

**COMMONWEALTH OF PENNSYLVANIA**

**STATE EMPLOYEES' RETIREMENT SYSTEM**

**1999 ACTUARIAL REPORT**

**HAY/HUGGINS COMPANY**

**MAY 3, 2000**

May 3, 2000

Mr. John Brosius  
Executive Director  
State Employees' Retirement System  
30 North Third Street  
Harrisburg, PA 17108-1147

Dear Mr. Brosius:

The purpose of this letter is to certify the actuarial adequacy of the contributions being made by the State 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 funding objective of the plan is set forth in the SERS code. The annual employer contribution is equal to the sum of the following:

- (1) The employer share of the normal cost.
- (2) The amortization of the unfunded liabilities as of December 31, 1990 over a twenty-year period ending on June 30, 2011.
- (3) The amortization of changes in liability after 1990 over twenty-year periods typically beginning with the July first following the effective date of the change. Changes include actuarial gains and losses and plan amendments.

The amortization payments increase five percent a year. The employer cost is determined as a percent of payroll, and the employer contributes that percent of the payroll of all covered members during each fiscal year. The employer cost is the total of (1) the employer normal cost percent and (2) the amortization payment on the outstanding liabilities. The employer contribution rate is based on the results of the actuarial valuation, which is performed annually. The most recent valuation was performed as of December 31, 1999.

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. The calculations were performed on the basis of actuarial assumptions and methods, which are internally consistent, and reasonable (taking into account past experience under the SERS and reasonable expectations) and which in combination represent the best estimate of anticipated experience under the plan.

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 its use in the actuarial valuation. The data are also summarized and tabulated for the purpose of analyzing trends.

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, 1999 actuarial valuation were adopted by the Board and were based on actual experience of SERS during the years 1991 through 1995. The rate of inflation is not a direct assumption because the SERS plan does not include automatic cost-of-living adjustments. The implicit inflation assumption is 3.0 percent a year.

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.

Government Accounting Standards Board (GASB) Statement No. 25, *Financial Reporting for Defined Benefit Pension Plans and Note Disclosures for Defined Contributions Plans* establishes the range of funding methods for the Unfunded Actuarial Accrued Liability. The minimum funding can be over a 40-year period with payments increasing by the assumed increase in payroll. The SERS contributions increase at 5 percent, which is greater than the 3.3 percent salary growth assumption. However, the use of a 20-year amortization period results in payments that are greater than the minimum required under GASB #25.

Based upon the valuation results, it is our opinion that the Pennsylvania State Employees' Retirement System continues in sound condition in accordance with generally accepted actuarial principles and procedures.

Respectfully submitted,  
Hay Group

By  
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Enrolled Actuary No. 99-1499

# State Employees' Retirement System

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**State Employees' Retirement System**  
**Valuation Highlights**

	<b><u>December 31, 1999</u></b>	<b><u>December 31, 1998</u></b>
	<b><u>Valuation</u></b>	<b><u>Valuation</u></b>

**Summary of Contributions as a Percent of Members' Compensation**

Normal Cost	9.02%	8.96%
Amortization of Liabilities	-7.63%	-3.96%
Total Contribution	1.39%	5.00%

Contribution Rates by Employee Group:

Class A Members:

Age 60 Retirement	0.61%	4.02%
Age 50 Retirement	2.03%	5.77%
Park Rangers	2.96%	6.62%
Capitol Police	2.96%	6.62%
State Police	11.17%	17.56%

Class C Members:

State Police	11.17%	17.56%
Enforcement Officers	2.03%	5.77%

Class D Members

	7.61%	21.64%
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Class E Members

	2.15%	7.83%
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**Demographic Characteristics of the Population**

Active Participants:

Number		108,035		108,893
Average annualized compensation	\$	39,698	\$	38,898
Total annualized compensation	\$	4,288,773,430	\$	4,235,719,914

Annuitants and Beneficiaries:

Number		88,043		85,834
Total annual pension	\$	963,766,896	\$	898,593,605

Inactive Participants:

Number		3,664		3,785
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**Assets**

Market Value Assets	\$	28,093,181,182	\$	24,123,360,098
Actuarial Value of Assets	\$	23,624,267,185	\$	20,670,711,370

# State Employees' Retirement System

## **General Discussion**

The liabilities and costs in this report were based on actuarial assumptions adopted by the State Employees' Retirement Board in 1996 and funding procedures specified in the State Employees' Retirement System (SERS) code. The most important actuarial assumptions are the investment return and salary growth. The investment return assumption is 8.5 percent per year. Salary growth is the total of assumed increases in salary rates and career salary growth. It is assumed that the salary rates will increase at 3.3 percent a year and that career salary growth will average 3.5 percent a year. The total average salary increase for an individual will be 6.8 percent a year. The investment return and the salary rate increase assumptions are based on an underlying inflation rate of 3.0 percent a year.

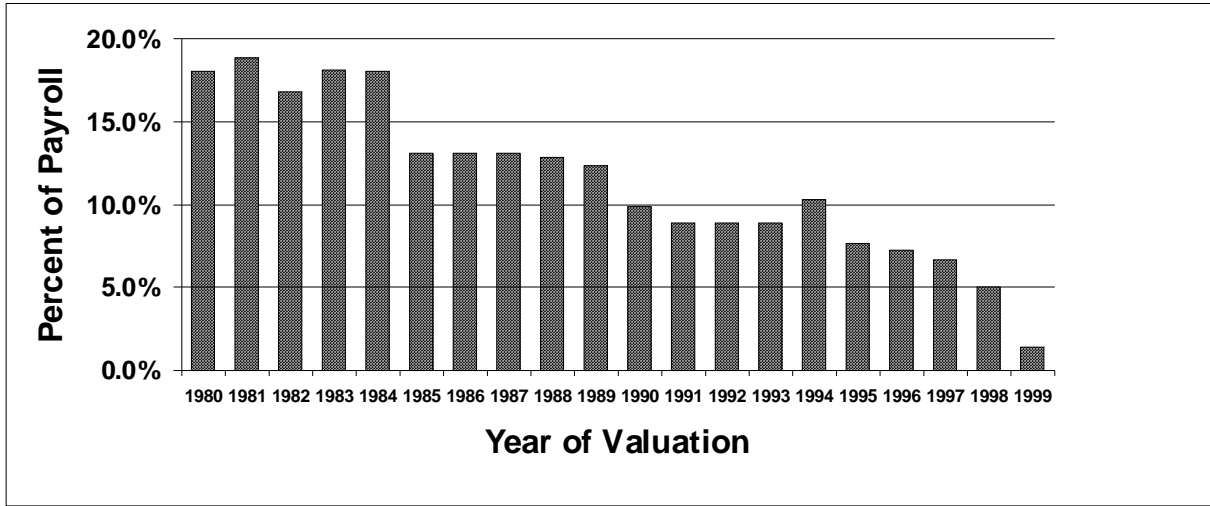
In the December 31, 1995 actuarial valuation, the Board agreed with the actuary that it would be prudent to fund for the 30-year retirement benefit as if it were a permanent feature of the retirement system. Actuarial and accounting practice is to recognize a temporary feature of a retirement plan as permanent if it has been extended a number of years and there is no evidence that the feature will not be extended permanently. A variation of the current window was first opened in 1985 and has been extended since then through a series of plan changes. The most recent window was closed on June 30, 1999 but the pattern of past extensions suggests that the window will be reopened in the near future. In the event that the window is not reopened, and kept open fairly routinely, the long-term cost of the system will be reduced. However, it is prudent to continue to fund on the current basis at least through the next fiscal year.

## **History of the Employer Contribution Rate**

Chart 1 shows the history of the employer contribution rate from 1980 through 1999. With some fluctuations, the general trend has been downward with the rate declining from 18.02 percent in 1980 to 1.39 percent in 1999.

The rate increased in 1980 due to the adoption of the 1976-1980 actuarial experience results but has been substantially lowered as a result of each of the three experience studies since 1980. The results of the 1981 to 1985 experience study, adopted in the December 31, 1985 valuation, decreased the employer contribution rate from 18.03 to 13.09 percent of payroll. Adoption of the results of the 1986 to 1990 study, in the December 1990 valuation, resulted in a drop in the employer contribution from 12.32 to 9.87 percent of salary. The adoption of the results of the 1991 through 1995 study resulted in a reduction in the rate from 10.27 percent of salary in 1995 to 7.69 percent of salary in 1996. The rate has been steadily declining during the past three years primarily due to the recognition of excess investment earnings.

## Pennsylvania State Employees' Retirement System History of Employer Cost



The total employer cost is the actual contribution rate during the succeeding fiscal year. For instance, the rate of 1.39 percent will be the employer contribution for fiscal year 2000/2001. In some years the rate was adjusted for events occurring after the valuation.

## State Employees' Retirement System

### History of Inflation, Investment Return and Salary Growth

Table 1 below shows the rate of inflation, the nominal and real investment return base on the market value of assets, and the nominal and real salary growth for the past nineteen years. The nominal rates are the actual investment rate and salary growth. The real rates are the nominal rates adjusted by removing inflation. The 1999 numbers reflect actual experience through December 31, 1999. The inflation rates shown are based on the Consumer Price Index (CPI-U) data and are current through December 31, 1999.

**Table 1**  
**Comparison of Annual Rates of Growth**

Year	Investment Return			Salary Growth	
	Inflation	Nominal	Real	Nominal	Real
1981	8.9%	0.9%	(7.4%)	8.0%	(0.8%)
1982	3.8	27.8	23.1	8.0	4.0
1983	3.8	13.0	8.9	0.0	(3.7)
1984	3.9	9.4	5.2	5.1	1.1
1985	3.8	23.1	18.6	3.6	(0.2)
1986	1.1	15.2	13.9	3.5	2.4
1987	4.4	3.3	(1.1)	3.4	(1.0)
1988	4.4	12.8	8.0	5.0	0.6
1989	4.6	17.8	12.6	6.0	1.3
1990	6.1	1.0	(4.8)	5.0	(1.0)
1991	3.1	22.6	19.0	1.0	(2.0)
1992	2.9	7.4	4.4	2.1	(0.8)
1993	2.7	13.2	10.2	5.1	2.3
1994	2.7	(1.1)	(3.7)	3.9	1.2
1995	2.5	25.5	22.4	3.8	1.2
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
<b>Average 1981-1999</b>	<b>3.6%</b>	<b>13.8%</b>	<b>9.9%</b>	<b>3.9%</b>	<b>0.3%</b>



# State Employees' Retirement System

## Comments on Schedules

### **Employer Contribution Rate**

Schedules A and B summarize the development of the employer contribution rate before allocation by group.

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 who had not yet completed one year of credited service. The employer share of the normal cost increased from 8.96 percent in 1998 to 9.02 percent in 1999.

The unfunded liability that existed on December 31, 1990 is being funded over 20 years from July 1, 1991. Unfunded liability increases (decreases) due to changes in assumptions, changes in legislation, or gains or losses because actual experience differs from the actuarial assumptions, are amortized over 20 years from the July 1 following the effective date of the change. Increases in the unfunded liability due to supplemental annuities are amortized over 20 years.

Schedule B shows a reduction in the unfunded liability of \$2.2 billion in 1999. The primary reason for the reduction was the high rate of return on the fund in the last five years. The credit for the 1999 gain will be recognized as an offset against contributions otherwise needed over the 20 years beginning in July 1, 2000.

The total negative unfunded liability is a temporary surplus that will gradually be recognized as an offset to future employer normal costs. The total credit for amortization of the surplus increased from 3.96 percent of payroll in 1998 to 7.63 percent of payroll in the 1999.

The employer contribution rate is comprised of the normal cost and the amortization of the unfunded liabilities. The employer contribution rate calculated as a result of the December 31, 1999 actuarial valuation is 1.39 percent of payroll compared to a rate of 5.00 percent of payroll based on the 1998 valuation.

### **Employer Contribution Rates by Group**

Schedule C summarizes the development of the rate for the cost of additional benefits for each group of members with different benefits. The basic employer contribution rate for general benefits is 0.61 percent of salary. There is an additional employer contribution required to pay for the added liability for members entitled to full benefits at age 50; and for those entitled to an annual benefit rate that is greater than the basic 2 percent rate. The Park Rangers, Capitol Police, State Police Officers, and the Class E members are charged the amount necessary to fund the past service cost of benefit improvements that were effective in prior years. The effect of the adjustments is to produce an aggregate employer contribution rate that is equal to the required rate of 1.39 percent of total payroll. The complete schedule of contributions by group is shown on the following page:

## State Employees' Retirement System

<b>Employer Contribution Rate by Group Fiscal Year 2000/2001</b>		
Class A		
Age 60 benefit	0.61%	
Age 50 benefit	2.03	
Park Rangers	2.96	
Capitol Police	2.96	
State Police	11.17	
Class C		
State Police	11.17	
Enforcement Officers	2.03	
Class D		7.61
Class E		2.15
Total Overall Cost	1.39%	

Schedule D shows the development of the contribution rates for additional annuities for certain State Police and Enforcement Officers. These members receive an additional annuity that is equal to the accumulated member contributions and interest at retirement determined as if the members were at least age 60 at retirement. These benefits have been fully funded by past contributions so no future contribution is required.

### **Change in Employer Contribution Rate**

Schedule E contains an analysis of the change in the employer contribution rate and unfunded liability from the 1998 to 1999 valuation. The excess investment earnings of \$2.0 billion brought into the assets in 1999 reduced the employer cost by 3.18 percent of salary. The actual pay increase was lower than the assumed pay increase, which lowered the contribution rate by 0.27 percent.

According to the law, each change in the unfunded liability (increase or decrease) is amortized over 20 years, and the payments on the change in the unfunded liability increase 5 percent each year. If the increase in funding payroll is different than the increase in the payment, either more than 5 percent, or less than 5 percent, the contribution rate will be affected. However, the increase or decrease in the contribution rate because of the funding payroll does not affect the unfunded liability. The net result of all changes was to reduce the employer contribution rate from 5.00 percent to 1.39 percent of payroll.

## State Employees' Retirement System

### Actuarial Balance Sheet and Account Balance Transfers

Schedule F contains the actuarial balance sheet that compares the total assets and liabilities of \$26.1 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 it is necessary to compare the account balance in the benefit payment accounts, the Annuity Reserve Account, the State Police Benefit Account, and the Enforcement Officers' Benefit Account with the actuarial liability of the accounts and make any transfer necessary 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. The transfer of \$28.1 million to the State Accumulation Account from the Annuity Reserve Account, and the transfer of \$0.3 million to the Enforcement Officer's Account from the State Accumulation Account is shown on Schedule G.

### Accounting Disclosure Statements

Schedule H is a statement of disclosure to report the information required by the Governmental Accounting Standards Board (GASB) Statement No. 25. Page 1 of Schedule H shows the funding progress from December 31, 1992 through December 31, 1999. The actuarial value of the assets has been greater than the actuarial accrued liability since the December 31, 1992 actuarial valuation. This causes the unfunded actuarial accrued liability (UAAL) to be negative.

Page 2 of Schedule H shows that the actual contribution to the system has been consistent with the Annual Required Contribution (ARC). The ARC is the actual contribution unless the contribution rates differed from the actuarial calculation. In those cases, the ARC is the amount that would have been paid based on the contribution rate calculated in the valuation.

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 the valuation supported an adjustment to the valuation rate.

The Board adopted the valuation rate as the contribution rate in 1995 through 1999. The Board adopted a slightly different rates in 1993 and 1994 based on information available after the valuation was performed. The actuary agreed with the actions taken by the Board in 1993 and 1994. The effect of the adjustments to the contribution rate extended over two calendar years so the 1993 through 1995 actual contributions are different from the ARCs in those years.

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 the following categories:

- Liability for active member contributions in the Fund,
- Liability for future benefits to present retired lives, and

## State Employees' Retirement System

- Liability for service already rendered by the active members.

The schedule shows that the total actuarial accrued liability has been fully covered by the assets since December 31, 1992.

### **Plan Assets**

Schedule J summarizes the development of the actuarial value of assets as of December 31, 1999. The assets are based on the unaudited financial statements prepared by SERS. The asset valuation method will smooth 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 rate of return (8.5 percent in 1999). This smoothing method recognizes 20 percent of the 1999 asset gain of \$3.0 billion this year, with the remainder to be recognized over the next four years.

### **Projection**

Schedule K shows the number of members, contributions, and benefits from 1990 through 1999 with a projection through 2010. The first half of Schedule K shows new retirements, deaths from former employees, new survivors, and deaths from survivors during the year. The second half of Schedule K shows the projection of employer and employee contributions and a projection of the benefits and expenses.

### **Participant Data**

Section I of Schedule L provides a distribution of the active and inactive participants as of December 31, 1999 by benefit class, sex, age, and length of service. It also shows the average annualized salary in 1999 by age group and sex. Section II of the schedule shows the retired participants and beneficiaries 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.

### **Plan Provisions**

Schedule M contains a summary of the principal provisions of the plan. There was no change in the plan provisions during 1999.

### **Actuarial Assumptions**

Schedule N summarizes the actuarial assumptions used for the valuation. The actuarial assumptions have been unchanged since the December 31, 1995 actuarial valuation.

## **State Employees' Retirement System**

### **Actuarial Methods**

Schedule O explains the asset valuation and funding method used in the valuation, and the determination of the annual contribution. The asset valuation method amortizes 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.

### **Definitions**

Schedule P defines certain technical terms used in the valuation.

**State Employees' Retirement System**  
**Unfunded Liability and Normal Cost as of December 31, 1999**

I.	Present Value of Benefits:	
	1) Active and Inactive Participants	
	a) Superannuation and Withdrawal	\$ 16,561,006,054
	b) Disability	781,299,521
	c) Death	904,362,161
	d) Refunds	38,338,365
	e) Special Police and Enforcement Officer Benefits	16,912,795
	2) Annuitants and Beneficiaries	7,779,992,691
	3) Total	\$ 26,081,911,587
II.	Present Value of Member and Employer Contributions:	
	1) Employer Portion of Normal Cost	\$ 4,459,891,903
	2) Member Contributions	2,530,179,375
	3) Special Police and Enforcement Officer Contributions	0
	4) Total	\$ 6,990,071,278
III.	Actuarial Accrued Liability: (I) - (II)	\$ 19,091,840,309
IV.	Actuarial Value of Assets	\$ 23,624,267,185
V.	Unfunded Liability (III) - (IV)	\$ (4,532,426,876)
VI.	Employer Normal Cost Rate	
	1) Normal Cost Rate for new active members to fund:	
	a) Superannuation and Withdrawal	12.18%
	b) Disability	0.86%
	c) Death	0.65%
	d) Refunds	<u>0.33%</u>
	e) Total	14.02%
	2) Member Deductions	5.00%
	3) Employer Normal Cost (1) - (2)	9.02%

**State Employees' Retirement System**  
**Total Employer Contribution Rate in Fiscal Year 2000 - 2001**

	Funding Period 20 Years from July 1	Initial Amount of Liability	Outstanding Balance as of 12/31/99	Annual Payment Amount	Payment as a Percent of Payroll *
<b>I. Amortization of:</b>					
1) Liability for Supplemental Annuities	1991	\$ 405,641,841	\$ 436,300,892	\$ 50,430,641	1.11%
2) Liability for Other Benefits	1991	461,468,532	496,347,065	57,371,187	1.27%
3) Liability (Asset) for Changes in 1991	1992	(735,926,889)	(804,907,995)	(86,604,261)	-1.92%
4) Liability (Asset) for Changes in 1992	1993	(428,770,084)	(473,033,672)	(47,704,420)	-1.06%
5) Liability (Asset) for Changes in 1993	1994	(556,924,445)	(615,368,074)	(58,507,852)	-1.29%
6) Liability for Changes in 1994	1995	392,912,465	433,751,081	39,076,362	0.86%
7) Liability for Supplemental Annuities (1994 COLA)	1995	224,936,857	248,316,392	22,370,667	0.50%
8) Liability (Asset) for Changes in 1995	1996	(173,981,943)	(179,492,565)	(15,389,035)	-0.34%
9) Liability (Asset) for Changes in 1996	1997	(455,733,960)	(468,718,571)	(38,390,993)	-0.85%
10) Liability (Asset) for Changes in 1997	1998	(840,207,534)	(858,576,049)	(67,408,588)	-1.49%
11) Liability for Supplemental Annuities (1998 COLA)	1998	478,000,000	488,449,979	38,349,221	0.85%
12) Liability (Asset) for Changes in 1998	1999	#####	(1,036,607,438)	(78,248,191)	-1.73%
12) Liability (Asset) for Changes in 1999	2000	#####	<u>(2,198,887,921)</u>	<u>(160,012,220)</u>	<u>-3.54%</u>
13) Total Liability Payment Sum of (1) through (12)			<b>(\$4,532,426,876)</b>	<b>(\$344,667,482)</b>	-7.63%
<b>II. Employer Normal Cost</b>					<b>9.02%</b>
<b>III. Total Employer Cost (I) + (II)</b>					<b>1.39%</b>

\* The payment is expressed as a percentage of the total projected payroll for active members in fiscal year 2000-2001 of \$4,519,112,000. Percentages may not add due to rounding

**State Employees' Retirement System**  
**Employer Contribution Rate By Group**

	----- Class A -----			----- Class C -----				
	Age 60 Retirement	Age 50 Retirement	Park Rangers & Capitol Police	State Police	State Police	Enforcement Officers	Class D	Class E
1) Basic Contribution Rate	0.61%	0.61%	0.61%	0.61%	0.61%	0.61%	0.61%	0.61%
2) Age 50 Retirement	-	1.42%	1.13%	1.42%	1.42%	1.42%	1.42%	0.00%
3) Multiplier Adjustment	1.0000	1.0000	1.0000	1.5580	1.5580	1.0000	3.7500	1.6582
4) Past Liability	-	-	1.22%	8.01%	8.01%	-	-	1.14%
5) Class C Additional Annuities	-	-	-	0.00	0.00	-	-	-
6) Adjusted Contribution Rates: [(1) + (2)] x 3 + 4 + 5	0.61%	2.03%	2.96%	11.17%	11.17%	2.03%	7.61%	2.15%
7) Projected 2000/01 Payroll ( dollars in thousands)	\$3,587,639	\$599,627	\$7,697	\$218,337	\$18,936	\$2,205	\$810	\$83,862
8) Employer Contribution Amount ( dollars in thousands)	\$21,885	\$12,172	\$228	\$24,388	\$2,115	\$45	\$62	\$1,803

NOTE: The total employer contribution (\$62,816,000) is the average employer contribution rate from Schedule B (1.39 percent) times the total projected payroll of \$4,519,113,000. The Basic Contribution Rate of 0.61percent was determined as the percentage needed to produce employer contribution amounts by class that sum to \$62,816,000. The resulting total contribution amount may differ slightly because of rounding.



**State Employees' Retirement System**  
**State Police and Enforcement Officers Additional Annuity Rate**  
**(Fiscal Year 2000 - 2001)**

	<u>State Police</u>	<u>Enforcement Officers</u>
1) Balance in Benefit Account as of December 31, 1999	\$1,139,067,359	\$22,172,776
2) Present Value of Benefits for Annuitants and Beneficiaries	1,021,606,134	20,080,398
3) Assets available for additional annuities for Active Members: (1) - (2)	117,461,225	2,092,378
4) Present Value of additional annuities for Active Members	14,820,417	2,092,378
5) Present Value of Future Contribution to fund additional annuities: (4) - (3); not less than zero	-	-
6) Present Value of Future Compensation for eligible Active Members	*	*
7) Contribution Rate as a percentage of payroll payable January 1: (5) / (6)	0.00%	0.00%

\* Not calculated because additional annuity is fully funded.

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

	Normal <u>Cost</u>	Unfunded <u>Liabilities</u>	<u>Total</u>
I. December 31, 1998 Valuation	8.96%	-3.96%	5.00%
II. Changes - 12/31/99 Valuation:			
1) Gain from investment earnings		-3.18%	-3.18%
2) Change in demographics of new entrants	0.06%	-0.05%	0.01%
3) Pay increase different than assumptions		-0.27%	-0.27%
4) Other differences between actual experience and actuarial assumptions		-0.05%	-0.05%
5) Subtotal of changes that affect the Unfunded Liability	0.06%	-3.55%	-3.49%
6) Amount of payment increasing at a rate different than funding payroll *		-0.12%	-0.12%
7) Total Change	0.06%	-3.67%	-3.61%
III. December 31, 1999 Valuation:	9.02%	-7.63%	1.39%
(I) + (II.7)			

**Analysis of the Change in the Unfunded Liability**

I. December 31, 1998 Unfunded Liability	\$ (2,312,812,082)
II. Expected Amortization Payment	(175,862,154)
III. Expected Liability as of December 31, 1999 [((I) x 1.085) - (II)]	\$ (2,333,538,955)
IV. Change in Liability Due to:	
1) Gain from investment earnings	\$ (1,971,870,302)
2) Change in demographics of new entrants	(29,666,687)
3) Pay increase different than assumptions	(165,851,692)
4) Other differences between actual experience and actuarial assumptions	<u>(31,499,240)</u>
5) Total change	\$ (2,198,887,921)
V. December 31, 1999 Unfunded Liability: (III) + (IV. 5)	\$ (4,532,426,876)

\* Note: the decrease in the contribution rate for funding payroll changes as a percent of payroll does not affect the dollar amount of the unfunded liability

**State Employees' Retirement System**  
**Actuarial Balance Sheet as of December 31, 1999**

**ASSETS**

Present Assets:

Members Savings Account	\$ 2,989,489,244
Annuity Reserve Account	6,738,306,159
State Police Benefit Account	1,139,067,359
Enforcement Officers Benefit Account	22,172,776
State Accumulation Account *	18,377,212,907
Supplemental Annuity Account	<u>(1,173,067,263)</u>
Total Present Assets (Market Value)	\$ 28,093,181,182
Adjustment to Smooth Market Fluctuations	(4,468,913,997)
Total Present Assets (Actuarial Value)	\$ 23,624,267,185

Present Value of Future Contributions

Members' Contributions (Employee)	\$ 2,530,179,375
Normal Cost Contributions (Employer)	4,459,891,903
Accrued Liability Amortization (Employer)	(5,705,494,139)
Supplemental Annuity Amortization (Employer)	1,173,067,263
Special State Police Contributions (Employer)	0
Special Enforcement Officer Contributions (Employer)	<u>0</u>
Total Future Contributions	<u>\$ 2,457,644,402</u>
<b>TOTAL ASSETS</b>	<b><u><u>\$ 26,081,911,587</u></u></b>

\* Includes \$3,269,646 in directed commissions.

**LIABILITIES**

Present Value of Benefits Payable to Annuitants and Beneficiaries from:

Annuity Reserve Account	\$ 6,738,306,159
State Police Benefit Account	1,021,606,134
Enforcement Officers Benefit Account	<u>20,080,398</u>
Total for Annuitants and Beneficiaries	\$ 7,779,992,691

Present Value of Benefits to Active and Inactive Members from:

Members Savings Account and State Accumulation Account	
Superannuation and withdrawal	\$ 16,561,006,054
Disability	781,299,521
Death	904,362,161
Refunds	<u>38,338,365</u>
Subtotal	\$ 18,285,006,101
State Police Benefit Account	14,820,417
Enforcement Officers Benefit Account	<u>2,092,378</u>
Total Present Value of Benefits to Active and Inactive Members	<u>\$ 18,301,918,896</u>
<b>TOTAL LIABILITIES</b>	<b><u><u>\$ 26,081,911,587</u></u></b>

**State Employees' Retirement System**  
**Required Transfers Within SERS Accounts**

I. Annuity Reserve Account

Balance as reported by SERS	\$ 6,766,410,971
Transfer to State Accumulation Account	<u>(28,104,812)</u>
December 31, 1999 balance after transfers	\$ 6,738,306,159

II. Enforcement Officer's Account

Balance as reported by SERS	\$ 21,801,426
Transfer from State Accumulation Account	<u>371,350</u>
December 31, 1999 balance after transfers	\$ 22,172,776

III. State Accumulation Account \*

Balance as reported by SERS	\$18,349,479,445
Transfer from Annuity Reserve Account	28,104,812
Transfer to Enforcement Officer's Account	<u>(371,350)</u>
December 31, 1999 balance after transfers	\$18,377,212,907

\* Balance includes \$3,269,646 in directed commissions.

**State Employees' Retirement System**  
**Accounting Disclosure Statement**

**I. Schedule of Funding Progress as of December 31, 1999**

(Dollars in Thousands)

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded Actual Accrued Liability (UAAL) (b-a)	Funded Ratio (a) / (b)	Covered Payroll (c)	Unfunded Actuarial Accrued Liability as a Percentage of Covered Payroll ((b-a)/c)
12/31/92	11,769,388	11,488,414	(280,974)	102.4%	3,533,428	-8.0%
12/31/93	13,060,613	12,213,736	(846,877)	106.9%	3,731,515	-22.7%
12/31/94	13,991,485	13,742,056	(249,429)	101.8%	3,990,440	-6.3%
12/31/95 *	15,510,309	15,067,205	(443,104)	102.9%	4,021,605	-11.0%
12/31/96	16,841,069	15,936,616	(904,453)	105.7%	4,163,683	-21.7%
12/31/97	18,565,136	17,288,413	(1,276,723)	107.4%	4,219,034	-30.3%
12/31/98	20,670,711	18,357,899	(2,312,812)	112.6%	4,446,147	-52.0%
12/31/99	23,624,267	19,091,840	(4,532,427)	123.7%	4,519,112	-100.3%

\* Revised economic and demographic assumptions due to experience review.

**State Employees' Retirement System**  
**Accounting Disclosure Statement (continued)**

**II. Schedule of Employer Contributions as of December 31, 1999**

(Dollars in Thousands)

Calendar Year	Required Contribution	Actual Contribution	Percentage Contributed
1992	\$ 319,093	\$ 319,093	100.0%
1993	310,089	304,122	98.1%
1994	342,158	342,927	100.2%
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%

**Notes to Governmental Accounting Standards Board Statement No. 25**

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 in the required supplementary schedules was determined as part of the actuarial valuations at the dates indicated. Additional information as of the latest actuarial valuation follows.

Valuation Date	December 31, 1999
Actuarial cost method	Variation of Entry-age Actuarial Cost Method
Amortization method	Increasing 5 percent annually
Remaining amortization period	11 to 19 years
Asset valuation method	5 - year smooth market
Actuarial Assumptions:	
Investment rate of return *	8.50%
Projected salary increases *	6.8% - average increase (range: 5.16% to 8.98%)
* Includes inflation at	3.00%
Cost-of-living adjustments	None

**State Employees' Retirement System**  
**Accounting Disclosure Statement (continued)**

**II. Schedule of Employer Contributions as of December 31, 1999**

(Dollars in Thousands)

Calendar Year	Required Contribution	Actual Contribution	Percentage Contributed
1992	\$ 319,093	\$ 319,093	100.0%
1993	310,089	304,122	98.1%
1994	342,158	342,927	100.2%
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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%

**Notes to Governmental Accounting Standards Board Statement No. 25**

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Actuarial cost method	Variation of Entry-age Actuarial Cost Method
Amortization method	Increasing 5 percent annually
Remaining amortization period	11 to 19 years
Asset valuation method	5 - year smooth market
Actuarial Assumptions:	
Investment rate of return *	8.50%
Projected salary increases *	6.8% - average increase (range: 5.16% to 8.98%)
* Includes inflation at	3.00%
Cost-of-living adjustments	None

**State Employees' Retirement System**  
**Solvency Test**

Valuation Date	Actuarial Accrued Liabilities For			Total Actuarial Accrued Liability (AAL)	Actuarial Valuation of Assets	Portion of Accrued Liabilities Covered by Reported Assets			Funded Ratio
	(1) Active Member Contributions	(2) Retirants & Beneficiaries	(3) Active Members (Employer Financed Portion)*			(1)	(2)	(3)	
(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%



**State Employees' Retirement System**  
**Actuarial Value of Assests**

I. Development of 12/31/99 Expected Actuarial Value:		
1)	Actuarial Value as of 12/31/98	\$ 20,670,711,370
2)	Contributions in 1999	493,798,376
3)	Benefits and Expenses in 1999	(1,237,515,358)
4)	Investment return at 8.5% to 12/31/99 on (1)	1,757,010,466
5)	Investment return at 8.5% to 12/31/99 on (2) and (3)	<u>(31,607,972)</u>
	.5 x ((2) + (3))	
6)	Expected Actuarial Value as of 12/31/99:	\$ 21,652,396,883
	(1) + (2) + (3) + (4) + (5)	
II. Previous Differences Not Yet Amortized:		
1)	Unrecognized amount of 12/31/95 Difference:	\$ 399,851,847
	.2 x \$1,999,259,233	
2)	Unrecognized amount of 12/31/96 Difference:	462,797,346
	.4 x \$1,156,993,365	
3)	Unrecognized amount of 12/31/97 Difference:	1,145,913,401
	.6 x \$1,909,855,668	
4)	Unrecognized amount of 12/31/98 Difference:	<u>1,444,086,136</u>
	.8 x \$1,805,107,670	
5)	Total	\$ 3,452,648,730
III. Gain or Loss from 1999		
1)	Market Value of Assets on 12/31/99	\$ 28,093,181,182
2)	Expected Market Value II(5) + I(6)	<u>25,105,045,613</u>
3)	Gain (loss) from 1999 Investments (1) - (2)	\$ 2,988,135,569
IV. Development of Actuarial Value of Assets as of 12/31/99:		
1)	20% of \$1,999,259,233 (12/31/95 Difference):	\$ 399,851,847
2)	20% of \$1,156,993,365 (12/31/96 Difference):	231,398,673
3)	20% of \$1,909,855,668 (12/31/97 Difference):	381,971,134
4)	20% of \$1,805,107,670 (12/31/98 Difference):	361,021,534
5)	20% of \$2,988,135,569 (12/31/99 Difference):	597,627,114
6)	Total Difference:	<u>\$ 1,971,870,302</u>
	(1) + (2) + (3) + (4) + (5)	
7)	Actuarial Value at 12/31/99: I(6) + IV(6)	\$ 23,624,267,185

The actuarial value of assets are based on the unaudited financial statements prepared by SERS. The difference between the audited financial values and the unaudited financial values are not material.

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

**Projection of Annuitants and Employees**  
**Actual Data Through 1999**

Calendar Year	New Retirements During the Year	Deaths During the Year	Former Employees (EOY)	New Survivors During the Year	Deaths During the Year	Survivors (EOY)	Retired and Survivor Lives	Active Employees
1990			68,156			6,066	74,222	111,248
1991			69,908			6,332	76,240	105,731
1992			73,897			6,595	80,492	109,609
1993			73,894			6,796	80,690	111,962
1994			73,780			7,055	80,835	114,120
1995			74,110			7,094	81,204	112,637
1996			75,609			7,477	83,086	110,922
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	3,849	3,130	80,814	674	410	8,212	89,026	108,035
2001	3,797	3,175	81,436	682	437	8,457	89,893	108,035
2002	3,837	3,211	82,062	689	462	8,684	90,746	108,035
2003	4,006	3,244	82,824	694	484	8,894	91,718	108,035
2004	3,969	3,275	83,518	700	508	9,086	92,604	108,035
2005	4,001	3,301	84,218	704	531	9,259	93,477	108,035
2006	3,951	3,319	84,850	706	554	9,411	94,261	108,035
2007	4,069	3,333	85,586	708	575	9,544	95,130	108,035
2008	4,099	3,346	86,339	709	597	9,656	95,995	108,035
2009	4,218	3,358	87,199	710	620	9,746	96,945	108,035
2010	4,111	3,372	87,938	711	639	9,818	97,756	108,035

**State Employees' Retirement System**  
**Projection of Population, Benefits, and Contributions (continued)**

**Projection of Expected Contributions and Benefits**  
**Actual Data Through 1999**  
**(Dollars in Millions)**

Calendar Year	Contributions		
	Employee	Employer	Benefits / Expenses
1990	\$ 175	\$ 418	\$ 607
1991	183	381	664
1992	187	319	851
1993	190	304	781
1994	193	343	812
1995	202	385	894
1996	210	374	943
1997	213	324	1,037
1998	222	311	1,080
1999	224	270	1,240
2000	231	160	1,268
2001	239	20	1,343
2002	247	0	1,423
2003	255	0	1,570
2004	263	0	1,724
2005	272	0	1,827
2006	281	0	1,930
2007	290	0	2,048
2008	300	0	2,250
2009	310	0	2,479
2010	320	0	2,719

The projection is based upon the following assumptions: a projected investment return of 8.5 percent; general pay increases of 3.3 percent; and supplemental annuity increases in 2003 and 2008.

**State Employees' Retirement System**

**I. Age, Service and Salary Profile of Active Participants as of December 31, 1999**

**Active Employees\***

Males - Full Years of Service to December 31, 1999

Age Group	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30+	Total	Average Salary
Less than 20	14	0	0	0	0	0	0	14	\$ 20,179
20-24	465	4	0	0	0	0	0	469	23,032
25-29	1,468	408	13	0	0	0	0	1,889	28,321
30-34	1,363	1,390	483	11	0	0	0	3,247	32,548
35-39	1,236	1,380	1,477	668	72	0	0	4,833	35,879
40-44	1,263	1,366	1,623	1,560	922	93	0	6,827	38,461
45-49	1,141	1,309	1,448	1,508	1,886	1,682	64	9,038	41,876
50-54	1,051	1,139	1,141	1,102	1,523	3,006	1,077	10,039	45,644
55-59	629	694	703	625	694	1,303	1,405	6,053	47,466
60-64	303	450	413	365	285	390	733	2,939	48,457
65+	178	204	185	105	111	98	257	1,138	49,528
<b>Total</b>	<b>9,111</b>	<b>8,344</b>	<b>7,486</b>	<b>5,944</b>	<b>5,493</b>	<b>6,572</b>	<b>3,536</b>	<b>46,486</b>	<b>\$ 41,497</b>

Average Age 46.98

Average Service 14.59

Females - Full Years of Service to December 31, 1999

Age Group	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30+	Total	Average Salary
Less than 20	45	0	0	0	0	0	0	45	\$ 20,265
20-24	705	32	0	0	0	0	0	737	22,433
25-29	1,416	685	65	0	0	0	0	2,166	26,247
30-34	1,190	1,233	813	51	0	0	0	3,287	29,187
35-39	1,243	1,190	1,271	1,023	115	0	0	4,842	32,099
40-44	1,244	1,367	1,358	1,405	1,318	220	0	6,912	34,435
45-49	1,108	1,283	1,368	1,309	1,639	2,229	197	9,133	37,014
50-54	766	1,045	1,227	1,023	1,125	1,638	848	7,672	37,864
55-59	392	591	810	795	836	847	510	4,781	37,823
60-64	169	281	402	390	363	302	252	2,159	37,085
65+	66	139	143	104	100	79	113	744	35,828
<b>Total</b>	<b>8,344</b>	<b>7,846</b>	<b>7,457</b>	<b>6,100</b>	<b>5,496</b>	<b>5,315</b>	<b>1,920</b>	<b>42,478</b>	<b>\$ 34,836</b>

Average Age 45.57

Average Service 13.83

**State Employees' Retirement System**  
**I. Age, Service and Salary Profile of Active Participants as of December 31, 1999**

**Selected Hazardous Duty\***

Males - Full Years of Service to December 31, 1999

Age Group	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30+	Total	Average Salary
Less than 20	1	0	0	0	0	0	0	1	\$ 20,000
20-24	145	0	0	0	0	0	0	145	26,409
25-29	1,243	357	1	0	0	0	0	1,601	33,924
30-34	1,088	2,032	211	2	0	0	0	3,333	42,339
35-39	509	1,113	913	174	0	0	0	2,709	45,401
40-44	351	509	564	616	136	1	0	2,177	46,921
45-49	303	441	363	345	446	85	2	1,985	47,277
50-54	270	430	442	268	271	418	98	2,197	48,517
55-59	103	181	190	113	76	124	119	906	48,261
60-64	28	87	89	51	32	27	29	343	46,502
65+	<u>9</u>	<u>14</u>	<u>20</u>	<u>9</u>	<u>4</u>	<u>2</u>	<u>10</u>	<u>68</u>	<u>47,767</u>
<b>Total</b>	<b>4,050</b>	<b>5,164</b>	<b>2,793</b>	<b>1,578</b>	<b>965</b>	<b>657</b>	<b>258</b>	<b>15,465</b>	<b>\$ 44,473</b>

Average Age 40.73  
Average Service 9.74

Females - Full Years of Service to December 31, 1999

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	36	1	0	0	0	0	0	37	24,631
25-29	193	31	0	0	0	0	0	224	31,051
30-34	192	130	16	0	0	0	0	338	35,479
35-39	146	129	62	34	0	0	0	371	38,313
40-44	115	120	92	90	35	5	0	457	41,999
45-49	90	123	76	60	68	27	2	446	43,452
50-54	39	72	70	42	32	22	6	283	45,776
55-59	17	51	28	26	23	6	7	158	43,890
60-64	3	20	17	13	5	7	4	69	50,545
65+	<u>2</u>	<u>1</u>	<u>3</u>	<u>5</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>14</u>	<u>55,640</u>
<b>Total</b>	<b>833</b>	<b>678</b>	<b>364</b>	<b>270</b>	<b>164</b>	<b>68</b>	<b>20</b>	<b>2,397</b>	<b>\$ 40,385</b>

Average Age 41.92  
Average Service 8.70

\* 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, 1999**

**Legislators**

Males - Full Years of Service to December 31, 1999

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	60,672
30-34	3	1	0	0	0	0	0	4	52,505
35-39	9	9	1	0	0	0	0	19	58,953
40-44	6	11	4	9	1	0	0	31	58,177
45-49	5	12	4	15	5	1	0	42	61,284
50-54	4	8	7	11	8	2	0	40	63,298
55-59	0	4	7	5	8	4	2	30	64,717
60-64	2	1	3	5	2	3	4	20	63,444
65+	<u>0</u>	<u>4</u>	<u>3</u>	<u>3</u>	<u>6</u>	<u>4</u>	<u>12</u>	<u>32</u>	<u>64,654</u>
<b>Total</b>	<b>30</b>	<b>50</b>	<b>29</b>	<b>48</b>	<b>30</b>	<b>14</b>	<b>18</b>	<b>219</b>	<b>\$ 62,007</b>

Average Age 52.31  
Average Service 15.07

Females - Full Years of Service to December 31, 1999

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	60,672
35-39	1	3	0	0	0	0	0	4	60,672
40-44	1	1	0	0	0	0	0	2	60,672
45-49	0	0	1	2	0	0	0	3	60,672
50-54	2	8	0	0	0	0	0	10	60,672
55-59	2	3	0	1	0	0	0	6	60,672
60-64	0	2	0	0	0	0	0	2	60,672
65+	<u>0</u>	<u>0</u>	<u>3</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>1</u>	<u>4</u>	<u>62,800</u>
<b>Total</b>	<b>7</b>	<b>17</b>	<b>4</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>32</b>	<b>\$ 60,938</b>

Average Age 52.88  
Average Service 9.03

**State Employees' Retirement System**

**I. Age, Service and Salary Profile of Active Participants as of December 31, 1999**

**Judges And District Judges**

Males - Full Years of Service to December 31, 1999

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	4	3	0	0	0	0	0	7	56,348
35-39	5	6	2	0	0	0	0	13	56,348
40-44	24	17	12	3	0	0	0	56	71,923
45-49	22	51	36	17	9	2	0	137	74,267
50-54	29	44	49	25	17	5	2	171	84,951
55-59	15	40	40	26	14	6	9	150	85,645
60-64	11	19	25	22	21	9	17	124	88,058
65+	<u>5</u>	<u>5</u>	<u>17</u>	<u>9</u>	<u>22</u>	<u>20</u>	<u>9</u>	<u>87</u>	<u>99,944</u>
<b>Total</b>	<b>115</b>	<b>185</b>	<b>181</b>	<b>102</b>	<b>83</b>	<b>42</b>	<b>37</b>	<b>745</b>	<b>\$ 83,647</b>

Average Age 54.34  
Average Service 12.99

Females - Full Years of Service to December 31, 1999

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	5	0	0	0	0	0	8	56,348
35-39	4	8	1	0	0	0	0	13	56,348
40-44	12	9	6	1	0	0	0	28	88,919
45-49	11	17	20	2	4	0	0	54	90,251
50-54	10	12	17	7	0	1	0	47	95,088
55-59	5	6	9	4	2	0	0	26	76,358
60-64	3	5	6	4	5	2	1	26	68,573
65+	<u>0</u>	<u>4</u>	<u>1</u>	<u>4</u>	<u>0</u>	<u>2</u>	<u>0</u>	<u>11</u>	<u>71,740</u>
<b>Total</b>	<b>48</b>	<b>66</b>	<b>60</b>	<b>22</b>	<b>11</b>	<b>5</b>	<b>1</b>	<b>213</b>	<b>\$ 82,503</b>

Average Age 50.39  
Average Service 9.80

**State Employees' Retirement System**

**I. Age, Service and Salary Profile of Active Participants as of December 31, 1999**

**All Active Employees**

Males - Full Years of Service to December 31, 1999

Age Group	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30+	Total	Average Salary
Less than 20	15	0	0	0	0	0	0	15	\$ 20,167
20-24	610	4	0	0	0	0	0	614	23,829
25-29	2,712	765	14	0	0	0	0	3,491	30,900
30-34	2,458	3,426	694	13	0	0	0	6,591	37,537
35-39	1,759	2,508	2,393	842	72	0	0	7,574	39,378
40-44	1,644	1,903	2,203	2,188	1,059	94	0	9,091	40,760
45-49	1,471	1,813	1,851	1,885	2,346	1,770	66	11,202	43,302
50-54	1,354	1,621	1,639	1,406	1,819	3,431	1,177	12,447	46,748
55-59	747	919	940	769	792	1,437	1,535	7,139	48,441
60-64	344	557	530	443	340	429	783	3,426	49,782
65+	<u>192</u>	<u>227</u>	<u>225</u>	<u>126</u>	<u>143</u>	<u>124</u>	<u>288</u>	<u>1,325</u>	<u>53,113</u>
<b>Total</b>	<b>13,306</b>	<b>13,743</b>	<b>10,489</b>	<b>7,672</b>	<b>6,571</b>	<b>7,285</b>	<b>3,849</b>	<b>62,915</b>	<b>\$ 42,799</b>

Average Age 45.55  
Average Service 13.38

Females - Full Years of Service to December 31, 1999

Age Group	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30+	Total	Average Salary
Less than 20	45	0	0	0	0	0	0	45	\$ 20,265
20-24	741	33	0	0	0	0	0	774	22,538
25-29	1,609	716	65	0	0	0	0	2,390	26,697
30-34	1,386	1,368	829	51	0	0	0	3,634	29,841
35-39	1,394	1,330	1,334	1,057	115	0	0	5,230	32,622
40-44	1,372	1,497	1,456	1,496	1,353	225	0	7,399	35,115
45-49	1,209	1,423	1,465	1,373	1,711	2,256	199	9,636	37,618
50-54	817	1,137	1,314	1,072	1,157	1,661	854	8,012	38,508
55-59	416	651	847	826	861	853	517	4,971	38,245
60-64	175	308	425	407	373	311	257	2,256	37,881
65+	<u>68</u>	<u>144</u>	<u>150</u>	<u>113</u>	<u>101</u>	<u>82</u>	<u>115</u>	<u>773</u>	<u>36,837</u>
<b>Total</b>	<b>9,232</b>	<b>8,607</b>	<b>7,885</b>	<b>6,395</b>	<b>5,671</b>	<b>5,388</b>	<b>1,942</b>	<b>45,120</b>	<b>\$ 35,374</b>

Average Age 45.41  
Average Service 13.54



**State Employees' Retirement System**

**I. Age, Service and Salary Profile of Active Participants as of December 31, 1999**

**Active And Inactive Employees**

Males - Full Years of Service to December 31, 1999

Age Group	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30+	Total
Less than 20	15	0	0	0	0	0	0	15
20-24	610	4	0	0	0	0	0	614
25-29	2,719	766	15	0	0	0	0	3,500
30-34	2,477	3,435	703	14	0	0	0	6,629
35-39	1,784	2,521	2,456	850	72	0	0	7,683
40-44	1,674	1,924	2,282	2,226	1,063	95	0	9,264
45-49	1,522	1,829	1,942	1,932	2,377	1,788	67	11,457
50-54	1,480	1,651	1,727	1,476	1,863	3,463	1,181	12,841
55-59	844	939	986	805	815	1,460	1,553	7,402
60-64	395	575	564	473	355	448	823	3,633
65+	<u>212</u>	<u>237</u>	<u>244</u>	<u>134</u>	<u>149</u>	<u>131</u>	<u>301</u>	<u>1,408</u>
Total	13,732	13,881	10,919	7,910	6,694	7,385	3,925	64,446

Average Age 45.69

Average Service 13.35

Females - Full Years of Service to December 31, 1999

Age Group	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30+	Total
Less than 20	45	0	0	0	0	0	0	45
20-24	742	33	0	0	0	0	0	775
25-29	1,622	720	66	0	0	0	0	2,408
30-34	1,411	1,381	856	52	0	0	0	3,700
35-39	1,430	1,347	1,406	1,065	115	0	0	5,363
40-44	1,425	1,545	1,602	1,550	1,367	226	0	7,715
45-49	1,345	1,498	1,592	1,451	1,736	2,273	201	10,096
50-54	1,019	1,229	1,411	1,138	1,200	1,690	855	8,542
55-59	557	693	928	867	878	867	522	5,312
60-64	237	329	457	437	395	325	268	2,448
65+	<u>97</u>	<u>151</u>	<u>162</u>	<u>122</u>	<u>105</u>	<u>88</u>	<u>124</u>	<u>849</u>
Total	9,930	8,926	8,480	6,682	5,796	5,469	1,970	47,253

Average Age 45.61

Average Service 13.36

**State Employees' Retirement System**

**II. Age and Benefit Profile of Annuitants and Beneficiaries as of December 31, 1999**

**Superannuation Annuitants**

<u>Age</u>	<u>Male</u>		<u>Female</u>		<u>Total</u>	
	<u>Number</u>	<u>Annual Pension</u>	<u>Number</u>	<u>Annual Pension</u>	<u>Number</u>	<u>Annual Pension</u>
50-54	301	\$ 9,140,623	47	\$ 849,431	348	\$ 9,990,054
55-59	921	28,768,617	176	3,430,627	1,097	32,199,244
60-64	2,832	65,140,279	1,703	24,744,686	4,535	89,884,965
65-69	4,798	85,118,952	3,326	38,022,983	8,124	123,141,935
70-74	5,675	84,845,649	4,206	41,111,019	9,881	125,956,668
75-79	5,277	65,773,808	4,461	35,276,575	9,738	101,050,383
80-84	3,447	32,006,479	3,547	23,592,472	6,994	55,598,951
85-89	1,924	17,524,803	2,166	14,657,076	4,090	32,181,879
90 & over	750	6,118,332	1,017	6,979,697	1,767	13,098,029
<b>Total</b>	<b>25,925</b>	<b>\$ 394,437,542</b>	<b>20,649</b>	<b>\$ 188,664,566</b>	<b>46,574</b>	<b>\$ 583,102,108</b>

Average Age 74.3  
Average Annual Pension \$12,520

**State Employees' Retirement System**

**II. Age and Benefit Profile of Annuitants and Beneficiaries as of December 31, 1999**

**Early Retirement Annuitants**

<u>Age</u>	<u>Male</u>		<u>Female</u>		<u>Total</u>	
	<u>Number</u>	<u>Annual Pension</u>	<u>Number</u>	<u>Annual Pension</u>	<u>Number</u>	<u>Annual Pension</u>
30-34	34	\$ 37,266	69	\$ 66,453	103	\$ 103,719
35-39	170	277,116	333	511,220	503	788,336
40-44	427	911,864	878	1,777,134	1,305	2,688,998
45-49	1,071	4,489,810	2,028	5,991,245	3,099	10,481,055
50-54	3,179	45,880,277	2,329	16,335,851	5,508	62,216,128
55-59	3,372	57,164,199	1,937	19,431,431	5,309	76,595,630
60-64	2,338	36,308,798	1,814	18,627,430	4,152	54,936,228
65-69	2,081	26,406,782	1,592	13,554,723	3,673	39,961,505
70-74	1,205	13,910,547	1,127	8,211,415	2,332	22,121,962
75-79	554	5,449,296	702	4,355,682	1,256	9,804,978
80-84	195	1,689,685	303	2,125,622	498	3,815,307
85-89	86	730,833	90	708,746	176	1,439,579
90 & over	27	154,163	35	225,706	62	379,869
<b>Total</b>	<b>14,739</b>	<b>\$ 193,410,636</b>	<b>13,237</b>	<b>\$ 91,922,658</b>	<b>27,976</b>	<b>\$ 285,333,294</b>

Average Age 58.7  
Average Annual Pension \$10,199

**State Employees' Retirement System**

**II. Age and Benefit Profile of Annuitants and Beneficiaries as of December 31, 1999**

**Disabled Annuitants**

<u>Age</u>	<u>Male</u>		<u>Female</u>		<u>Total</u>	
	<u>Number</u>	<u>Annual Pension</u>	<u>Number</u>	<u>Annual Pension</u>	<u>Number</u>	<u>Annual Pension</u>
30-34	8	\$ 56,820	13	\$ 99,120	21	\$ 155,940
35-39	62	602,018	76	679,905	138	1,281,923
40-44	122	1,141,039	175	1,597,776	297	2,738,815
45-49	290	2,977,816	378	3,692,433	668	6,670,249
50-54	478	5,370,398	426	4,537,618	904	9,908,016
55-59	496	5,297,699	423	3,972,771	919	9,270,470
60-64	400	3,810,677	398	3,504,798	798	7,315,475
65-69	350	3,031,283	343	2,460,308	693	5,491,591
70-74	268	2,175,566	247	1,567,631	515	3,743,197
75-79	149	992,775	199	1,087,092	348	2,079,867
80-84	72	464,747	103	533,738	175	998,485
85-89	17	92,649	36	171,551	53	264,200
90 & over	4	16,630	12	42,069	16	58,699
<b>Total</b>	<b>2,716</b>	<b>\$ 26,030,117</b>	<b>2,829</b>	<b>\$ 23,946,810</b>	<b>5,545</b>	<b>\$ 49,976,927</b>

Average Age 59.4  
Average Annual Pension \$9,013

**State Employees' Retirement System**

**II. Age and Benefit Profile of Annuitants and Beneficiaries as of December 31, 1999**

**Beneficiaries and Survivor Annuitants**

<u>Age</u>	<u>Male</u>		<u>Female</u>		<u>Total</u>	
	<u>Number</u>	<u>Annual Pension</u>	<u>Number</u>	<u>Annual Pension</u>	<u>Number</u>	<u>Annual Pension</u>
Under 25	4	\$ 5,898	9	\$ 172,048	13	\$ 177,946
25-29	5	54,202	7	185,724	12	239,926
30-34	6	48,347	9	57,907	15	106,254
35-39	11	41,025	19	117,351	30	158,376
40-44	23	62,823	40	361,455	63	424,278
45-49	29	91,101	90	546,127	119	637,228
50-54	49	300,183	164	1,197,652	213	1,497,835
55-59	46	208,766	273	2,380,873	319	2,589,639
60-64	57	306,851	403	3,248,144	460	3,554,995
65-69	58	316,199	588	4,615,525	646	4,931,724
70-74	123	852,919	1,140	7,428,391	1,263	8,281,310
75-79	76	432,469	1,417	7,579,342	1,493	8,011,811
80-84	83	518,638	1,506	6,770,276	1,589	7,288,914
85-89	34	130,208	1,077	4,703,812	1,111	4,834,020
90 & over	12	46,580	590	2,527,886	602	2,574,466
<b>Total</b>	<b>616</b>	<b>\$ 3,416,209</b>	<b>7,332</b>	<b>\$ 41,892,513</b>	<b>7,948</b>	<b>\$ 45,308,722</b>

Average Age 75.5  
Average Annual Pension \$5,701

**State Employees' Retirement System**  
**Benefit and Contribution Provisions as of December 31, 1999**  
**(as embodied in Act 31, approved March 1, 1974)**

The State Employees' Retirement System makes provision for retirement, disability, and death benefits for all State employees and certain other eligible groups. The major provisions may be summarized as follows:

**Eligible Employees**

- Class A - All regular State employees as well as employees of certain Commissions and Authorities and all employees of state-owned educational institutions and the State University (unless such employees have joined the Public School Employees' Retirement System or TIAA-CREF). All employees who become members (or who rejoin the Retirement System) on and after March 1, 1974 except Judges and District Justices.
- Class C - Liquor Law enforcement officers and other officers and certain employees of the State Police who have been members and employees continuously since prior to March 1, 1974.
- Class D-3 - Members of the General Assembly who have been members and employees continuously since prior to March 1, 1974.
- Class E-1 - Judges.
- Class E-2 - District Justices.

**State Employees' Retirement System**  
**Benefit and Contribution Provisions as of December 31, 1999 (continued)**  
**(as embodied in Act 31, approved March 1, 1974)**

**Age and Service Requirements for Superannuation (full formula benefits)**

- Class A - Age 60, with three years of service, except for members of the General Assembly, enforcement officers, correction officers, psychiatric security aides, and officers of the Delaware River Port Authority; for whom the requirement is age 50 with three years of service. Members of Class A with 35 or more years of credited service are entitled to full formula benefits regardless of age. State Police Officers can retire on full benefits after age 50 or with 20 years of service. Capitol Police and Park Rangers can retire on full benefits at age 50 with 20 years of Capitol Police or Park Ranger service.
- Classes C Age 50, with three years of service.
- Class D-3 Age 50, with three years of service.
- Class E-1 Age 60, with three years of service; or 35 or more years of credited service, regardless of age.
- Class E-2 Age 60, with three years of service; or 35 or more years of credited service, regardless of age.

**Formula for Superannuation Annuity**

The standard single-life annuity applicable to members of Class A and Class C is equal to 2 percent of the high 3-year average salary ("F.A.S.") of the member multiplied by the years and fractions of credited service.

The applicable single-life annuity for Class C State Police and Class A State Police is a minimum of 50 percent of highest annual salary if the member has over 20 but less than 25 years of service. With more than 25 years of service the benefit is a minimum of 75 percent of highest annual salary.

The annuity paid to a member shall not exceed the member's highest salary during any period of twelve consecutive months of creditable service. For members of Class D-3, the annuity paid to a member on account of Class D-3 service, reduced for any optional benefits, can not exceed the greatest of \$12,000, or the D-3 member's highest annual compensation as a member of the General Assembly.

**State Employees' Retirement System**  
**Benefit and Contribution Provisions as of December 31, 1999 (continued)**  
**(as embodied in Act 31, approved March 1, 1974)**

The annuity for other classes of members is obtained by multiplying the standard single-life annuity by a class multiplier as follows:

<u>Class</u>	<u>Multiplier</u>	
D-3	3.75	
E-1	2.0	for each of the first 10 years of judicial service dropping to 1.5 for each subsequent year of judicial service.
E-2	1.5	for each year of judicial service.

**NOTE:** There are conditions under which long-service members or members retiring at advanced ages may receive somewhat larger benefits than those described above. Further, benefit limitations exist for most members of Class D-3.

In addition to the standard single-life annuity as determined above, a member of Class C receives a "member's annuity" actuarially equivalent to the regular accumulated member contributions and interest at retirement but not less than such annuity determined as if the member was age 60 at retirement.

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 members' "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.



**State Employees' Retirement System**  
**Benefit and Contribution Provisions as of December 31, 1999 (continued)**  
**(as embodied in Act 31, approved March 1, 1974)**

**Age and Service Requirements for Disability Retirement**

A member is eligible for disability retirement if the member is unable to perform his or her current job and has at least 5 years of service. An officer of the State Police or enforcement officer does not have a service requirement.

**Formula for Disability Benefit**

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

- (a) the benefit calculated as for full retirement based on service projected to retirement date, or
- (b) 33-1/3 percent of F.A.S. at time of disability.

**Eligibility for Vested Benefit**

A member is eligible for a vested benefit after 10 years of service, except for members of Class D-3 who are eligible after 6 years of Class D-3 service.

**Vested Benefit**

The vested benefit is equal to the benefit calculated as for retirement, based on years of credited service at the time of leaving the plan. The former member can receive the full benefit beginning at retirement age, or an actuarially reduced early retirement benefit beginning at any date after separation but before retirement. The early retirement benefit is reduced from the earlier of age 60, or the age at which the member would have 35 years of credited service.

**Eligibility for Death Benefit Prior to Retirement**

A member is eligible if the member is (1) under retirement age with 10 years of credited service, except for a member of Class D-3 who is eligible after 6 years of Class D-3 service, or (2) upon attainment of retirement age with 3 years of credited service.

**State Employees' Retirement System**  
**Benefit and Contribution Provisions as of December 31, 1999 (continued)**  
**(as embodied in Act 31, approved March 1, 1974)**

**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.

**Death Benefits After Retirement**

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

**Temporary Early Retirement Benefit**

A temporary early retirement incentive was provided for under Act 1998-41. That early retirement incentive closed on June 30 1999. However, the early retirement incentive program has been available to active members since 1981, in one form of incentive or another. Beginning with the December 31, 1995 valuation, the Board agreed with the actuary that it would be prudent to fund for the 30-year retirement benefit as if it were a permanent feature of the retirement system. If the current 30-year retirement benefit is not extended the long-term cost of the system will be reduced.

**Supplemental Allowances**

Any retirement or disability annuitant is entitled to a supplemental allowance sufficient to build the amount of the total single-life allowance, including any cost-of-living supplements, up to the rate of \$84.50 for each year of credited service. An annuitant that retired early is entitled to the supplemental allowance upon attaining retirement age.

**The "Extra Piece"**

The retirement code provides for an "extra piece" to be added to the annual benefit if the member's accumulated deductions, excluding any Class C deductions. 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.

**State Employees' Retirement System**  
**Benefit and Contribution Provisions as of December 31, 1999 (continued)**  
**(as embodied in Act 31, approved March 1, 1974)**

Supplemental annuities applying cost-of-living increases to the benefits of annuitants have been instituted from time to time. The most recent of these became effective as of July 1, 1994.

**Rate of Member Contribution**

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

Class A - 5.00% of total salary

For other classes of members, the class of service multiplier is applied to the 5.00% rate to produce the following:

Class C - 5.00%

Class D-3 - 18.75%

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

Class E-2 - 7.50%

(ii) Additional contribution for Social Security Integration Credit

Any member who elects 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.

**State Employees' Retirement System**  
**Benefit and Contribution Provisions as of December 31, 1999 (continued)**  
**(as embodied in Act 31, approved March 1, 1974)**

**Interest Credited on Member Contributions**

A rate of 4 percent, stipulated as 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 are paid to the beneficiary; also, any member terminating service when not eligible for another form of benefit is paid a refund of the accumulated contributions and interest; any other terminating member may elect the refund of accumulated contributions and interest in lieu of a retirement allowance.

**Employer Contributions**

The employer pays the balance of the cost in excess of the members' contributions with payment schedules determined by law. The employer contribution is the employer share of the normal cost plus the amount needed to amortize the December 31, 1990 accrued and supplemental liabilities over a twenty-year period ending with June 30, 2011. Changes in cost after 1990 are typically amortized over new twenty-year periods beginning with the July first following the effective date of the change.

**Actuarial Equivalence**

There are three sets of actuarial equivalent factors that are used to calculate member retirement benefits. The determination of the specific factor to use for the member is dependent on when the member entered and earned service. The specific mortality tables are described below.

- ◆ For members who entered service before August, 1983, for benefits attributable to service before August, 1983, for members and survivors:
  - Males – 1971 Group Annuity Mortality Table for Men
  - Females – 1971 Group Annuity Mortality Table for Men, setback 6 years
- ◆ For members who entered service before August, 1983, for benefit attributable to service after August, 1983:
  - Members – 1971 Group Annuity Mortality Table for Men, setback 6 years
  - Survivors – the 1971 Group Annuity Mortality table for Men
- ◆ For members who enter service after August, 1983:
  - Members – 1971 Group Annuity Mortality Table for Men, setback 2 years
  - Survivors – 1971 Group Annuity Mortality Table for Men, setback 4 years.

**State Employees' Retirement System**  
**Actuarial Assumptions**

Schedule N shows the actuarial assumptions used for the valuation. The assumptions were based on a review of experience under SERS from 1991 through 1995. Schedule M contains an extract of the full set of rates used in the valuation. The full set of rates is in the evaluation report, which can be obtained from SERS. The rates are the probabilities that an event will occur in the year after the valuation. For instance, the male retirement rate of .170 at age 60 means that 170 of every 1,000 employees age 60 and eligible for full benefits are expected to retire before they reach age 61.

Interest Rate: 8.5 percent compounded annually

Mortality After Retirement:

Current Retirees, Beneficiaries and Survivors: The mortality table used for current male retirees is the 1971 Group Annuity Mortality Table for males. The mortality table used for current female retirees is the 1971 Group Annuity Mortality Table for males setback 6 years. The same tables are used for current beneficiaries and survivors.

Current Active Employees: The table used for current active employees to project mortality after retirement (full retirement or early retirement) is the 1983 Group Annuity Mortality Table for males and females.

Disability Allowances: The disability mortality table is based on the Federal Civil Service Retirement System disability mortality table. The Federal table was modified to produce mortality rates that are appropriate for the expected future mortality of disabled SERS members.

**State Employees' Retirement System**  
**Actuarial Assumptions (continued)**

**FOR ACTIVE GENERAL EMPLOYEES:**

**Rates of Separation for Eligibility for Full Unreduced Benefits:  
(30 years of service under age 60; 3 years of service over age 60)**

<u>Age</u>	<u>Male</u>	<u>Female</u>
50-58	.130	.030
59	.130	.130
60	.170	.260
61	.190	.210
62	.510	.430
63	.260	.280
64	.260	.280
65	.510	.500
66	.340	.350
67	.260	.330
68-79	.240	.240
80	1.000	1.000

**Rates of Separation for Eligibility for Reduced Benefits:\***

<u>Age</u>	<u>Male</u>	<u>Female</u>
30	.010	.010
35	.010	.010
40	.010	.010
45	.010	.010
50	.011	.010
55	.016	.010

\* Early retirement rates only apply to members not eligible for full unreduced benefits.

**State Employees' Retirement System**  
**Actuarial Assumptions (continued)**

**FOR ACTIVE GENERAL EMPLOYEES:**

**Rates of Separation Due to Withdrawal:\***

<u>Male</u>					<u>Female</u>				
<u>Years of Service</u>					<u>Years of Service</u>				
<u>Age</u>	<u>0</u>	<u>1</u>	<u>5</u>	<u>9+</u>	<u>Age</u>	<u>0</u>	<u>1</u>	<u>5</u>	<u>9+</u>
20	.1204	.0840	.0350	.0048	20	.0951	.0507	.0588	.0098
25	.1204	.0840	.0378	.0048	25	.1057	.0910	.0588	.0098
30	.0905	.0748	.0375	.0048	30	.1059	.1012	.0575	.0098
35	.0870	.0523	.0315	.0048	30	.0890	.0731	.0449	.0078
40	.0767	.0449	.0263	.0037	40	.0752	.0490	.0341	.0061
45	.0725	.0557	.0205	.0034	45	.0640	.0441	.0306	.0051
50	.0707	.0358	.0152	.0032	50	.0775	.0435	.0273	.0060
55	.0599	.0301	.0133	.0030	55	.0645	.0565	.0256	.0056

**FOR ALL ACTIVE EMPLOYEES:**

**Rates of Separation Due to Death and Disability:**

<u>Age</u>	<u>Death</u>		<u>Disability*</u>	
	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>
25	.0005	.0004	.0003	.0005
30	.0006	.0004	.0007	.0013
35	.0007	.0005	.0014	.0020
40	.0010	.0008	.0021	.0029
45	.0017	.0009	.0038	.0046
50	.0026	.0017	.0053	.0069
55	.0044	.0028	.0070	.0087
60	.0068	.0032	.0080	.0102

\* Separation due to withdrawal and disability retirement rates only apply to members not eligible for full retirement.

**State Employees' Retirement System**  
**Actuarial Assumptions (continued)**

**FOR SPECIAL BENEFIT CLASSES:**

**Rates of Separation Due to Withdrawal:**

<u>Years of Service</u>	<u>State Police/ Hazardous Duty</u>	<u>Legislators</u>	<u>Judicial Officers</u>
0	.0400	.0000	.0400
1	.0300	.0300	.0300
2-3	.0200	.0300	.0200
4-6	.0100	.0300	.0100
7-8	.0050	.0300	.0100
9+	.0006	.0020	.0020

**Rates of Separation Due to Early Retirement:**

	<u>State Police/ Hazardous Duty</u>	<u>Legislators</u>	<u>Judicial Officers</u>
Any Age	.0050	.0260	.0220

**Rates of Separation Due to Retirement other than State Police with 20 or more years of Service:**

<u>Age</u>	<u>Hazardous Duty</u>	<u>Legislators</u>	<u>Judicial Officers</u>
50	.075	.050	N/A
55	.130	.050	N/A
60	.350	.060	.010
65	.650	.100	.060
70	.300	.100	.900
75	.300	.100	.900
80	1.000	1.000	1.000



**State Employees' Retirement System**  
**Actuarial Assumptions (continued)**

**FOR SPECIAL BENEFIT CLASSES:**

**Rates of Separation due to Retirement for State Police with 20 or More Years of Service:**

<u>Service</u>	
20	.040
21	.060
22	.080
23	.100
24	.200
25	.200
26	.210
27	.220
28	.230
29	.240
30	.250
31	.260
32	.270
33	.280
34	.290
35	.300

**State Employees' Retirement System**  
**Actuarial Assumptions (continued)**

**Career Salary Increases**

The salary scale shown below includes average increases in the employee salary due to promotions and longevity growth. The average career salary growth is 3.5 percent per year. In addition, it is assumed that the salary schedules will increase by 3.3 percent a year. The scale below does not include the assumed 3.3 percent general salary increase.

This table does not apply to members in Classes D and E. It is assumed that only the general salary increase (3.3 percent each year) would apply to members in these classes.

**Career Salary Scale for Members**

<u>Age</u>	<u>Annual Increase</u>	<u>Age</u>	<u>Annual Increase</u>
20	5.5%	41	3.9%
21	5.5	42	3.8
22	5.5	43	3.7
23	5.5	44	3.6
24	5.5	45	3.5
25	5.5	46	3.4
26	5.5	47	3.2
27	5.5	48	3.1
28	5.5	49	3.0
29	5.5	50	2.8
30	5.3	51	2.6
31	5.2	52	2.5
32	5.0	53	2.4
33	4.9	54	2.2
34	4.8	55	2.1
35	4.6	56	2.0
36	4.5	57	1.9
37	4.4	58	1.9
38	4.2	59	1.8
39	4.1	60	1.8
40	4.0		

**State Employees' Retirement System**  
**Asset Valuation, Funding Method, and**  
**Determination of the Annual Contribution**

**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 funding policy provides for employer contributions at actuarially determined rates that will amortize the liabilities by June 30, 2019. 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. The 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 amortization of the unfunded liabilities as of December 31, 1990 over a twenty-year period ending on June 30, 2011.

**State Employees' Retirement System**  
**Asset Valuation, Funding Method, and**  
**Determination of the Annual Contribution (continued)**

- (3) The amortization of changes in liability after 1990 over twenty-year periods typically beginning with the July first following the effective date of the change. Changes include actuarial gains and losses and plan amendments.

All of the amortization payments are based on a schedule of contributions that increase five percent a year. The employer cost is determined as a percent of payroll, and the employer contributes that percent of the payroll of all covered members during each fiscal year. The employer cost is the total of (1) the employer normal cost percent and (2) the amortization payment for fiscal year 2000/2001 divided by the projected payroll for the fiscal year.

The assumptions used in determining the actuarial cost are stated in Schedule M, and the employer cost, as a percent of payroll, is determined in Schedules A and B. The assumptions used for the current valuation were adopted after a review of the evaluation of experience under SERS from 1991 through 1995.

The investment return assumption is 8.5 percent per year. Salary growth is the total of assumed increases in salary rates and career salary growth. It is assumed that the total payroll will increase at 3.3 percent a year. The employee career salary growth (promotion and longevity growth) will average 3.5 percent a year. Therefore, the average total salary growth for an individual will be 6.8 (3.3 plus 3.5) percent a year. The investment return and the salary rate increase assumptions are based on assumed underlying inflation of 3.0 percent a 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. The calculations were performed on the basis of actuarial assumptions and methods, which are internally consistent, and reasonable (taking into account past experience under the SERS and reasonable expectations) and which in combination represent the best estimate of anticipated experience under the plan.

**State Employees' Retirement System**  
**Definition of Technical Terms**

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

Actuarial Accrued Liability. The portion of the actuarial present value of benefits which is 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 principle -- as opposed to paying off with a lump sum payment.

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 Liabilities. The difference between actuarial accrued liabilities and valuation assets.