

Hay/Huggins
Company

STATE EMPLOYES' RETIREMENT SYSTEM

1986 ACTUARIAL REPORT

Final copy 7/8/87

May 15, 1987

Hay/Huggins
Company

Mr. John Brosius, Secretary
State Employees' Retirement System
BOAS School Building
909 Green Street
Harrisburg, PA 17102

Dear Mr. Brosius:

This report presents the results of our actuarial valuation of the State Employees' Retirement System as of December 31, 1986. Highlights of the valuation are presented on page 1, followed by a general discussion and comments on the various schedules included in the report. These schedules summarize the underlying calculations, asset information, participant data, plan benefits and actuarial assumptions.

Purpose

The main purposes of this report are:

- to indicate the pension contribution rates which will be the basis for the Fiscal Year 1987-88 appropriation request;
- to disclose the financial condition of the Plan;
- to provide information relating to the disclosure and reporting requirements of Statement No. 5 of the Government Accounting Standards Board. In addition, information relating to the requirements of Statement No. 35 of the Financial Accounting Standards Board is provided for comparison to data for the 1985 report.
- to summarize the required transfers among the various accounts in order to bring them into actuarial balance.

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Certification

To the best of our knowledge, this report is complete and accurate and all costs and liabilities have been determined in conformance with generally accepted actuarial principles and on the basis of actuarial assumptions and methods which, in the aggregate, are reasonable (taking into account past experience under the Plan and reasonable expectations) and which in combination represent our best estimate of anticipated experience under the plan.

Respectfully submitted,

HAY/HUGGINS COMPANY, INC.



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STATE EMPLOYES' RETIREMENT SYSTEM

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STATE EMPLOYEES' RETIREMENT SYSTEM

VALUATION HIGHLIGHTS

	<u>December 31, 1986</u>	<u>December 31, 1985</u>	1984
	<u>Valuation</u>	<u>Valuation</u>	—
• Summary of Contributions: (Percent of Participants' Compensation)			
Normal Cost	4.45%	3.60%	
Amortization of Unfunded Actuarial Accrued Liability ...	6.96	7.75	
Amortization of Supplemental Annuities	<u>1.68</u>	<u>1.74</u>	
Total	13.09%	13.09%	18.03
Contribution Rate for:			
Class A Members: Age 60 Superannuation	12.78%	12.78%	
Class A Members: Age 50 Superannuation	15.57	15.64	
Class C: State Police (PSP) Enforcement Officers (LCB-EO)	23.25	22.85	
Class D Members	15.57	15.64	
Class E Members	58.39	58.65	
	19.17	19.17	
• Market Value of Assets	\$7,117,572,134	\$6,160,205,315	
• Actuarial Present Value of Accumulated Plan Benefits:			
GASB	\$6,983,974,574	N/A	
FASB	\$6,614,165,123	\$5,398,172,276	
• Active Participants:			
Number	109,454	111,480	
Average Projected compensation. \$	23,007	\$ 21,769	
Total Projected compensation ..	\$2,518,206,000	\$2,426,797,000	
• Annuitants and Beneficiaries:			
Number	67,488	64,222	
Total annual pension	\$ 352,978,810	\$ 324,097,257	
• Inactive Participants:			
Number	3,178	3,080	

STATE EMPLOYES' RETIREMENT SYSTEM

General Discussion

The liabilities and costs in this report were calculated using demographic assumptions based on plan experience, an interest rate of 5.5%, and a salary growth that ranges from 4.2% a year at age 20 to no salary change after age 40. The actuarial assumptions are summarized in Schedule N.

The assumptions were selected to produce a realistic employer cost considering the legislative requirement that the valuation be based on an annual investment return of 5.5%. For the 1985 valuation, a realistic employer cost was developed based on observed career salary growth ranging from 5.7% at age 20 to 1.5% at age 45 and over and the following rates of investment return and salary increases:

<u>Years</u>	<u>Salary Increases</u>			<u>Investment Return</u>
	<u>General</u>	<u>Average Career</u>	<u>Total</u>	
1986 to 1987	3.6%	1.75%	5.35%	9.8%
1988 to 1995	4.0	1.75	5.75	9.8
1996 to 2000	4.0	1.75	5.75	9.0
2001 to 2005	4.0	1.75	5.75	8.0
2006 to 2010	4.0	1.75	5.75	7.0
*After 2010	4.0	1.75	5.75	6.0

The formal 1985 valuation was performed without any general salary growth and with a reduced career salary growth which, when combined with the 5.5% investment return, would produce a contribution rate close to the rate determined by use of the realistic assumptions. These assumptions were used in 1986 to produce a total employer cost that would reflect the expected investment returns listed above.

There were no significant changes in the benefit or contribution provisions of SERS or the method of determining the contribution rates from the 1985 valuation.

COMMENTS ON SCHEDULES

Contribution Rate

Schedules A and B summarize the development of the Employer Contribution Rate before allocation by group. The Employer Contribution Rate comprises three pieces: the Normal Cost; the amortization of the Unfunded Actuarial Accrued Liability; and, the amortization of the liability for the Supplemental Annuities.

The Employer Contribution Rate calculated as a result of the December 31, 1986 actuarial valuation is 13.09%. The 1985 valuation had produced an identical Employer Contribution Rate of 13.09%, but, the three pieces composing the rate changed as shown in the following table:

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	<u>1986</u> <u>Valuation</u>	<u>1985</u> <u>Valuation</u>
Normal Cost Rate	4.45%	3.60%
Unfunded Actuarial Accrued Liability Rate	6.96	7.75
Supplemental Annuities Rate	<u>1.68</u>	<u>1.74</u>
 TOTAL	 13.09%	 13.09%

The normal cost rate is the level percentage of compensation which would be required for new active members over their period of active service to fund the liability for any prospective benefits earned by the members. In making this calculation we used data for all active members who had not yet completed one year of credited service.

The unfunded actuarial accrued liability of \$2,062,621,556 is composed of two parts: one part is to be funded over 30 years from July 1, 1969 and the other part over 30 years from July 1, 1974. To the extent the unfunded actuarial accrued liability increases (decreases) due to changes in assumptions or due to gains or losses because actual experience differs from the actuarial assumptions, those increases (decreases) are prorated between the two parts based on the expected outstanding balances.

The accrued liability for supplemental annuities is composed of four parts to be funded in level payments over 20 years from July 1, 1969; July 1, 1974; July 1, 1979; and July 1, 1984.

Employer Contribution Rates by Group

Schedule C summarizes the employer contribution rate for each group of members with different benefits. The basic employer contribution rate for general benefits is 12.78% of salary. There is an additional employer contribution required to pay for the added liability for members entitled to full benefits at age 50; for those entitled to an annual benefit rate that is a multiple of the basic 2% rate; and for additional annuities for Class C members. The complete schedule of contributions is as follows:

Class A with age 60 benefit	12.78%
Class A with age 50 benefit	15.57
Class C - State Police	23.25
Class C - Enforcement Officers	15.57
Class D	58.39
Class E	19.17

Schedules D shows the development of the contribution rate for the cost of additional benefits for full benefits payable at age 50 and the higher multipliers paid to Class D and Class E members. Full benefits are available at age 50 for all Class C and Class D members and some Class A members. The effect of the adjustments is to produce an aggregate employer contribution rate that is equal to the required rate of 13.09% of total payroll.

STATE EMPLOYES' RETIREMENT SYSTEM

The benefit multipliers used are 3.75 for Class D and 1.5 for Class E members. These are the ratios of the next years' credited accrual rate for Class D and Class E to the general 2% accrual rate.

By increasing the contribution for the groups with additional benefits, the employer contribution for members with basic benefits can be reduced. The effect of the adjustments is to produce an aggregate contribution equal to the required 13.09% of the total payroll.

Schedule E 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. The State Police (PSP) benefit requires contributions equal to 7.68% of the payroll to fully fund the additional benefit over the working life of the members. The Enforcement Officer (LCB-EO) benefits have been fully funded by past contributions.

Contribution For Air and Army National Guard

A special contribution is developed for members of the Air and Army National Guard on Schedule F. It consists of the Employer Contribution Rate plus a contribution sufficient to amortize the deficiency in the Air and Army National Guard Account over 20 years from July 1, 1980.

Schedule G contains a detailed analysis of the change in the Employer Contribution Rate and Unfunded Actuarial Accrued Liability from the 1985 to the 1986 valuation.

Actuarial Balance Sheet

Schedule H contains an actuarial balance sheet. It illustrates that the excess of actuarial present value of plan benefits (Total Liabilities) over the present assets is fully funded by future contributions. These future contributions consist of Normal Cost payments, amounts to fund the Unfunded Actuarial Accrued Liability and Supplemental Annuities, special contributions for State Police and Enforcement Officers and Member Contributions.

Reserve Transfers to Adjust Account Balances

Each year it is necessary to compare the account balance in the Annuity Reserve Account with the actuarial liability of that account and make the necessary transfer to bring the account into balance with the liability.

There was a transfer to the Annuity Reserve Account of \$20,943,955. This transfer has been reflected in the account balances shown in Schedule H.

Schedule I shows the details of the required account transfer.

STATE EMPLOYES' RETIREMENT SYSTEM

Funding Status

Page 1 of Schedule J provides information required by the Governmental Accounting Standards Board (GASB). Page 2 of the schedule provides information required under Statement No. 35 of the Financial Accounting Standards Board (FASB).

The FASB data are presented for comparison to 1985 since the GASB requirements only apply to 1986 and later years. The 1987 and later reports will only include the GASB numbers.

The GASB liability for credited projected benefits is a standardized disclosure measure of the present value of pension benefits estimated to be payable in the future as a result of employe service to December 31, 1986. The liability was determined to be \$6,983,974,574 or 98% of the net assets available for benefits

Plan Assets

Schedule K summarizes the development of the actuarial value of assets as of December 31, 1986. The assets are based on the unaudited 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 returns and the assumed rate of 5-1/2%. This smoothing method includes 20% of the 1986 asset gain of \$616,681,305 this year, with the remainder to be recognized over the next four years.

A detailed description of the asset valuation method is contained in Schedule N.

Participant Data

Section I of Schedule L provides a distribution of the active participants as of December 31, 1986 by sex, age, and length of service. It also shows the average projected salary by age group and sex. Section II of the schedule includes a breakdown of the retired participants, beneficiaries, and terminated vested participants 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 in effect as of December 31, 1986. There were no major changes in the provisions since the prior valuation.

STATE EMPLOYES' RETIREMENT SYSTEM

Actuarial Assumptions and Methods

Schedule N summarizes the actuarial assumptions, the asset valuation method and cost methods used for the valuation.

The actuarial assumptions were unchanged since the last valuation except for the interest rate used in the determination of the Present Value of Accumulated Plan Benefits which was changed from 8.5% in 1985 to 7.0% in 1986 for FASB information. For GASB information, the following assumptions were used:

Projected future salary increases of 4 percent per year compounded annually.

Additional projected salary increases attributable to merit/promotion as set forth in Schedule N increased by 1.5 percent.

A rate of return on the investment of present and future assets of 8.75 percent per year compounded annually.

Assumptions as to withdrawal, disability, death, and retirement as set forth in Schedule N.

No postretirement benefit increases.

STATE EMPLOYEES' RETIREMENT SYSTEM

I. UNFUNDED ACTUARIAL ACCRUED LIABILITY DECEMBER 31, 1986

1) Present Value of Benefits:

(a) Active and Inactive Participants	
Superannuation and Withdrawal	\$ 6,244,355,620
Disability	337,924,904
Death	516,608,553
Refunds	46,874,181
Special Police and Enforcement Officer Benefits	85,357,073
(b) Annuitants and Beneficiaries	<u>3,486,531,296</u>
(c) Total	\$10,717,651,627

2) Present Value of Member and Employer Contributions:

(a) Normal Cost (Employer portion only)	\$ 997,277,710
(b) Supplemental Annuity Amortization	393,951,748
(c) Member Contributions	1,192,552,075
(d) Special Police and Enforcement Officer Contributions	<u>61,883,275</u>
(e) Total	\$ 2,645,664,808

3) Actuarial Accrued Liability: (1) - (2)	\$ 8,071,986,819
4) Actuarial Value of Assets	\$ 6,009,365,263
5) Unfunded Actuarial Accrued Liability: (3) - (4)	\$ 2,062,621,556

II. AMORTIZATION OF UNFUNDED ACTUARIAL ACCRUED LIABILITY

<u>Funding Period</u> 30 Years from July 1	<u>Amount of</u> <u>Liability</u>	<u>Annual Payment to Fund</u>	
		<u>Amount</u>	<u>Percent*</u>
1969	\$1,419,309,779	\$127,624,294	5.07%
1974	<u>643,311,777</u>	<u>42,807,544</u>	<u>1.70</u>
	\$2,062,621,556	\$170,431,838	6.77%

*Payment for 1987 expressed as a percentage of the estimated total payroll for active members in 1987 of \$2,518,206,000. The estimate was obtained by multiplying the 1986 salary for each active employee by the salary growth assumption for one year.

STATE EMPLOYES' RETIREMENT SYSTEM

I. DEVELOPMENT OF EMPLOYER NORMAL COST RATE
(Fiscal Year 1987-88)

1) Normal Cost Rate for new active members to fund:	
(a) Superannuation and Withdrawal	8.44%
(b) Disability67
(c) Death59
(d) Refunds	<u>.88</u>
(e) Total	10.58%
2) Member Deductions	6.25%
3) Employer Normal Cost (1)(e) - (2)	4.33%

II. AMORTIZATION OF SUPPLEMENTAL ANNUITIES

<u>Funding Period:</u> 20 Years from July 1	<u>Amount of</u> <u>Liability</u>	<u>Annual Payment to Fund</u>	
		<u>Amount</u>	<u>Percent*</u>
1969	\$ 1,497,899	\$ 624,882	.02%
1974	45,982,928	7,253,686	.29
1979	171,397,949	18,320,496	.73
1984	<u>175,072,972</u>	<u>15,010,471</u>	<u>.60</u>
	\$393,951,748	\$41,209,535	1.64%

*Payment for 1987 expressed as a percentage of the estimated total payroll for active members in 1987 of \$2,518,206,000. The estimate was obtained by multiplying the 1986 salary for each active employee by the salary growth assumption for one year.

III. DEVELOPMENT OF TOTAL EMPLOYER CONTRIBUTION RATE
(Fiscal Year 1987-88)

	<u>Payable</u> <u>January 1</u>	<u>Payable</u> <u>Quarterly*</u>
1) Employer Normal Cost	4.33%	4.45%
2) Payment on Unfunded Actuarial Accrued Liability	6.77	6.96
3) Payment on Supplemental Annuities	<u>1.64</u>	<u>1.68</u>
4) Total	12.74%	13.09%

*Equals the contribution payable January 1 plus 2.75% interest.

STATE EMPLOYEES' RETIREMENT SYSTEM

TOTAL CONTRIBUTION RATE BY GROUP
(Fiscal Year 1987-88)

	<u>Basic</u>	<u>Additional</u> <u>for</u> <u>Age 50</u>	<u>Service</u>	<u>Additional</u> <u>for</u> <u>Class C</u>	<u>Total</u>
	<u>Rate</u>	<u>Retirement</u>	<u>Multiplier</u>	<u>Benefit</u>	
1) Class A (age 60 superannuation)	12.78%	-	-	-	12.78%
2) Class A (age 50 superannuation)	12.78	2.79%	-	-	15.57
3) Class C					
State Police (PSP)	12.78	2.79	-	7.68%	23.25
Enforcement Officers (LCB-EO)	12.78	2.79	-	0.00	15.57
4) Class D	12.78	2.79	42.82%	-	58.39
5) Class E	12.78	-	6.39	-	19.17

STATE EMPLOYEES' RETIREMENT SYSTEM

Development of Employer Contribution Rates by Group

	Class A (Age 60 Super- annuation)	Class A (Age 50 Super- annuation) and Class C	Class D	Class E	Total
1. Basic Contribution Rate	12.78%	12.78%	12.78%	12.78%	N/A
2. Additional Contribution Rate for Age 50 Superannuation	-	2.79%	2.79%	-	N/A
3. Service Multiplier Adjustment for Class D and Class E	1.0	1.0	3.75	1.5	N/A
4. Adjusted Contribution Rates: $[(1) + (2)] \times (3)$	12.78%	15.57%	58.39%	19.17%	13.09%
5. Projected 1987 Payroll	\$2,287,153,693	\$215,320,428	\$1,914,604	\$13,817,275	\$2,518,206,000
6. Employer Contribution Amount	\$ 292,298,242	\$ 33,525,391	\$1,117,937	\$ 2,648,772	\$ 329,590,342

The basic contribution rate is determined algebraically such that the sum of the adjusted contribution rate for each class times the payroll for each class equals the product of the total contribution rate and total payroll. The total employer contribution amount differs slightly from the total salary times the total rate as a result of rounding.

STATE EMPLOYES' RETIREMENT SYSTEM

I. DEVELOPMENT OF CONTRIBUTION RATES FOR ADDITIONAL ANNUITY FOR
STATE POLICE AND ENFORCEMENT OFFICERS
(Fiscal Year 1987-88)

	<u>State Police (PSP)</u>	<u>Enforcement Officers (LCB-EO)</u>
1) Balance in Benefit Account as of December 31, 1986	\$ 235,230,051	\$20,532,030
2) Present Value of Benefits for Annuitants and Beneficiaries	214,996,637	14,113,256
3) Assets available for additional annuities for Active Members: (1) - (2)	20,233,414	6,418,774
4) Present Value of additional annuities for Active Members	82,116,689	3,240,384
5) Present Value of Future Contribution to fund additional annuities: (4) - (3)	61,883,275	0
6) Present Value of Future Compensation for eligible Active Members	828,367,073	N.A.
7) Contribution Rate as a percentage of payroll payable January 1: (5) / (6)	7.47%	0.00%
8) Contribution Rate as a percent of payroll payable quarterly:	<u>7.68%</u>	<u>0.00%</u>

STATE EMPLOYES' RETIREMENT SYSTEM

DEVELOPMENT OF CONTRIBUTION RATE AND ACCOUNT BALANCE

FOR AIR AND ARMY NATIONAL GUARD ACCOUNT
(Fiscal Year 1987-88)

1. Estimated Account Balance @ July 1, 1987	\$4,778,147
2. Contribution Required to Amortize (1) over 20 years from July 1, 1980	510,064
3. Estimated Fiscal year 1987-88 payroll for Air and Army National Guard Members	1,812,000
4. Employer Contribution Rate	12.78%
5. Total Required Contribution: (2) + (3) x (4)	741,638

STATE EMPLOYES' RETIREMENT SYSTEM

I. ANALYSIS OF CHANGE IN EMPLOYER CONTRIBUTION RATE

	<u>Normal Cost</u>	<u>Accrued Liability</u>	<u>Supplemental Annuities</u>	<u>Total</u>
1. December 31, 1985 Valuation	3.60%	7.75%	1.74%	13.09%
2. Changes - 12/31/86 Valuation:				
a) Excess Investment Earnings		-1.18%		-1.18%
b) Change in Demographic Profile of New Entrants*	0.85%	-0.65%		0.20%
c) Salary Increase Over Assumed Rates and Miscellaneous Changes ..		+1.04%	-0.06%	0.98%
d) Total Change	0.85%	-0.79	-0.06%	0%
4. December 31, 1986 Valuation:				
(1) + (2d)	4.45%	6.96%	1.68%	13.09%

*For example, the average age of the new entrant increased from 34.22 years, in 1985 to 35.04 years in 1986.

II. ANALYSIS OF CHANGE IN UNFUNDED ACTUARIAL ACCRUED LIABILITY

1. December 31, 1985 Unfunded Actuarial Accrued Liability	\$ 2,361,496,311
2. Expected amortization payment	183,179,159
3. Expected liability as of December 31, 1986 [((1) - (2)) x 1.055]	2,298,124,595
4. Change in Liability due to:	
a) Excess Investment Earnings	(349,668,914)
b) Change in Normal Cost Rate	(191,164,088)
c) Salary Increases Over Assumed Rates and Miscellaneous Changes	305,329,963
d) Total Change	\$ (235,503,039)
5. December 31, 1986 Unfunded Actuarial Accrued Liability:	
(3) + (4d)	\$ 2,062,621,556

STATE EMPLOYEES' RETIREMENT SYSTEM

ACTUARIAL BALANCE SHEET

A S S E T S

L I A B I L I T I E S

Present Assets:

Members' Savings Account \$ 1,388,101,885
 Annuity Reserve Account 3,257,421,403
 State Police Benefit Account 235,230,051
 Enforcement Officers Benefit Account .. 20,532,030
 State Accumulation Account 2,610,238,513
 Supplemental Annuity Account (393,951,748)
 Total Present Assets (Market Value) ... \$ 7,117,572,134

Adjustment to smooth market

Fluctuations (1,108,206,871)
 Total Present Assets (Actuarial Value) \$ 6,009,365,263

Present Value of Future Contributions

Members' Savings Account (Employee) ... \$ 1,192,552,075
 Normal Cost Contributions (Employer) .. 997,277,710
 Accrued Liability Amortization
 (Employer) 2,062,621,556
 Supplemental Annuity Amortization
 (Employer) 393,951,748
 Special State Police Contributions
 (Employer) 61,883,275
 Special Enforcement Officer
 Contributions (Employer) 0

Total Future Contributions \$ 4,708,286,364

TOTAL ASSETS \$10,717,651,627

Present Value of Benefits Payable to Annuitants and Beneficiaries from:

Annuity Reserve Account \$ 3,257,421,403
 State Police Benefit Account 214,996,637
 Enforcement Officers Benefit Account 14,113,256
 Total for Annuitants and Beneficiaries .. \$ 3,486,531,296

Present Value of Benefits to Active and Inactive Members from:

Member Savings Account and State Accumulation Account

Superannuation and

Withdrawal \$6,244,355,620
 Disability 337,924,904
 Death 516,608,553
 Refunds 46,874,181
 Sub Total \$ 7,145,763,258

State Police Benefit Account 82,116,689

Enforcement Officers Benefit Account 3,240,384

Total \$ 7,231,120,331

TOTAL LIABILITIES \$10,717,651,627

STATE EMPLOYES' RETIREMENT SYSTEM

SUMMARY OF TRANSFERS WITHIN SERS ACCOUNTS

1. Annuity Reserve Account	
Balance as reported by SERS	\$ 3,236,477,448
Transfer from State Accumulation Account	20,943,955
December 31, 1986 balance after transfers	<u>\$ 3,257,421,403</u>
2. State Accumulation Account	
Balance as reported by SERS	\$ 2,631,182,468
Transfer to Annuity Reserve Account	<u>(20,943,955)</u>
December 31, 1986 Balance after transfers	\$ 2,610,238,513

STATE EMPLOYES' RETIREMENT SYSTEM

I. FUNDING STATUS OF PROJECTED BENEFIT OBLIGATION AS OF DECEMBER 31, 1986

	Number of Members	
I. Projected benefit obligation		
(a) Retirees and beneficiaries		
1. Superannuation retirements	44,331	\$1,997,580,000
2. Early retirements	14,260	533,166,335
3. Disabled	3,660	129,598,964
4. Beneficiaries	5,237	118,345,096
5. Total	67,488	\$2,778,690,395
(b) Inactive participants	3,178	\$ 70,095,567
(c) Active members		
1. Employee contributions and interest ..		\$1,388,101,885
2. Employer-financed liability - vested	62,750	2,553,354,123
3. Employer-financed liability - nonvested	46,704	193,732,604
4. Total		\$4,135,188,612
(d) Total obligation for all members	180,120	\$6,983,974,574
II. Market value of assets available for benefits		\$7,117,572,134
III. Unfunded projected benefit obligation		\$ (133,597,560)
IV. Assets as a percent of projected benefit obligation		101.9%

Notes:

The amount shown above as the "projected benefit obligation (PBO)" is a standardized disclosure measure of the present value of pension benefits estimated to be payable in the future as a result of employee service to December 31, 1986. The PBO was calculated in conformance with the requirements of Statement No. 5 of the Governmental Accounting Standards Board (GASB) - "Disclosure of Pension Information by Public Employee Retirement Systems and State and Local Governmental Employers."

The liability for the PBO was determined by using the following assumptions:

Projected future salary increases of 4 percent per year compounded annually.

Additional projected salary increases attributable to merit/promotion as set forth in Schedule N increased by 1.5 percent.

A rate of return on the investment of present and future assets of 8.75 percent per year compounded annually.

Assumptions as to withdrawal, disability, death, and retirement as set forth in Schedule N.

No postretirement benefit increases.

STATE EMPLOYEES' RETIREMENT SYSTEM

I. FUNDING STATUS OF ACCUMULATED PLAN BENEFITS DECEMBER 31, 1986

1. Actuarial present value of accumulated plan benefits:

(a) Vested	
Active participants (62,750)	\$3,275,604,886
Inactive (3,178)	51,346,781
Superannuation Retirements (44,331)	2,229,034,268
Early Retirements (14,260)	611,892,378
Disabled (3,660)	144,649,199
Beneficiaries (5,237)	131,452,968
Total (133,416)	<u>\$6,443,980,480</u>

(b) Non-vested (46,704)	<u>170,184,643</u>
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(c) Total: (a) + (b)	\$6,614,165,123
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2. Market value of assets	7,117,572,134
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3. Ratio of Market value of assets to actuarial present value of accumulated plan benefits

	<u>1986</u>	<u>1985</u>
	Valuation	Valuation
(a) Vested benefits:	110.5%	116.8%
(b) Accumulated benefits:	107.6%	114.1%

II. CHANGE IN ACTUARIAL PRESENT VALUE OF ACCUMULATED PLAN BENEFITS*

1. Actuarial present value of accumulated plan benefits as of December 31, 1985	\$5,398,172,276
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2. Changes during the year:

(a) Due to passage of time	\$ 598,568,173
(b) Due to plan provision changes	0
(c) Due to change in interest rate	617,424,674
(d) Total	<u>\$1,215,992,847</u>

3. Actuarial present value of accumulated plan benefits as of December 31, 1986: (1) + (2)	<u>\$6,614,165,123</u>
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*The assumed rate of return on investments is 7.0% in 1986 as compared to 8.5% in 1985. The other assumptions were the same as in 1985.

STATE EMPLOYEES' RETIREMENT SYSTEM

ACTUARIAL VALUE OF ASSETS

I. Development of 12/31/86 Expected Actuarial Value:

1) Actuarial Value as of 12/31/85	\$5,319,010,834
2) Contributions in 1986	546,729,829
3) Benefits and Expenses in 1986	499,878,326
4) Interest @ 5.5% to 12/31/86 on (1)	292,545,596
5) Interest @ 5.5% to 12/31/86 on .5 x ((2) - (3)).	<u>1,288,416</u>
6) Expected Actuarial Value as of 12/31/86: (1) + (2) - (3) + (4) + (5)	\$5,659,696,349

II. Development of Amount of Difference to Be Amortized:

1) Unrecognized Amount of 12/31/82 Difference: .2 x (119,511,895)	\$ (23,902,378)
2) Unrecognized Amount of 12/31/83 Difference: .4 x \$274,734,721	109,893,888
3) Unrecognized Amount of 12/31/84 Difference: .6 x \$129,746,917	77,848,150
4) Unrecognized amount of 12/31/85 Difference: .8 x \$846,693,525	677,354,820
5) Market Value as of 12/31/86	<u>7,117,572,134</u>
6) Difference between Expected Actuarial and Market Value as of 12/31/86: (5) - (4) - (3) - (2) - (1) - I (6).....	\$ 616,681,305

III. Development of Actuarial Value of Assets as of 12/31/86:

1) 20% of (\$119,511,895) (12/31/82 Difference):	\$ (23,902,379)
2) 20% of \$274,734,721 (12/31/83 Difference):	54,946,944
3) 20% of \$129,746,917 (12/31/84 Difference):	25,949,383
4) 20% of \$846,693,525 (12/31/85 Difference):	169,338,705
4) 20% of \$616,681,305 (12/31/86 Difference):	<u>123,336,261</u>
6) Actuarial Value at 12/31/86: I(6) + (1) + (2) + (3) + (4) + (5)	<u>\$6,009,365,263</u>

STATE EMPLOYEES' RETIREMENT SYSTEM

I. AGE, SERVICE AND SALARY PROFILE OF ACTIVE PARTICIPANTS DECEMBER 31, 1986

GENERAL EMPLOYEES

Age	Males - Full Years of Service to December 31, 1986							Total	Average Salary
	0-4	5-9	10-14	15-19	20-24	25-29	30+		
Under 20	23	-	-	-	-	-	-	23	\$12,146
20-24	902	124	-	-	-	-	-	1,026	16,540
25-29	2,032	1,667	140	-	-	-	-	3,839	18,968
30-34	1,824	2,376	1,856	360	-	-	-	6,416	21,214
35-39	1,524	2,056	2,952	2,766	198	1	-	9,497	23,854
40-44	1,089	1,291	1,758	3,116	1,391	90	-	8,735	25,961
45-49	707	844	916	1,826	1,574	691	82	6,640	27,097
50-54	559	653	850	1,313	1,271	994	527	6,167	27,501
55-59	531	696	913	1,353	1,190	820	732	6,235	26,860
60-64	304	538	644	920	734	478	458	4,076	26,601
65 & over	80	166	205	214	166	70	148	1,049	28,365
Total	9,575	10,411	10,234	11,868	6,524	3,144	1,947	53,703	\$24,853

Average age 44.0
 Average service 13.2

Age	Females - Full Years of Service to December 31, 1986							Total	Average Salary
	0-4	5-9	10-14	15-19	20-24	25-29	30+		
Under 20	109	-	-	-	-	-	-	109	\$13,392
20-24	1,453	410	-	-	-	-	-	1,863	15,236
25-29	1,876	2,242	430	-	-	-	-	4,548	17,642
30-34	1,664	2,276	2,569	911	-	-	-	7,420	19,249
35-39	1,459	1,646	2,129	2,472	355	-	-	8,061	20,239
40-44	1,127	1,408	1,257	1,495	898	116	-	6,301	20,503
45-49	775	1,187	1,097	1,058	592	406	64	5,179	20,615
50-54	563	926	1,100	1,143	605	312	198	4,847	20,524
55-59	372	796	995	1,150	927	374	222	4,836	20,335
60-64	142	465	595	880	479	226	205	2,992	20,293
65 & over	33	104	137	230	142	47	94	787	20,409
Total	9,573	11,460	10,309	9,339	3,998	1,481	783	46,943	\$19,739

Average age 42.1
 Average service 11.4

STATE EMPLOYEES' RETIREMENT SYSTEM

I. AGE, SERVICE AND SALARY PROFILE OF ACTIVE PARTICIPANTS DECEMBER 31, 1986

STATE POLICE, CORRECTION OFFICERS,
ENFORCEMENT OFFICERS, AND PSYCHIATRIC SECURITY AIDES

Age	Males - Full Years of Service to December 31, 1986							Total	Average Salary
	0-4	5-9	10-14	15-19	20-24	25-29	30+		
Under 20	-	-	-	-	-	-	-	-	\$ -
20-24	168	2	-	-	-	-	-	170	17,588
25-29	547	285	5	-	-	-	-	837	22,386
30-34	299	449	115	3	-	-	-	866	24,823
35-39	268	248	341	410	9	-	-	1,276	27,256
40-44	191	113	160	1,049	432	23	-	1,968	29,330
45-49	102	85	56	199	357	285	24	1,108	29,554
50-54	71	41	53	40	86	137	138	566	29,015
55-59	34	16	26	23	46	45	136	326	29,537
60-64	7	12	16	14	13	32	47	141	28,181
65 & over	-	1	2	2	3	1	2	11	23,948
Total	<u>1,687</u>	<u>1,252</u>	<u>774</u>	<u>1,740</u>	<u>946</u>	<u>523</u>	<u>347</u>	<u>7,269</u>	<u>\$27,343</u>

Average age 40.4
Average service 13.5

Age	Females - Full Years of Service to December 31, 1986							Total	Average Salary
	0-4	5-9	10-14	15-19	20-24	25-29	30+		
Under 20	-	-	-	-	-	-	-	-	\$ -
20-24	11	-	-	-	-	-	-	11	18,027
25-29	78	40	2	-	-	-	-	120	21,307
30-34	55	33	10	2	-	-	-	100	21,773
35-39	32	13	21	8	-	-	-	74	23,949
40-44	22	8	6	7	1	-	-	44	22,177
45-49	9	6	3	4	2	-	2	26	23,857
50-54	2	7	2	2	1	1	1	16	25,798
55-59	3	3	1	1	0	1	1	10	22,671
60-64	1	1	-	4	1	-	-	7	24,357
65 & over	-	-	-	-	0	-	-	0	-
Total	<u>213</u>	<u>111</u>	<u>45</u>	<u>28</u>	<u>5</u>	<u>2</u>	<u>4</u>	<u>408</u>	<u>\$22,230</u>

Average age 35.1
Average service 6.3

STATE EMPLOYEES' RETIREMENT SYSTEM

I. AGE, SERVICE AND SALARY PROFILE OF ACTIVE PARTICIPANTS DECEMBER 31, 1986

LEGISLATORS

<u>Age</u>	<u>Males - Full Years of Service to December 31, 1986</u>							<u>Total</u>	<u>Average Salary</u>
	<u>0-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25-29</u>	<u>30+</u>		
Under 20	-	-	-	-	-	-	-	-	\$ -
20-24	-	-	-	-	-	-	-	-	-
25-29	1	2	-	-	-	-	-	3	35,000
30-34	9	12	1	-	-	-	-	22	35,736
35-39	3	22	7	4	-	-	-	36	35,000
40-44	6	26	8	5	1	-	-	46	37,439
45-49	4	7	2	7	4	2	-	26	39,791
50-54	3	7	4	8	1	3	1	27	37,101
55-59	5	5	12	6	4	2	1	35	37,542
60-64	-	6	3	-	7	2	5	23	37,221
65 & over	-	3	1	1	4	5	3	17	37,069
Total	<u>31</u>	<u>90</u>	<u>38</u>	<u>31</u>	<u>21</u>	<u>14</u>	<u>10</u>	<u>235</u>	<u>\$37,063</u>

Average age 47.9

Average service 12.0

<u>Age</u>	<u>Females - Full Years of Service to December 31, 1986</u>							<u>Total</u>	<u>Average Salary</u>
	<u>0-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25-29</u>	<u>30+</u>		
Under 20	-	-	-	-	-	-	-	-	\$ -
20-24	-	-	-	-	-	-	-	-	-
25-29	-	-	-	-	-	-	-	-	-
30-34	2	1	-	-	-	-	-	3	39,616
35-39	1	1	1	-	-	-	-	3	31,613
40-44	1	-	-	-	-	-	-	1	35,000
45-49	1	1	-	-	-	-	-	2	35,000
50-54	1	-	-	-	-	-	-	1	35,000
55-59	2	-	-	-	-	-	-	2	35,000
60-64	-	1	1	-	-	-	1	3	35,000
65 & over	-	-	-	-	-	1	2	3	35,000
Total	<u>8</u>	<u>4</u>	<u>2</u>	<u>-</u>	<u>-</u>	<u>1</u>	<u>3</u>	<u>18</u>	<u>\$35,203</u>

Average age 53.2

Average service 11.4

STATE EMPLOYEES' RETIREMENT SYSTEM

I. AGE, SERVICE AND SALARY PROFILE OF ACTIVE PARTICIPANTS DECEMBER 31, 1986

JUDGES AND DISTRICT JUSTICES

<u>Age</u>	<u>Males - Full Years of Service to December 31, 1985</u>							<u>Total</u>	<u>Average Salary</u>
	<u>0-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25-29</u>	<u>30+</u>		
Under 20	-	-	-	-	-	-	-	-	\$ -
20-24	-	-	-	-	-	-	-	-	-
25-29	2	-	-	-	-	-	-	2	31,846
30-34	14	10	3	-	-	-	-	27	37,139
35-39	24	22	12	3	-	-	-	61	37,581
40-44	31	27	19	5	-	-	-	82	45,560
45-49	19	31	22	11	3	1	-	87	50,057
50-54	9	30	23	24	4	2	1	93	51,455
55-59	13	23	37	40	15	14	7	149	50,196
60-64	12	25	32	45	17	6	10	147	47,920
65 & over	0	13	13	31	11	8	12	88	50,953
Total	<u>124</u>	<u>181</u>	<u>161</u>	<u>159</u>	<u>50</u>	<u>31</u>	<u>30</u>	<u>736</u>	<u>\$47,884</u>

Average age 53.1
Average service 12.5

<u>Age</u>	<u>Females - Full Years of Service to December 31, 1986</u>							<u>Total</u>	<u>Average Salary</u>
	<u>0-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25-29</u>	<u>30+</u>		
Under 20	-	-	-	-	-	-	-	-	\$ -
20-24	-	-	-	-	-	-	-	-	-
25-29	2	1	-	-	-	-	-	3	34,764
30-34	2	4	-	-	-	-	-	6	37,701
35-39	8	1	2	-	-	-	-	11	41,981
40-44	8	5	-	1	-	-	-	14	46,321
45-49	3	6	6	2	-	-	-	17	35,921
50-54	2	9	5	6	-	-	-	22	35,044
55-59	6	7	4	12	1	-	-	30	35,611
60-64	2	5	3	16	1	-	1	28	36,763
65 & over	-	1	3	6	-	-	1	11	40,784
Total	<u>33</u>	<u>39</u>	<u>23</u>	<u>43</u>	<u>2</u>	<u>-</u>	<u>2</u>	<u>142</u>	<u>\$37,808</u>

Average age 55.2
Average service 10.5

STATE EMPLOYEES' RETIREMENT SYSTEM

I. AGE, SERVICE AND SALARY PROFILE OF ACTIVE PARTICIPANTS DECEMBER 31, 1986

ALL EMPLOYEES*

<u>Age</u>	<u>Males - Full Years of Service to December 31, 1986</u>								<u>Average Salary</u>
	<u>0-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25-29</u>	<u>30+</u>	<u>Total</u>	
Under 20	23	-	-	-	-	-	-	23	\$12,146
20-24	1,096	130	-	-	-	-	-	1,226	16,777
25-29	2,622	1,966	146	-	-	-	-	4,734	19,601
30-34	2,187	2,870	1,994	366	-	-	-	7,417	21,726
35-39	1,874	2,366	3,347	3,207	210	1	-	11,005	24,317
40-44	1,393	1,487	1,975	4,199	1,834	113	-	11,001	26,675
45-49	905	987	1,028	2,076	1,945	982	106	8,029	27,590
50-54	737	762	970	1,405	1,374	1,137	673	7,058	27,782
55-59	687	791	1,039	1,468	1,275	886	897	7,043	27,260
60-64	402	621	718	1,014	798	542	547	4,642	27,020
65 & over	95	194	242	262	192	88	168	1,241	29,689
Total	12,021	12,174	11,459	13,997	7,628	3,749	2,391	63,419	\$25,351

Average age 43.8

Average service 13.1

<u>Age</u>	<u>Females - Full Years of Service to December 31, 1986</u>								<u>Average Salary</u>
	<u>0-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25-29</u>	<u>30+</u>	<u>Total</u>	
Under 20	110	-	-	-	-	-	-	110	\$13,444
20-24	1,490	411	-	-	-	-	-	1,901	15,322
25-29	2,003	2,305	436	-	-	-	-	4,744	17,785
30-34	1,764	2,347	2,634	925	-	-	-	7,670	19,327
35-39	1,569	1,698	2,210	2,506	357	-	-	8,340	20,314
40-44	1,252	1,453	1,293	1,528	908	117	-	6,551	20,581
45-49	876	1,237	1,139	1,086	603	409	66	5,416	20,686
50-54	661	974	1,156	1,174	612	322	203	5,102	20,609
55-59	518	864	1,050	1,194	938	381	235	5,180	20,461
60-64	254	527	625	932	495	241	221	3,295	20,487
65 & over	66	130	155	250	152	51	100	904	20,718
Total	10,563	11,946	10,698	9,595	4,065	1,521	825	49,213	\$19,850

Average age 42.3

Average service 11.3

* Includes Active and Inactive (Departments 710, 712, 714 and 758) Employees.

STATE EMPLOYES' RETIREMENT SYSTEM

II. AGE AND BENEFIT PROFILE OF INACTIVE PARTICIPANTS DECEMBER 31, 1986

SUPERANNUATION ANNUITANTS

Age	Male		Female		Total	
	Number	Annual Pension	Number	Annual Pension	Number	Annual Pension
Under 50	1	\$ 1,249	2	\$ 3,812	3	\$ 5,061
50-54	112	1,616,319	5	35,342	117	1,651,661
55-59	459	6,393,389	94	1,172,325	553	7,565,714
60-64	3,532	34,674,972	2,433	15,296,312	5,965	49,971,284
65-69	6,497	43,723,592	4,968	25,037,568	11,465	68,761,160
70-74	6,660	38,509,998	4,948	22,923,220	11,608	61,433,218
75-79	4,852	26,133,621	3,442	15,490,634	8,294	41,624,255
80-84	2,425	12,410,554	1,826	7,447,560	4,251	19,858,114
85-89	850	4,529,811	679	2,898,056	1,529	7,427,867
90 & Over	256	1,453,463	290	1,141,265	546	2,594,728
Total	25,644	\$169,446,968	18,687	\$91,446,094	44,331	\$260,893,062

Average age 71.7
Average annual pension ...\$5,885

EARLY RETIREMENT ANNUITANTS

Age	Male		Female		Total	
	Number	Annual Pension	Number	Annual Pension	Number	Annual Pension
Under 30	-	\$ -	11	\$ 7,948	11	\$ 7,948
30-34	132	98,752	519	408,523	651	507,275
35-39	717	706,558	961	853,530	1,678	1,560,088
40-44	1,103	1,386,026	642	744,958	1,745	2,130,984
45-49	819	1,721,856	503	896,673	1,322	2,618,529
50-54	909	4,573,653	654	2,264,151	1,563	6,837,804
55-59	1,467	11,543,746	1,069	5,357,346	2,536	16,901,092
60-64	1,127	7,986,728	1,150	5,549,480	2,277	13,536,208
65 & Over	1,302	6,811,506	1,175	5,349,268	2,477	12,160,774
Total	7,576	\$ 34,828,825	6,684	\$21,431,877	14,260	\$ 56,260,702

Average age 53.5
Average annual pension....\$3,945

STATE EMPLOYES' RETIREMENT SYSTEM

II. AGE AND BENEFIT PROFILE OF INACTIVE PARTICIPANTS DECEMBER 31, 1986

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>
Under 30	-	\$ -	8	\$ 40,060	8	\$ 40,060
30-34	17	82,882	33	162,624	50	245,506
35-39	71	363,653	53	247,425	124	611,078
40-44	130	727,206	79	390,375	209	1,117,581
45-49	149	903,754	98	517,222	247	1,420,976
50-54	222	1,327,829	135	717,457	357	2,045,286
55-59	413	2,596,300	288	1,428,639	701	4,024,939
60-64	505	2,758,377	372	1,652,036	877	4,410,413
65 & over	557	2,346,954	530	1,809,538	1,087	4,156,492
Total	<u>2,064</u>	<u>\$ 11,106,955</u>	<u>1,596</u>	<u>\$ 6,965,376</u>	<u>3,660</u>	<u>\$18,072,331</u>

Average age 58.9
Average annual pension ...\$4,938

BENEFICIARIES

<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	6	\$ 12,302	4	\$ 4,857	10	\$ 17,159
25-29	6	17,452	7	34,968	13	52,420
30-34	7	44,804	11	37,330	18	82,134
35-39	11	37,431	25	76,277	36	113,708
40-44	17	72,241	22	71,718	39	143,959
45-49	25	76,420	47	113,009	72	189,429
50-54	14	31,506	90	321,578	104	353,084
55-59	16	115,779	195	822,888	211	938,667
60-64	25	88,985	420	1,857,720	445	1,946,705
65-69	52	166,011	817	3,007,238	869	3,173,249
70-74	53	171,524	1,069	3,710,444	1,122	3,881,968
75-79	33	100,474	996	3,498,023	1,029	3,598,497
80-84	17	49,785	680	1,895,254	697	1,945,039
85-89	6	14,977	373	952,408	379	967,385
90 & Over	4	10,643	189	338,669	193	349,312
Total	<u>292</u>	<u>\$ 1,010,334</u>	<u>4,945</u>	<u>\$16,742,381</u>	<u>5,237</u>	<u>\$17,752,715</u>

Average age 72.3
Average annual pension ..\$3,390

STATE EMPLOYES' RETIREMENT SYSTEM

BENEFIT AND CONTRIBUTION PROVISIONS as of DECEMBER 31, 1986
(as embodied in Act 31, approved March 1, 1974)

The State Employees' Retirement System of Pennsylvania 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:

Eligibility 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 Pennsylvania State University (unless such employees have joined the Public School Employees' Retirement System of Pennsylvania or TIAA-CREF). All employees who become members (or who rejoin the Retirement System) on and after March 1, 1974.

- Class C - Enforcement officers of the Pennsylvania Liquor Control Board and officers and certain employees of the Pennsylvania State Police who were members prior to March 1, 1974.

- Class D-3 - Members of the General Assembly who were members prior to March 1, 1974.

- Class E-1 - Members of the Judiciary who were members prior to March 1, 1974.

- Class E-2 - District Justices paid by the Commonwealth who were members prior to March 1, 1974.

Age Requirements for Superannuation Retirement (with full formula benefits)

- Class A - Age 60, except for members of the General Assembly, enforcement officers, correction officers, psychiatric security aides and officers of the Pennsylvania State Police for whom the requirement is age 50. Members of Class A with 35 or more years of credited service are entitled to at least full formula benefits regardless of age.

- Classes C and D-3 - Age 50.

- Class E-1 - Age 60.

- Class E-2 - Age 60.

STATE EMPLOYES' RETIREMENT SYSTEM

BENEFIT AND CONTRIBUTION PROVISIONS as of DECEMBER 31, 1986
(as embodied in Act 31, approved March 1, 1974)

Formula for Superannuation Retirement Annuity

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

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>	
C	1.0	
D-3	3.75	
E-1	2.0	for each of the first 10 years of judicial service plus 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.

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 were age 60 at retirement.

In addition to the above benefits, a member who, prior to March 1, 1974, has elected "Social Security Integration Credits" is entitled to a single-life annuity of 2% of his "Average Non-Covered Salary" for each year of Social Security Integration credit. "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. In effect, the years of Social Security Integration Credit are the same as total credited service unless the member did not elect coverage when first eligible.

Age and Service Requirements for Early Retirement

In the case of withdrawal, a member of Class D-3 is eligible for early retirement after 6 years of legislative service and members of other classes are eligible after 10 years of service.

Adjustment for Early Retirement Benefit

A member receives the actuarial equivalent of the annuity payable at superannuation retirement age earned to the date of early retirement.

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Age and Service Requirements for Disability Retirement

A member is eligible for disability retirement if he is unable to perform his current job prior to superannuation retirement age and has at least 5 years of service, except an officer of the State Police or an enforcement officer for whom there is no service requirement.

Formula for Disability Benefit

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

- (a) the benefit calculated as for superannuation retirement based on service projected to superannuation date, or
- (b) 33-1/3% 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 credited service.

Vested Benefit

The vested benefit is calculated as for superannuation retirement but deferred until superannuation retirement age.

Eligibility for Death Benefit Prior to Retirement

A member is eligible if he has 10 years of credited service, except for a member of Class D-3 who is eligible after 6 years of credited service, or upon attainment of superannuation age with 3 years of credited service.

Amount of Death Benefit Prior to Retirement

An eligible beneficiary receives the full reserve value of the benefits to which the member would have been entitled had he retired the day before he died, assuming he had elected Option 1 if no other option had been elected.

Death Benefits After Retirement

A member may elect one of several typical optional reduced pensions in lieu of his maximum single-life annuity provided by the formula. However, if he elects the single-life annuity, there is a provision for a modified cash refund without actuarial reduction of the unpaid balance of the member accumulated contributions and interest at time of retirement.

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Supplemental Allowances

Any superannuation or disability annuitant is entitled to a supplemental allowance sufficient to build the amount of his total single-life allowance including any cost of living supplements up to not less than at the rate of \$84.50 for each year of credited service. An annuitant who retired early is entitled to the supplemental allowance upon attaining superannuation age.

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, 1984 for annuitants who had retired on or prior to July 1, 1982. The increases varied according to year of retirement and years of service and were determined as the total of (a) 2% of the annuity in effect on July 1, 1984 plus (b) \$1 times full years of credited service, plus (c) \$2 times full years of retirement through July 1, 1983 with certain maximums. Other supplemental annuities have become effective as of July 1, 1968, July 1, 1974, and July 1, 1979.

Rate of Member Contribution

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

Class A - 5.00% of total salary for those who became members prior to July 22, 1983 and are in continuous membership, and employment since July 22, 1983.

6.25% of total salary for those who became members and employes July 22, 1983 or thereafter.

For other classes of members, the class of service multiplier is applied to the 5% rate to produce the following:

Class C - 5.00%

Class D-3 - Assumed to be 18.75%

Class E-1 - Assumed to be 10.00% during the first 10 years of judicial service and 7.5% thereafter.

Class E-2 - Assumed to be 7.50%

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(ii) Additional contribution for Social Security Integration Credit

A member of any class who elected before March 1, 1974 Social Security Integration Credit pays 5% 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 Contribution

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

Employer Contributions

The Employer pays the balance of the required contributions in excess of the members contributions in accordance with the law. Basically, the employer contribution is the normal cost plus an accrued liability contribution funded over 30 years, assuming the accrued liability contribution increases at least 4% each year. In addition, contributions are required to fund each of the Supplemental Allowances over a 20-year period in level dollars.

STATE EMPLOYES' RETIREMENT SYSTEM

I. ACTUARIAL ASSUMPTIONS

Interest Rate: 5-1/2% per annum, compounded annually.

Service Tables: Service tables for active members based on the experience of the Retirement System in 1981-85, with values at specimen ages in five separate classes as follows:

CLASS*	AGE	Rates of Separation Due To							
		Withdrawal after Years of Service			Death	Dis- ability	Early Retire- ment**	Super- annuation Retire- ment**	Salary Scale
		1	5	11					
A (MALE)	25	.125	.038	.003	.0008	.0006	-	-	2.6%
	35	.105	.036	.002	.0009	.0012	.019	-	1.3
	45	.072	.024	.002	.0026	.0025	.015	-	0
	55	.064	.016	.002	.0074	.0081	.022	.143	0
	65	-	-	-	.0131	-	-	.537	0
A (FEMALE)	25	.148	.061	.005	.0003	.0004	-	-	2.6%
	35	.094	.043	.004	.0004	.0014	.029	-	1.3
	45	.067	.030	.003	.0014	.0030	.019	-	0
	55	.051	.024	.003	.0028	.0071	.035	.117	0
	65	-	-	-	.0042	-	-	.481	0
C (MALE and FEMALE)	25	.025	.025	.003			.010	-	2.6%
	35	.025	.025	.003	***	***	.010	-	1.3
	45	.025	.025	.003			.010	-	0
	55	-	-	-			-	.080	0
	65	-	-	-			-	.350	0
D (MALE and FEMALE)	25	.030	.030	.002			.045	-	0
	35	.030	.030	.002	***	***	.045	-	0
	45	.030	.030	.002			.045	-	0
	55	-	-	-			-	.030	0
	65	-	-	-			-	.150	0
E (MALE and FEMALE)	25	.040	.020	.002			.020	-	0
	35	.040	.020	.002	***	***	.020	-	0
	45	.040	.020	.002			.020	-	0
	55	.040	.020	.002			.020	-	0
	65	-	-	-			-	.250	0

Superannuation and Early Retirement Allowances: The mortality table used for those receiving superannuation and early retirement allowance is the 1971 Group Annuity Mortality Table.

Disability Allowances: The mortality tables used for those receiving disability allowances are modifications based on sex of 1965 Railroad Retirement Board Mortality among Totally Disabled Annuitants.

*As defined in Retirement Law prior to March 1, 1974 amendment (Act 31).

**Retirement Rates are assumed to decrease and withdrawal rates to increase by 20% after 1990.

***Same as Class A.

STATE EMPLOYEES' RETIREMENT SYSTEM

II. ASSET VALUATION METHOD

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 (@ 5.5%). Each year twenty (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 eighty (80) percent to be recognized over the next four years. This asset valuation method began with the December 31, 1982 valuation. To begin this process, the actuarial value of assets was set equal to the book value of assets as of December 31, 1981 and carried forward.

III. FUNDING POLICY AND CONTRIBUTIONS

The Pennsylvania State Employees' Retirement System funding policy provides for periodic employer contributions at actuarially determined rates that will amortize all existing liabilities by June 30, 2004. 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 superannuation, 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 employes 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.

The annual contribution is equal to the sum of:

The employer share of the normal cost.

The amortization of the unfunded liability attributable to the plan as in effect on July 1, 1969 over a period ending on June 30, 1999.

The amortization of the unfunded liability attributable to the 1974 amendments over a period ending on June 30, 2004.

The amortization of liabilities for supplemental annuities over 20 year periods from the July 1 following their effective dates. There are currently four such liabilities being amortized over 20 year periods beginning July 1, 1969, 1974, 1979, and 1984.

STATE EMPLOYES' RETIREMENT SYSTEM

The total 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 beginning year costs, as determined in the valuation, are adjusted by a half year's interest to reflect the fact that the payments are made by the employer each quarter.

The assumptions used in determining the actuarial cost are stated in Schedule N, and the employer cost, as a percent of payroll, is determined in Schedules A and B. The assumptions are the same as those used in the determination of the funding status of the projected benefit obligation, with the following exceptions:

The interest rate is assumed to be 5.5 percent a year.

There is no general salary scale increase assumed, and the internal increases are as listed in Schedule N.

The reason for the difference in assumptions is that the SERS pension legislation limits the assumed interest rate to 5.5 percent a year. In order to provide a realistic basis for the valuation, the actuarial cost was determined in 1985 using demographic assumptions based on the plan experience and the following set of recommended annual investment return and general salary increase trends:

<u>Years</u>	<u>Salary Increase</u>			<u>Investment Return</u>
	<u>General</u>	<u>Average Career</u>	<u>Total</u>	
1986 to 1987	3.6%	1.75%	5.35%	9.8%
1988 to 1995	4.0	1.75	5.75	9.8
1996 to 2000	4.0	1.75	5.75	9.0
2001 to 2005	4.0	1.75	5.75	8.0
2006 to 2010	4.0	1.75	5.75	7.0
After 2010	4.0	1.75	5.75	6.0

The salary growth was then revised downward so that, in combination with the 5.5 percent interest rate, the employer contribution would be approximately the same as for the realistic valuation.

STATE EMPLOYES' RETIREMENT SYSTEM

DEFINITIONS OF TECHNICAL TERMS

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.

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

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.

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.

Unfunded Actuarial Accrued Liabilities. The difference between actuarial accrued liabilities and valuation assets.