XI	Middle	09/02/2014	25,000,000	6,625,000	0
33.	H.I.G. Growth Buyouts & Equity Fund II	Growth Equity	07/20/2011	15,000,000	5,584,431	1,262,815
	H.I.G. Europe Capital Partners II	Small	01/10/2014	27,544,596	345,686	0
	H.I.G. Brazil and Latin America Partners	Middle	08/12/2015	50,000,000	1,256,862	0
34.	Hahn & Company II	Middle	05/29/2015	50,000,000	11,031,449	129
35.	Halpern Denny Fund III	Growth Equity	04/26/2000	25,000,000	24,886,871	28,106,844
36.	HarbourVest IPEP III	Fund of Funds	06/30/1998	40,000,000	39,400,000	59,871,083
	HarbourVest Partners VI	Fund of Funds	05/07/1999	200,000,000	196,586,055	218,164,754
	HarbourVest IPEP IV	Fund of Funds	04/09/2001	40,000,000	39,000,000	62,146,297
	HarbourVest Partners VII	Fund of Funds	03/24/2003	75,000,000	73,312,500	67,344,750
	HIPEP V-Asia Pacific & Rest of World	Fund of Funds	05/09/2006	30,000,000	27,945,316	23,953,451
	HarbourVest Partners VIII	Fund of Funds	10/05/2006	100,000,000	96,000,000	67,733,307
37.	Hellman & Friedman Capital Partners V	Large	12/20/2004	80,000,000	71,538,366	191,258,607
	Hellman & Friedman Capital Partners VI	Large	06/05/2007	125,000,000	119,124,961	183,153,728
	Hellman & Friedman Capital Partners VIII	Large	*	50,000,000	0	0
38.	Horizon Strategic Fund - Carlyle Group	Small	09/19/2014	100,000,000	35,248,060	2,329,107
	Horizon Impact Fund - BAML	Small	10/24/2014	50,000,000	12,970,238	235,251
39.	Incline Equity Partners III	Small	01/14/2013	15,000,000	6,387,977	1,426,200

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Private Equity Committed, Drawn, and Distributed (continued)

	Active Private Equity Funds Limited Partnership	Strategy/Stage	SERS Initial Funding	Capital Committed ^{1/}	Accumulated Capital Drawn	Accumulated Distributions ^{2/}
40.	InterMedia Partners VII	Small	01/05/2007	\$15,000,000	\$17,473,382	\$9,647,740
41.	Invemed Catalyst Fund	Small	10/19/1999	25,000,000	14,738,867	11,020,750
42.	J.H. Whitney IV	Small	02/01/2000	20,000,000	17,958,772	6,970,458
	J.H. Whitney VI	Small	01/05/2006	50,000,000	49,616,832	40,539,938
	J.H. Whitney VII	Small	10/12/2010	25,000,000	22,827,498	8,784,711
43.	J.W. Childs Equity Partners III	Middle	08/20/2002	40,000,000	41,966,504	76,553,620
44.	JMI Equity Fund V	Growth Equity	06/07/2005	24,000,000	24,009,205	118,917,437
	JMI Equity Fund VI	Growth Equity	06/27/2007	40,000,000	39,120,000	51,060,358
	JMI Equity Fund VII	Growth Equity	02/14/2011	10,000,000	9,500,000	4,631,456
	JMI Equity Fund VIII	Growth Equity	*	25,000,000	0	0
45.	Kelso VII	Middle	10/18/2004	40,000,000	41,147,081	65,111,995
	Kelso VIII	Middle	11/29/2007	150,000,000	140,451,008	61,254,544
46.	Leeds Equity Partners IV	Small	11/12/2004	20,000,000	20,396,198	21,192,794
47.	LLR Equity Partners	Middle	02/04/2000	25,000,000	24,576,062	52,558,191
	LLR Equity Partners II	Middle	01/29/2004	25,000,000	25,000,000	35,987,257
	LLR Equity Partners III	Middle	07/24/2008	30,000,000	29,108,721	25,254,905
	LLR Equity Partners IV	Middle	03/14/2014	50,000,000	18,167,708	0
48.	Madison Dearborn Capital Partners IV	Middle	04/02/2001	90,000,000	90,365,390	164,788,730
	Madison Dearborn Capital Partners V	Middle	07/31/2006	75,000,000	71,452,654	66,481,198
	Madison Dearborn Capital Partners VI	Middle	05/27/2008	50,000,000	49,184,218	43,738,060
49.	Meridian Venture Partners II	Small	02/11/2005	10,000,000	10,000,000	9,971,195
50.	Motion II B	Middle	11/02/2005	48,204,998	47,474,492	20,440,413
51.	New York Life Capital Partners III	Fund of Funds	06/30/2006	50,000,000	54,633,766	27,015,711
	New York Life Capital Partners IV	Fund of Funds	04/04/2008	50,000,000	53,836,943	46,876,514
52.	NewSpring Growth Capital II	Growth Equity	12/05/2006	10,000,000	9,650,000	12,229,434
	NewSpring Growth Capital III	Growth Equity	07/27/2012	25,000,000	14,718,750	2,091,744
53.	Nordic Capital V	Middle	05/07/2004	34,996,500	46,006,700	131,078,798
	Nordic Capital VI	Middle	07/25/2006	54,369,000	64,433,447	59,094,573
	Nordic Capital VII	Middle	05/02/2008	92,519,165	94,732,061	23,268,509
54.	Oakhill Capital Partners	Middle	05/17/1999	50,000,000	53,718,802	93,999,577
55.	Parthenon Investors II	Small	08/09/2001	20,000,000	22,170,045	35,602,239
56.	Patriot Financial Partners	Small	06/12/2008	25,000,000	25,017,767	11,938,334
57.	Permira European Fund	Large	09/30/1997	33,494,536	32,159,947	84,005,717
	Permira European Fund II	Large	06/07/2000	48,000,000	45,672,612	91,464,087
	Permira European Fund III	Large	01/12/2004	115,960,000	127,340,454	207,867,572
	Permira IV	Large	12/14/2006	127,779,198	133,445,310	129,010,940

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Private Equity Committed, Drawn, and Distributed (continued)

Active Private Equity Funds Limited Partnership	Strategy/Stage	SERS Initial Funding	Capital Committed ^{1/}	Accumulated Capital Drawn	Accumulated Distributions ^{2/}
58. PNC Equity Partners II	Small	08/30/2007	\$15,000,000	\$13,299,943	\$16,490,348
59. Primavera Capital Fund II	Large	*	50,000,000	0	0
60. Providence Equity Partners IV	Large	11/27/2000	25,000,000	23,439,922	55,857,767
Providence Equity Partners V	Large	04/04/2005	45,000,000	42,595,818	38,982,836
Providence Equity Partners VI	Large	03/16/2007	50,000,000	51,959,744	37,081,372
61. Ridgmont Equity Partners II	Small	*	50,000,000	0	0
62. Segulah IV	Middle	09/25/2008	16,705,647	16,460,609	6,248,327
63. Sentinel Capital Partners V	Middle	07/15/2014	10,000,000	3,546,143	48,630
64. ShoreView Capital Partners	Small	06/16/2003	38,000,000	32,440,363	51,944,029
ShoreView Capital Partners II	Small	03/27/2008	40,000,000	37,511,284	25,020,529
65. Siguler Guff BRIC Opportunities Fund	Fund of Funds	05/08/2006	10,000,000	9,558,299	6,101,472
Siguler Guff BRIC Opportunities Fund II	Fund of Funds	04/09/2008	25,000,000	22,248,443	4,458,920
66. Sterling Capital Partners I	Middle	10/31/2002	15,000,000	14,979,168	30,283,347
Sterling Capital Partners II	Middle	08/18/2005	30,000,000	29,893,709	27,324,339
Sterling Capital Partners III	Middle	08/13/2007	32,000,000	31,610,435	26,771,623
Sterling Group Partners IV	Middle	*	20,000,000	0	0
67. Summit IV	Middle	09/30/1995	25,000,000	24,250,000	183,419,644
Summit V	Growth Equity	03/31/1998	37,500,000	36,187,500	49,906,903
Summit Ventures VI	Growth Equity	03/23/2001	62,000,000	63,914,751	123,202,183
Summit Partners Private Equity Fund VII	Middle	02/09/2006	97,134,500	97,134,505	88,461,625
68. TA IX	Middle	09/20/2000	45,000,000	43,741,796	105,463,424
TA X	Middle	04/25/2006	70,000,000	69,732,009	63,432,009
69. Thomas H. Lee Equity Fund V	Large	07/03/2001	100,000,000	104,848,200	175,331,220
Thomas H. Lee Equity Fund VI	Large	11/14/2006	50,000,000	51,397,868	43,911,567
70. TPG Partners III	Mega	01/13/2000	75,000,000	64,119,169	163,679,936
Newbridge Asia III	Middle	02/15/2001	15,000,000	14,438,357	55,662,218
TPG Partners IV	Mega	12/29/2003	30,000,000	27,981,463	48,998,171
Newbridge Asia IV	Middle	09/27/2005	40,000,000	38,903,378	82,409,421
TPG Partners V	Mega	06/27/2006	95,756,241	92,531,812	69,758,667
TPG Asia V	Large	02/19/2008	22,500,000	21,714,904	13,471,153
TPG Partners VI	Mega	05/22/2008	45,000,000	47,749,575	35,565,659
71. Vestar Capital Partners III	Middle	06/30/1997	25,000,000	24,362,534	27,746,687
Vestar Capital Partners IV	Middle	01/25/2000	100,000,000	97,632,498	171,785,140
Vestar Capital Partners V	Middle	01/25/2006	50,000,000	51,379,800	19,925,076

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Private Equity Committed, Drawn, and Distributed (continued)

Active Private Equity Funds Limited Partnership	Strategy/Stage	SERS Initial Funding	Capital Committed ^{1/}	Accumulated Capital Drawn	Accumulated Distributions ^{2/}
72. Weston Presidio III	Growth Equity	12/31/1998	\$35,000,000	\$31,989,586	\$30,440,421
Weston Presidio IV	Growth Equity	06/21/2000	35,000,000	34,451,015	38,399,714
Weston Presidio V	Growth Equity	12/08/2005	50,000,000	49,037,193	66,805,218
73. Yucaipa American Alliance Fund II	Middle	01/13/2009	25,000,000	29,225,349	15,280,372
Total Active Private Equity			\$7,956,585,824	\$7,026,635,872	\$8,707,546,470

Cash flows as of September 30, 2015.

*Not funded as of September 30, 2015.

^{1/}Commitments as of December 31, 2015.

^{2/}Distributions include stock distributions.

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

Special Situations Committed, Drawn, and Distributed

Active Special Situations Funds Limited Partnership	Strategy/Stage	SERS Initial Funding	Capital Committed ^{1/}	Accumulated Capital Drawn	Accumulated Distributions ^{2/}
1. ABRY Mezzanine Partners	Mezzanine	03/15/2002	\$30,000,000	\$26,698,593	\$46,795,147
ABRY Senior Equity II	Mezzanine	07/27/2006	30,000,000	28,019,267	43,788,432
ABRY Advanced Securities Fund	Distressed/Restructuring	08/01/2008	25,000,000	23,419,669	38,645,084
2. ADV Opportunities Fund I	Distressed/Restructuring	*	50,000,000	0	0
3. AG Capital Recovery Partners IV	Distressed/Restructuring	02/04/2003	50,000,000	35,415,216	55,993,470
AG Capital Recovery Partners V	Distressed/Restructuring	04/17/2006	20,000,000	20,000,000	20,312,163
4. Avenue Special Situations Fund IV	Distressed/Restructuring	03/27/2006	50,000,000	50,000,000	68,816,017
Avenue Asia Special Situations Fund IV	Distressed/Restructuring	06/30/2006	50,000,000	31,897,973	24,590,247
Avenue Special Situations Fund V	Distressed/Restructuring	06/04/2007	70,000,000	70,004,050	92,444,416
Avenue Europe Special Situations Fund	Distressed/Restructuring	07/30/2008	38,632,500	25,749,356	37,284,263
Avenue Special Situations Fund VI	Distressed/Restructuring	11/02/2010	20,000,000	20,068,464	12,031,191
5. AXA Secondary Fund III	Secondaries	11/19/2004	26,000,000	21,729,005	35,450,439
AXA Secondary Fund III-2	Secondaries	11/24/2004	14,000,000	11,677,210	18,091,006
AXA Secondary Fund IV	Secondaries	02/26/2007	80,000,000	68,942,813	73,090,550
AXA Secondary Fund V B	Secondaries	06/19/2012	75,000,000	56,279,763	30,398,609
6. Centerbridge Capital Partners I	Distressed/Restructuring	02/27/2007	50,000,000	56,486,029	91,801,176
Centerbridge Capital Partners III	Distressed/Restructuring	05/21/2015	30,000,000	4,774,032	0
7. Cerberus Institutional Partners	Distressed/Restructuring	03/05/1999	35,000,000	35,000,000	79,906,454
Cerberus Institutional Partners Series Two	Distressed/Restructuring	10/09/2001	35,000,000	30,100,793	93,440,504
Cerberus Institutional Partners Series Three	Distressed/Restructuring	11/13/2003	35,000,000	22,321,354	44,589,261
Cerberus Institutional Partners Series Four	Distressed/Restructuring	11/27/2006	75,000,000	69,258,215	80,738,061
8. CVI Global Value Fund	Distressed/Restructuring	02/23/2007	60,000,000	57,151,667	74,919,103
9. Dover Street VII	Secondaries	07/02/2008	30,000,000	28,595,287	28,538,793

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Special Situations Committed, Drawn, and Distributed (continued)

	Active Special Situations Funds Limited Partnership	Strategy/Stage	SERS Initial Funding	Capital Committed ^{1/}	Accumulated Capital Drawn	Accumulated Distributions ^{2/}
10.	H.I.G. Bayside Debt & LBO Fund II	Distressed/Restructuring	06/17/2008	\$30,000,000	\$27,100,000	\$19,471,584
	H.I.G. Bayside Loan Opportunity Fund III	Distressed/Restructuring	06/12/2013	50,000,000	22,782,558	3,067,566
	H.I.G. Bayside Loan Opportunity Fund IV	Distressed/Restructuring	01/16/2015	25,000,000	1,250,000	0
11.	JP Morgan U.S. Corp Finance Investors II	Distressed/Restructuring	01/14/2003	50,000,000	53,017,192	71,564,865
12.	KPS Special Situations Fund IV	Distressed/Restructuring	05/08/2014	25,000,000	2,281,153	1,019,917
13.	Landmark Equity IV	Secondaries	03/31/1995	14,923,291	12,495,850	18,728,790
	Landmark Equity Partners V	Secondaries	12/31/1995	19,624,113	19,434,947	23,521,627
14.	LBC Credit Partners III	Mezzanine	03/04/2013	50,000,000	34,651,834	11,758,372
15.	Lexington Capital Partners II	Secondaries	06/30/1998	40,000,000	39,538,000	52,184,319
	Lexington Capital Partners III	Secondaries	01/26/1999	35,000,000	34,516,449	43,094,145
	Lexington Capital Partners V	Secondaries	01/17/2002	75,000,000	74,623,418	118,366,242
	Lexington Capital Partners VI	Secondaries	10/21/2005	50,000,000	53,066,325	53,539,647
16.	Matlin Patterson Global Opportunities Partners	Distressed/Restructuring	05/31/2001	35,000,000	30,091,262	56,689,513
	Matlin Patterson Global Opportunities Partners II	Distressed/Restructuring	06/30/2004	30,000,000	30,410,597	10,578,309
17.	OCM Opportunities Fund III	Distressed/Restructuring	01/20/2000	60,000,000	60,007,890	89,378,449
	OCM Principal Opportunities II	Distressed/Restructuring	04/24/2001	25,000,000	25,000,000	43,867,500
	OCM Opportunities Fund IV	Distressed/Restructuring	09/26/2001	70,000,000	70,000,000	115,463,024
	Oaktree Capital Management	Distressed/Restructuring	05/28/2004	40,000,000	40,581,778	102,648,889
	OCM Opportunities Fund V	Distressed/Restructuring	08/12/2004	40,000,000	40,003,507	63,462,053
	OCM Opportunities Fund VI	Distressed/Restructuring	09/28/2005	40,000,000	40,000,000	60,678,867
	OCM Principal Opportunities Fund IV	Distressed/Restructuring	01/24/2007	20,000,000	20,400,000	20,812,996
	OCM Opportunities Fund VII	Distressed/Restructuring	05/16/2007	40,000,000	40,000,000	49,960,261
	OCM Opportunities Fund VIIIb	Distressed/Restructuring	06/03/2008	40,000,000	36,000,000	57,846,712
	Oaktree Opportunities Fund VIII	Distressed/Restructuring	09/20/2010	12,500,000	12,583,425	10,425,994
	Oaktree Opportunities Fund VIIIb	Distressed/Restructuring	08/22/2011	12,500,000	12,500,000	2,681,889
	Oaktree Opportunities Fund IX	Distressed/Restructuring	03/26/2013	50,000,000	47,500,000	0

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Special Situations Committed, Drawn, and Distributed (continued)

Active Special Situations Funds Limited Partnership	Strategy/Stage	SERS Initial Funding	Capital Committed ^{1/}	Accumulated Capital Drawn	Accumulated Distributions ^{2/}
18. Platinum Equity Capital Partners III	Distressed/Restructuring	08/05/2013	\$50,000,000	\$26,577,598	\$18,921,290
19. RRJ Capital Master Fund III	Growth Equity	*	50,000,000	0	0
20. Sankaty Credit Opportunities III	Distressed/Restructuring	03/08/2007	50,000,000	50,000,000	44,479,364
Sankaty Credit Opportunities IV	Distressed/Restructuring	07/15/2008	40,000,000	38,000,000	47,579,989
21. Templeton Strategic Emerging Markets Fund III	Distressed/Restructuring	05/29/2009	100,000,000	95,482,762	19,825,294
22. Versa Capital Partners	Distressed/Restructuring	10/16/2005	20,000,000	23,611,753	15,988,714
Versa Capital Partners II	Distressed/Restructuring	07/31/2008	15,000,000	15,154,364	5,867,313
23. W Capital Partners II	Secondaries	08/08/2007	40,000,000	39,034,444	42,438,800
Total Active Special Situations			\$2,323,179,904	\$1,961,285,862	\$2,387,576,680

Cash flows as of September 30, 2015.

*Not funded as of September 30, 2015.

^{1/}Commitments as of December 31, 2015.

^{2/}Distributions include stock distributions.

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

Venture Capital Committed, Drawn, and Distributed

Active Venture Capital Funds Limited Partnership	Strategy/Stage	SERS Initial Funding	Capital Committed ^{1/}	Accumulated Capital Drawn	Accumulated Distributions ^{2/}
1. Abingworth Bioventures IV	Balanced	09/01/2003	\$20,000,000	\$19,858,273	\$20,261,429
Abingworth Bioventures V	Balanced	01/23/2007	33,775,000	27,388,013	34,609,983
2. Accel Europe	Early Stage	07/02/2001	15,000,000	11,350,000	12,366,539
3. Adams Capital Management III	Early Stage	11/21/2000	30,000,000	30,000,000	7,011,905
4. Advanced Technology Ventures VI	Balanced	03/09/2000	10,000,000	10,000,000	4,320,705
Advanced Technology Ventures VII	Balanced	07/11/2001	27,000,000	27,000,000	27,000,001
5. Alloy Ventures 2000	Early Stage	05/19/2000	20,000,000	20,000,000	5,125,846
Alloy Ventures 2002	Early Stage	07/22/2002	25,000,000	25,000,000	15,448,474
Alloy Annex I	Early Stage	10/31/2003	5,000,000	5,000,000	1,271,247
Alloy Ventures 2005	Early Stage	08/11/2005	25,000,000	25,000,000	7,492,217
6. APEX Investment Fund V	Early Stage	04/19/2002	20,000,000	20,651,307	7,429,304
7. Artiman Ventures II	Early Stage	10/27/2006	25,000,000	25,000,000	13,141,575
Artiman Ventures III	Early Stage	08/09/2010	20,000,000	17,410,000	0
8. Atlas Venture Fund V	Early Stage	02/07/2000	37,200,000	37,211,109	40,115,109
Atlas Venture Fund VI	Early Stage	08/01/2001	24,800,000	24,800,000	11,980,477
9. Austin Ventures VIII	Balanced	07/26/2001	20,932,140	21,100,362	32,354,375
Austin Ventures IX	Balanced	01/09/2006	15,000,000	15,070,611	12,256,015
10. Battery Ventures VIII	Balanced	08/13/2007	25,000,000	24,747,225	29,513,693
Battery Ventures VIII Side Car Fund	Balanced	08/29/2008	9,000,000	6,559,483	17,349,638
11. Birchmere Ventures III	Early Stage	05/05/2005	10,000,000	10,386,534	8,692,184
12. Care Capital Investments III	Balanced	02/08/2006	25,000,000	22,050,338	4,940,190
13. Charles River Partnership XI	Early Stage	02/15/2001	11,032,259	11,032,259	14,360,660
14. CID Greater China Venture Capital Fund II	Balanced	08/10/2007	20,000,000	18,120,000	16,768,630
15. Clearstone Venture Partners III-A	Early Stage	12/22/2004	25,000,000	23,500,000	4,156,842
16. Cross Atlantic Technology Fund	Balanced	02/14/2000	20,000,000	20,149,041	23,742,240
Cross Atlantic Technology Fund II	Balanced	01/28/2002	32,900,000	32,900,000	27,178,304
17. Devon Park Bioventures	Balanced	12/15/2006	10,842,697	9,589,743	4,460,728
18. Draper Fisher Jurvetson VI	Early Stage	08/13/1999	8,000,000	8,000,000	4,973,853
Draper Triangle Ventures	Early Stage	12/20/1999	20,000,000	20,708,908	11,357,493
Draper Fisher Jurvetson VII	Early Stage	09/22/2000	20,000,000	20,000,000	7,893,620
Draper Triangle Ventures II	Early Stage	10/13/2004	12,000,000	12,866,238	11,286,921
Draper Triangle Ventures III	Early Stage	01/28/2015	10,000,000	2,915,026	0
19. Fairview Capital	Fund of Funds	09/30/1994	10,000,000	10,000,000	4,543,128
Fairview II	Fund of Funds	03/31/1998	10,000,000	9,870,000	3,982,519

SERS FUND

Investment Program | Portfolio Snapshot | Alternative Investments

Venture Capital Committed, Drawn, and Distributed (continued)

	Active Venture Capital Funds Limited Partnership	Strategy/Stage	SERS Initial Funding	Capital Committed ^{1/}	Accumulated Capital Drawn	Accumulated Distributions ^{2/}
20.	Frazier Healthcare III	Balanced	03/31/1999	\$30,000,000	\$30,000,000	\$12,700,255
	Frazier Healthcare IV	Balanced	09/27/2001	30,000,000	29,820,000	24,821,191
	Frazier Healthcare V	Balanced	05/10/2005	30,000,000	29,625,000	36,819,209
21.	Grotech Partners V	Early Stage	09/30/1998	25,000,000	25,000,000	24,521,934
22.	Guggenheim Technology Ventures I	Early Stage	11/17/2008	2,000,000	2,000,000	554,674
23.	Healthcare Ventures VI	Early Stage	06/19/2000	35,000,000	35,000,000	4,722,059
	Healthcare Ventures VII	Early Stage	10/29/2002	35,000,000	35,000,000	16,404,798
	Healthcare Ventures VIII	Early Stage	08/22/2005	30,000,000	28,875,000	9,581,777
24.	Highland Capital Partners VI	Early Stage	10/25/2001	25,000,000	25,000,000	34,486,407
	Highland Capital Partners VII	Early Stage	10/13/2006	35,000,000	35,001,991	19,129,884
	Highland Consumer Fund I	Early Stage	05/04/2007	25,000,000	23,763,199	4,998,050
25.	IP II	Balanced	12/17/2001	8,600,000	8,584,074	2,799,296
	IP III	Balanced	11/19/2004	10,500,000	9,555,000	12,722,259
	IP IV	Balanced	09/21/2007	14,000,000	13,300,000	9,724,773
26.	Insight Venture Partners VI	Balanced	08/21/2007	30,000,000	32,244,177	50,756,194
	Insight Venture Partners VII	Balanced	04/27/2011	20,000,000	20,781,338	10,493,635
	Insight Venture Partners VIII	Balanced	07/10/2013	50,000,000	47,700,000	622,752
	Insight Venture Partners IX	Balanced	03/24/2015	50,000,000	13,000,000	22,498
27.	InterWest Partners VIII	Early Stage	08/25/2000	25,000,000	25,000,000	11,786,981
	InterWest Partners IX	Balanced	10/19/2005	20,000,000	19,000,000	15,163,946
	InterWest Partners X	Balanced	10/30/2008	30,000,000	25,500,000	2,300,138
28.	JP Morgan Venture Capital Investors	Fund of Funds	07/08/1999	100,000,000	107,682,691	67,130,528
	JP Morgan Venture Capital Investors II	Fund of Funds	09/08/2000	100,000,000	111,720,310	97,413,531
	JP Morgan Venture Capital Investors III	Fund of Funds	06/20/2006	100,000,000	108,588,377	59,498,106
29.	Kline Hawkes Pacific	Balanced	08/30/2000	15,000,000	15,100,498	7,024,260
30.	Knightsbridge Venture Capital VI	Fund of Funds	12/07/2004	20,000,000	18,266,667	9,633,946
31.	Lightspeed Venture Partners VII	Early Stage	02/27/2006	18,000,000	17,737,490	6,660,237
	Lightspeed Venture Partners VIII	Early Stage	06/27/2008	15,000,000	14,400,000	14,943,179
	Lightspeed India Partners I	Early Stage	08/14/2015	15,000,000	1,875,000	0
32.	Media/Communications Ventures Fund V	Growth Equity	09/27/2000	35,000,000	34,812,205	55,791,912
33.	Meritech Capital Partners II	Late Stage	01/02/2001	26,475,166	24,842,529	37,600,668
	Meritech Capital Partners III	Late Stage	04/05/2006	35,000,000	34,475,000	164,200,262
	Meritech Capital Partners IV	Late Stage	02/10/2011	20,000,000	18,300,000	8,621,882
	Meritech Capital Partners V	Late Stage	09/03/2014	23,000,000	5,347,500	0
34.	Mid-Atlantic Venture Fund III	Early Stage	06/30/1997	20,008,308	20,000,000	5,654,702
	Mid-Atlantic Venture Fund IV	Early Stage	05/04/2000	30,000,000	30,246,718	9,177,849

SERS FUND

Investment Program | Portfolio Snapshot | Alternative Investments

Venture Capital Committed, Drawn, and Distributed (continued)

	Active Venture Capital Funds Limited Partnership	Strategy/Stage	SERS Initial Funding	Capital Committed ^{1/}	Accumulated Capital Drawn	Accumulated Distributions ^{2/}
35.	Morgenthaler Partners VII	Balanced	07/26/2001	\$35,000,000	\$35,143,798	\$28,302,655
	Morgenthaler Partners VIII	Balanced	10/03/2005	35,000,000	35,754,696	32,623,615
	Morgenthaler Partners IX	Balanced	11/25/2008	20,000,000	19,200,000	18,162,195
36.	NEPA Venture-II	Balanced	12/31/1992	7,500,000	7,500,000	34,879,769
37.	New Enterprise Associates VII	Early Stage	12/31/1996	30,000,000	30,000,000	102,186,705
	New Enterprise Associates IX	Early Stage	11/15/1999	20,000,000	19,600,000	6,787,262
	New Enterprise Associates X	Early Stage	12/11/2000	35,000,000	34,503,000	32,493,542
	New Enterprise Associates 11	Early Stage	03/01/2004	25,000,000	25,000,000	49,921,379
	New Enterprise Associates 12	Early Stage	06/26/2006	35,000,000	35,631,130	33,334,405
38.	Novitas Capital III	Early Stage	04/17/2003	10,000,000	9,925,000	3,924,047
39.	Oak Investment Partners XI	Late Stage	07/21/2004	35,000,000	34,989,508	15,565,248
	Oak Investment Partners XII	Late Stage	07/10/2006	40,000,000	39,968,468	19,176,423
40.	Permira UK Venture Fund IV	Balanced	09/30/1996	15,248,000	15,993,572	23,494,012
41.	Pitango Venture Capital Fund IV	Early Stage	07/19/2004	20,000,000	20,001,534	9,809,664
	Pitango Venture Capital Fund V	Early Stage	08/22/2007	30,000,000	28,163,295	16,866,840
42.	Polaris Venture Partners II	Balanced	09/30/1998	25,000,000	24,750,000	40,118,427
	Polaris Venture Partners III	Balanced	01/21/2000	50,000,000	49,500,000	29,629,123
	Polaris Venture Partners IV	Balanced	09/30/2002	50,000,000	49,750,000	37,609,685
	Polaris Venture Partners V	Balanced	08/08/2006	50,000,000	49,000,000	33,243,318
43.	Quaker BioVentures	Balanced	02/20/2003	20,000,000	20,000,000	3,526,430
	Quaker BioVentures II	Balanced	04/03/2007	25,000,000	22,750,000	13,046,843
44.	SCP Private Equity Partners II	Late Stage	06/15/2000	25,000,000	25,000,000	6,219,887
45.	Sofinnova Venture Partners VII	Early Stage	01/18/2007	20,000,000	19,600,000	25,412,872
46.	Summit Accelerator Fund	Early Stage	11/15/1999	8,000,000	7,609,500	13,127,408
	Summit Partners Venture Capital Fund II	Early Stage	09/22/2006	15,000,000	15,823,703	22,536,326
47.	T. Rowe Price Stock Distribution Account ^{3/}	Late Stage	01/03/2005		See Footnote	
48.	Three Arch Capital	Balanced	12/20/2000	20,000,000	19,500,000	15,455,458
	Three Arch Partners IV	Balanced	06/04/2004	20,000,000	19,050,000	15,945,483
49.	TL Ventures IV	Early Stage	05/13/1999	35,000,000	35,000,000	25,582,809
	TL Ventures V	Early Stage	10/18/2000	40,000,000	40,048,219	16,100,247
50.	US Venture Partners VII	Balanced	02/18/2000	13,750,000	13,750,000	4,800,279
	US Venture Partners VIII	Early Stage	06/01/2001	26,250,000	25,830,000	30,849,103

SERS FUND

Investment Program | Portfolio Snapshot | Alternative Investments

Venture Capital Committed, Drawn, and Distributed (continued)

Active Venture Capital Funds Limited Partnership	Strategy/Stage	SERS Initial Funding	Capital Committed ^{1/}	Accumulated Capital Drawn	Accumulated Distributions ^{2/}
51. Weathergag Venture Capital	Fund of Funds	06/26/2007	\$25,000,000	\$22,875,000	\$14,151,174
Weathergag Venture Capital II	Fund of Funds	06/29/2010	25,000,000	21,500,000	1,692,670
52. Worldview Technology Partners IV	Balanced	01/31/2001	18,130,023	16,951,175	7,034,048
Total Active Venture Capital			\$2,688,943,593	\$2,592,040,832	\$2,079,478,967

Cash flows as of September 30, 2015.

^{1/}Commitments as of December 31, 2015.

^{2/}Distributions include stock distributions.

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

SERS FUND

Investment Program | Portfolio Snapshot | Global Public Equity

Asset Class Description

Global Public Equity includes SERS Fund assets held in publicly traded securities of companies throughout the developed world and in emerging markets. These companies have a wide range of market capitalizations in many industries and sectors, and offer vastly different return opportunities.

Global Public Equity is the most highly volatile asset class in SERS Fund, and thus, the largest contributor to total SERS Fund volatility. This asset class contributes a high expected long-term return to SERS Fund but also brings the largest measure of near-term downside risk.

Role in the SERS Fund

The program seeks high total return, which may be accompanied by higher volatility. This asset class offers a high degree of immediate liquidity in normal market conditions and can provide moderate inflation protection.

Program Structure

The Global Public Equity program accomplishes its objective through active and passive ownership of large, mid, and small capitalization stocks worldwide.

The program maintains a neutral profile compared to the composition of the program's benchmark. Regional and capitalization exposures emulate the benchmark. This neutral structure reduces uncompensated risk and makes security selection the primary determinant of excess return performance.

Within the context of benchmark neutrality, the portfolio is organized in a core/satellite structure. In developed markets, core investments include low-cost index funds, which provide equity market exposure in the most efficient regions of the global equity market. In emerging markets, core investments include diverse, actively-managed strategies that provide moderate excess return expectations. The goal of the core portion in less-efficient emerging markets is to capture all available excess returns while controlling risk.

Regardless of region, satellite investments include aggressive investment strategies with moderate-to-high excess return targets. Such investments generally have concentrated exposures. When combined, these investments complement and diversify each other, providing opportunity for more stable, high, risk-adjusted returns.

While passive mandates are routinely employed, the program maintains a moderate bias toward active management, particularly in portions of the equity universe where historical returns have been commensurate with active risk taken. This bias is examined on a periodic basis.

SERS FUND

Investment Program | Portfolio Snapshot | Global Public Equity

Asset Class Benchmark

The objective of the program is to generate annualized total net returns that exceed the benchmark by approximately 100 basis points over a three- to five-year period. Performance is measured and evaluated relative to the MSCI All-Country World Investable Market Index (ACWI-IMI).

Global Public Equity

Manager	Investment Style	Market Exposure as of 12/31/15 ^{1/} (\$ millions)
Global Mandates		
1. Walter Scott & Partners Limited	Growth	\$658.2
Total Global Mandates		658.2
U.S. Equity		
2. Diamond Hill Concentrated	Large-cap concentrated	416.5
3. Emerald Advisers - PA Companies	Small-cap PA companies	431.9
4. Epoch Value	Large-cap value	380.0
5. Iridian Asset Management	Mid-cap private business value	386.9
6. Mellon Capital Management - PA Companies	Small-cap PA companies	243.1
Mellon Capital Management Russell 1000 Growth	Russell 1000 Growth	370.7
Mellon Capital Management Russell 1000 Index	Russell 1000 Index	2,829.4
Total U.S. Equity		5,058.5
Non-U.S. Developed Markets Equity		
7. Artisan Partners - Global ex U.S.	Global ex-U.S. growth	409.5
8. Harris Associates	Small-cap intrinsic value	474.8
Mellon Capital Management MSCI World ex U.S. Index	MSCI World ex-U.S. Index	1,760.0
9. Morgan Stanley Investment Management Limited-developed ex U.S.	EAFE value	397.3
10. Templeton Investment Counsel - Global ex U.S.	Global ex-U.S. value	562.1
Total Non-U.S. Developed Markets Equity		3,603.7
Emerging Markets Equity		
11. Ashmore EMM	Small-cap value	112.0
12. BlackRock/Emerging Markets Index Non-Lendable Fund	MSCI Emerging Markets Index	121.8
13. Delaware Investment Advisers	Mid/large cap value	218.2
14. GlobeFlex Capital	Small-cap - GARP	70.7
15. Martin Currie Investment Management	All-cap	203.3
Total Emerging Markets Equity		726.0
Total Global Public Equity		\$10,046.4

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

SERS FUND

Investment Program | Portfolio Snapshot | Real Assets

Asset Class Description

Real Assets include SERS Fund investments that predominantly own or develop physical assets and are more correlated to inflation than most other asset classes. There are two categories of investments in this class:

Private Real Assets

- *Private, closed-end, commingled funds and/or limited partnerships* with long-term capital commitments and limited liquidity, including: real estate, energy, infrastructure assets, agriculture, timber, mining, water, and other natural resources
- *Investments through separate account relationships* with reasonable levels of liquidity over a 12- to 18-month period
- *Private, open-ended funds* with investor redemption rights with reasonable levels of liquidity over a six- to 12-month period

Public Real Assets

- *REITs* are publicly traded real estate investment trusts.
- *Commodities, listed infrastructure, and master limited partnerships* provide exposure to oil and gas, natural resources, and infrastructure projects.

Role in the SERS Fund

The program is intended to generate competitive long-term returns through capital appreciation and current income. Real Assets generally offer lower volatility than the equity markets and provide at least moderate protection against inflation. The asset class provides significant diversification benefits due to its relatively low correlation to stocks and bonds.

Program Structure

The Real Assets portfolio contains both public and private investments, direct and indirect investments, and investments across a variety of sub-asset classes; however, it is currently dominated by exposure to real estate and commodities. Focus during the plan period is to diversify into other real assets sectors.

SERS FUND

Investment Program | Portfolio Snapshot | Real Assets

Asset Class Benchmark

Performance is measured and evaluated over a three- to five-year period relative to a custom stylized benchmark including market-based sub-asset class indices where available (such as real estate, timber, agriculture), or CPI + 3% where not available, with the various components weighted according to long-term allocation targets within the class.

Real Assets

Manager	Vintage Year	Asset Type	Investment Structure	Fair Value (\$ millions)
Private Energy^{1/}				
1. Carlyle Energy Mezz Opp Fund	2012	Energy	Limited Partnership	\$32.3
2. Denham Commodity VI	2012	Energy	Limited Partnership	17.2
3. Energy Spectrum Partners IV	2004	Energy	Limited Partnership	0.1
Energy Spectrum Partners V	2007	Energy	Limited Partnership	0.7
4. First Reserve Fund X	2004	Energy	Limited Partnership	0.2
First Reserve Fund XI	2006	Energy	Limited Partnership	9.7
First Reserve Fund XII	2008	Energy	Limited Partnership	21.3
5. Lime Rock Partners III	2004	Energy	Limited Partnership	0.9
Lime Rock Resources	2005	Energy	Limited Partnership	1.4
Lime Rock Partners IV	2006	Energy	Limited Partnership	37.7
Lime Rock Partners V	2008	Energy	Limited Partnership	18.3
6. OCM/GFI Power Opportunities Fund II	2005	Energy	Limited Partnership	0.2
Oaktree Power Opportunities Fund III	2010	Energy	Limited Partnership	11.9
7. SFC Energy Partners I	2007	Energy	Limited Partnership	5.0
SFC Energy Partners II	2011	Energy	Limited Partnership	5.5
Total Private Energy				162.4
Non-Core Real Estate^{2/}				
8. AG Asia Realty Fund	2007	Diversified	Limited Partnership	7.9
9. Apollo Real Estate Fund III	1998	Diversified	Limited Partnership	0.1
10. Berwind Investment Partnership V	1999	Diversified	Limited Partnership	1.4
Berwind Investment Partnership VI	2002	Diversified	Limited Partnership	6.3
Berwind Investment Partnership VII	2005	Diversified	Limited Partnership	17.3
Berwind Investment Partnership VIII	2007	Diversified	Limited Partnership	8.2
Berwind Investment Partnership IX	2012	Diversified	Limited Partnership	19.9
11. Blackstone Real Estate Partners IV	2003	Diversified	Limited Partnership	9.0
Blackstone Real Estate Partners V	2006	Diversified	Limited Partnership	36.1
Blackstone Real Estate Partners VI	2007	Diversified	Limited Partnership	47.0
Blackstone Real Estate Partners VII	2011	Diversified	Limited Partnership	79.3
12. Clerestory Small Cap Fund I	2007	Diversified	Limited Partnership	8.8

SERS FUND

Investment Program | Portfolio Snapshot | Real Assets

Real Assets (continued)

Manager	Vintage Year	Asset Type	Investment Structure	Fair Value (\$ millions)
Non-Core Real Estate^{2/}(continued)				
13. Colony Investors VIII	2007	Diversified	Limited Partnership	\$4.9
14. Fillmore East Fund	2005	Debt	Limited Partnership	0.7
Fillmore West Fund	2008	Debt	Limited Partnership	17.6
15. Hawkeye Scout Fund I	2006	Diversified	Limited Partnership	8.3
16. LEM Real Estate High-Yield Debt Fund III	2012	Debt	Limited Partnership	29.8
17. Lubert Adler Fund III	2000	Diversified	Limited Partnership	0.1
Lubert Adler Fund IV	2004	Diversified	Limited Partnership	1.7
Lubert Adler Fund V	2006	Diversified	Limited Partnership	8.7
Lubert Adler Fund VI	2008	Diversified	Limited Partnership	8.5
Lubert Adler Fund VII	2014	Diversified	Limited Partnership	9.4
18. OCM Real Estate Opp Fund III	2003	Diversified	Limited Partnership	1.5
19. Oxford GSA Fund	2006	Diversified	Limited Partnership	1.9
20. Prudential Latin America Retail Fund I	2006	Retail	Limited Partnership	1.4
Prudential Senior Housing Fund III	2006	Senior housing	Limited Partnership	0.3
Prudential Latin America Residential Fund III	2007	Residential	Limited Partnership	11.9
Prudential Senior Housing Fund IV	2011	Senior housing	Limited Partnership	21.8
Prudential Senior Housing Fund V	2015	Senior housing	Limited Partnership	5.2
21. Rockpoint Real Estate Fund I	2004	Diversified	Limited Partnership	0.1
Rockpoint Real Estate Fund II	2005	Diversified	Limited Partnership	8.6
Rockpoint Finance Fund I	2006	Diversified	Limited Partnership	1.2
Rockpoint Real Estate Fund III	2007	Diversified	Limited Partnership	7.2
22. Starwood Fund IV	1997	Diversified	Limited Partnership	0.1
Starwood Fund VI	2001	Diversified	Limited Partnership	15.0
Starwood Fund VII	2005	Diversified	Limited Partnership	13.7
Starwood Fund VIII	2007	Diversified	Limited Partnership	26.6
23. Valstone Opportunity Fund V	2014	Diversified	Limited Partnership	14.4
24. Westbrook Fund V	2004	Diversified	Limited Partnership	5.7
Westbrook Fund VI	2005	Diversified	Limited Partnership	14.4
Westbrook Fund VII	2006	Diversified	Limited Partnership	22.0
Westbrook Fund VIII	2009	Diversified	Limited Partnership	13.1
Total Non-Core Real Estate				517.1

SERS FUND

Investment Program | Portfolio Snapshot | Real Assets

Real Assets (continued)

	Manager	Vintage Year	Asset Type	Investment Structure	Fair Value (\$ millions)
Core Real Estate^{2/}					
25.	Fidelity Real Estate Opportunistic Income Fund	2007	Debt	Limited Partnership	\$64.1
26.	Forest I.M.A.	1992	Timber	Separate Account	154.9
27.	Heitman I.M.A.	1988	Diversified	Separate Account	80.8
	Heitman America Real Estate Trust	2007	Diversified	Limited Partnership	168.3
28.	LaSalle I.M.A.	1994	Diversified	Separate Account	407.3
29.	Lowe I.M.A.	1994	Diversified	Separate Account	445.3
	Lowe GTO	2012	Diversified	Separate Account	251.4
30.	UBS Trumbull Property Fund	1988	Diversified	Open-Ended Fund	67.9
	UBS Trumbull Property Income Fund	1988	Diversified	Open-Ended Fund	59.9
Total Core Real Estate					1,699.9
REITs^{3/}					
31.	CBRE Clarion Real Estate Securities	1996	REITs	Separate Account	280.0
32.	CenterSquare Real Estate Securities	2002	REITs	Separate Account	66.4
Total REITs					346.4
Commodities and Infrastructure^{3/}					
33.	BAAM Commodities	2007	Commodities	Open-Ended Fund	325.6
34.	Harvest Fund MLP	2013	MLPs	Separate Account	125.2
35.	Kayne Anderson MLP	2013	MLPs	Separate Account	107.4
36.	Wellington DIH	2004	Commodities	Open-Ended Fund	253.2
Total Commodities and Infrastructure					811.4
Total Real Assets					\$3,537.2

^{1/}Fair Values for 100% of Private Energy represent September 30, 2015 values. All of these values have been updated for cash flows.

^{2/}Fair Values for 31% of Non-Core Real Estate and Core Real Estate represent September 30, 2015 values with the remaining 69% based on June 30, 2015 values. All of these values have been updated for cash flows.

^{3/}Market exposure as of December 31, 2015. Includes securities and cash, which the manager had available for investments.

SERS FUND

Investment Program | Portfolio Snapshot | Diversifying Assets

Asset Class Description

The Diversifying Assets program includes investments designed to provide total returns comparable to the total SERS Fund return but with less volatility and lower correlation to other asset classes.

Role in the SERS Fund

The program seeks to provide competitive returns and protect capital in all market conditions by investing in a diverse set of strategies including long/short equity, global macro, relative value, credit, event driven, and other hedge fund strategies—all with attractive long-term, risk-adjusted returns. The program targets a liquidity profile less than that of public equities but significantly more than private equity.

Program Structure

The program contains both direct and fund-of-funds investments, which invest across a wide variety of strategies.

Asset Class Benchmark

Performance is measured and evaluated over a three- to five-year period relative to the HFRI Fund-of-Funds Strategic Index.

SERS FUND

Investment Program | Portfolio Snapshot | Diversifying Assets

Diversifying Assets

Manager	Investment Style	Market Exposure as of 12/31/15 ^{1/} (\$ millions)
Absolute Return Strategies		
1. Arden	Fund-of-Funds	\$22.5
2. Blackstone - Stable Alpha	Fund-of-Funds	27.5
3. Mesirow Financial	Fund-of-Funds	31.3
4. Morgan Stanley Alternative Investment Partners	Fund-of-Funds	10.5
5. PAAMCO	Fund-of-Funds	9.8
6. Robeco Investment	Fund-of-Funds	0.3
7. Rock Creek	Fund-of-Funds	3.5
Total Absolute Return Strategies		105.4
Hedged Strategies		
Arden Keystone	Fund-of-Funds	145.1
Blackstone Keystone	Fund-of-Funds	1,016.9
8. Entrust Keystone	Fund-of-Funds	302.8
Total Hedged Strategies		1,464.8
Direct Investments		
9. Hoplite Partners	Direct Hedge Fund	22.5
10. Luxor Capital Partners	Direct Hedge Fund	14.6
11. MKP Opportunity Fund	Direct Hedge Fund	14.8
12. Pine River Fund	Direct Hedge Fund	20.5
13. Samlyn Onshore Fund	Direct Hedge Fund	15.7
14. Stelliam Fund	Direct Hedge Fund	15.0
Total Direct Investments		103.1
Total Diversifying Assets		\$1,673.3

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

SERS FUND

Investment Program | Portfolio Snapshot | Fixed Income/Liquidity Reserve

Asset Class Description

Fixed Income includes investments in publicly traded debt obligations of sovereign, quasi-sovereign, and corporate entities. The asset class generates current income and the repayment of principal at maturity. Fixed income investments have substantially lower volatility than equities and most fixed income investments are significantly uncorrelated with equity returns.

The Liquidity Reserve has a distinct mandate to support regular disbursement of SERS Fund obligations and is invested in liquid and short-term instruments either directly or through a fund structure.

Role in the SERS Fund

The program is structured to generate income to pay benefits, provide liquidity to minimize capital impairment risk, reduce volatility in SERS Fund, protect SERS Fund against deflation (via Treasuries) and inflation (via TIPS), and contribute to SERS Fund return when market conditions permit.

Program Structure

There are four key components to the Fixed Income program. The size of each is based on SERS Fund's liabilities and expected cash flows, general liquidity conditions in the capital markets, inflation and economic growth expectations, the risk level of SERS Fund, and current valuations of various fixed income strategies. Components of the program include:

- *Core and Core Plus Fixed Income* provide excess return when performance conditions are favorable, offer varying potential return with a corresponding variance in expected risk, provide capital protection in difficult market conditions, and offer risk mitigation due to low correlation with equity depending on the mix of core and core plus exposures in the composite.
- *Inflation Protection Securities* preserve purchasing power due to high positive correlation to inflation and predominantly includes U.S. Treasury Inflation Protection Securities (TIPS) and some foreign inflation protection securities.
- *Nominal U.S. Treasuries* provide SERS Fund with a deflation hedge and a ready source of liquidity to pay benefits.
- The *Liquidity Reserve* includes cash equivalents and short-duration notes that mature within five years.

SERS FUND

Investment Program | Portfolio Snapshot | Fixed Income/Liquidity Reserve

Asset Class Benchmarks

Performance is evaluated over a five-year period relative to the following benchmarks:

- Fixed Income – Barclays U.S. Aggregate Bond Index
- Liquidity Reserve – BofA ML 3 Month U.S. T-Bill Index

Fixed Income

Manager	Investment Style	Market Exposure as of 12/31/15 ^{1/} (\$ millions)
Core Plus		
1. Brandywine Global	Global Sovereign Credit	\$173.9
2. PIMCO EMD	Emerging Market Debt (liquidating)	0.1
3. Pyramis Global Advisors	Commercial Mortgage-Backed Securities	298.4
4. SEI Structured Credit Fund	High Yield Bank Loans	226.6
5. Stone Harbor	Emerging Market Debt	117.9
Stone Harbor	Global High Yield	176.3
6. W.R. Huff	High Yield (liquidating)	11.7
7. Waterfall Asset Management	Asset-Backed Securities	173.8
Total Core Plus		1,178.7
Core		
8. Mellon Capital Management	Barclays Aggregate	1,117.6
9. MacKay Shields Core	Barclays Aggregate	192.7
PIMCO Core	Barclays Aggregate ex. Treasuries	243.1
10. Taplin, Canida & Habacht (TCH)	U.S. Credit	166.9
11. UBS Core Bond	Barclays Aggregate	101.0
Total Core		1,821.3
Global Treasury Inflation Protected Securities (TIPS)		
12. Brown Brothers Harriman	Global TIPS	200.6
13. New Century Advisors	Global TIPS	102.2
14. NISA Investment Advisors	U.S. TIPS	451.5
Total Global Treasury Inflation Protected Securities (TIPS)		754.3
Nominal U.S. Treasuries		
PIMCO U.S. Treasuries	Domestic Treasuries	266.9
15. Wellington U.S. Treasuries	Domestic Treasuries	264.0
Total Nominal U.S. Treasuries		530.9
Total Fixed Income		\$4,285.2

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

SERS FUND

Investment Program | Portfolio Snapshot | Fixed Income/Liquidity Reserve

Liquidity Reserve^{1/}

Manager	Investment Style	Market Exposure as of 12/31/15 ^{2/} (\$ millions)
Short-Term Notes		
1. PNC Short Duration	Short Duration Government Credit	\$233.9
2. StoneRidge Short Duration	Short Duration Government Credit	117.6
Total Short-Term Notes		351.5
Cash Equivalent		
3. PA State Treasury (STIF)	Cash	1,348.1
PA Treasury Overnight Cash	Cash	4.3
Total Cash Equivalent		1,352.4
Liquidate Holdings		
Liquidate Holdings	Securities to be Liquidated	0.1
Total Liquidate Holdings		0.1
Total Liquidity Reserve		\$1,704.0

^{1/}The SERS Liquidity Reserve is jointly managed by SERS Fixed Income investment staff and the Pennsylvania Treasury.

^{2/}Includes securities and cash, which the manager had available for investment.

SERS Fund

Pennsylvania Investments

SERS FUND

Investment Program | 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, which was last revised January 2016. Where investment characteristics including yield, risk, and liquidity are equivalent, the board's policy favors 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, 2015, was approximately \$1.1 billion, or 4.3% of the SERS Fund.

Pennsylvania Investments by Asset Class

(\$ millions)

Asset Class	Total PA Fair Value
Alternative Investments	\$164.2
Global Public Equity	740.1
Real Assets	177.2
Fixed Income & Liquidity Reserve	31.3
Total Pennsylvania Investments	\$1,112.8

SERS FUND

Investment Program | Pennsylvania Investments

SERS investment portfolios have historically held investments in Pennsylvania firms, as some large national firms are headquartered in Pennsylvania, including AmerisourceBergen (Chesterbrook-wholesale pharmaceutical distributor), Comcast Corporation (Philadelphia-communications), United States Steel (Pittsburgh-steel producer), PNC Financial Services (Pittsburgh-financial), and PPG Industries Inc. (Pittsburgh-basic materials). In addition, SERS has invested in portfolios that are designed to give emphasis to investments in Pennsylvania while meeting the fiduciary standards.

Alternative Investments

SERS Alternative Investments program dates back to 1985. Initially the program targeted a 1% allocation to venture capital 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 venture capital managers. Since inception, SERS Alternative Investments program has made commitments of over \$1.2 billion to 65 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 December 31, 2015, SERS active Alternative Investments managers held investments in 113 Pennsylvania-based companies. SERS pro-rata investment value in these companies is approximately \$164.2 million. This equates to 3.6% of the Alternative Investments program fair value and does not include investments headquartered outside of Pennsylvania that may have impactful operations within the state.

Global Public Equity

Emerald Advisers of Lancaster and Mellon Capital Management Corporation actively manage portfolios principally derived from the mid/small cap stocks in SERS Pennsylvania stock universe. These two portfolios, plus the Pennsylvania stocks held in SERS other stock portfolios, invested \$740.1 million in Pennsylvania stocks.

SERS Pennsylvania stock universe is comprised of 363 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

SERS FUND

Investment Program | Pennsylvania Investments

Top-Performing Pennsylvania Stocks

Company	Location	Return for 2015
PEGASUS COMPANIES INC The Pegasus Companies, Inc., formerly Xanadoo Co., provides mobile broadband solutions to multiple cities in Texas, Oklahoma, and Illinois. It uses the Cisco Internet Protocol Next-Generation Network infrastructure for its mobile WiMAX networks.	Bala Cynwyd	667%
RECRO PHARMA INC Recro Pharma, Inc. is a clinical stage specialty pharmaceutical company developing non-opioid therapeutics for the treatment of pain, initially in the post-operative setting.	Malvern	215%
MEETME INC MeetMe, Inc. is a social network for meeting new people in the United States. The company allows for meeting new people through social games and apps, monetized by both advertising and virtual currency. The company operates through the website and smartphone apps and comes in multiple languages.	New Hope	134%
EGALET CORP Egalet Corp. is a specialty pharmaceutical company. The company is engaged in developing and planning to commercialize proprietary, abuse-deterrent oral products for the treatment of pain and in other indications.	Malvern	94%
USA TECHNOLOGIES INC USA Technologies, Inc. is a provider of technology-enabled solutions that facilitate electronic payment transactions and value-added services within the unattended point of sale market.	Malvern	91%
PEP BOYS - MANNY, MOE & JACK Pep Boys - Manny, Moe & Jack, together with its subsidiaries, offers automotive repair and maintenance services and sells automotive tires, parts, and accessories through a chain of stores.	Philadelphia	88%
FIBROCELL SCIENCE INC Fibrocell Science, Inc., an autologous cell and gene therapy company, focuses on treatments for skin and connective tissue diseases. The company is developing an autologous fibroblast therapy for chronic dysphonia. Fibrocell's gene-therapy program uses gene-modified autologous fibroblasts to treat RDEB. The company also has a gene-therapy program for linear scleroderma.	Exton	76%
TREVENA INC Trevena, Inc. develops pharmaceutical products. The company offers discovery and development of agents targeting G-protein coupled receptors and therapies and drugs that treat acute heart failure, acute chronic pain, and depression. Trevena serves customers throughout the United States.	King of Prussia	76%
EPAM SYSTEMS INC EPAM Systems, Inc. is a provider of software engineering solutions and information technology services to clients in different locations. Its services include product development, application development, and application testing, among others.	Newtown	65%
TRINSEO SA Trinseo SA manufactures and markets emulsion polymers and plastics, including various specialty and technologically differentiated products. It operates its business through the following segments: Latex, Synthetic Rubber, Styrenics, and Engineered Polymers.	Berwyn	62%

SERS FUND

Investment Program | Pennsylvania Investments

Real Assets

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 Lowe Enterprises Investment Management and reported as Lowe GTO. 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 December 31, 2015, the SERS real estate portfolio contained 42 Pennsylvania investments totaling 1.3 million square feet of office, retail, and warehouse space, as well as, 5,021 apartment, hotel, and senior housing units.

The gross fair value of the Pennsylvania real estate portfolio investments totaled \$1.4 billion, of which SERS ownership share was \$177.2 million.

Fixed Income and Liquidity Reserve

SERS had approximately \$31.3 million invested, as of December 31, 2015, in corporate securities issued by Pennsylvania-based companies. These securities are held in SERS various externally managed bond portfolios.

SERS is one of the largest investors in the Pennsylvania Treasury Department's short-term investment pool. The fund also has Pennsylvania exposure with various other asset managers.

Pennsylvania Investments - Fixed Income & Liquidity Reserve

(\$ millions)

Manager	Fair Value
Pyramis Global Advisors	\$8.7
Stone Harbor	7.0
Taplin, Canida & Habacht (TCH)	5.4
PIMCO Core	3.2
Mellon Capital Management	3.1
MacKay Shields Core	2.8
UBS Core Bond	1.1
Total Pennsylvania Investments - Fixed Income & Liquidity Reserve	\$31.3

SERS Fund

Minority/Woman-Owned Managers and Brokers

SERS FUND

Investment Program | Minority/Woman-Owned Managers and Brokers

Minority/Woman-Owned Investment Managers

The following minority and/or woman-owned firms were under contract with SERS to provide investment management services as of December 31, 2015:

Firm	Status	SERS Assets Under Management
GlobeFlex Capital, L.P.	Minority/Woman-Owned	\$70.7 million market value
Hawkeye Partners	Woman-Owned	\$104.9 million committed; \$77.4 million funded
New Century Advisors	Woman-Owned	\$102.2 million market value
Rock Creek (Penn Quarter, L.P.)	Minority/Woman-Owned	\$3.5 million market value
StoneRidge Investment Partners	Minority/Woman-Owned	\$117.6 million market value
Taplin, Canida & Habacht, Inc.	Minority/Woman-Owned	\$166.9 million market value

Minority/Woman-Owned Brokers Brokerage Commissions

The table to the right lists the minority/woman-owned brokerage firms utilized by SERS external investment managers during calendar year 2015.

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 \$240,311 for the year. It is estimated this year that SERS U.S. equity managers directed 4% of their trades through minority/woman-owned brokerage firms. Fixed Income and Liquidity Reserve managers traded a combined \$78.8 million of securities through minority/woman-owned brokerage firms.

Firm	Minority/ Woman-Owned Commissions
Cabrera Capital	\$6,270
C. L. King Directed	28,184
Drexel Hamilton	4,247
Greentree Brokerage	9,477
Loop Capital	12,305
M. Ramsey King	21,209
Mischler Direct	9,951
North South Capital	2,285
Seslia Securities	2,137
Sturdivant & Company	95,495
Susquehanna Direct	4,052
Telsey Advisory	26,510
Valdes & Moreno	18,189
Total Minority/Woman-Owned Commissions	\$240,311

Deferred Compensation Program

DEFERRED COMPENSATION PROGRAM

History, Growth & Highlights

As indicated earlier in this book, the Pennsylvania State Employees' Retirement System administers two retirement plans to help safeguard the financial security of the commonwealth's public workforce in its retirement years. Most state employees are required to participate in Pennsylvania's defined benefit plan. Most employees who are eligible to participate in the defined benefit plan may choose to augment their retirement savings by also voluntarily participating in the deferred compensation program (DCP).

The economic engine of the defined benefit plan is the SERS Fund, which is reviewed in-depth in the previous section. Details about DCP are provided here.

DCP History

Act 1987-81 charged the SERS Board with establishing and managing a deferred compensation program for the commonwealth's employees and officers. DCP allows employees to voluntarily build retirement savings and achieve certain tax advantages by deferring a portion of their salaries to selected investment options.

DCP was established as a trust and is administered in accordance with Internal Revenue Code Section 457(b). The array of investment options from which participants may choose is examined, selected, and overseen by the SERS Board.

SERS uses a competitive request-for-proposals process to retain a third-party administrator for DCP. Responsibilities of the third-party administrator include, but are not limited to, marketing DCP, maintaining participant records, and counseling participants with regard to the benefit offered. The most recent competitive process was conducted and a contract was awarded in 2013 to Great-West Life & Annuity Insurance Company, which has retained this role since 2003. Today, Empower Retirement is the brand name for the company's retirement services division, and Great-West Financial is the brand for its insurance, annuity, and investment businesses.

The cost of administering DCP is extremely low and is borne solely by participants, using no commonwealth funds.

In 2012, DCP began accepting deferrals into designated Roth accounts. Participants pay federal income tax on the amount of their Roth deferrals at the time of investment and then qualified distributions from their Roth accounts are tax-free in retirement.

In October 2014, the plan document was amended to allow in-plan conversions of assets to Roth assets.

DEFERRED COMPENSATION PROGRAM

History, Growth & Highlights

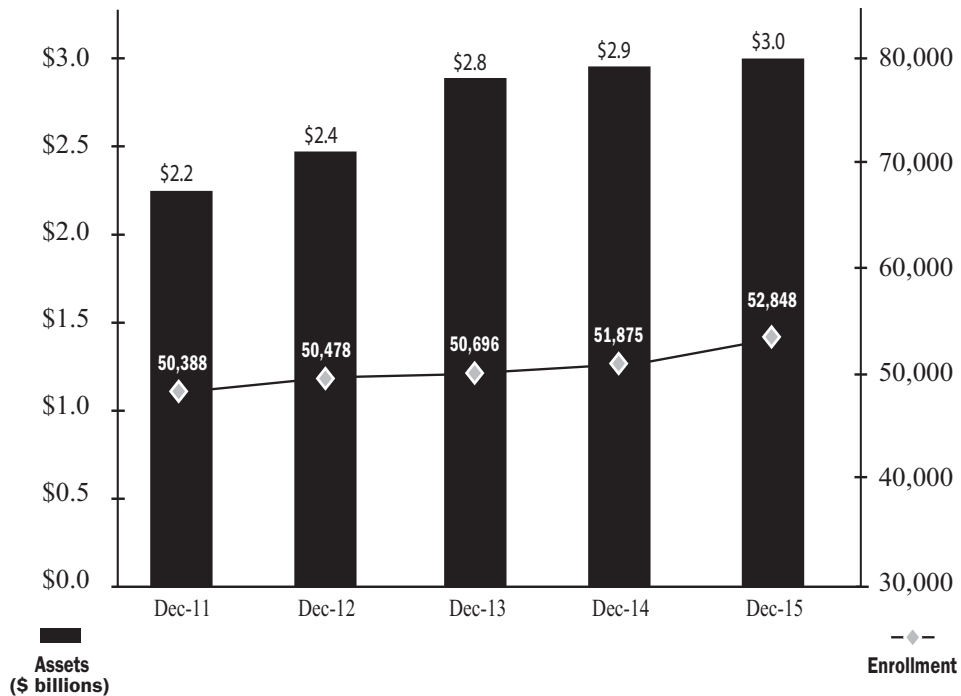
Growth of DCP

In 2015, nearly 53,000 participants had saved approximately \$3.0 billion in the DCP.

As of December 31, there were 32,629 active and 20,219 inactive participants in the DCP. From 2011 to 2015, annual deferrals have ranged from \$122 million to \$136 million per year and total fund value grew from approximately \$2.2 billion to approximately \$3.0 billion.

When employees leave state service, they gain access to the amount they have saved, including the earnings and/or losses on their investments. Benefit payments have grown from approximately \$60 million in 2011 to \$82 million in 2015.

DCP Assets & Enrollment



DEFERRED COMPENSATION PROGRAM

History, Growth & Highlights

DCP Highlights

In DCP, employees may elect to have any sum they choose—as little as \$5 biweekly up to IRS limits— withheld from their pay to save for retirement and achieve certain tax advantages. They may change the amount of their deferrals at any time and it is up to each DCP participant to allocate their investments among the options provided. Once money is invested in DCP, it must remain until an employee leaves state service or an emergency situation exists that is within code parameters.

To assist DCP participants, Empower Retirement offers individual and group counseling sessions at worksites statewide as well as in their downtown Harrisburg walk-in office.

Counselors are also available via a toll-free telephone service. In addition to providing personal assistance, the toll-free line offers a host of automated selections including providing account balances and allowing participants to transfer funds among investment options.

Empower Retirement manages a website that allows participants to view their investment position, change their deferral amounts, transfer money among investment options, change their future allocation, update their beneficiaries, and more. Free educational videos are also available on financial, investment, and retirement topics.

DCP Deferrals by Year
(\$ millions)

