Commonwealth of Pennsylvania State Employees' Retirement System

2015 Actuarial Report

COMMONWEALTH OF PENNSYLVANIA

STATE EMPLOYEES' RETIREMENT SYSTEM

2015 ACTUARIAL REPORT

DEFINED BENEFIT PLAN

KORN FERRY HAY GROUP, INC.
JUNE 8, 2016

KORN FERRY | HayGroup

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June 8, 2016

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

Dear Mr. Durbin:

The purpose of this letter is to certify the actuarial adequacy of the contributions being made by the Commonwealth of Pennsylvania and other participating agencies to the Pennsylvania State Employees' Retirement System (SERS), and to discuss the approach currently being taken toward meeting the financing objectives of the plan. The results provided herein are based upon the December 31, 2015 annual actuarial valuation.

The funding objective of the plan is set forth in the State Employees' Retirement Code (SERC). The annual employer contribution is equal to the sum of the following for the fiscal year beginning July 1, 2016:

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

The amortization payments are level dollar amounts over the remaining applicable amortization periods. The employer cost is determined as a percent of retirement covered compensation. The total employer cost is the average contribution amount that needs to be received from the employer groups participating in the system. Some employer groups contribute a higher percent of compensation, and some employer groups contribute a lower percent of compensation depending on the benefits payable to their employees.

The actuarial valuation is based on financial and participant data, which is prepared by SERS staff. The data are reviewed for internal and year-to-year consistency as well as general reasonableness prior to their use in the actuarial valuation.

The actuarial valuation uses assumptions regarding future rates of investment return and rates of retirement, withdrawal, death, and disability among SERS members and their beneficiaries. The current set of assumptions used in the December 31, 2015 actuarial valuation, with the exception of the investment return assumption, was adopted by the State Employees' Retirement Board (the Board) based upon actual experience of SERS during the years 2011 through 2015. Based upon an annual review of SERS investment data and results, the Board approved a reduction in the assumed annual investment return from 8.0% to 7.5% effective as of the December 31, 2011 actuarial valuation and the 7.5% assumption has remained in effect since then. We will continue to closely monitor this assumption and will recommend changing it if conditions warrant such change. The actuarial value of assets is developed by recognizing the difference between the expected actuarial value of assets and the market value of assets over a five-year period.

Apart from the statutory funding requirements set forth in the SERC, there are also separate accounting standards that SERS uses for financial reporting purposes. Governmental Accounting Standards Board (GASB) Statement No. 67, *Financial Reporting for Pension Plans,* replaced the requirements of GASB Statement No. 25, *Financial Reporting for Defined Benefit Pension Plans and Note Disclosures for Defined Contribution Plans,* effective for financial statements for the fiscal year ended June 30, 2014. GASB Statement No. 68, *Accounting and Financial Reporting for Pensions,* which establishes standards for accounting and financial reporting by state and local governments for pensions, replaced the requirements of GASB Statement No. 27, *Accounting for Pensions by State and Local Governmental Employers,* effective for the fiscal year ended June 30, 2015. The new reporting requirements of Statements No. 67 and 68 will be provided to SERS under a separate report to provide required financial reporting data to SERS and participating employers of the system.

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

It should be noted that, with the passage of Act 2010-120 (Act 120), significant changes were legislated to many key benefit provisions of SERS. This was in response to the significant funding challenges SERS had been facing, and will continue to face in coming years. By reducing pensions for future Commonwealth employees and providing funding relief to SERS' employers through the use of contribution collars, Act 120 addressed both SERS' long-term and short-term funding challenges.

As actuaries for SERS, Hay Group considers it important to note that the Act 120 contribution collars continue to result in employer funding at levels below the otherwise applicable pre-collared contribution levels. This is not to say that required employer contributions will never be made; rather, Act 120 provides that they will be deferred and paid in future years. It is therefore essential to the long-term funding of the system that the Commonwealth adhere not only to the short-term collars provided by Act 120, but also to the long-term funding obligations that the statute established.

We expect this December 31, 2015 actuarial valuation to be the last annual valuation under which the contribution collars will govern employer contribution levels. That is, we expect required employer contributions determined in our December 31, 2016 actuarial valuation to be below the collared contribution level, thereby making the Act 120 collars no longer applicable (for FY2018 or beyond). While Hay Group would prefer that SERS funding in FY2017 be based upon the pre-collared contribution levels, we recognize that the contribution collars continue to provide, as they have for the past several years, an important and necessary funding deferral mechanism. Following the collared contribution level in FY2017, we anticipate that annual funding on an actuarial basis will resume in FY2018.

Actuarial Certification

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

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

Respectfully submitted,
Korn Ferry Hay Group, Inc.

By ______________________
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By ______________________
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State Employees' Retirement System
Valuation Highlights

	December 31, 2015 Valuation	December 31, 2014 Valuation
Summary of Employer Contributions as a Percent of Total Compensation		
SERS Plan Contribution		
Normal Cost	4.52%	4.95%
Amortization of Liabilities	27.62%	26.56%
Contribution Before Change Prescribed by Law	32.14%	31.51%
Total SERS Plan Contribution*	29.50%	25.00%
Benefits Completion Plan Contribution	0.01%	0.01%
Total Contribution	29.51%	25.01%

* Reflects Rates Prescribed by Act 2010-120

	December 31, 2015 Valuation	December 31, 2014 Valuation
Demographic Characteristics of the Population		
Active Participants:		
Number	105,025	104,431
Average age	46.4	46.6
Average service	11.6	11.8
Average annualized compensation	$ 56,858	$ 54,769
Total annualized compensation	$ 5,971,511,000	$ 5,719,581,000
Funding payroll	$ 6,255,189,000	$ 6,021,688,000
Annuitants and Beneficiaries:		
Number	124,689	122,249
Average age	69.0	68.9
Total annual pension	$ 2,664,555,759	$ 2,552,267,698
Inactive and Vested Participants:		
Number	6,918	7,054
Assets		
Market Value of Assets	$ 26,050,326,844	$ 27,332,909,054
Actuarial Value of Assets	$ 26,877,126,928	$ 26,584,948,430
Funded Status (Market Assets)	56.2%	61.1%
Funded Status (Actuarial Assets)	58.0%	59.4%

Employer Contribution Rate by Group
Fiscal Year 2016 - 2017

	SERS Plan	Benefits Completion Plan	Total
Class A-3 and A-4 Members:			
Age 65 Retirement	20.69%	0.01%	20.70%
Age 55 Retirement	23.29%	0.01%	23.30%
Park Rangers	23.29%	0.01%	23.30%
Capitol Police	23.29%	0.01%	23.30%
State Police	38.24%	0.01%	38.25%
Class AA Members:			
Age 60 Retirement	29.94%	0.01%	29.95%
Age 50 Retirement	33.71%	0.01%	33.72%
Park Rangers	33.44%	0.01%	33.45%
Capitol Police	33.44%	0.01%	33.45%
Enforcement Officers	33.71%	0.01%	33.72%
Class A Members:			
Age 60 Retirement	23.95%	0.01%	23.96%
Age 50 Retirement	26.97%	0.01%	26.98%
Park Rangers	26.87%	0.01%	26.88%
Capitol Police	26.87%	0.01%	26.88%
State Police	42.36%	0.01%	42.37%
Enforcement Officers	26.97%	0.01%	26.98%
Class D-4 Legislators	40.45%	0.01%	40.46%
Class E Members	37.96%	0.01%	37.97%

The above group rates result in employer contribution rates (expressed as a percentage of total projected covered compensation for active members in fiscal year 2016-2017) of 29.50% for the SERS Plan, 0.01% for the Benefits Completion Plan and 29.51% in Total.

General Discussion

The liabilities and costs in this report are based upon actuarial assumptions adopted by the State Employees' Retirement Board (the Board) and funding procedures specified in the SERC. The SERC requires that the Board conduct a study of the actuarial experience of SERS every five years as a basis for setting the actuarial assumptions used in the valuation. A five-year study was conducted and delivered to the Board in March of 2016. The Board approved the recommendations of the actuary and the new assumptions were first used in the December 31, 2015 valuation.

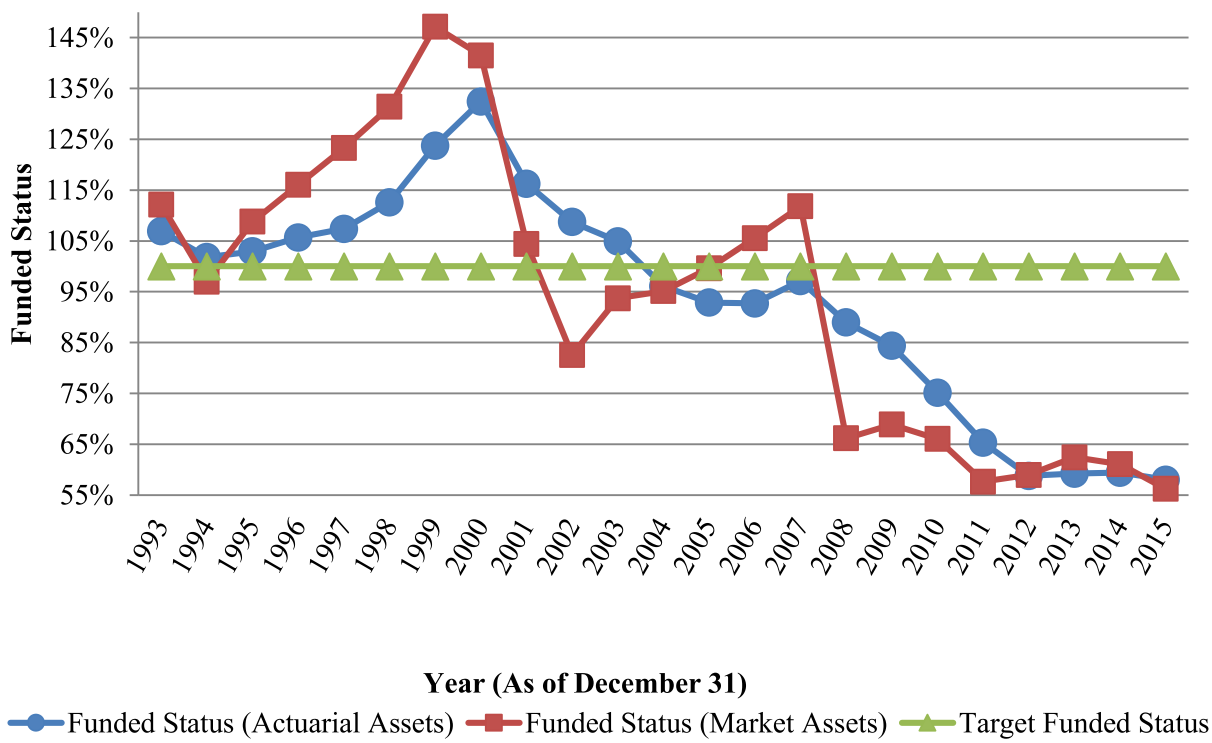
The most important actuarial assumptions are the investment return, which is used as the basis for the valuation interest rate, and salary growth. The investment return experience is reviewed annually and as a part of the normal five-year experience study cycle. Based upon the most recent annual review (in early 2016) of the SERS investment data and results, the annual investment return assumption remained at 7.5 percent for the December 31, 2015 valuation. Salary growth is the total of assumed increases in salary rates and career salary growth. It is generally assumed that the salary rates will increase at 3.05 percent per year due to general salary schedule increases and that career salary growth (promotion and longevity growth) will average an additional 2.65 percent per year. Thus, the total average salary increase for an individual will generally be 5.70 percent per year. The investment return and the salary rate increase assumptions are based on an underlying inflation rate of 2.75 percent per year.

The SERS plan employer contribution is determined as a percent of covered compensation that is the total of (1) the employer normal cost percent and (2) the net amortization of the unfunded liability, but not less than any applicable minimum contribution prescribed by the SERC and not more than the total contribution amount that results from applying the collars established by Act 2010-120 to limit the extent of annual increase in the employer contribution rate. The final total pre-collared employer contribution level as of December 31, 2015 is 32.14 percent of covered compensation, which is the sum of (1) the employer normal cost of 4.52 percent of compensation plus (2) the net amortization of the unfunded liability of 27.62 percent of compensation. To determine the maximum 2016-2017 employer contribution rate under Act 2010-120, we add the fiscal 2016-2017 contribution collar increase of 4.5 percent of payroll to the final 2015-2016 employer contribution requirement of 25.00 percent of payroll, to produce a result of 29.50 percent of compensation. Therefore, the 2016-2017 employer contribution rate is limited to 29.50 percent of covered compensation, well below the pre-collared contribution level that would otherwise be required. See Schedule O for further discussion of the Act 2010-120 employer contribution collars.

The funded ratio is the ratio of assets to the actuarial accrued liability. As a consequence of the global economic downturn, SERS experienced very unfavorable investment results during calendar 2008. Thus, SERS' funded status, as measured by the funded ratio, declined significantly during 2008, to a level of 66.2 percent based on market value and 89.0 percent based on actuarial value of plan assets as of December 31, 2008. As a result of somewhat more favorable investment results during calendar years 2009 and 2010, the funded ratio based on the market value of assets as of December 31, 2010 was 66.1 percent; however, the funded ratio based on the actuarial value of assets (which recognizes investment losses over a five-year period) decreased to 75.2 percent as of December 31, 2010. With investment results well below expectations during calendar 2011, combined with an increase in the actuarial accrued liability due to the December 31, 2011 interest assumption decrease, the funded ratio based on market value of assets decreased from 66.1 percent to 57.6 percent, and the funded ratio based on actuarial value of assets decreased from 75.2 percent to 65.3 percent. Investment results above expectations in 2012 resulted in an increase in the funded ratio based on market value from 57.6 percent to 59.0 percent. However, with the final 20 percent of the 2008 investment loss being recognized in 2012, there was a decrease in the funded ratio based on actuarial value from 65.3 percent to 58.8 percent. Favorable investment results in 2013 resulted in an increase in both the market value and actuarial value funded ratios from 59.0 percent to 62.4 percent, and from 58.8 percent to 59.2 percent, respectively. A market return below expectations in 2014 resulted in a decrease in the market value funded ratio from 62.4 percent to 61.1 percent and recognition of prior asset gains through the smoothing method resulted in the actuarial value funded ratio increasing from 59.2 percent to 59.4 percent. In 2015, a second consecutive annual market return below expectations resulted in decreases in the market value funded ratio from 61.1 percent to 56.2 percent and in the smoothed actuarial value funded ratio from 59.4 percent to 58.0 percent.

Chart 1 below presents a history of SERS funded ratios, relative to the 100% target funded status.

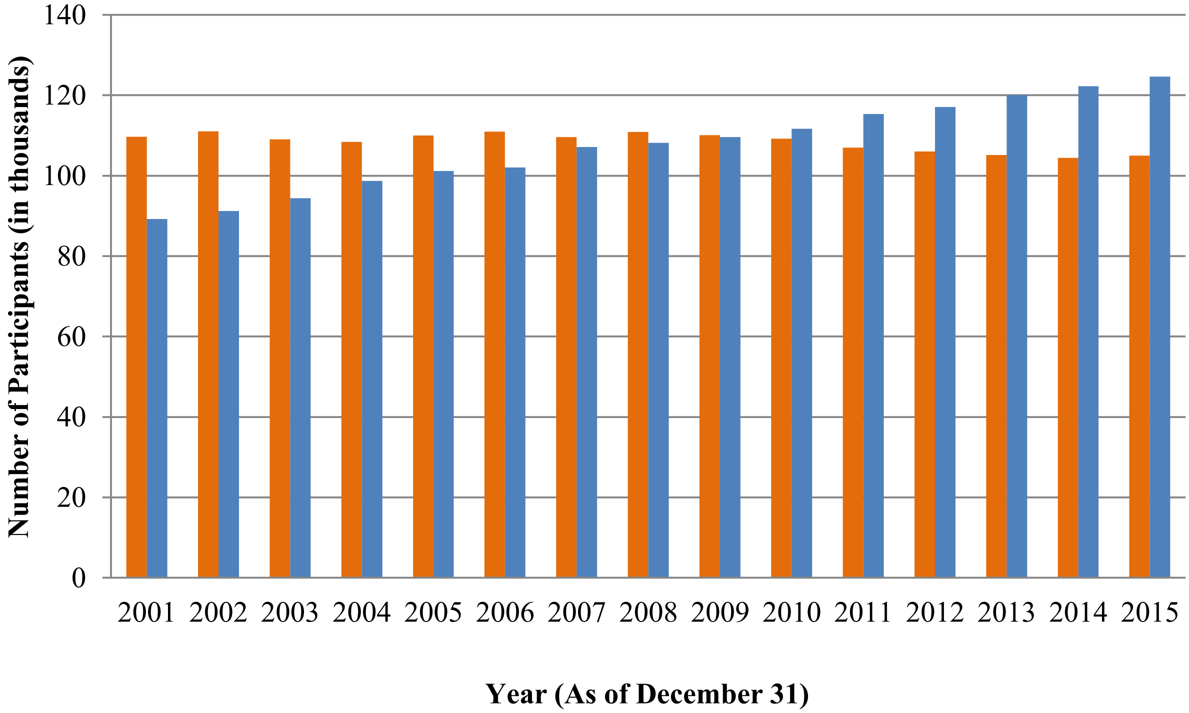
Chart 1
SERS Historical Funded Status =
Assets / Actuarial Accrued Liability



During 2010, the count of pensioners exceeded the count of active participants for the first time in the history of SERS. As of December 31, 2015, the count of pensioners (124,689) further exceeds the count of active participants (105,025), a clear sign of a mature retirement system. Chart 2 below illustrates the maturing of the SERS population since 2001.

Although it was noted previously that the interest rate and salary growth are the most important actuarial assumptions, the maturity of the SERS population heightens the importance of the mortality assumptions. Thus, the updates to the post-retirement mortality assumptions recommended by the actuary every five years based upon SERS' actual ongoing mortality experience, have become increasingly critical to the annual valuation process.

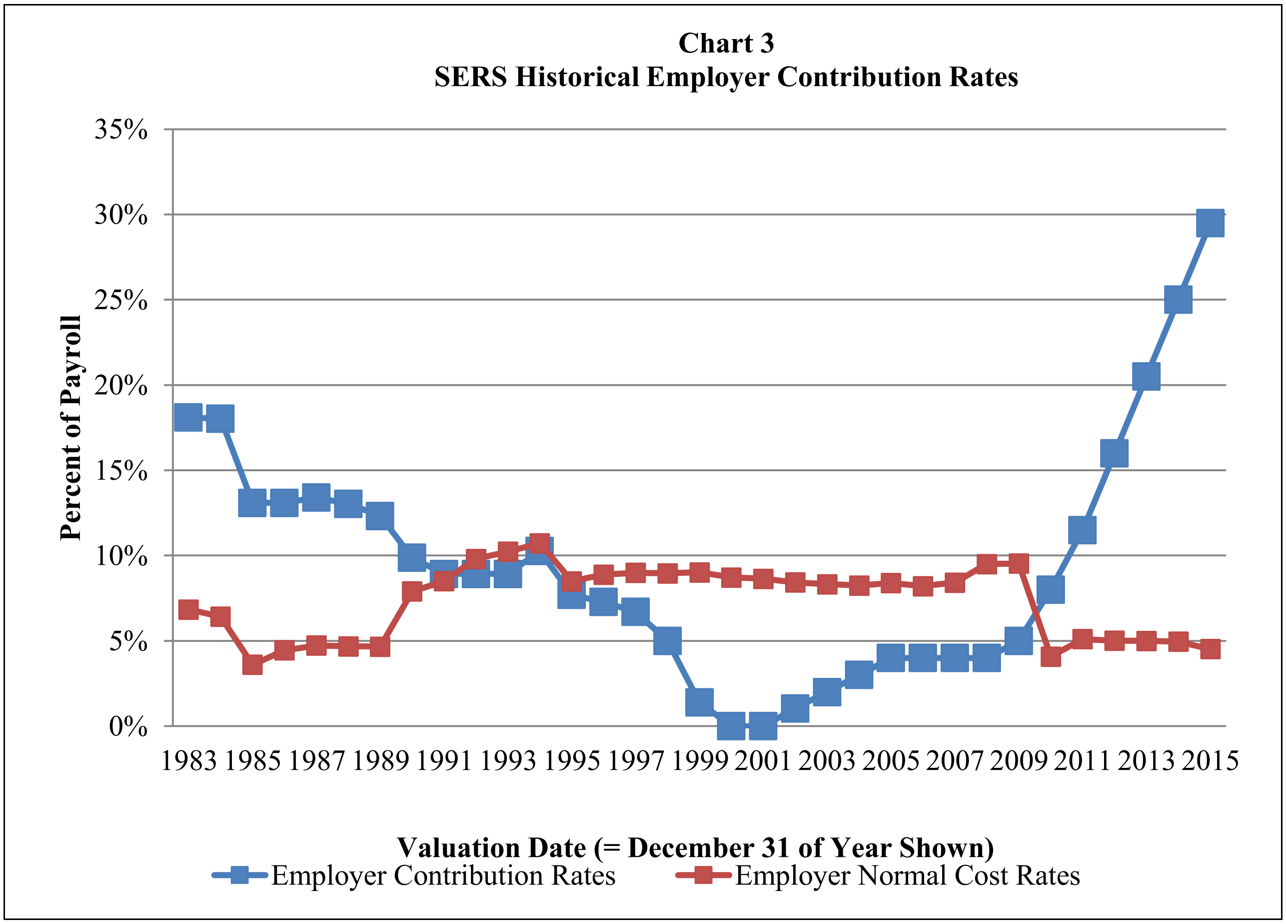
Chart 2
SERS Participation
Pensioner Count First Exceeded Active Count in 2010



A separate and distinct Benefits Completion Plan provides benefits to certain members whose SERS benefits are limited by IRC Section 415(b) maximum benefit limitations. The Benefits Completion Plan employer contribution requirements for fiscal year 2016-2017, which were determined by a separate December 31, 2015 actuarial valuation, are presented in the Valuation Highlights herein. Otherwise, Benefits Completion Plan costs and liabilities are not included in the schedules of this report.

History of the Employer Contribution Rate

Chart 3 below shows the history of the employer contribution rate from 1984 through 2015. With some fluctuations, the general trend from 1984 through 2001 had been downward, with the rate declining from the 18 percent range in the years 1983 and 1984 to zero in 2000 and 2001. The investment returns were below the actuarial assumption (then 8.5 percent) in 2000 through 2002. The changes to the amortizations under Act 2003-40 and subsequent investment gains would have kept the contributions from increasing, if it had not been for legislated floors that caused the employer contributions to increase between 2002 and 2005. From 2006 through 2015, actual employer contribution rates have been at levels prescribed by law, increasing each year since 2009.



The total employer cost is the actual contribution rate during the succeeding fiscal year. For instance, the rate of 29.50 percent of covered compensation for the December 31, 2015 valuation date will be the employer contribution for the fiscal year beginning July 1, 2016.

History of Inflation, Investment Return and Salary Growth

Table 1 below shows the rate of inflation, the nominal and real investment return based on the market value of assets, and the nominal and real salary growth for the past twenty years. The nominal rates are the actual investment rate and salary growth. The real rates are the nominal rates adjusted by removing inflation. The inflation rates shown are based on the Consumer Price Index for All Urban Consumers (CPI-U) data. The nominal rate of salary growth is the percentage increase in general pay levels specified by the predominant collective bargaining agreement. This salary growth includes general pay increases, but excludes career salary growth (that is, pay changes resulting from promotions or longevity growth).

Table 1: Comparison of Annual Rates of Growth

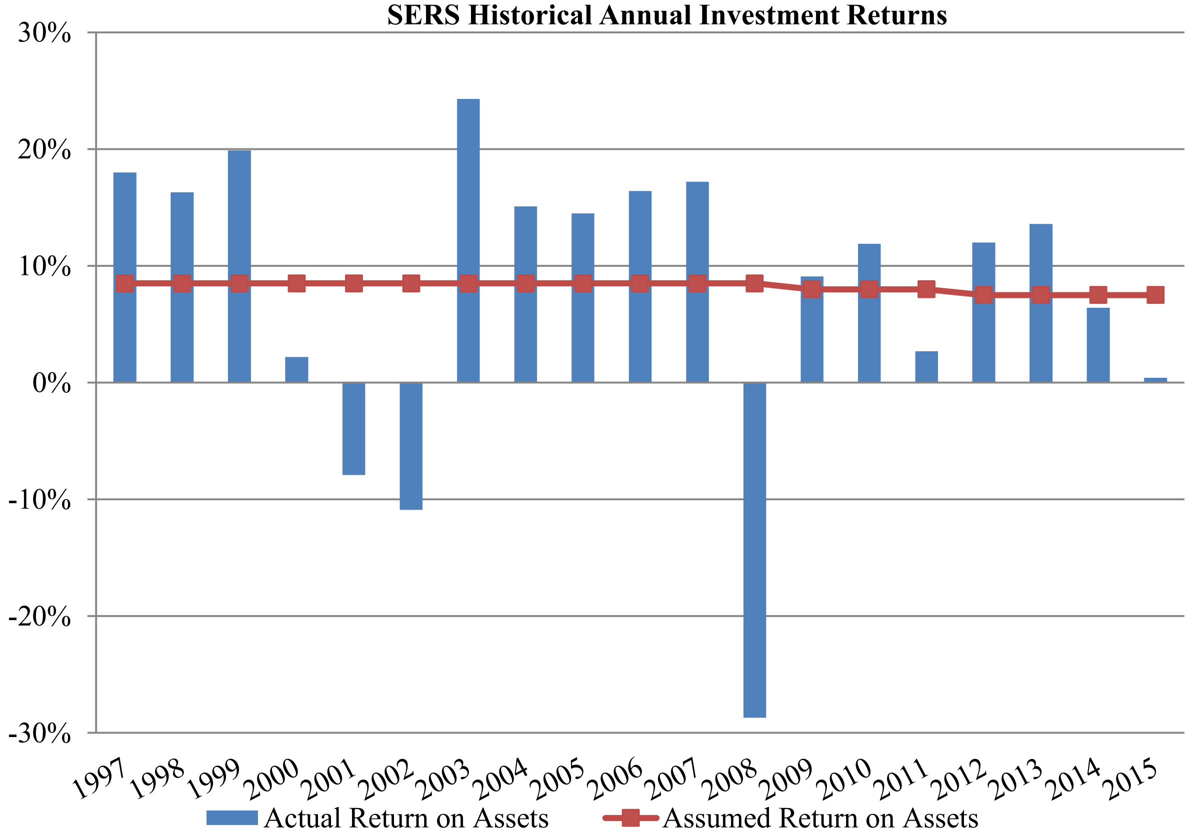
Year	Inflation	Investment Return		Salary Growth	
		Nominal	Real	Nominal	Real
1996	3.3	15.9	12.2	2.0	(1.3)
1997	1.7	18.0	16.0	3.0	1.3
1998	1.6	16.3	14.5	3.0	1.4
1999	2.7	19.9	16.8	3.0	0.3
2000	3.4	2.2	(1.1)	3.0	(0.4)
2001	1.6	(7.9)	(9.3)	3.3	1.7
2002	2.4	(10.9)	(13.0)	3.5	1.1
2003	1.9	24.3	22.0	2.0	0.1
2004	3.3	15.1	11.4	1.9	(1.4)
2005	3.4	14.5	10.7	3.0	(0.4)
2006	2.5	16.4	13.6	3.5	1.0
2007	4.1	17.2	12.6	2.8	(1.2)
2008	0.1	(28.7)	(28.8)	3.0	2.9
2009	2.7	9.1	6.2	3.0	0.3
2010	1.5	11.9	10.2	3.0	1.5
2011	3.0	2.7	(0.3)	3.0	0.0
2012	1.7	12.0	10.1	1.0	(0.7)
2013	1.5	13.6	11.9	2.8	1.3
2014	0.8	6.4	5.6	3.5	2.7
2015	0.7	0.4	(0.3)	3.4	2.7
Average 1996-2015	**2.2%**	**7.6%**	**5.3%**	**2.8%**	**0.6%**

The averages represent the geometric averages of all of the rates over the 20-year period, not the arithmetic averages.

Chart 4 below presents a 19-year history of SERS annual investment returns relative to the actuarially assumed returns of:

- 8.5% for 1997 through 2008,
- 8.0% for 2009 through 2011 and
- 7.5% for 2012 through 2015

Chart 4
SERS Historical Annual Investment Returns



Comments on Schedules

Employer Contribution Rate

Schedules A and B summarize the development of the employer contribution rate before allocation by group. The employer contribution is equal to the sum of (1) the employer share of the normal cost and (2) amortization of the unfunded liability.

The normal cost is the level percentage of compensation needed to fund the liability for any prospective benefits earned by new active members over the period of their actual service. The normal cost calculation uses data for all active members in Class A-3 (65) who had not yet completed one year of credited service. The employer share of the normal cost decreased from 4.95 percent in 2014 to 4.52 percent in 2015. The normal cost decreased mainly due to the assumption changes reflected this year as a result of the new experience study.

Portions of the unfunded liability are amortized over either 10 years or 30 years, as required by the SERC. Under Act 2010-120, the total December 31, 2009 unfunded liability was amortized over 30 years as part of a fresh start that combined all of the unfunded liability amortizations into one amortization. Net losses in 2010 and after were amortized over 30 years. The total unfunded liability as of December 31, 2015 was $19.45 billion. As of December 31, 2014, the total unfunded liability was $18.17 billion.

Schedule B shows the allocation of the total unfunded liability by year into those liabilities being amortized over 30 years. All amortization payments are level dollar amounts over the applicable amortization period. There are currently no 10-year amortizations. The total net charge for the amortization of the unfunded liability is 27.62 percent of the total projected covered compensation for the 2016-2017 fiscal year.

The employer contribution rate is equal to the total of the normal cost and the amortization of the unfunded liabilities, but not less than the normal cost and not more than the rate based on the collar (which limits the contribution increases pursuant to Act 2010-120) applicable to the 2016/2017 employer contribution rate. Because there were no costs added by legislated benefit changes since the prior valuation, the employer contribution rate calculated as a result, 29.50 percent of covered compensation, will be applied for the fiscal year beginning July 1, 2016.

Employer Contribution Rates by Group

Schedule C summarizes the development of the employer contribution rate for each group of members with different benefits. The Class A-3 (65) rate is used to determine the base contribution rate because the majority of new members enter that class. The base employer contribution rate for Class A-3 benefits is 20.69 percent of compensation.

The employer contribution rate for each class is a function of the Class A-3 (65) rate. Three adjustments are made to develop the Class rates. The first is to add the cost of earlier full retirement conditions if applicable. The second is to multiply by the applicable adjustment factor relative to the Class A-3 benefit value. Third, the Park Rangers, Capitol Police and State Police Officers are also charged the amount necessary to fund the past service cost of benefit improvements that were effective in prior years. These charges are further explained in Schedule O. The complete schedule of contributions by group is shown in Table 2.

Table 2
Employer Contribution Rate by Group
Fiscal Year 2016/2017
(Excluding Benefits Completion Plan Contribution)

Class A3/A4	
Age 65 benefit	20.69%
Age 55 benefit	23.29
Park Rangers	23.29
Capitol Police	23.29
State Police	38.24
Class AA	
Age 60 benefit	29.94
Age 50 benefit	33.71
Park Rangers	33.44
Capitol Police	33.44
Enforcement Officers	33.71
Class A	
Age 60 benefit	23.95
Age 50 benefit	26.97
Park Rangers	26.87
Capitol Police	26.87
State Police	42.36
Enforcement Officers	26.97
Class D-4 Legislators	40.45
Class E Members	37.96

Schedule D shows the development of the shared risk member contributions, in accordance with Act 2010-120. No shared risk contribution applies for the 2016-2017 fiscal year.

Change in Employer Contribution Rate

Schedule E contains an analysis of the change in the employer contribution rate and unfunded liability from the 2014 to the 2015 valuation.

The largest increase in the unfunded liability – $535.7 million – resulted from underfunding due to the Act 2010-120 employer contribution collars. This loss of $535.7 million resulted in an increase in the employer cost of 0.73 percent of compensation.

Another increase in the unfunded liability – $366.6 million – resulted from the adoption of new actuarial assumptions as recommended by SERS' actuaries in connection with the 2011-2015 actuarial experience study. The 0.50 percent of compensation cost of this liability change was offset by a 0.42 percent decrease in the normal cost, resulting in a net increase in employer cost of 0.08 percent of compensation.

Another increase in the unfunded liability – $279.7 million – resulted primarily from recognition (under the five-year asset smoothing method) of three years of asset losses totaling $815.8 million, which more than offset two years of gains totaling $536.1 million. This net loss of $279.7 million resulted in an increase in the employer cost of 0.38 percent of compensation.

Another increase in the unfunded liability was due to larger than expected pay increases, which resulted in a loss of $253.2 million, and therefore an increase in employer cost of 0.34 percent of compensation.

Another increase in the unfunded liability was the result of demographic experience. Differences between actual and expected demographic experience of the covered population resulted in a liability increase of $81.5 million. This additional liability resulted in an increase in the employer cost of 0.09 percent of compensation.

The smallest increase in the unfunded liability was due to changes in the demographics of the new entrant population, which resulted in a loss of $6.1 million. The increase in unfunded liability cost of 0.01 percent was offset by a 0.01 percent decrease in the normal cost, for a net change in cost of 0.00 percent of compensation.

Actuarial Balance Sheet and Account Balance Transfers

Schedule F contains the actuarial balance sheet that compares the total assets and liabilities of $53.0 billion. The assets include current assets and the present value of future contributions. The liabilities include the present value of all benefits to current active and retired members.

Each year the account balances in the three benefit payment accounts are compared to the actuarial liabilities developed in the valuation. If needed, transfers are made to bring the accounts into balance with the liabilities. The accounts go out of balance during the year as a result of differences between actual experience and the reserves set for retirees. In 2015, a transfer of $552.1 million was made from the State Accumulation Account to the Annuity Reserve Account to keep the latter account in balance. There were also transfers of $1.6 million and $43.0 million from the State Accumulation Account to the Enforcement Officers' Benefit Account and the State Police Benefit Account, respectively, to keep these accounts in balance. No other transfers were necessary.

The details of these transfers are shown in Schedule G.

Accounting Disclosure Statements

Schedule H addresses disclosure information required by the Governmental Accounting Standards Board (GASB). Major changes have occurred in GASB's reporting and disclosure requirements over the past few years. Specifically, new GASB Statements No. 67 and 68 have replaced prior GASB Statements No. 25 and 27, respectively. As a result, beginning this year, Hay Group will prepare and issue our first annual actuarial report covering SERS information required by GASB (Statements No. 67 and 68). Therefore, we will be issuing two separate annual actuarial reports, this one to cover SERS funding and the other to cover SERS accounting and disclosure.

Over past years, this report has presented the disclosure information required under GASB Statement No. 25, including the "Schedule of Funding Progress" and the "Schedule of Employer Contributions," and commentary relating to SERS' annual employer contributions versus the GASB minimum levels. Although these schedules have been discontinued by GASB, the information and our commentary continue to be of interest to readers of this report. Therefore, Schedule H once again includes information as required under the former GASB accounting and disclosure requirements:

Page 2 of Schedule H shows funding progress from December 31, 1995 through December 31, 2015.

Page 3 of Schedule H shows a comparison of the actual contributions to the system over recent years to the Annual Required Contribution (ARC) as defined by GASB Statement No. 25.

GASB Statement No. 25 defined the ARC to be equal to the employer normal cost plus an amount to amortize the unfunded actuarial accrued liability over an acceptable amortization period. The 2016-2017 employer contribution is lower than the ARC. GASB Statement No. 25 required that the net unfunded liability be funded over a period of no more than 30 years. Through June 30, 2015, the Act 120 employer contribution collars resulted in contributions that were below the minimum ARC. Beginning July 1, 2015, the contributions exceeded the minimum ARC. Thereafter, provided that employer contributions are made in accordance with current law, we expect employer contributions to continue to exceed the GASB minimum. Overall, the amortization schedules are reasonable and, if met, will assure the long-term financial soundness of SERS.

Schedule I shows the results of the solvency test. A short-term solvency test is one means of checking a pension system's progress under its funding program. In this solvency test, the SERS assets are compared with the actuarial accrued liabilities. The liabilities are classified into:

- Liability for active participant contributions in the Fund,
- Liability for future benefits to present annuitants and beneficiaries, and
- Liability for service already rendered by the active participants.

The schedule shows that from 1992 through 2003 the total actuarial accrued liability was fully covered by the assets. In 2004, the funded ratio dropped below 100 percent and it is currently at 58.0 percent. Absent unusual circumstances, the funded status of defined benefit plans will be below 100 percent and gradually approach 100 percent funding as liabilities become fully amortized. The State Employees' Retirement Fund had exceeded 100 percent of liabilities as a result of the high level of investment returns between 1985 and 1999. The funded ratio dropped below 100 percent largely as a result of the low investment returns of 2000 to 2002 and 2008, the Act 2001-9 benefit increases, the 2002-2003 COLAs, and the amortization schedule. Also, the implementation of Act 2010-120 for the December 31, 2010 valuation led to a lower normal cost and a higher accrued liability (and unfunded accrued liability). The reduction in the assumed annual investment return from 8.0 percent to 7.5 percent on December 31, 2011 resulted in a higher accrued liability (and unfunded accrued liability).

The current funding policy will eventually restore the funded ratio to 100 percent provided that contributions are made as provided in current law. SERS is being funded in accordance with generally accepted actuarial principles and procedures even though the accrued liabilities are temporarily greater than the assets.

Plan Assets

Schedule J summarizes the development of the actuarial value of assets as of December 31, 2015. The assets are based on the financial statements prepared by SERS. The asset valuation method smooths out year-to-year fluctuations in the market value. The approach gradually recognizes, over a 5-year period, the differences between total investment return and the actuarial assumed annual rate of return (8.5 percent prior to 2009; 8.0 percent for 2009 through 2011; and 7.5 percent for 2012 and later). This smoothing method recognizes 20 percent of the 2015 asset loss of $1.9 billion this year, with the remainder to be recognized over the next four years.

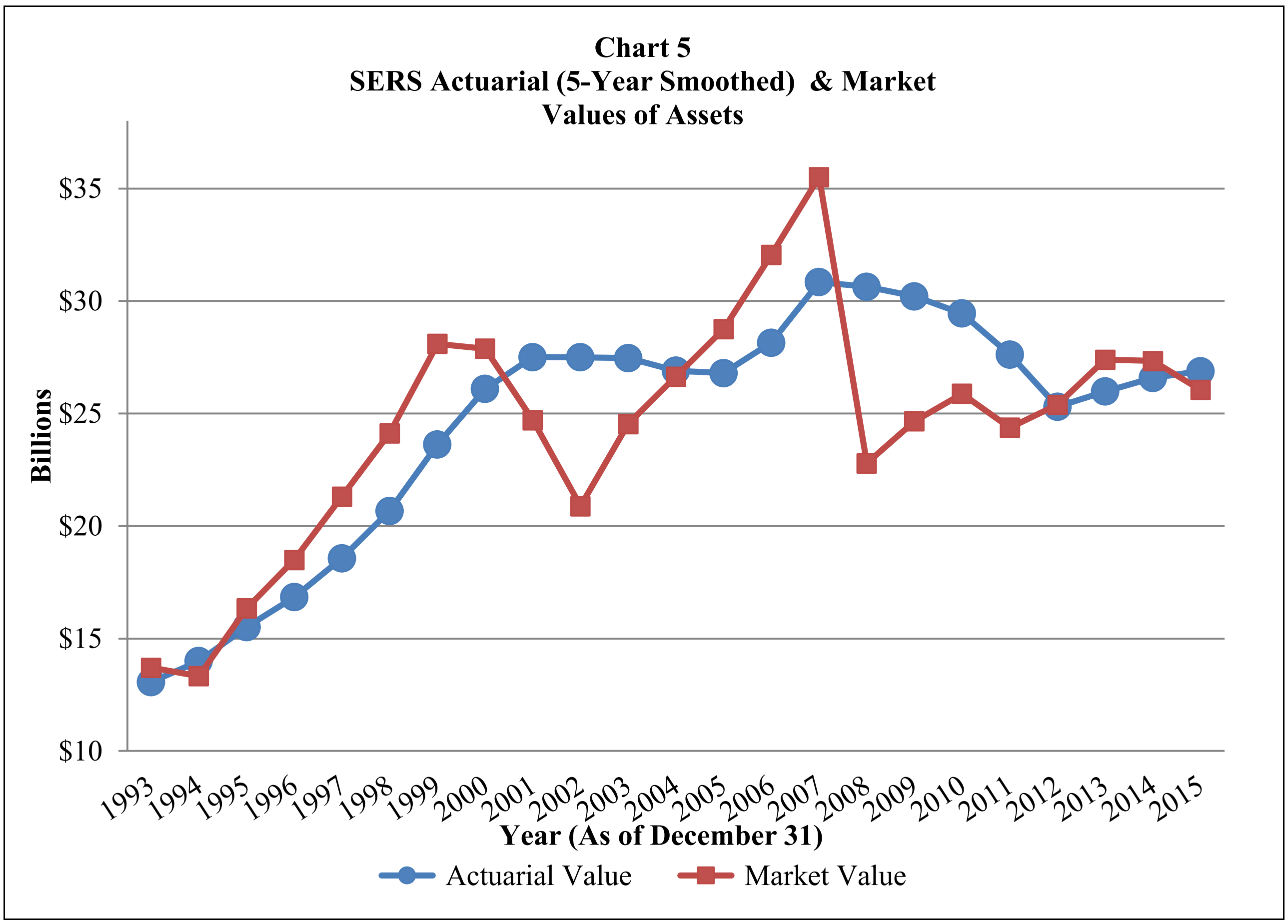


Chart 5 above presents a history since 1993 of SERS asset values, including both the actuarial value and the market value.

Projection

Schedule K shows the number of participants, contributions, and benefits from 1997 through 2015 with a projection through 2026. The first page of Schedule K shows new annuitants, annuitant deaths, new beneficiaries, and beneficiary deaths during the year. The second and third pages of Schedule K show the projection of employer and employee contributions and a projection of the benefits and expenses. The projected employee and employer contributions are shown in dollars and as a percentage of compensation.

The second page of the Schedule K projection shows projected contributions under Act 2010-120, fully reflecting the employer contribution collars under Act 2010-120. The third page of the Schedule K projection also projects contributions under Act 2010-120; however, this projection presents future employer contribution rates without applying future (after June 30, 2016) Act 2010-120 contribution collars; thus, these projected employer contributions reflect the uncollared employer contribution levels.

Participant Data

Sections I and II of Schedule L provide a distribution of the total of the active, inactive, and terminated vested participants as of December 31, 2015 by benefit class, sex, age, and length of service. Inactive participants include employees on furlough as well as employees with prior SERS service currently participating in the Pennsylvania Public School Employees' Retirement System (PSERS). The table also shows the average annualized salary in 2015 by age group and sex. Section III of the schedule shows retired annuitants, disabled annuitants, survivors and beneficiaries receiving benefits by age, sex, and benefit amounts.

Although we have made tests to check for reasonableness and consistency, we have not independently audited the data, which were submitted by SERS. As appropriate, we have made certain adjustments to the SERS data, including the use of a minimum annual salary assumption of $20,000.

Section III of Schedule L shows the monthly annuities that were being paid as of December 31, 2015. Total benefits from the fund include lump sum payments and death benefits so these are much higher than the sum of annuities shown in Schedule L and in the highlights.

Plan Provisions

Schedule M contains a summary of the principal provisions of the plan. As a consequence of Act 2010-120 (signed into law in November 2010 and generally effective January 1, 2011), there were significant changes in plan provisions in 2010.

Actuarial Assumptions

Schedule N summarizes the actuarial assumptions used for the valuation. The two types of assumptions are economic assumptions, such as the investment return and salary growth assumptions, and demographic assumptions, such as the assumed rates of retirement and mortality.

For the December 31, 2015 valuation, as a result of the 2011-2015 actuarial experience study and the large number of actuarial assumption changes that were recommended, changes were made to most of the actuarial assumptions used for the SERS actuarial valuation. Based upon an annual review of SERS investment data and results, the Board approved the continued use of the 7.5 percent annual investment return assumption in the December 31, 2015 actuarial valuation.

Actuarial Methods

Schedule O explains the asset valuation and funding method used in the valuation, and the determination of the annual contribution, including a discussion of the Act 2010-120 employer contribution collars. The asset valuation method spreads investment gains and losses over five years. The funding method provides for reasonable levels of contribution that will fund the cost of future benefits with a credit for amortization of the excess of assets over liabilities. Schedule O also explains how the individual class rates are determined. The final section of Schedule O discusses the plan provisions that are not valued.

Glossary

Schedule P defines certain terms used in this actuarial report.

State Employees' Retirement System
Unfunded Liability and Normal Cost as of December 31, 2015

I.	Present Value of Benefits:		
	A) Active and Inactive Participants		
	1) Superannuation and Withdrawal	$	26,081,966,062
	2) Disability		867,982,292
	3) Death		818,279,065
	4) Refunds		56,288,047
	5) Special Police and Enforcement Officer Benefits		-
	6) Subtotal	$	27,824,515,466
	B) Annuitants and Beneficiaries		25,156,124,601
	C) Total	$	52,980,640,067
II.	Present Value of Member and Employer Contributions:		
	A) Employer Portion of Normal Cost	$	2,736,877,355
	B) Member Contributions		3,547,142,309
	C) Administrative Expenses		(223,687,470)
	D) Fiscal Year Amortization Payable		591,379,320
	E) Total	$	6,651,711,514
III.	Actuarial Accrued Liability: (I) - (II)	$	46,328,928,553
IV.	Actuarial Value of Assets	$	26,877,126,928
V.	Unfunded Liability (III) - (IV)	$	19,451,801,625
VI.	Employer Normal Cost Rate		
	A) Total Normal Cost Rate for new active members to fund:		
	1) Superannuation and Withdrawal		9.32%
	2) Disability		0.71%
	3) Death		0.38%
	4) Refunds		0.36%
	5) Total		10.77%
	B) Member Contribution Rate		6.25%
	C) Employer Normal Cost Rate (A) - (B)		4.52%

State Employees' Retirement System
Employer Contribution Rate in Fiscal Year 2016 - 2017

	Funding Period Initial Years	From July 1	Initial Amount of Liability	Outstanding Balance as of 12/31/15	Annual Payment Amount	Payment as a Percent of Compensation*
I. Amortization of Liability (Asset) For:						
A) Liability Fresh Start	30	2010	$5,592,323,524	$5,209,590,801	$474,333,657	7.58%
B) Changes in 2010	30	2011	4,192,690,873	3,960,540,996	355,302,793	5.68%
C) Changes in 2011	30	2012	5,018,078,343	4,801,002,885	424,886,895	6.79%
D) Changes in 2012	30	2013	3,244,242,829	3,142,879,262	274,694,050	4.39%
E) Changes in 2013	30	2014	344,271,135	337,362,367	29,149,862	0.47%
F) Changes in 2014	30	2015	482,239,376	477,575,525	40,831,804	0.65%
G) Changes in 2015	30	2016	1,522,849,789	1,522,849,789	128,941,574	2.06%
Total				**$ 19,451,801,625**	**$ 1,728,140,635**	**27.62%**
II. Employer Normal Cost						**4.52%**
III. Total Employer Cost before Act 2010-120 = (I) + (II)						**32.14%**
IV. Total Employer Cost (III), reflecting the 29.50 percent contribution prescribed by Act 2010-120						**29.50%**

* The payment is expressed as a percentage of the total projected covered compensation for active members in fiscal year 2016-2017 of $6,255,189,000. Percentages may not add due to rounding.

State Employees' Retirement System

Employer Contribution Rate by Group
(excluding Benefits Completion Plan rate)

Employer Group (1)	Base Contribution Rate (2)	Age 50 or 55 Retirement Adjustment (3)	Multiplier Adjustment* (4)	Past Liability Adjustment (5)	Adjusted Contribution Rate** (6)	Projected 2016-2017 Compensation (7)	Employer Contribution Amount (8)
Class A-3 and A-4 - Age 65 Retirement	20.69%		1.0000		20.69%	$ 1,165,078,000	$ 241,054,638
Class AA - Age 60 Retirement	20.69%		1.4472		29.94%	3,311,468,000	991,453,519
Class A - Age 60 Retirement	20.69%		1.1578		23.95%	30,010,000	7,187,395
Class A-3 and A-4 - Age 55 Retirement	20.69%	2.60%	1.0000		23.29%	232,414,000	54,129,221
Class AA - Age 50 Retirement (Including Enforcement Officers)	20.69%	2.60%	1.4472		33.71%	895,676,000	301,932,380
Class A - Age 50 Retirement (Including Enforcement Officers)	20.69%	2.60%	1.1578		26.97%	15,481,000	4,175,226
Class A-3 and A-4 - Park Rangers & Capitol Police	20.69%	2.00%	1.0000	0.60%	23.29%	4,635,000	1,079,492
Class AA - Park Rangers & Capitol Police	20.69%	2.00%	1.4472	0.60%	33.44%	9,745,000	3,258,728
Class A - Park Rangers & Capitol Police	20.69%	2.00%	1.1578	0.60%	26.87%	142,000	38,155
Class A-3 and A-4 - State Police	20.69%	2.60%	1.4724	3.95%	38.24%	75,042,000	28,696,061
State Police - Other	20.69%	2.60%	1.6491	3.95%	42.36%	370,769,000	157,057,748
Class D4	20.69%	2.60%	1.7367		40.45%	13,107,000	5,301,782
Class E	20.69%		1.8347		37.96%	131,622,000	49,963,711
					Total***	$ 6,255,189,000	$ 1,845,328,055

* The multiplier adjustment is the adjustment for the employer group contribution rate. Because the majority of new active members of SERS will be covered under Class A-3 (65), the 2.0 percent accrual rate for that Class is used to determine the base contribution rate. Column (4) is the applicable adjustment factor relative to the Class A-3 benefit value.

** The adjusted contribution rate is [(2) + (3)] times (4) + (5).

*** The total employer contribution ($1,845,328,055) is approximately equal to the average employer contribution rate from Schedule B (29.50 percent) times the total projected covered compensation of $6,255,189,000. The base contribution rate of 20.69 percent was determined as the percentage needed to produce employer contribution amounts by employer group that sum to $1,845,328,055.

NOTE: See Schedule O, Section IV for further discussion of this schedule.

Development of Shared Risk Member Contributions

Calendar Year	Actual Return	Expected Return	Excess of Expected Over Actual		
2016	TBD	7.5%	TBD		July 1, 2017 Shared Risk Basis
2015	0.4%	7.5%	7.1%		
2014	6.4%	7.5%	1.1%		
2013	13.6%	7.5%	-6.1%	July 1, 2014 Shared Risk Basis	
2012	12.0%	7.5%	-4.5%		
2011	2.7%	8.0%	5.3%		
2011-2013	9.3%/year**	7.7%/year*	-1.6%		
2011-2016	TBD****	7.6%/year***	TBD		

1)	Shared Rate for Class A-3 and Class A-4 Members as of June 30, 2014:	0.0%
2)	Calculation of 3-Year Annualized Returns for 2011-2013:	
	a) * Expected: [(1+0.08) x (1+0.075) x (1+0.075)]^(1/3) - 1	7.7%
	b) ** Actual: [(1+0.027) x (1+0.120) x (1+0.136)]^(1/3) - 1	9.3%
	c) = a) - b)	-1.6%
3)	Adjustment to Shared Rate Based on Initial 3-Year Period (2011-2013)	
	Since 2c) is not greater than 1.0%, Adjustment to Shared Rate = 0%	0.0%
4)	New Shared Rate Effective July 1, 2014 = (1) + (3):	0.0%
5)	Calculation of 6-Year Annualized Returns for 2011-2016:	
	a) *** Expected: [(1+0.08) x (1+0.075) x (1+0.075) x (1+0.075) x (1+0.075) x (1+0.075)]^(1/6) - 1	7.6%
	b) **** Actual: [(1+0.027) x (1+ 0.120) x (1+0.136) x (1+0.064) x (1+0.004) x (1+TBD)]^(1/6) - 1	TBD
	c) = a) - b)	TBD
6)	Adjustment to Shared Rate Based on 6-Year Period (2011-2016)	
	If 5c) is greater than 1.0%, Adjustment to Shared Rate = 0.5%	TBD
	If 5c) is less than 1.0%, Adjustment to Shared Rate = 0.0%	TBD
7)	New Shared Rate Effective July 1, 2017 = (4) + (6):	TBD

Under the Shared Risk provision of Act 2010-120, higher member contribution rates could have become effective in 2014 if SERS investments had underperformed. The first potential Shared Risk Contribution Rate (Shared Rate) was determined based upon the actual SERS investment returns earned during the three calendar year period ended December 31, 2013. The 2011 to 2013 return information and Shared Rate calculations shown above support the conclusion that no Shared Rate was applicable for the fiscal year beginning July 1, 2014. That is, since the expected annual return over the three-year period 2011-2013 (7.7%) was not more than 1.0% greater than the actual annual return (9.3%), the Shared Rate does not increase from 0.0% to 0.5%. Thus, no Shared Rate became effective July 1, 2014, and a 0.0% Shared Rate applies through June 30,

As of December 31, 2016, the next potential adjustment to the Shared Rate will be determined based upon investment returns over the six calendar years 2011 through 2016. Any resulting adjustment will be effective July 1, 2017, and will apply for three years, through June 30, 2020. If the expected return over the 6 calendar year period: (i) is greater than the actual return by more than 1.0%, then the Shared Rate will increase by 0.5%, (ii) is equal to or less than the actual return, then the Shared Rate will decrease by 0.5%, or (iii) is greater than the actual return by 1.0% or less, then the Shared Rate will remain unchanged. Note: Given that the Shared Rate will be 0.0% from July 1, 2014 through June 30, 2017, and the Shared Rate can never be less than 0.0%, the decrease by 0.5% referred to in (ii) of the preceding sentence cannot occur as of July 1, 2017.

As of December 31, 2019, the Shared Rate adjustment will be measured based upon the returns over the nine calendar years 2011 through 2019. As of December 31, 2022 and every three years thereafter, the Shared Rate adjustment will be based upon the returns over the preceding ten calendar years.

In no case will the Shared Rate be less than 0.0% or greater than 2.0%. Also, should the employer contribution level be below the amount prescribed under Act 2010-120 in any fiscal year, the Shared Rate will revert to zero.

State Employees' Retirement System
Analysis of the Change in Employer Contribution Rate

		Normal Cost	Unfunded Liability	Total
I.	December 31, 2014 Valuation	4.95%	26.56%	31.51%
II.	Changes in the December 31, 2015 Valuation:			
	A) Additional cost due to Act 120 contribution collar restrictions		0.73%	0.73%
	B) Assumption changes (2011-2015 actuarial experience study)	-0.42%	0.50%	0.08%
	C) Loss from investment earnings (net, during 2011-2015)		0.38%	0.38%
	D) Pay increases different than assumptions		0.34%	0.34%
	E) Differences between actual and expected demographic experience		0.09%	0.09%
	F) Change in demographics of new entrants	-0.01%	0.01%	0.00%
	G) Change in amortization due to change in payroll	0.00%	-0.99%	-0.99%
	H) Total change	-0.43%	1.06%	0.63%
III.	December 31, 2015 Valuation: I + II(H)	4.52%	27.62%	32.14%

Analysis of the Change in the Unfunded Liability

I.	December 31, 2014 Unfunded Liability	$ 18,165,721,764
II.	Expected Amortization Payment	1,599,199,061
III.	Expected Unfunded Liability as of December 31, 2015 [(I x 1.075) - II]	$ 17,928,951,835
IV.	Change in Liability Due to:	
	A) Additional cost due to Act 120 contribution collar restrictions	$ 535,701,042
	B) Assumption changes (2011-2015 actuarial experience study)	366,637,502
	C) Loss from investment earnings (net, during 2011-2015)	279,734,105
	D) Pay increases different than assumptions	253,175,534
	E) Differences between actual and expected demographic experience	81,546,569
	F) Change in demographics of new entrants	6,055,038
	G) Total change	$ 1,522,849,790
V.	December 31, 2015 Unfunded Liability: III + IV(G)	$ 19,451,801,625

State Employees' Retirement System

Actuarial Balance Sheet as of December 31, 2015

ASSETS

Present Assets:	
Members' Savings Account	$ 4,816,121,480
Annuity Reserve Account	22,800,202,584
State Police Benefit Account	2,310,957,319
Enforcement Officers' Benefit Account	44,964,698
State Accumulation Account *	(3,921,919,237)
Supplemental Annuity Account	-
Total Present Assets (Market Value)	$ 26,050,326,844
Adjustment to Smooth Market Fluctuations	826,800,084
Total Present Assets (Actuarial Value)	$ 26,877,126,928
Present Value of Future Contributions	
Normal Cost Contributions (Employer)	$ 2,736,877,355
Members' Contributions (Employee)	3,547,142,309
Accrued Liability Amortization (Employer)	19,451,801,625
Supplemental Annuity Amortization (Employer)	-
Administrative Expenses	(223,687,470)
Fiscal Year Amortization Payable	591,379,320
Total Future Contributions	$ 26,103,513,139
Total Assets	$ 52,980,640,067

LIABILITIES

Present Value of Benefits Payable to Annuitants and Beneficiaries from:	
Annuity Reserve Account	$ 22,800,202,584
State Police Benefit Account	2,310,957,319
Enforcement Officers' Benefit Account	44,964,698
Total for Annuitants and Beneficiaries	$ 25,156,124,601
Present Value of Benefits to Active and Inactive Members from:	
Members' Savings Account and State Accumulation Account	
Superannuation and withdrawal	$ 26,081,966,062
Disability	867,982,292
Death	818,279,065
Refunds	56,288,047
Subtotal	$ 27,824,515,466
Total Present Value of Benefits to Active and Inactive Members	$ 27,824,515,466
Total Liabilities	$ 52,980,640,067

* Includes $3,660,963 in directed commissions.

State Employees' Retirement System
Required Transfers Within SERS Accounts

I. Annuity Reserve Account

Balance as reported by SERS	$	22,248,065,827
Transfer from State Accumulation Account		552,136,757
Transfer to Supplemental Annuity Account		-
December 31, 2015 balance after transfers	$	22,800,202,584

II. State Accumulation Account *

Balance as reported by SERS	$	(3,325,230,408)
Transfer to Enforcement Officers' Benefit Account		(1,588,605)
Transfer to State Police Benefit Account		(42,963,467)
Transfer to Annuity Reserve Account		(552,136,757)
December 31, 2015 balance after transfers	$	(3,921,919,237)

III. Enforcement Officers' Benefit Account

Balance as reported by SERS	$	43,376,093
Transfer from State Accumulation Account		1,588,605
Transfer from Supplemental Annuity Account		-
December 31, 2015 balance after transfers	$	44,964,698

IV. State Police Benefit Account

Balance as reported by SERS	$	2,267,993,852
Transfer from State Accumulation Account		42,963,467
Transfer from Supplemental Annuity Account		-
December 31, 2015 balance after transfers	$	2,310,957,319

V. Supplemental Annuity Account

Balance as reported by SERS	$	-
Transfer from Annuity Reserve Account		-
Transfer to State Police Benefit Account		-
Transfer to Enforcement Officers' Benefit Account		-
December 31, 2015 balance after transfers	$	-

* Balance includes $3,660,963 in directed commissions.

Accounting Disclosure Statements

Introduction

SERS provides retirement benefits to the employees of the Commonwealth of Pennsylvania and is a cost-sharing, multiple-employer defined benefit pension plan. The Governmental Accounting Standards Board (GASB), pursuant to Statement No. 67, *Financial Reporting for Pension Plans*, and Statement No. 68, *Accounting and Financial Reporting for Pensions* (hereafter Statements 67 and 68), addresses accounting and financial reporting for the activities of pension plans, like SERS, that provide pensions to employees of state governmental employers.

It should be noted that:

- Statement 67 recently replaced the requirements of GASB Statement No. 25, *Financial Reporting for Defined Benefit Pension Plans and Note Disclosures for Defined Contribution Plans,* effective for financial statements for fiscal years ending on or after June 30, 2014, and
- Statement 68 recently replaced the requirements of GASB Statement No. 27, *Accounting for Pensions by State and Local Governmental Employers,* effective for fiscal years ending on or after June 30, 2015.

Statement 67 is designed for financial reporting by pension plans and Statement 68 is designed for financial reporting by entities that participate in pension plans. The objective of both statements is to provide more useful, transparent, and comparable financial information related to pensions.

Among the schedules that are no longer required, that had been required disclosures under Statement 25 for many years in the past, are the "Schedule of Funding Progress" and the "Schedule of Employer Contributions." These schedules, both of which have been included in this actuarial report in past years, remain of interest to many readers of this report. Therefore, we have updated these two schedules to reflect the December 31, 2015 actuarial valuation and they are included on the next two pages, for informational purposes. As well, we have included on the pages that follow these schedules, again for informational purposes, our notes and commentary relating to the disclosures formerly required by GASB Statement No. 25.

NOTE: The new reporting requirements of Statements No. 67 and 68 will be provided to SERS under a separate report to provide required financial reporting data to SERS and participating employers of the system.

State Employees' Retirement System
Accounting Disclosure Statements (continued)

I. Schedule of Funding Progress as of December 31, 2015
(Dollars in Thousands)

Note: This table is included in this report **FOR INFORMATIONAL PURPOSES**; it is no longer a required disclosure under GASB.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded Actuarial Accrued Liability (UAAL) (b-a)	Funded Ratio (a) / (b)	Funding Payroll (c)	Unfunded Actuarial Accrued Liability as a Percentage of Funding Payroll ((b-a)/c)
12/31/1995*	15,510,309	15,067,205	(443,104)	102.9%	4,021,605	-11.0%
12/31/1996	16,841,069	15,936,616	(904,453)	105.7%	4,163,683	-21.7%
12/31/1997	18,565,136	17,288,413	(1,276,723)	107.4%	4,219,034	-30.3%
12/31/1998	20,670,711	18,357,899	(2,312,812)	112.6%	4,446,147	-52.0%
12/31/1999	23,624,267	19,091,840	(4,532,427)	123.7%	4,519,112	-100.3%
12/31/2000*	26,094,306	19,702,278	(6,392,028)	132.4%	4,769,180	-134.0%
12/31/2001	27,505,494	23,658,757	(3,846,737)	116.3%	4,872,375	-78.9%
12/31/2002	27,497,464	25,650,389	(1,847,075)	107.2%	5,093,454	-36.3%
12/31/2003	27,465,615	26,179,761	(1,285,854)	104.9%	4,965,360	-25.9%
12/31/2004	26,900,027	27,999,026	1,099,000	96.1%	5,093,573	21.6%
	26,793,782	28,851,716	2,057,934	92.9%	5,138,377	40.1%
12/31/2006	28,148,834	30,364,997	2,216,163	92.7%	5,661,675	39.1%
12/31/2007	30,839,877	31,753,971	914,093	97.1%	5,529,069	16.5%
12/31/2008**	30,635,621	34,437,396	3,801,775	89.0%	5,660,319	67.2%
12/31/2009	30,204,693	35,797,017	5,592,324	84.4%	5,935,988	94.2%
12/31/2010*	29,443,945	39,179,594	9,735,649	75.2%	5,851,704	166.4%
12/31/2011***	27,618,461	42,281,862	14,663,401	65.3%	5,890,704	248.9%
12/31/2012	25,302,688	43,055,564	17,752,876	58.8%	5,836,402	304.2%
12/31/2013	25,975,185	43,874,580	17,899,395	59.2%	5,897,627	303.5%
12/31/2014	26,584,948	44,750,670	18,165,722	59.4%	6,021,688	301.7%
12/31/2015*	26,877,127	46,328,929	19,451,802	58.0%	6,255,189	311.0%

* Revised economic and demographic assumptions due to experience review.

** Revised interest rate assumption from 8.5% to 8.0%.

*** Revised interest rate assumption from 8.0% to 7.5%.

II. Schedule of Employer Contributions as of December 31, 2015

(Dollars in Thousands)

Note: This table is included in this report **FOR INFORMATIONAL PURPOSES**; it is no longer a required disclosure under GASB.

Calendar Year	Annual Required Contribution (ARC)	Actual Contribution	Percentage Contributed
1995	376,692	384,506	102.1%
1996	373,903	373,903	100.0%
1997	324,093	324,093	100.0%
1998	310,501	310,501	100.0%
1999	269,869	269,869	100.0%
2000	168,002	168,002	100.0%
2001	52,104	76,709	147.2%
2002	22,906	50,831	221.9%
2003	55,079	67,947	123.4%
2004	105,229	105,229	100.0%
2005	319,190	147,163	46.1%
2006	548,745	195,407	35.6%
2007	617,253	242,337	39.3%
2008	584,248	233,138	39.9%
2009	643,861	251,870	39.1%
2010	866,822	272,525	31.4%
2011	913,778	391,189	42.8%
2012	1,044,632	562,883	53.9%
2013	1,314,925	790,996	60.2%
2014	1,407,361	1,081,826	76.9%
2015	1,469,116	1,359,246	92.5%

Notes Pertaining to Governmental Accounting Standards Board Statement No. 25 (Although Statement 25 has been replaced by Statement 67, the Statement 25 notes below and on the following pages are provided FOR INFORMATIONAL PURPOSES.)

The actual contribution amounts in the above table include the employer share of regular contributions, the employer share of purchased service and contributions for employee service under the Public School Employees' Retirement System.

The information presented above was determined as part of the actuarial valuations at the dates indicated. Additional information as of the latest actuarial funding valuation follows.

Accounting Disclosure Statements (continued)

Valuation Date	December 31, 2015
Actuarial cost method	Variation of Entry-age Actuarial Cost Method
Amortization method	10-year or 30-year schedule with level payments (on a closed amortization basis)
Remaining amortization period	24 to 30 years (rounded equivalent single amortization period: 26 years)
Asset valuation method	5-year smoothed market
Actuarial Assumptions	
Investment rate of return	7.5 percent
Projected compensation increases	Average increase of 5.7 percent (range: 3.85 to 9.05 percent)
Inflation	2.75 percent
Cost-of-living adjustments	None

The annual employer contribution as set forth in the SERC is equal to the sum of the following:

(1) The employer share of the normal cost.

(2) The fresh start amortization of the December 31, 2009 unfunded liability over a 30-year period beginning July 1, 2010 and ending on June 30, 2040.

(3) The amortization of the change in liability due to Act 2010-120 over a 30-year period beginning July 1, 2011 and ending on June 30, 2041.

(4) The amortization of changes in liability due to actual experience differing from assumed experience after December 31, 2009 over 30-year periods beginning with the July 1st following the actuarial valuation determining such changes.

Valuations are performed on December 31 of each year, and the results are presented to the Board as a basis for determining the employer contribution rate for the year beginning July 1 after the valuation date. The Board has adopted the rate from the valuation unless information available after or as part of the valuation supports an adjustment to the valuation rate.

Apart from the statutory funding requirements set forth in the SERC, there are separate accounting standards applicable to SERS. The current reporting requirements of GASB Statements No. 67 and 68 are provided under a separate report.

The former reporting requirements of GASB Statements No. 25 and 27 defined an Annual Required Contribution (ARC) for financial reporting purposes. As long as the statutory annual employer contribution, as defined above, was at least equal to the minimum contribution reported under GASB Statement No. 25, the statutory annual employer contribution was deemed to be the ARC. Whenever the statutory annual employer contribution was less than the minimum contribution reported under GASB, the GASB minimum was deemed to be the ARC.

Accounting Disclosure Statements (continued)

GASB Statement No. 25 defined the ARC to be equal to the employer normal cost plus an amount to amortize the unfunded actuarial accrued liability. The Statement prescribed the maximum acceptable period over which the total unfunded actuarial liability should be amortized. The Statement also required that the “equivalent single amortization period” for all combined amortizations should not exceed the maximum acceptable period. Under the contribution collars from Act 2010-120, the current contribution level results in an “equivalent single amortization period” in excess of the maximum acceptable period and thus an actual contribution less than the ARC. In this case, the ARC is determined using a 30-year amortization period.

The Board adopted slightly different rates in 1993 and 1994 based on information available after the valuation was performed. In 1993, the valuation rate of 9.27 percent was lowered to 8.92 percent because it was determined that the covered compensation reported for the valuation was unusually high and that future covered compensation was expected to be relatively lower. In 1994, the valuation rate of 8.53 percent was increased to 8.92 percent to allow for the extension of the early retirement window and acceleration of the longevity pay scales.

The actuary agreed with the actions taken by the Board that resulted in some difference between the ARC and the actual contribution. The table presented on page 3 of Schedule H shows the ARC based on the actuarial valuation. The effect of the adjustments in 1993 and 1994 extended over three calendar years so the 1993 through 1995 actual contributions are different from the ARCs in those years.

The Board adopted the valuation rate as the contribution rate for 1996 through 2000.

During 2001, 2002, and 2003, actual contributions exceeded the ARC. For the period July 1, 2001 through June 30, 2003, the ARC was set at zero. However, contributions were made by employers of some special class members for the cost of additional benefits including payment of past liabilities for retroactive benefit enhancements. Collection of those amounts resulted in the actual contributions exceeding the ARC for all or part of calendar years 2001, 2002 and 2003.

All amortization payments are currently based upon a 30-year schedule of contributions, which remain level during the amortization period. The employer cost is determined as a percent of covered compensation, and the employer contributes that percent of the compensation of all covered members during each fiscal year.

The employer contribution was below the GASB Statement No. 25 minimum from July 1, 2005 through June 30, 2015. However, since then, the actual employer contributions have exceeded the GASB Statement No. 25 minimum.

State Employees' Retirement System
Solvency Test

Valuation Date	Actuarial Accrued Liabilities For (1) Active Participant Contributions	(2) Annuitants and Beneficiaries	(3) Active Participants (Employer Financed Portion)	Total Actuarial Accrued Liability (AAL)	Actuarial Value of Assets	Portion of Accrued Liabilities Covered by Reported Assets (1)	(2)	(3)	Funded Ratio
	(Amounts in Thousands)								
December 31, 1992	$ 1,994,567	$ 4,621,318	$ 4,872,529	$ 11,488,414	$ 11,769,388	100.0 %	100.0 %	100.0 %	102.4 %
December 31, 1993	2,170,593	4,806,907	5,236,236	12,213,736	13,060,613	100.0	100.0	100.0	106.9
December 31, 1994	2,352,731	5,039,221	6,350,104	13,742,056	13,991,485	100.0	100.0	100.0	101.8
December 31, 1995	2,499,485	5,649,454	6,918,265	15,067,205	15,510,309	100.0	100.0	100.0	102.9
December 31, 1996	2,646,630	6,027,333	7,262,653	15,936,616	16,841,069	100.0	100.0	100.0	105.7
December 31, 1997	2,748,177	6,951,411	7,588,825	17,288,413	18,565,136	100.0	100.0	100.0	107.4
December 31, 1998	2,904,232	7,200,000	8,253,666	18,357,899	20,670,711	100.0	100.0	100.0	112.6
December 31, 1999	2,989,489	7,779,993	8,322,358	19,091,840	23,624,267	100.0	100.0	100.0	123.7
December 31, 2000	3,182,776	8,148,876	8,370,626	19,702,278	26,094,306	100.0	100.0	100.0	132.4
December 31, 2001	3,344,107	8,684,734	11,629,915	23,658,757	27,505,494	100.0	100.0	100.0	116.3
December 31, 2002	3,498,672	10,129,669	12,022,048	25,650,389	27,497,464	100.0	100.0	100.0	107.2
December 31, 2003	3,588,664	11,296,520	11,294,578	26,179,761	27,465,615	100.0	100.0	100.0	104.9
December 31, 2004	3,593,576	12,779,570	11,625,880	27,999,026	26,900,027	100.0	100.0	90.5	96.1
December 31, 2005	3,696,477	14,000,196	11,155,043	28,851,716	26,793,782	100.0	100.0	81.6	92.9
December 31, 2006	3,916,841	14,474,525	11,973,631	30,364,997	28,148,834	100.0	100.0	81.5	92.7
December 31, 2007	3,849,293	16,255,843	11,648,835	31,753,971	30,839,877	100.0	100.0	92.2	97.1
December 31, 2008	4,068,036	17,305,971	13,063,389	34,437,396	30,635,621	100.0	100.0	70.9	89.0
December 31, 2009	4,280,680	17,962,741	13,553,596	35,797,017	30,204,693	100.0	100.0	58.7	84.4
December 31, 2010	4,409,444	18,995,355	15,774,795	39,179,594	29,443,945	100.0	100.0	38.3	75.2
December 31, 2011	4,406,306	21,222,075	16,653,481	42,281,862	27,618,461	100.0	100.0	11.9	65.3
December 31, 2012	4,551,507	22,095,052	16,409,005	43,055,564	25,302,688	100.0	93.9	0.0	58.8
December 31, 2013	4,636,219	23,046,717	16,191,644	43,874,580	25,975,185	100.0	92.6	0.0	59.2
December 31, 2014	4,733,833	23,872,658	16,144,179	44,750,670	26,584,948	100.0	91.5	0.0	59.4
December 31, 2015	4,816,121	25,156,125	16,356,683	46,328,929	26,877,127	100.0	87.7	0.0	58.0

State Employees' Retirement System
Actuarial Value of Assets

I.	Development of 12/31/15 Expected Actuarial Value:	
A)	Actuarial Value as of 12/31/14	$ 26,584,948,430
B)	Contributions in 2015	1,730,870,536
C)	Benefits and Expenses in 2015	(3,101,432,974)
D)	Investment return at 7.5% to 12/31/15 on (A)	1,993,871,132
E)	Investment return at 7.5% to 12/31/15 on (B) and (C): 7.5% x .5 x ((B) + (C))	(51,396,091)
F)	Expected Actuarial Value as of 12/31/15: (A) + (B) + (C) + (D) + (E)	$ 27,156,861,033
II.	Previous Differences Not Yet Amortized:	
A)	Unrecognized amount of 12/31/11 Difference: .2 x ($1,795,550,551)	$ (359,110,110)
B)	Unrecognized amount of 12/31/12 Difference: .4 x $789,653,676	315,861,470
C)	Unrecognized amount of 12/31/13 Difference: .6 x $1,890,838,336	1,134,503,002
D)	Unrecognized amount of 12/31/14 Difference: .8 x ($429,117,174)	(343,293,739)
E)	Total	$ 747,960,623
III.	Gain or Loss from 2015	
A)	Market Value of Assets on 12/31/15	$ 26,050,326,844
B)	Expected Market Value II(E) + I(F)	27,904,821,656
C)	Gain (loss) from 2015 Investments (A) - (B)	$ (1,854,494,812)
IV.	Development of Actuarial Value of Assets as of 12/31/15:	
A)	20% of ($1,795,550,551) (12/31/11 Difference):	$ (359,110,110)
B)	20% of $789,653,676 (12/31/12 Difference):	157,930,735
C)	20% of $1,890,838,336 (12/31/13 Difference):	378,167,667
D)	20% of ($429,117,174) (12/31/14 Difference):	(85,823,435)
E)	20% of ($1,854,494,812) (12/31/15 Difference):	(370,898,962)
F)	Total Difference: (A) + (B) + (C) + (D) + (E)	$ (279,734,105)
G)	Actuarial Value at 12/31/15: I(F) + IV(F)	$ 26,877,126,928

State Employees' Retirement System
Projection of Population, Benefits, and Contributions

Projection of Annuitants, Beneficiaries and Active Participants
Actual Data Through 2015

Calendar Year	New Annuitants During the Year	Annuitant Deaths During the Year	Total Annuitants (End of Year)	New Beneficiaries During the Year	Beneficiary Deaths During the Year	Total Beneficiaries (End of Year)	Total Annuitants and Beneficiaries	Active Participants
1997			77,667			7,790	85,457	108,684
1998			78,017			7,817	85,834	108,893
1999			80,095			7,948	88,043	108,035
2000			80,289			8,103	88,392	109,469
2001			80,911			8,306	89,217	109,716
2002			82,805			8,423	91,228	111,059
2003			85,808			8,604	94,412	109,018
2004			89,869			8,858	98,727	108,405
2005			92,120			9,059	101,179	109,981
2006			92,879			9,181	102,060	110,972
2007			97,657			9,473	107,130	109,610
2008			98,492			9,654	108,146	110,866
2009			99,776			9,863	109,639	110,107
2010			101,701			10,012	111,713	109,255
2011			105,096			10,246	115,342	107,021
2012			106,673			10,388	117,061	106,048
2013			109,356			10,696	120,052	105,186
2014			111,328			10,921	122,249	104,431
2015			113,537			11,152	124,689	105,025
2016	5,725	3,448	115,814	690	557	11,285	127,099	105,025
2017	5,506	3,505	117,815	701	606	11,380	129,195	105,025
2018	5,350	3,540	119,625	708	646	11,442	131,067	105,025
2019	5,238	3,585	121,278	717	679	11,480	132,758	105,025
2020	5,010	3,642	122,646	728	711	11,497	134,143	105,025
2021	4,882	3,700	123,828	740	737	11,500	135,328	105,025
2022	4,628	3,727	124,729	745	755	11,490	136,219	105,025
2023	4,380	3,765	125,344	753	765	11,478	136,822	105,025
2024	4,148	3,816	125,676	763	773	11,468	137,144	105,025
2025	3,859	3,886	125,649	777	787	11,458	137,107	105,025
2026	3,630	3,963	125,316	793	797	11,454	136,770	105,025

The retirement projections in Schedule K are based upon the current retirement assumptions used for the valuation.

State Employees' Retirement System
Projection of Population, Benefits, and Contributions

Projection of Expected Contributions and Benefits - Reflecting Act 120 Collars
Actual Data Through 2015 (Dollars in Millions)

Year	Calendar Year Contributions (After 2015, Based Upon Blended Fiscal Projections) Employee	Calendar Year Contributions (After 2015, Based Upon Blended Fiscal Projections) Employer	Contributions as a Percent of Pay: Calendar Year Contributions (Employer Rates Based Upon Blended Fiscal Projections) Employee	Contributions as a Percent of Pay: Calendar Year Contributions (Employer Rates Based Upon Blended Fiscal Projections) Employer	Contributions as a Percent of Pay: Actual Projected Employer Rate (Fiscal Year Beginning July 1)	Calendar Year Benefits and Expenses
1997	$ 213	$ 324				$ 1,037
1998	222	311				1,080
1999	224	270				1,248
2000	232	168				1,198
2001	240	77				1,266
2002	304	51				1,450
2003	308	68				1,656
2004	302	106				1,880
2005	306	147				1,966
2006	317	196				1,943
2007	334	242				2,361
2008	337	233				2,231
2009	349	252				2,297
2010	349	273				2,473
2011	351	391				2,730
2012	348	563				2,690
2013	352	791				2,862
2014	366	1,082				2,967
2015	372	1,359				3,101
2016	383	1,673	6.2%	27.3%	29.5%	3,245
2017	396	1,943	6.2%	30.6%	31.7%	3,379
2018	408	2,058	6.2%	31.5%	31.2%	3,513
2019	421	2,101	6.2%	31.2%	31.1%	3,650
2020	434	2,154	6.2%	31.0%	30.9%	3,781
2021	447	2,189	6.2%	30.6%	30.2%	3,912
2022	461	2,208	6.2%	29.9%	29.6%	4,032
2023	475	2,226	6.2%	29.3%	29.0%	4,149
2024	489	2,244	6.2%	28.6%	28.3%	4,264
2025	504	2,261	6.2%	28.0%	27.7%	4,370
2026	519	2,278	6.2%	27.4%	27.1%	4,474

This projection is based upon these assumptions: a projected investment return of 7.5 percent in 2016 and after; general pay increases of 3.05 percent; no future COLAs. The employer contributions are subject to the Act 2010-120 collars, which are projected to be applicable through 2016, after which actuarially determined employer contribution rates apply.

Projection of Expected Contributions and Benefits - Without Future Act 120 Collars
Actual Data Through 2015 (Dollars in Millions)

	Calendar Year Contributions (After 2015, Based Upon Blended Fiscal Projections)		Contributions as a Percent of Pay: Calendar Year Contributions (Employer Rates Based Upon Blended Fiscal Projections)		Contributions as a Percent of Pay: Actual Projected Employer Rate (Fiscal Year Beginning July 1)	Calendar Year Benefits and Expenses
Year	Employee	Employer	Employee	Employer		
1997	$ 213	$ 324				$ 1,037
1998	222	311				1,080
1999	224	270				1,248
2000	232	168				1,198
2001	240	77				1,266
2002	304	51				1,450
2003	308	68				1,656
2004	302	106				1,880
2005	306	147				1,966
2006	317	196				1,943
2007	334	242				2,361
2008	337	233				2,231
2009	349	252				2,297
2010	349	273				2,473
2011	351	391				2,730
2012	348	563				2,690
2013	352	791				2,862
2014	366	1,082				2,967
2015	372	1,359				3,101
2016	383	1,754	6.2%	28.6%	32.1%	3,245
2017	396	2,023	6.2%	31.9%	31.6%	3,379
2018	408	2,048	6.2%	31.3%	31.0%	3,513
2019	421	2,087	6.2%	30.9%	30.9%	3,650
2020	434	2,140	6.2%	30.8%	30.7%	3,781
2021	447	2,174	6.2%	30.4%	30.0%	3,912
2022	461	2,193	6.2%	29.7%	29.4%	4,032
2023	475	2,212	6.2%	29.1%	28.8%	4,149
2024	489	2,229	6.2%	28.4%	28.1%	4,264
2025	504	2,246	6.2%	27.8%	27.5%	4,370
2026	519	2,264	6.2%	27.2%	26.9%	4,474

This projection is based upon these assumptions: a projected investment return of 7.5 percent in 2016 and after; general pay increases of 3.05 percent; no future COLAs. No Act 2010-120 employer contribution collars are assumed after June 30, 2016 in this projection, therefore actuarially determined employer contribution rates apply effective July 1, 2016.

State Employees' Retirement System

I. Age, Service and Salary Profile of Active Participants as of December 31, 2015

Active Participants*

Males - Full Years of Service to December 31, 2015

Age Group	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30+	Total	Average Salary
Less than 20	26	0	0	0	0	0	0	26	$ 25,243
20-24	878	5	0	0	0	0	0	883	31,034
25-29	2,275	478	10	0	0	0	0	2,763	39,505
30-34	1,730	1,458	476	4	0	0	0	3,668	46,080
35-39	1,423	1,157	1,147	311	3	0	0	4,041	51,299
40-44	1,270	1,039	1,034	803	266	10	0	4,422	54,785
45-49	1,221	1,024	1052	934	1,006	393	17	5,647	57,766
50-54	1,247	977	1,066	803	880	1,147	515	6,635	59,605
55-59	1,080	989	1,086	852	816	1,065	1,122	7,010	60,394
60-64	771	810	891	676	454	409	546	4,557	59,437
65+	385	444	471	306	168	125	274	2,173	59,599
Total	12,306	8,381	7,233	4,689	3,593	3,149	2,474	41,825	$ 55,020

Average Age 47.56
Average Service 11.73

Females - Full Years of Service to December 31, 2015

Age Group	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30+	Total	Average Salary
Less than 20	36	0	0	0	0	0	0	36	$ 23,630
20-24	1,034	7	0	0	0	0	0	1,041	29,580
25-29	2,285	461	23	0	0	0	0	2,769	36,639
30-34	1,834	1,350	481	30	0	0	0	3,695	42,760
35-39	1,529	1,160	1,140	379	18	0	0	4,226	47,478
40-44	1,345	1,079	995	701	355	27	0	4,502	49,045
45-49	1,363	1,174	1,113	774	789	583	43	5,839	51,059
50-54	1,258	1,213	1,109	813	773	858	707	6,731	52,500
55-59	1,133	1,138	1,222	898	865	807	948	7,011	52,800
60-64	574	771	853	630	411	365	421	4,025	51,539
65+	195	284	329	248	111	89	153	1,409	51,919
Total	12,586	8,637	7,265	4,473	3,322	2,729	2,272	41,284	$ 48,804

Average Age 46.80
Average Service 11.24

* The following three pages contain information on members in special categories. These include selected hazardous duty members, legislators, judges and district justices. The above information is for all other active members. Page five of Schedule L is the total of all active categories. Page six is the total of all active participants and inactive and vested participants.

State Employees' Retirement System
I. Age, Service and Salary Profile of Active Participants as of December 31, 2015

Selected Hazardous Duty*

Males - Full Years of Service to December 31, 2015

Age Group	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30+	Total	Average Salary
Less than 20	0	0	0	0	0	0	0	0	$ -
20-24	278	0	0	0	0	0	0	278	39,659
25-29	1,445	143	0	0	0	0	0	1,588	51,662
30-34	936	1,050	246	5	0	0	0	2,237	63,745
35-39	454	744	821	222	5	0	0	2,246	70,415
40-44	298	477	722	891	358	6	0	2,752	77,572
45-49	202	351	522	882	1,480	428	4	3,869	86,963
50-54	161	203	360	398	619	441	76	2,258	83,844
55-59	83	146	190	270	192	162	89	1,132	79,126
60-64	27	80	115	163	88	59	35	567	76,080
65+	6	35	61	48	35	18	18	221	75,941
Total	3,890	3,229	3,037	2,879	2,777	1,114	222	17,148	$ 74,794

Average Age 42.75
Average Service 12.37

Females - Full Years of Service to December 31, 2015

Age Group	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30+	Total	Average Salary
Less than 20	0	0	0	0	0	0	0	0	$ -
20-24	68	0	0	0	0	0	0	68	36,857
25-29	280	33	0	0	0	0	0	313	48,200
30-34	220	200	34	1	0	0	0	455	56,384
35-39	159	202	160	29	1	0	0	551	61,368
40-44	115	158	157	120	30	0	0	580	64,198
45-49	107	115	124	137	109	18	0	610	68,830
50-54	74	113	84	90	62	31	5	459	68,872
55-59	27	79	87	49	44	30	10	326	71,511
60-64	15	40	46	45	20	14	2	182	69,355
65+	1	8	7	10	6	4	5	41	80,974
Total	1,066	948	699	481	272	97	22	3,585	$ 63,361

Average Age 43.09
Average Service 9.44

* Enforcement officers, correction officers, psychiatric security aides, and officers of the Pennsylvania State Police and the Delaware River Port Authority

State Employees' Retirement System
I. Age, Service and Salary Profile of Active Participants as of December 31, 2015

Legislators*

Males - Full Years of Service to December 31, 2015

Age Group	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30+	Total	Average Salary
Less than 20	0	0	0	0	0	0	0	0	$ -
20-24	0	0	0	0	0	0	0	0	-
25-29	0	0	0	0	0	0	0	0	-
30-34	7	5	1	0	0	0	0	13	85,339
35-39	3	3	3	0	0	0	0	9	89,595
40-44	6	5	3	1	0	0	0	15	87,277
45-49	4	13	2	4	1	0	0	24	87,833
50-54	4	7	2	6	3	1	0	23	92,135
55-59	7	11	8	4	2	4	3	39	90,102
60-64	2	4	4	6	3	2	5	26	87,615
65+	4	6	3	2	4	6	10	35	89,406
Total	37	54	26	23	13	13	18	184	$ 88,985

Average Age 54.18
Average Service 13.41

Females - Full Years of Service to December 31, 2015

Age Group	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30+	Total	Average Salary
Less than 20	0	0	0	0	0	0	0	0	$ -
20-24	0	0	0	0	0	0	0	0	-
25-29	1	0	0	0	0	0	0	1	85,339
30-34	1	0	0	0	0	0	0	1	85,339
35-39	2	1	0	0	0	0	0	3	85,339
40-44	2	0	1	0	0	0	0	3	85,339
45-49	0	2	0	0	1	1	0	4	88,332
50-54	1	4	0	0	1	1	0	7	87,049
55-59	2	3	0	0	1	0	0	6	85,339
60-64	2	0	1	1	0	2	1	7	87,928
65+	1	2	2	1	4	1	0	11	86,427
Total	12	12	4	2	7	5	1	43	$ 86,596

Average Age 55.72
Average Service 11.79

*Legislators are not required to join the retirement system, therefore the total participant count may not add to 253.

Judges And Magisterial District Judges

Males - Full Years of Service to December 31, 2015

Age Group	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30+	Total	Average Salary
Less than 20	0	0	0	0	0	0	0	0	$ -
20-24	0	0	0	0	0	0	0	0	-
25-29	0	0	0	0	0	0	0	0	-
30-34	1	0	0	0	0	0	0	1	89,030
35-39	6	1	1	0	0	0	0	8	99,378
40-44	12	5	3	2	0	0	0	22	109,232
45-49	24	22	12	6	0	0	0	64	119,015
50-54	27	20	18	14	9	2	1	91	121,979
55-59	21	28	32	26	18	7	2	134	126,023
60-64	24	25	53	24	46	20	11	203	128,891
65+	10	10	33	35	34	23	19	164	143,383
Total	125	111	152	107	107	52	33	687	$ 128,924

Average Age 58.54
Average Service 13.91

Females - Full Years of Service to December 31, 2015

Age Group	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30+	Total	Average Salary
Less than 20	0	0	0	0	0	0	0	0	$ -
20-24	0	0	0	0	0	0	0	0	-
25-29	0	0	0	0	0	0	0	0	-
30-34	3	0	0	0	0	0	0	3	88,290
35-39	1	0	1	0	0	0	0	2	88,290
40-44	8	4	5	2	0	0	0	19	116,194
45-49	11	6	10	7	0	0	0	34	127,135
50-54	7	17	12	5	6	0	0	47	129,697
55-59	6	16	17	15	6	4	0	64	146,369
60-64	3	12	14	9	16	9	4	67	146,627
65+	0	3	5	6	7	2	10	33	146,118
Total	39	58	64	44	35	15	14	269	$ 137,848

Average Age 56.00
Average Service 13.58

All Active Participants

Males - Full Years of Service to December 31, 2015

Age Group	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30+	Total	Average Salary
Less than 20	26	0	0	0	0	0	0	26	$ 25,243
20-24	1,156	5	0	0	0	0	0	1,161	33,099
25-29	3,720	621	10	0	0	0	0	4,351	43,942
30-34	2,674	2,513	723	9	0	0	0	5,919	52,849
35-39	1,886	1,905	1,972	533	8	0	0	6,304	58,226
40-44	1,586	1,526	1,762	1,697	624	16	0	7,211	63,715
45-49	1,451	1,410	1,588	1,826	2,487	821	21	9,604	70,011
50-54	1,439	1,207	1,446	1,221	1,511	1,591	592	9,007	66,395
55-59	1,191	1,174	1,316	1,152	1,028	1,238	1,216	8,315	64,141
60-64	824	919	1,063	869	591	490	597	5,353	63,970
65+	405	495	568	391	241	172	321	2,593	66,693
Total	16,358	11,775	10,448	7,698	6,490	4,328	2,747	59,844	$ 61,639

Average Age 46.33
Average Service 11.94

Females - Full Years of Service to December 31, 2015

Age Group	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30+	Total	Average Salary
Less than 20	36	0	0	0	0	0	0	36	$ 23,630
20-24	1,102	7	0	0	0	0	0	1,109	30,026
25-29	2,566	494	23	0	0	0	0	3,083	37,828
30-34	2,058	1,550	515	31	0	0	0	4,154	44,295
35-39	1,691	1,363	1,301	408	19	0	0	4,782	49,119
40-44	1,470	1,241	1,158	823	385	27	0	5,104	51,038
45-49	1,481	1,297	1,247	918	899	602	43	6,487	53,152
50-54	1,340	1,347	1,205	908	842	890	712	7,244	54,071
55-59	1,168	1,236	1,326	962	916	841	958	7,407	54,459
60-64	594	823	914	685	447	390	428	4,281	53,844
65+	197	297	343	265	128	96	168	1,494	55,051
Total	13,703	9,655	8,032	5,000	3,636	2,846	2,309	45,181	$ 50,525

Average Age 46.57
Average Service 11.11

State Employees' Retirement System

II. Age and Service Profile of Active Participants and Inactive and Vested Participants
As of December 31, 2015

Active Participants and Inactive and Vested Participants

Males - Full Years of Service to December 31, 2015

Age Group	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30+	Total
Less than 20	26	0	0	0	0	0	0	26
20-24	1,156	5	0	0	0	0	0	1,161
25-29	3,731	646	11	0	0	0	0	4,388
30-34	2,697	2,692	741	9	0	0	0	6,139
35-39	1,908	2,128	2,027	540	8	0	0	6,611
40-44	1,610	1,769	1,854	1,726	624	17	0	7,600
45-49	1,484	1,648	1,724	1,878	2,510	840	21	10,105
50-54	1,483	1,426	1,566	1,285	1,551	1,621	598	9,530
55-59	1,247	1,345	1,443	1,221	1,070	1,277	1,255	8,858
60-64	892	983	1,124	904	640	508	637	5,688
65+	518	542	618	425	267	190	336	2,896
Total	16,752	13,184	11,108	7,988	6,670	4,453	2,847	63,002

Average Age 46.54
Average Service 11.87

Females - Full Years of Service to December 31, 2015

Age Group	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30+	Total
Less than 20	36	0	0	0	0	0	0	36
20-24	1,102	8	0	0	0	0	0	1,110
25-29	2,575	517	23	0	0	0	0	3,115
30-34	2,082	1,737	534	31	0	0	0	4,384
35-39	1,723	1,648	1,372	415	19	0	0	5,177
40-44	1,527	1,517	1,242	848	387	28	0	5,549
45-49	1,557	1,565	1,376	978	912	613	43	7,044
50-54	1,431	1,611	1,365	964	868	905	726	7,870
55-59	1,269	1,504	1,533	1,028	955	864	1,000	8,153
60-64	736	960	1,001	718	488	410	472	4,785
65+	296	348	366	284	143	105	176	1,718
Total	14,334	11,415	8,812	5,266	3,772	2,925	2,417	48,941

Average Age 46.86
Average Service 10.97

Superannuation Annuitants

Age	Male Number	Male Annual Annuity	Female Number	Female Annual Annuity	Total Number	Total Annual Annuity
Under 25	-	$ -	-	$ -	-	$ -
25-29	-	-	-	-	-	-
30-34	-	-	-	-	-	-
35-39	-	-	-	-	-	-
40-44	-	-	-	-	-	-
45-49	-	-	-	-	-	-
50-54	588	23,945,587	157	5,464,629	745	29,410,216
55-59	1,601	65,254,836	923	37,494,037	2,524	102,748,873
60-64	5,035	178,900,158	4,284	142,324,193	9,319	321,224,351
65-69	9,453	296,413,287	6,149	165,968,953	15,602	462,382,240
70-74	6,825	211,570,149	4,344	99,272,608	11,169	310,842,757
75-79	4,999	141,294,164	3,520	66,982,928	8,519	208,277,092
80-84	3,455	81,670,599	2,639	38,013,576	6,094	119,684,175
85-89	2,342	47,729,544	2,211	25,949,553	4,553	73,679,097
90 & over	1,359	23,597,519	1,869	18,053,203	3,228	41,650,722
Total	35,657	$ 1,070,375,843	26,096	$ 599,523,680	61,753	$ 1,669,899,523

Average Age	72.3
Average Annual Annuity	$27,042

Early Retirement Annuitants

	Male		Female		Total	
Age	Number	Annual Annuity	Number	Annual Annuity	Number	Annuity
Under 25	-	$ -	-	$ -	-	$ -
25-29	19	15,019	48	33,200	67	48,219
30-34	200	219,757	270	245,545	470	465,302
35-39	420	682,476	479	604,428	899	1,286,904
40-44	558	1,943,259	605	1,251,059	1,163	3,194,318
45-49	1,271	25,988,485	924	4,082,597	2,195	30,071,082
50-54	1,743	46,357,225	1,319	12,720,722	3,062	59,077,947
55-59	2,338	52,044,090	2,562	37,134,616	4,900	89,178,706
60-64	3,524	80,135,569	4,807	84,848,492	8,331	164,984,061
65-69	5,139	118,873,869	4,409	72,040,096	9,548	190,913,965
70-74	3,548	75,389,647	2,292	32,689,605	5,840	108,079,252
75-79	1,785	28,136,178	1,420	15,349,477	3,205	43,485,655
80-84	1,088	16,647,775	1,026	9,532,202	2,114	26,179,977
85-89	487	7,083,308	578	4,907,332	1,065	11,990,640
90 & over	143	1,914,486	270	2,030,598	413	3,945,084
Total	22,263	$ 455,431,143	21,009	$ 277,469,969	43,272	$ 732,901,112

Average Age	64.0
Average Annual Annuity	$16,937

Disabled Annuitants

	Male		Female		Total	
Age	Number	Annual Annuity	Number	Annual Annuity	Number	Annuity
Under 25	-	$ -	-	$ -	-	$ -
25-29	2	27,522	2	22,175	4	49,697
30-34	12	176,722	12	134,856	24	311,578
35-39	38	515,643	44	597,573	82	1,113,216
40-44	101	1,548,206	101	1,244,914	202	2,793,120
45-49	226	4,062,237	208	3,128,224	434	7,190,461
50-54	452	8,586,983	424	6,802,253	876	15,389,236
55-59	623	11,891,126	725	12,335,457	1,348	24,226,583
60-64	883	15,556,682	968	15,654,452	1,851	31,211,134
65-69	844	12,881,933	869	12,421,643	1,713	25,303,576
70-74	451	5,325,345	500	5,799,684	951	11,125,029
75-79	230	2,247,376	288	2,624,797	518	4,872,173
80-84	125	1,105,081	181	1,460,894	306	2,565,975
85-89	61	606,949	83	606,379	144	1,213,328
90 & over	22	196,125	37	289,817	59	485,942
Total	4,070	$ 64,727,930	4,442	$ 63,123,118	8,512	$ 127,851,048

Average Age	63.0
Average Annual Annuity	$15,020

Beneficiaries and Survivor Annuitants

	Male		Female		Total	
Age	Number	Annual Annuity	Number	Annual Annuity	Number	Annuity
Under 25	14	$ 112,706	17	$ 144,607	31	$ 257,313
25-29	20	203,193	19	113,395	39	316,588
30-34	12	199,032	19	151,239	31	350,271
35-39	26	367,641	23	363,089	49	730,730
40-44	23	352,864	54	470,982	77	823,846
45-49	52	535,598	123	1,215,777	175	1,751,375
50-54	46	292,943	292	3,560,488	338	3,853,431
55-59	85	847,538	479	5,871,235	564	6,718,773
60-64	134	1,520,361	833	11,297,418	967	12,817,779
65-69	202	2,261,355	1,332	19,505,234	1,534	21,766,589
70-74	171	2,104,198	1,255	19,188,756	1,426	21,292,954
75-79	154	1,418,931	1,383	18,768,409	1,537	20,187,340
80-84	122	1,131,316	1,445	16,382,465	1,567	17,513,781
85-89	112	966,898	1,385	14,003,224	1,497	14,970,122
90 & over	73	610,693	1,247	9,942,493	1,320	10,553,186
Total	1,246	$ 12,925,267	9,906	$ 120,978,811	11,152	$ 133,904,078

Average Age	74.6
Average Annual Annuity	$12,007

Benefit and Contribution Provisions as of December 31, 2015
(as embodied in Act 31 of 1974, and amended through Act 93 in December 2015)

The State Employees' Retirement System makes provision for retirement, disability, and death benefits for all State employees, except those specifically excluded under Section 5301 of the SERC, and certain other eligible groups. The major provisions are summarized as follows:

Eligible Employees

Class A-3 - All eligible employees hired after December 31, 2010, except members of the judiciary. Certain groups have effective dates after December 31, 2010 that are tied to the expiration of collective bargaining agreements. Members of the General Assembly who joined SERS on or after December 1, 2010 are also part of this class.

Class A-4 - Same as Class A-3 except that this class is for members who elect to pay a higher member contribution amount and receive a higher benefit.

Class AA - All eligible employees hired after June 30, 2001 but prior to January 1, 2011, except State Police Officers, members of the judiciary and legislators, and employees hired before July 1, 2001, who elected Class AA by December 31, 2001.

Class A - State Police Officers hired on or after March 1, 1974 but prior to July 1, 2012, members of the judiciary who have not elected Class E-1 or E-2, legislators elected and became members before July 1, 2001, who have not elected Class AA or Class D-4 and Class A employees hired before July 1, 2001, who remained in Class A.

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

Class E-1 - Judges who elect Class E-1.

Class E-2 - Magisterial District Judges who elect Class E-2.

Benefit and Contribution Provisions as of December 31, 2015 (continued)
(as embodied in Act 31 of 1974, and amended through Act 93 in December 2015)

Age and Service Requirements for Superannuation (full formula benefits)

Class A-3 & Class A-4

General Conditions	Age 65 with three years of credited state service; or a total attained age and years of credited service of 92 (the "Rule of 92") with credited service being at least 35 years.
Legislators and certain correction officers and enforcement officers	Age 55 with three years of credited state service.
Park Rangers & Capitol Police	Age 55 with 20 years of Park Ranger or Capitol Police credited service. If total credited service is less than 20 years, General Conditions apply.
State Police	Age 55. State Police are eligible for special unreduced benefits after 20 years of credited service, regardless of age; however, age 55 remains their superannuation age.

Class AA & Class A

General Conditions	Age 60 with three years of credited state service; or 35 or more years of credited service, regardless of age.
Legislators and certain correction officers and enforcement officers	Age 50 with three years of credited state service.
Park Rangers & Capitol Police	Age 50 with 20 years of Park Ranger or Capitol Police credited service. If total credited service is less than 20 years, General Conditions apply.
State Police	Age 50. State Police are eligible for special unreduced benefits after 20 years of credited service, regardless of age; however, age 50 remains their superannuation age.
Class D-4	Age 50 with three years of credited state service.
Class E-1 & Class E-2	Age 60 with three years of credited state service; or 35 or more years of credited service, regardless of age.

Benefit and Contribution Provisions as of December 31, 2015 (continued)
(as embodied in Act 31 of 1974, and amended through Act 93 in December 2015)

Formula for Superannuation Annuity

The single life annuity applicable to members of Class AA and Class A-4 is equal to 2.5 percent of the high 3-year final average salary (FAS) of the member multiplied by the years and fractions of credited service.

The single life annuity applicable to members of Class A and Class A-3 is equal to 2 percent of the high 3-year final average salary of the member multiplied by the years and fractions of credited service.

The single life annuity applicable to Class A State Police is 50 percent of the highest full calendar year of compensation, other than the year in which the member retires, if the member has 20 but less than 25 years of service. With more than 25 years of service the benefit is 75 percent of the highest annual salary, other than the year in which the member retires.

The benefit accrual rates for other classes of members are as follows:

Class	Benefit Accrual Rate
D-4	3.0 percent
E-1	4.0 percent for each of the first 10 years of judicial service, dropping to 3.0 percent for each subsequent year of judicial service.
E-2	3.0 percent for each year of judicial service.

Members who have 41 or more years of combined Class A-3, A-4, A and AA service are entitled to a supplemental benefit ranging from 2 percent of the applicable single life annuity for members with 41 years of service to 10 percent of the applicable single life annuity for members with 45 or more years of service.

The benefit for a member who works past age 70 is at least equal to a benefit that is the actuarial equivalent of the prior year’s benefit. This determination is made each year after age 70.

In addition to the above benefits, a member who has elected Social Security Integration Coverage is entitled to a single life annuity of 2 percent of the member’s "Average Non-Covered Salary" for each year of Social Security Integration (SSI) coverage. All Class E members can elect SSI coverage. Other members must have elected SSI coverage before March, 1974. "Average Non-Covered Salary" is the average annual salary received while covered by the Retirement System since January 1, 1956 in excess of the maximum covered wages under Social Security.

Benefit and Contribution Provisions as of December 31, 2015 (continued)
(as embodied in Act 31 of 1974, and amended through Act 93 in December 2015)

Limitations on Annuity

In almost all cases, SERS benefits are limited to no more than 100 percent of compensation. An exception to this limit is the actuarial increase portion of the benefit for certain members eligible for actuarial increases due to retirement beyond age 70. For such members, the 100 percent of salary limit only applies to the base benefit. Also, the amount of annual retirement benefit a member may receive shall not exceed the dollar limit specified under Section 415(b) of the Internal Revenue Code. Benefits in excess of the 415(b) limit are paid through the Benefits Completion Plan.

Age and Service Requirements for Disability Retirement

A member is eligible for disability retirement, if, as determined by a member of the SERS medical review staff, he or she is unable to perform their current job and has at least 5 years of credited service. An officer of the State Police or an enforcement officer does not have a minimum service requirement.

Formula for Disability Benefit

The disability benefit is equal to the benefit calculated as of normal retirement age, based on years of credited service at disability, if the result is greater than or equal to 33-1/3 percent of FAS at time of disability. If the benefit so calculated is less than 33-1/3 percent of FAS, the disability benefit is equal to the smaller of:

(a) the benefit calculated as of normal retirement age based on Service projected to retirement date, or

(b) 33-1/3 percent of FAS at time of disability.

For service connected disabilities, the disability benefit payable will be increased, as needed, so that the sum of the plan benefit and the benefits paid or payable under the Workers' Compensation Act, The Pennsylvania Occupational Disease Act, and the Social Security Act equals 70 percent of FAS.

Eligibility for Vested Benefit

All Class A-3 and A-4 members have a vested entitlement to an annuity after 10 years of credited service. All other classes are vested after 5 years of credited service.

Vested Benefit

The vested benefit is equal to the benefit calculated using years of credited service at the time of leaving the plan. The former member can receive the full benefit beginning at normal retirement age, or an actuarially reduced withdrawal annuity beginning at any date after separation but before normal retirement age.

Benefit and Contribution Provisions as of December 31, 2015 (continued)
(as embodied in Act 31 of 1974, and amended through Act 93 in December 2015)

For those not in Classes A-3 or A-4, the withdrawal annuity is reduced from the earlier of age 60, or the age at which the member would have 35 years of credited service. Benefits for Park Rangers and Capitol Police who have 20 years of credited service (as Park Rangers and Capitol Police) are reduced from age 50. Benefits for other members who have an age 50 superannuation age are reduced from age 50 irrespective of the amount of credited service they have.

For Classes A-3 and A-4, the withdrawal annuity is reduced from age 65. If prior to age 65 the member has both reached 35 years of credited service and met the conditions of the Rule of 92, then the member is eligible for unreduced benefits. Benefits for Park Rangers and Capitol Police who have 20 years of credited service (as Park Rangers and Capitol Police) are reduced from age 55. Benefits for other members who have an age 55 superannuation age are reduced from age 55 irrespective of the amount of credited service they have.

Eligibility for Death Benefit Prior to Retirement

A member is eligible if the member (1) is under superannuation age with 5 years (or 10 years under Classes A-3 and A-4) of credited service or (2) has attained superannuation age with 3 years of credited state service.

Amount of Death Benefit Prior to Retirement

An eligible beneficiary receives the full present value of the benefits to which the member would have been entitled had the member retired the day before he or she died, assuming the member had elected Option 1 if no other option had been elected. This death benefit includes the present value associated with benefits, if any, to which the member may not have been entitled because they exceeded the member’s highest consecutive twelve months of salary and are limited by appropriate IRS limitations.

Death Benefits After Retirement

A member who elects the maximum single life annuity is entitled to a refund of the unpaid balance of the accumulated member contributions and interest at the time of retirement. A member may elect one of several optional reduced pensions in lieu of the maximum single life annuity to provide additional death benefit protection. The optional forms of benefit are actuarially equivalent to the maximum single life annuity benefit using 4.0 percent interest per annum, compounded annually, and the actuarial equivalence factors described below.

The beneficiary of a disabled member who did not elect an alternative option receives benefits determined under Option 1. Option 1 provides that the beneficiary will receive a benefit equal to the present value of the maximum single life annuity at retirement reduced by any payments received by the annuitant. The Option 1 benefit is provided to a disabled member without any reduction in the member’s benefit.

Benefit and Contribution Provisions as of December 31, 2015 (continued)
(as embodied in Act 31 of 1974, and amended through Act 93 in December 2015)

A Supplemental Death Benefit is payable to a beneficiary of a member who had a retirement benefit limited by 100 percent of final compensation. The Supplemental Death Benefit is the present value of the excess of the retirement benefit payable to the member before applying the 100 percent of final compensation limit, over the 100 percent of final compensation limit, subject to limits imposed by IRC Section 401(a)(9). If the benefit payable to the member is larger than the IRC Section 415(b) limit, the part of the Supplemental Death Benefit in excess of the IRC Section 415(b) limit will be payable from the Benefits Completion Plan. The Supplemental Death Benefit payment is in addition to any death benefit that may be paid as a result of the optional election.

The "Extra Piece"

The SERC provides for an "extra piece" to be added to the annual benefit if the member's accumulated deductions exceed one-half of the actuarially equivalent value of the annual benefit. The extra piece is equal to the difference between the total accumulated deductions and one-half of the actuarially equivalent value of the annual benefit. This provision does not apply to Classes A-3 and A-4.

Cost-of-Living Allowances (COLAs)

Supplemental annuities applying cost-of-living increases to the benefits of annuitants have been instituted from time to time. The last cost-of-living increase was a two-stage increase under Act 2002-38. The first stage was applicable to annuitants who retired on or before July 1, 1990, and it became effective in July of 2002. The second stage provided cost-of-living increases to annuitants who retired after July 1, 1990, but prior to July 2, 2002, and it became effective in July of 2003.

Rate of Member Contribution

(i) Regular member contributions, excluding Social Security Integration contributions

Class A-3 - 6.25 percent of total compensation

Class A-4 - 9.30 percent

Class AA - 6.25 percent

Class A - 5.00 percent

Class D-4 - 7.50 percent

Class E-1 - 10.00 percent during the first 10 years of judicial service and 7.50 percent thereafter.

Class E-2 - 7.50 percent

Benefit and Contribution Provisions as of December 31, 2015 (continued)
(as embodied in Act 31 of 1974, and amended through Act 93 in December 2015)

(ii) Additional contribution for Social Security Integration Credit

Any member who elects the Social Security Integration Credit pays 5.00 percent of any salary in excess of the amount of salary covered by Social Security during the year for which contributions are being made. A member electing to end additional contributions is ineligible to make future contributions or accrue future benefits.

Interest Credited on Member Contributions

A rate of 4 percent compounded annually, the statutory rate of interest, has been credited on the member contributions since the inception of the system.

Refund of Accumulated Member Contributions

On the death of a member not qualifying for death benefits, the accumulated member contributions and interest will be paid to the beneficiary. Upon application, a member terminating service when not eligible for another form of benefit is paid a refund of the accumulated contributions and interest. Other terminating members may elect to receive a lump sum payment of a portion of the present value of their benefit, not to exceed their accumulated contributions and interest under Option 4 as part of the members' option. Their lump sum payment results in a decrease to the annuity benefit otherwise payable. Under Act 120, Classes A-3 and A-4 are not eligible to receive a lump sum and reduced annuity under Option 4.

Employer Contributions

The employer pays the balance of the cost in excess of the members' contributions with payment schedules determined by law. Act 2010-120 made changes to the SERS funding rules which have significantly affected the required employer contributions. See Section III of Schedule O for the details.

Actuarial Equivalence

The actuarial table used to determine optional and early retirement benefits for members who entered service after August 1983 is the 1983 Group Annuity Mortality (1983 GAM) Unisex table.

Benefit and Contribution Provisions as of December 31, 2015 (continued)
(as embodied in Act 31 of 1974, and amended through Act 93 in December 2015)

Members who entered service before August 1983 receive the better of benefits based on the 1983 GAM table or a variation of the 1971 Group Annuity Mortality (1971 GAM) male table. The 1971 GAM table that applies in determining the benefits for members who entered service before August 1983 is:

For service before August, 1983:

Males (members or survivors) – 1971 GAM for males
Females (members or survivors) – 1971 GAM for males, set back 6 years

For service after August, 1983:

Members (male or female) – 1971 GAM for males, set back 6 years
Survivors (male or female) – 1971 GAM for males

Military Service

Act 2012-181, effective December 31, 2012, brought SERS into compliance with the federal Heroes Earnings Assistance and Relief Tax Act of 2008 (HEART Act) and Uniformed Services Employment and Reemployment Rights Act of 1994 (USERRA) for State employees who go on military leave, and revised the purchase price formula for nonintervening military service for members seeking to purchase nonstate service credit for military service that does not qualify for USERRA benefits or that was performed before becoming a State employee. The primary impacts of Act 181 are:

(i) Employees who return from USERRA qualified military leave receive vesting credit, even though they do not make member contributions to purchase credited service for the military leave.

(ii) Employees who return from USERRA qualified military leave may make the member contributions that they would have made had they not gone on military leave and if they do so will be treated as if they remained in active State service for that time.

(iii) Employees who die on military leave receive all SERS benefits that they would have received, except benefit accruals, as if they had returned to State service the day before their death.

(iv) The Pennsylvania Military and Veterans Code provisions allowing State employees on military leave to continue to make member contributions and remain active members of SERS while on military leave have been repealed.

Benefit and Contribution Provisions as of December 31, 2015 (continued)
(as embodied in Act 31 of 1974, and amended through Act 93 in December 2015)

(v) The purchase price for nonintervening military service for Class A-3 and Class A-4 members has been revised from the full actuarial value formula established in Act 2010-120 to the formula used by State employees who are members of the other classes of service, which is based on employee and employer normal contribution rates and the employees' compensation.

Given the past approach to funding the impact of military service-related events among SERS members, and considering the overall changes in benefits related to military service and military leave resulting from Act 181, it was determined that Act 181 had no material impact on the future actuarial funding of SERS, and thus did not produce a cost added by legislated benefit improvements that needed to be reflected in the final contribution rate.

Compliance With Federal and State Laws

Act 2015-93, signed into law in December of 2015, instituted several technical, tax-related requirements for SERS in an effort to maintain the SERC's compliance with federal and state laws, including the Internal Revenue Code. Many of these technical changes were transparent to SERS members, and most of the other changes affected only a few State employees.

These changes included:

- Retiree return to service rules, allowing annuitants to return to active service in limited circumstances, were structured to satisfy federal requirements
- Minimum vesting standards were established in the event the 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' actuaries have determined that Act 2015-93 had no material impact on the future actuarial funding of SERS, and thus did not produce a cost added by legislated benefit improvements that needed to be reflected in the final contribution rate.

Actuarial Assumptions

This schedule shows the actuarial assumptions used for the valuation. With the exception of the investment return assumption, these assumptions were adopted by the Board in March of 2016 based upon a review of SERS experience from 2011 through 2015. To ensure that the investment return assumption remains up-to-date and appropriate for every actuarial valuation, it is reviewed annually by the SERS actuaries and Board. The current annual investment return assumption of 7.50% was initially adopted by the Board for the December 31, 2011 actuarial valuation. Since that time, the 7.5% investment return assumption has been reviewed annually and, each time, retained by the Board.

Schedule N contains an extract of the full set of rates used in the valuation. The full set of rates is in the March 9, 2016 report, *Commonwealth of Pennsylvania State Employees' Retirement System 18th Investigation of Actuarial Experience – January 1, 2011 to December 31, 2015*, which can be obtained from SERS. The rates are the probabilities that an event will occur in the year after the valuation and are all assumed to occur at the beginning of the year. For example, the male retirement rate of 25.0 percent at age 60 means that 250 of every 1,000 male employees age 60 and who are eligible for full benefits are expected to retire at the date of the valuation.

Interest Rate: 7.5 percent compounded annually. The assumed interest rate of 7.5 percent is the investment return less investment expenses.

Mortality After Retirement:

Non-disabled Retirees, Beneficiaries and Survivors: The RP-2000 Male and Female Combined Healthy Mortality Tables projected (using Projection Scale AA) to 2016 for males and to 2020 for females, and then further adjusted to ensure sufficient margin for improvement in certain age ranges. Each table includes a margin for future improvement in life expectancy.

Disability Retirees: The RP-2000 Male and Female Disabled Retiree Mortality Tables projected (using Projection Scale AA) to 2021 for males and to 2017 for females. Each table includes a margin for future improvement in life expectancy.

Spouse Age Difference: Females are assumed to be 2 years younger than males.

Actuarial Assumptions (continued)

Demographic Assumptions for General Employees while Active Members

Rates of Separation for Eligibility for Full Unreduced Benefits
(35 years of credited service under age 60; 3 years of credited service over age 60)

Representative Rates of Separation for Eligibility for Full Unreduced Benefits		
Age	Male	Female
53	20.0%	23.0%
54-55	23.0	23.0
56-57	24.0	23.0
58	27.0	23.0
59	30.0	25.0
60	25.0	25.0
61	20.0	20.0
62	25.0	25.0
63 – 64	20.0	20.0
65 – 66	25.0	25.0
67 – 70	23.0	23.0
71 – 79	20.0	20.0
80	100.0	100.0

Rates of Separation for Eligibility for Reduced Benefits
(only apply to members not eligible for full unreduced benefits)

Representative Rates of Separation for Eligibility for Reduced Benefits				
	5 – 14 Years of Credited Service		15 or More Years of Credited Service	
Age	Male	Female	Male	Female
25	2.0%	3.7%	N/A	N/A
30	1.6	1.9	N/A	N/A
35	1.6	1.9	1.0%	1.2%
40	1.6	1.9	1.0	1.2
45	1.35	1.9	1.0	1.6
50	1.35	1.9	2.0	2.0
55	1.35	1.9	6.0	6.0

Actuarial Assumptions (continued)

Rates of Separation Due to Withdrawal
It is assumed that the benefit will be reduced from age 58 for general members (to factor 35 years of service before age 60) and from age 50 for members eligible for age 50 retirement.

Representative Rates of Separation Due to Withdrawal								
	Male				Female			
	Years of Credited Service				Years of Credited Service			
Age	0	5	9	14	0	5	9	14
20	24.2%	N/A	N/A	N/A	28.4%	N/A	N/A	N/A
25	18.5	3.0%	2.1%	N/A	22.4	3.7%	2.3%	N/A
30	16.4	3.0	2.1	1.0%	19.2	3.3	2.3	1.7%
35	15.6	2.4	1.3	1.0	15.0	3.2	2.3	1.2
40	15.0	2.4	1.3	1.0	13.4	3.2	1.2	1.0
45	14.4	2.4	0.7	1.1	13.1	2.7	1.2	1.0
50	14.4	2.6	0.7	1.1	13.1	2.7	1.5	1.0
55	14.4	1.9	0.8	0.8	13.1	1.8	1.0	1.6

Rates of Separation Due to Death and Disability
(Disability rates only apply to members not eligible for full retirement)

Representative Rates of Separation Due to Death and Disability				
	Death		Disability	
Age	Male	Female	Male	Female
20	0.04%	0.02%	N/A	N/A
25	0.04	0.02	0.02%	0.04%
30	0.05	0.02	0.06	0.09
35	0.06	0.03	0.11	0.14
40	0.09	0.04	0.17	0.19
45	0.13	0.06	0.30	0.30
50	0.24	0.09	0.42	0.45
55	0.29	0.14	0.55	0.57
60	0.35	0.24	N/A	N/A

Actuarial Assumptions (continued)

For Special Benefit Classes if Different from General Employee Rates:

Rates of Separation Due to Withdrawal			
Years of Service	State Police/ Hazardous Duty	Legislators	Judicial Officers
0	9.0%	4.0%	1.0%
1	4.0	4.0	1.0
2	3.0	4.0	0.3
3	3.0	4.0	0.3
4	2.0	4.0	0.3
5	1.0	4.0	0.3
6	1.0	4.0	0.3
7	0.5	12.0	0.3
8	0.5	12.0	0.3
9	0.5	12.0	0.3
10+	0.2	1.6	0.3

Rates of Separation Due to Early Retirement at Any Age		
State Police/ Hazardous Duty	Legislators	Judicial Officers
1.4%	2.7%	0.2%*

* The Judicial Officer rate increases to 1.8% beginning at age 50.

Representative Rates of Separation Due to Retirement other than State Police with 19 or More Years of Credited Service			
Age	State Police/ Hazardous Duty	Legislators	Judicial Officers
50	10.0%	5.0%	N/A
55	10.0	5.0	5.0%
60	19.0	5.0	5.0
65	27.0	11.0	10.0
70	32.0	15.0	100.0
75	32.0	15.0	N/A
80	100.0	100.0	N/A

Actuarial Assumptions (continued)

Rates of Separation due to Retirement for State Police with 19* or More Years of Credited Service			
Years of Service	Rate	Years of Service	Rate
19* – 23	1.0%	30	50.0
24*	50.0	31 – 32	40.0%
25	70.0	33 – 39	50.0
26 – 29	40.0	40+	100.0

* State Police with 19 and 24 years of service at the beginning of the year are assumed to retire at the point they reach 20 and 25 years respectively during the year and to receive the FOP award.

Years of Service Purchased by Eligible Members

Service	Number of Years Purchased
0	0.4
1	0.3
2	0.2
3	0.1
4+	0.0

It is assumed that the member will elect to pay for the reduction through an actuarial debt and that all purchased service is a 2 percent accrual. Under Act 2010-120 and Act 2012-181, the assumed years purchased as shown above were reduced by 9% for Classes A-3 and A-4.

Form of Payment: Members are assumed to elect the maximum benefit 32 percent of the time, some form of joint and survivor annuity 25 percent of the time, and some form of guaranteed present value (including joint and survivor with a guaranteed present value) 43 percent of the time. Also, 80 percent of members are assumed to elect a full Option 4 withdrawal of contributions and interest.

Career Salary Increases

The career salary scale shown on the following page includes average increases in the employee salary due to promotions and longevity growth. The average career salary growth is 2.65 percent per year.

Actuarial Assumptions (continued)

In addition, it is assumed that the salary schedules will increase by 3.05 percent per year. The scale below does not include the assumed 3.05 percent general salary increase.

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

The above scale does not apply to members in Classes D and E. It is assumed that only the general salary increase (3.05 percent per year) would apply to members in these classes.

Class A-3 and A-4 Assumptions

The following tables are the early and superannuation retirement rates applicable to Class A-3 and A-4 members.

Actuarial Assumptions (continued)

Early Retirement Rates for Class A-3 and Class A-4 Active Employees with 10 or more Years of Service	
Ages	**Rate**
35	1.5%
40	1.5
45	1.5
50	2.0
55	5.5
60	5.5
61	6.0
62	20.0
63	10.0
64	15.0
65	N/A

Superannuation Retirement Rates for Class A-3 and Class A-4 Employees	
Age	**Rate**
55	15.0%
56	16.0
57	17.0
58	18.0
59	19.0
60	20.0
61	20.0
62	25.0
63	20.0
64	20.0
65	25.0
66 to 79	20.0
80	100.0

Actuarial Methods

I. Asset Valuation

The actuarial value of assets is developed by recognizing the difference between the expected actuarial value of assets and the market value of assets over a five-year period. The expected actuarial value is last year's actuarial value brought forward to reflect actual contributions, benefit payments and expenses, and assumed investment income. Each year, 20 percent of the difference between this expected value and the market value is recognized in determining the current actuarial value of assets with the remaining 80 percent to be recognized over the next four years.

II. Funding Method

The State Employees' Retirement System's funding policy provides that the actuary determine employer contribution rates that will amortize liabilities over a ten-year or 30-year period beginning with the July following the measurement of the liability. See Section III below for details regarding the specific liabilities subject to amortization and the applicable amortization periods. This policy assures that the SERS is appropriately funded and also that the fund will accumulate sufficient assets to pay benefits when they are due. The policy is set by the State Employees' Retirement Board in conformance with specific legal requirements as to the method of funding.

A variation of the Entry-Age Actuarial Cost Method is used to determine the liabilities and costs related to all SERS' benefits including retirement, withdrawal, death and disability benefits. The significant difference between the method used for SERS and the typical Entry-Age Actuarial Cost Method is that the normal cost is based on the benefits and contributions for new employees rather than for all current employees from their date of entry. SERS' variation should produce approximately the same results as the typical method over the long run.

III. Determination of the Annual Contribution

The annual employer contribution is equal to the sum of the following:

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

Actuarial Methods (continued)

The amortization payments are level amounts over the remaining applicable amortization period. The employer cost is determined as a percent of compensation, and the employer contributes that percent of the compensation of all covered members during each fiscal year. The pre-collared employer contribution level for fiscal year 2016/2017 is the total of (1) the employer normal cost percent and (2) the net amortization payment for fiscal year 2016/2017 divided by the projected covered compensation for the fiscal year. However, Act 2010-120 established employer contribution collars for the purpose of temporarily limiting the extent of annual increase in the employer contribution rate.

To determine the maximum 2016/2017 employer contribution rate under Act 2010-120, we add the fiscal 2016/2017 contribution collar of 4.5 percent of payroll to the final 2015/2016 employer contribution requirement of 25.00 percent of payroll, to produce a result of 29.50 percent of compensation. No legislation enacted since the prior valuation resulted in any costs added by legislated benefit changes that would impact the December 31, 2015 actuarial valuation results. Therefore, the 2016/2017 employer contribution rate is limited to 29.50 percent of covered compensation, below the uncollared rate (32.14 percent of covered compensation) that would otherwise be required. The 4.5 percent contribution collar established under Act 2010-120 has limited the annual increase in the employer contribution rate for each fiscal year since fiscal 2012/2013. When the collar ceases to apply, uncollared contribution rates will apply thereafter (subject to a minimum employer contribution rate equal to the employer normal cost percent).

The assumptions used in determining the actuarial cost are stated in Schedule N, and the employer cost, as a percent of covered compensation, is determined in Schedules A and B. Except for the 7.5 percent investment return assumption, which is reviewed annually and has been used since the December 31, 2011 valuation, the assumptions used for the current valuation were based upon an evaluation of SERS experience from 2011 through 2015.

The annual investment return assumption is 7.5 percent compounded annually. Salary growth is the total of assumed increases in salary rates and career salary growth. It is generally assumed that the total payroll will increase at 3.05 percent per year and that employee career salary growth (promotion and longevity growth) will average an additional 2.65 percent per year. Therefore, the average total salary growth for an individual will generally be 5.70 (3.05 plus 2.65) percent per year. The investment return and the salary rate increase assumptions are based on an assumed underlying inflation of 2.75 percent per year.

All costs and liabilities have been determined in conformance with generally accepted actuarial principles and procedures in accordance with the principles of practice prescribed by the Actuarial Standards Board of the American Academy of Actuaries. The calculations were performed on the basis of actuarial assumptions and methods which are reasonable (taking into account the past experience of SERS and reasonable expectations) and which represent our best estimate of anticipated experience under the plan.

Actuarial Methods (continued)

IV. Allocation of the Annual Contribution Among Employer Groups

The annual employer contribution (total employer cost) is expressed as a percentage of the total projected covered compensation for active members. This amount is reflected on Schedule B, line IV, and is referred to as the total employer cost. The total employer cost is the average contribution amount that needs to be received from the employer groups participating in the system. Therefore, some employer groups contribute a higher percent of compensation, and some employer groups contribute a lower percent of compensation.

Schedule C develops the contribution rate for each of the employer groups. The allocation method used to determine the employer rate takes into consideration the cost of additional benefits for special classes of members. For example, the contribution rate for Class E members takes into consideration the additional accrual rate those members receive at retirement. The Base Contribution Rate (column 2 on Schedule C) is determined as the percentage needed to produce employer contribution amounts by class that, when added together, equal the total employer contribution.

The following is an explanation of the elements of Schedule C.

Column (1) is the employer group.

Column (2) is the Base Contribution Rate. The Base Contribution Rate is the amount needed to fund the benefits for Class A-3 (65) members. Because the majority of SERS new entrants will be covered under Class A-3 (65), the 2.0 percent accrual rate for that class is used to determine the base contribution rate.

Column (3) is the additional cost for members who are eligible to retire with unreduced benefits at age 50 or 55. The age 50/55 normal cost is determined for two groups of members: members who can retire at age 50/55 if they have 3 years of credited service, and members who can retire at age 50/55 once they obtain 20 service credits. Park Rangers and Capitol Police fall into the latter category. The additional cost for members who can retire at age 50/55 if they have 3 years of credited service is larger than the additional cost for members who can retire at age 50/55 if they have 20 years of credited service.

Column (4) is the multiplier adjustment to the basic benefit, which is applicable to members in classes that receive a different percent accrual rate than the accrual rate for Class A-3 members. The normal cost is determined for members who would receive the standard 2.0 percent single life annuity set by Act 120 (Class A-3). For example, members in Class AA receive an annuity equal to 1.25 times the standard Class A-3 single life annuity. The multiplier adjustment (Column (4)) for Class AA is 1.4472, which includes the 1.25 multiplier plus some additional adjustments (e.g., differences in superannuation age and limitations on Option 4 withdrawals under Act 120). There currently are no multiplier adjustments less than the 1.0.

Actuarial Methods (continued)

Column (5) is the past-service liability component for certain employee groups. These employee groups were granted benefit improvements that were retroactive at the date of passage and, therefore, cover all credited service for the class. Upon establishment of a benefit improvement it was determined that the employers of the individual employee group, not the Commonwealth, would fund the benefit improvement.

At implementation of the new benefit provision, a liability is established for the members who are eligible for the new benefit provisions, and a schedule is determined to pay off the increase in liability. For example, Park Rangers and Capitol Police Officers were formerly covered under the age 60 retirement provisions. Effective with the valuation at December 31, 1992, Park Rangers and Capitol Police Officers became eligible to retire at age 50 upon attaining 20 years of service (as Park Rangers and Capitol Police Officers). At that valuation, a liability was established that would fund the increase in benefits.

The liability for the increase in benefits for past service is paid off in equal installments by the employers of the member group. Each year, the annual contribution as a percent of payroll is determined as the annual payment divided by the funding payroll for the group. The outstanding balance is carried forward with interest each year.

The following table shows the payment schedule for the two groups of employees who have a past service liability.

Amortization Schedule for Past Liabilities		
Employer Group	**Payment**	**Last Payment (fiscal year beginning)**
State Police	$17,596,938	July 2029
Park Rangers / Capitol Police	$87,124	July 2027

Column (6) is the adjusted contribution rate, and is equal to column (2) plus column (3), multiplied by column (4). Column (5) is added.

Column (7) is the projected compensation for the class of employees. The projected compensation is for the fiscal year to which the contribution rate is applicable.

Column (8) is the dollar amount of the employer group contribution. Except when the base employer contribution rate is zero, the sum of the dollar amounts for each group is (approximately) equal to the total employer contribution (as a percent of covered compensation) multiplied by the total projected covered compensation for the active members.

Actuarial Methods (continued)

V. Plan Provisions Not Valued

The cost effect of two plan provisions was not included in this valuation because the effect of the provisions is minimal. These are the limit on the amount of retirement benefit imposed by Section 5702(c) (100 percent limit) and the supplemental death benefit payable when the retirement benefit is limited by Section 5702(c).

These two provisions are not valued because they only apply to very few SERS members. Since by definition the liability for the supplemental death benefit is lower than the reduction in liability for the 100 percent limit, the net effect of not including these provisions in the actuarial valuation is a minimal overstatement in the total employer cost.

VI. Determination of Present Value of Benefits for Inactive and Vested Members

The present value of benefits for inactive members not currently receiving benefits is determined using the same methods and procedures as for active members. They are valued using the final average compensation and service as of separation and are assumed to begin receiving benefits in accordance with the active employee assumptions.

Glossary

Accrued Service. Service credited under the system, which was rendered before the date of the actuarial valuation.

Active Participants. Active members who are in a position covered by SERS and on payroll, on leave with pay, or on certain unpaid leave (e.g., military leave). Inactive members on leave without pay are also included as active participants if there is an expectation they will return to paid service.

Actuarial Accrued Liability. The portion of the actuarial present value of benefits not provided for by the actuarial present value of future normal costs. Also referred to as Past Service Liability.

Actuarial Assumptions. Estimates of future experience with respect to rates of mortality, disability, turnover, retirement, investment income and salary growth. Decrement assumptions (rates of mortality, disability, turnover and retirement) are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (salary increases and investment income) consist of an underlying rate in an inflation-free environment plus a provision for a long-term average rate of inflation.

Actuarial Cost Method. A mathematical budgeting procedure for allocating the actuarial present value of future benefits between future normal costs and the actuarial accrued liability.

Actuarial Present Value. The amount of funds currently required to provide a payment or series of payments in the future. It is determined by discounting projected future payments at assumed rates of interest and probabilities of payment.

Amortization. Paying off an amount with periodic payments of interest and principal -- as opposed to paying off with a lump sum payment.

Annuitants. Participants of SERS who are currently receiving benefits for reason of superannuation retirement, early retirement, deferred retirement, or disability retirement.

Beneficiaries and other payment recipients. Beneficiaries, survivors or alternate payees who are receiving benefits as a result of the death of an active member or annuitant or due to a divorce (based upon a domestic relations order).

Funding Payroll. The contribution determinations for the funding of SERS are based on a fiscal year running from July 1 to June 30. The Total Annualized Compensation is adjusted to an appropriate fiscal year Funding Payroll using the salary scale assumption and expected turnover and replacement estimates.

Inactive and Vested Participants. In general, inactive and vested participants are former active members who are not expected to return to paid service in a position covered by SERS. Inactive and vested participants include employees on furlough as well as employees with prior SERS service currently participating in the Pennsylvania Public School Employees' Retirement System (PSERS).

Glossary (continued)

All inactive and vested participants are entitled to either a refund of accumulated deductions from SERS or a monthly benefit. Inactive and vested participants will eventually change statuses; for example, they may terminate non-vested and receive a refund of their accumulated deductions, they may retire and commence annuity payments, they may return to active membership, etc.

Total Annualized Compensation. The Total Annualized Compensation is a snapshot of compensation on December 31. For full-time employees, it is equal to the compensation during the calendar year ending December 31. For part-time employees, compensation is annualized using the current rate of compensation times the appropriate number of pay periods.

Total Normal Cost. The portion of the actuarial present value of future benefits that is allocated to the current year by the actuarial cost method.

Unfunded Actuarial Accrued Liability. The difference between actuarial accrued liability and the actuarial value of assets.

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