

**South Carolina Retirement System  
(SCRS)**

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**ACTUARIAL VALUATION**

**July 1, 2003**

May 4, 2004

State Budget and Control Board  
South Carolina Retirement System  
P.O. Box 11960  
Columbia, SC 29211-1960

**Subject: July 1, 2003 Actuarial Valuation for SCRS**

This is the July 1, 2003 actuarial valuation for the South Carolina Retirement System (SCRS). This report reflects the new assumptions and methods as described in the July 1, 2003 experience study, and adopted by the Budget and Control Board on April 20, 2004.

**Basic Contribution Requirements**

Our valuation finds the SCRS in good actuarial condition. Current contribution levels are (i) employee contributions of 6.0%, and (ii) employer contributions of 7.55%.

The employer contribution rates are the sum of a 4.31% normal cost contribution and a 3.24% contribution intended to amortize the unfunded liability. With these amortization payments, the current unfunded liability will be eliminated in 25 years. The funding period from the July 1, 2002 valuation was 21 years. The increase was mostly due to the 2.4% cost-of-living adjustment effective as of July 1, 2003, actuarial investment losses, and changes in assumptions and methods recommended in the July 1, 2003 experience study. The increase was offset in part by the change in the employer contribution rate for local government employers from 6.70% to 7.55%.

We have also determined that the Group Life Insurance employer contribution of 0.15% is reasonable and will adequately fund the expected benefit payments. The separate fund for this benefit has built sufficient reserves.

**Changes in System Benefits, Actuarial Assumptions and Methods**

This actuarial valuation reflects the current provisions of the System as outlined on Table XI. No material changes to the benefit structure have been made since the previous valuation. However, as noted above, the employer contribution rate for local government employees was increased from 6.70% to 7.55%.

The actuarial assumptions and methods, outlined in Table X, were adopted April 20, 2004 to be based on the July 1, 2003 experience study. The change in assumptions and methods lowered the normal cost from 4.61% to 4.31% and increased the unfunded liability by \$399 million.

### **Valuation Data**

This valuation was based on 185,538 active members with a payroll of \$6.2 billion. This represents a decrease in the number of active members of 1.9% and an increase of 1.5% in covered payroll since the previous year's valuation. The decrease in the number of active members, and the abnormally small increase in total payroll, are due to the adoption of the TERI provisions. There are 10,511 members in TERI as of June 2003, and they have been counted as retirees in this report.

The number of people receiving benefits increased since the last valuation by 6.8%. The annual benefits being paid increased by 11.3%. This reflects the 2.4% COLA that was effective July 1, 2003, as well as the new TERI "retirees."

### **Valuation Assets**

The market value of the SCRS assets as of July 1, 2003 was \$19.7 billion. The comparable figure one year before was \$18.4 billion. The market value rate of investment return on assets for the 2002-2003 year was 9.0%, net of administrative and investment expenses.

For purposes of the actuarial valuation, we are using an actuarial value of assets that each year smoothes the difference between the expected actuarial value (based on the 7.25% investment return assumption) and actual market value over a five year period. This actuarial value as of July 1, 2003 was \$20.2 billion as compared to \$19.3 billion the previous year. The estimated rate of return on an actuarial value basis was 6.2%. Note the actuarial value is larger than the market value. The actuarial value of assets is 102.7% of market value. The difference will be recognized over the next four years, and this will result in a shorter amortization period, in the absence of offsetting actuarial losses.

### **Unfunded Liability and Experience Factors**

After recognition of the actuarial value of assets and the 2.4% COLA, the unfunded liability as of July 1, 2003 is \$4.20 billion. There was an increase in unfunded liability of \$1.05 billion. The factors causing the increase, in millions, are:

Required amortization payment	\$(17)
Assumption/method change	399
2.4% COLA	278
Asset experience	120
Salary experience	(188)
Other experience	<u>460</u>
Net change	\$ 1,052

### **Governmental Accounting Standards Board (GASB) Calculations**

Our report includes information that is required by GASB. The System's funded ratio has decreased slightly since the previous valuation. As of the last valuation the funded ratio was 86.0%. This has decreased to 82.8%. In addition, the unfunded liability as a percentage of covered payroll has increased from 51.2% to 67.3%. The primary reasons for the changes in both statistics were (i) the 2.4% cost-of-living adjustment effective as of July 1, 2003, and (ii) the actuarial investment losses.

### **Census Data and System Assets**

The Retirement System staff provided the asset information and the member data for retired, active and inactive participants as of June 30, 2003. We have not subjected this data to any auditing procedures, but have examined the data for reasonableness and consistency with the prior year's data.

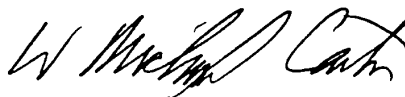
### **Conclusions**

In our opinion, the information contained in this actuarial report fairly represents the actuarial condition of the South Carolina Retirement System.

We look forward to reviewing this report with the State Budget and Control Board and the Director and staff of the Retirement System.

Sincerely,

Gabriel, Roeder, Smith & Company



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Enclosure

	<u>Page No.</u>
Executive Summary	1
Table I Summary of Actuarial Valuation Results	2
Table II Determination and Amortization of Unfunded Liability	3
Table III Development of Actuarial Value of Assets	4
Table IV Calculation of Excess Investment Income for Actuarial Value of Assets	5
Table V Accounting Information	6
Table VI Valuation Balance Sheet	7
Table VII Number and Annual Retirement Allowances of Benefit Recipients	8
Table VIII Distribution of Active Members by Attained Age Groups And Service Groups	10
Table IX Distribution of Participants Receiving Benefits	11
Table X Summary of Actuarial Assumptions and Methods	12
Table XI Summary of Principal Plan Provisions	19

EXECUTIVE SUMMARY

Item	2003	2002
Membership		
• Number of		
– Active Members	185,538	189,166
– Retirees and Beneficiaries	84,420	79,064
– Inactive Members	<u>142,245</u>	<u>141,313</u>
– Total	412,203	409,543
• Payroll (excludes ORP & TERI members)	\$6.2 billion	\$6.1 billion
Statutory contribution rate (including group insurance)		
• Member	6.00%	6.00%
• Employer (state and teacher)	7.70%	7.70%
• Employer (other)	7.70%	6.85%
Assets		
• Market value	\$19.7 billion	\$18.4 billion
• Actuarial value	20.2 billion	19.3 billion
• Return on market value	9.0%	0.9%
• Return on actuarial value	6.2%	6.1%
• Ratio of actuarial to market value	102.7%	104.7%
Actuarial Information		
• Employer normal cost %	4.31%	4.61%
• Unfunded actuarial accrued liability (UAAL)	\$4.201 billion	\$3.148 billion
• Funded ratio	82.8%	86.0%
• Funding period	25 years	21 years
Gains/(Losses)		
• Asset experience	\$(120) million	\$(215) million
• Salary experience	188 million	(166) million
• Other liability experience	(460) million	51 million
• COLA	(278) million	(149) million
• Benefit changes	0 million	0 million
• Assumption/method changes	(399) million	0 million
• Total	\$(1,069)million	\$(479)million

SUMMARY OF ACTUARIAL VALUATION RESULTS

	<u>July 1, 2003</u>	<u>July 1, 2002</u>
<b>1. <u>Number of Active Members and Compensation</u></b>		
a. State Employees	56,382	58,908
b. Compensation	\$ 2,052,664	\$ 2,060,141
c. Teachers	81,723	83,694
d. Compensation	\$ 2,725,597	\$ 2,772,237
e. Others	47,433	46,564
f. Compensation	\$ 1,462,507	\$ 1,315,334
g. Total number of active members	185,538	189,166
h. Total compensation	\$ 6,240,768	\$ 6,147,712
<b>2. <u>Number of Persons Receiving Benefits and Benefits</u></b>		
a. Total number receiving benefits	84,420	79,064
b. Total amount of benefits	\$ 1,337,385	\$ 1,201,180
<b>3. <u>Trust Fund Assets</u></b>		
a. Market value	\$ 19,665,571	\$ 18,439,431
b. Actuarial value	\$ 20,197,936	\$ 19,298,174
<b>4. <u>Unfunded Actuarial Accrued Liability (UAAL)</u></b>	\$ 4,200,995	\$ 3,148,400
<b>5. <u>Remaining Liquidation Period (Years)</u></b>	25	21
<b>6. <u>Required Contribution as a Percent of Compensation</u></b>		
a. State Employees and Teachers		
i) Normal cost contribution	4.31%	4.61%
ii) UAAL contribution	3.24%	2.94%
iii) Pre-retirement death contribution	<u>0.15%</u>	<u>0.15%</u>
iv) Total	7.70%	7.70%
b. Others		
i) Normal cost contribution	4.31%	4.61%
ii) UAAL contribution	3.24%	2.09%
iii) Pre-retirement death contribution	<u>0.15%</u>	<u>0.15%</u>
iv) Total	7.70%	6.85%

*All dollar amounts in thousands*

*Compensation shown excludes amounts for ORP and TERI participants*

**DETERMINATION AND AMORTIZATION OF UNFUNDED LIABILITY**

	<u>July 1, 2003</u>	<u>July 1, 2002</u>
<b>1. <u>Actuarial Present Value of Future Benefits</u></b>		
a. Present retired members and beneficiaries	\$ 13,240,368	\$ 11,600,395
b. Present active and inactive members	<u>16,185,226</u>	<u>16,592,030</u>
c. Total Actuarial Present Value	\$ 29,425,594	\$ 28,192,425
<b>2. <u>Present Value of Future Normal Contributions</u></b>		
a. Employee at 6.00%	\$ 2,781,610	\$ 3,077,754
b. Employer at 4.61%	<u>2,245,053</u>	<u>2,668,097</u>
c. Total Future Normal Contributions	\$ 5,026,663	\$ 5,745,851
<b>3. <u>Actuarial Accrued Liability = 1.c. – 2.c.</u></b>	\$ 24,398,931	\$ 22,446,574
<b>4. <u>Current Actuarial Value of Assets</u></b>	\$ 20,197,936	\$ 19,298,174
<b>5. <u>Unfunded Actuarial Accrued Liability = 3. – 4.</u></b>	\$ 4,200,995	\$ 3,148,400
<b>6. <u>Unfunded Accrued Liability Rates</u></b>		
a. State Employees and Teachers	3.24%	2.94%
b. Others	3.24%	2.09%
<b>7. <u>Unfunded Accrued Liability Liquidation Period</u></b>	25 years	21 years

*All dollar amounts in thousands*



DEVELOPMENT OF ACTUARIAL VALUE OF ASSETS

Item (1)	Valuation as of July 1, 2003 (2)
1. Excess (shortfall) of investment income for current year and previous three years (see Table IV):	
a. Current year	\$ 319,064
b. Current year -1	(1,179,755)
c. Current year -2	16,019
d. Current year -3	(430,856)
2. Deferral of excess (shortfall) of investment income for:	
a. Current year (80% deferral)	\$ 255,251
b. Current year -1 (60% deferral)	(707,853)
c. Current year -2 (40% deferral)	6,408
d. Current year -3 (20% deferral)	<u>(86,171)</u>
e. Total deferred for year	\$ (532,365)
3. Market value of plan assets, end of year	\$ 19,665,571
4. Preliminary actuarial value of plan assets, end of year (Item 3 - Item 2.e.)	\$ 20,197,936
5. Actuarial value of assets corridor	
a. 80% of market value of assets, end of year	\$ 15,732,457
b. 120% of market value of assets, end of year	\$ 23,598,685
6. Final actuarial value of plan assets, end of year (Item 4, but not less than Item 5.a., or greater than Item 5.b.)	\$ 20,197,936

*All dollar amounts in thousands*

**CALCULATION OF EXCESS INVESTMENT INCOME FOR ACTUARIAL VALUE OF ASSETS**

Item	Plan Year Ending June 30,			
	2003	2002	2001	2000
(1)	(2)	(3)	(4)	(5)
1. Market value of assets at beginning of year	18,439,431	18,585,912	17,386,719	16,639,506
2. Net external cash flow during the year	(414,748)	(303,213)	(74,657)	(27,305)
3. Market value of assets at end of year	19,665,571	18,439,431	18,585,912	17,386,719
4. Actual investment of income during the year based on market value: (3) – (2) – (1)	1,640,888	156,732	1,273,850	774,518
5. Assumed earnings rate	7.25%	7.25%	7.25%	7.25%
6. Expected earnings for the year				
a. Market value of assets, beginning of year: (5) x (1)	1,336,859	1,347,479	1,260,537	1,206,364
b. Net external cash flow: (5) x .5 x (2)	(15,035)	(10,991)	(2,706)	(990)
c. Total: (a) + (b)	1,321,824	1,336,487	1,257,831	1,205,374
7. Excess investment income for year: (4) – (6)	\$ 319,064	\$ (1,179,755)	\$ 16,019	\$ (430,856)

*All dollar amounts in thousands*

ACCOUNTING INFORMATION

1. **Number of Active and Retired Members as of July 1, 2003**

<u>Group</u>	<u>Number</u>
Retiree and Beneficiaries Currently Receiving Benefits	84,420
Terminated Employees Entitled to Benefits But not yet Receiving Benefits	142,245
Active Members	<u>185,538</u>
Total	<u>412,203</u>

2. **Schedule of Funding Progress**

Actuarial Valuation Date	Actuarial Value of Assets	Actuarial Accrued Liability (AAL)	Unfunded AAL (UAAL) (b – a)	Funded Ratio (a / b)	Covered Payroll (e)	UAAL as a % of Covered Payroll (c / e)
	(a)	(b)	(c)	(d)	(e)	(f)
7/1/03	\$20,197,936	\$24,398,931	\$4,200,995	82.8%	\$6,240,768	67.3%
7/1/02	19,298,174	22,446,574	3,148,400	86.0%	6,147,712	51.2%
7/1/01	18,486,773	21,162,147	2,675,374	87.4%	6,017,537	44.5%
7/1/00	17,286,108	19,414,972	2,128,864	89.0%	5,881,847	36.2%
7/1/99	16,120,513	16,298,438	177,925	98.9%	5,473,759	3.3%
7/1/98	14,946,070	15,952,345	1,006,275	93.7%	5,191,048	19.4%

*All dollar amounts in thousands*

3. **Assumptions and Methods**

Valuation date	July 1, 2003
Actuarial cost method	Entry Age Normal
Amortization method	Level percent open
Remaining amortization period	25 years
Asset valuation method	5 year smoothed market
Actuarial assumptions	
Investment rate of return*	7.25%
Projected salary increases*	4.00% - 8.00%
*Including inflation at	3.00%
Cost-of-living adjustments	None

VALUATION BALANCE SHEET

	<u>July 1, 2003</u>	<u>July 1, 2002</u>
<b>1. <u>Assets</u></b>		
a. <u>Current Assets (Actuarial Value)</u>		
i) Employee Annuity Savings Fund	\$ 4,867,828	\$ 4,512,402
ii) Employer Annuity Accumulation Fund	<u>15,330,108</u>	<u>14,785,772</u>
iii) Total Current Assets	\$ 20,197,936	\$ 19,298,174
b. <u>Future Member Contributions to Employee Annuity Savings Fund</u>	\$ 2,781,610	\$ 3,077,754
c. <u>Prospective Contributions to Employer Annuity Accumulation Fund</u>		
i) Normal Contributions	\$ 2,245,053	\$ 2,668,097
ii) Accrued Liability Contributions	<u>4,200,995</u>	<u>3,148,400</u>
iii) Total Prospective Employer Contributions	\$ 6,446,048	\$ 5,816,497
d. <u>Total Assets</u>	<u>\$ 29,425,594</u>	<u>\$ 28,192,425</u>
<b>2. <u>Liabilities</u></b>		
a. <u>Employee Annuity Savings Fund</u>		
i) Past Member Contributions	\$ 4,867,828	\$ 4,512,402
ii) Future Member Contributions	<u>2,781,610</u>	<u>3,077,754</u>
iii) Total Contributions to Employee Annuity Savings Fund	\$ 7,649,438	\$ 7,590,156
b. <u>Employer Annuity Accumulation Fund</u>		
i) Benefits Currently in Payment	\$ 13,240,368	\$ 11,600,395
ii) Benefits to be Paid to Current Active Members	<u>8,535,788</u>	<u>9,001,874</u>
iii) Total Benefits Payable from Employer Annuity Accumulation Fund	\$ 21,776,156	\$ 20,602,269
c. <u>Total Liabilities</u>	<u>\$ 29,425,594</u>	<u>\$ 28,192,425</u>

All dollar amounts in thousands

NUMBER AND ANNUAL RETIREMENT ALLOWANCES OF  
 BENEFIT RECIPIENTS AS OF JULY 1, 2003

	<u>Number</u>	<u>Annual Retirement Allowances</u>
<b>1. <u>Service Retirement</u></b>		
a. <u>Employees</u>		
Life Annuity	21,359	\$314,391
10 Year Certain and Life	662	9,215
100% J & S	1,827	32,510
100 % Pop-Up	3,069	59,855
50% J & S	1,194	29,036
50% Pop-Up	3,315	81,433
Level Off	<u>3,285</u>	<u>62,550</u>
	34,711	\$588,990
b. <u>Teachers</u>		
Life Annuity	22,827	\$359,837
10 Year Certain and Life	762	11,345
100% J & S	694	9,728
100 % Pop-Up	1,458	26,166
50% J & S	493	10,812
50% Pop-Up	1,935	44,249
Level Off	<u>5,689</u>	<u>125,450</u>
	33,858	\$587,587
c. <u>Total</u>		
Life Annuity	44,186	\$674,228
10 Year Certain and Life	1,424	20,560
100% J & S	2,521	42,238
100 % Pop-Up	4,527	86,022
50% J & S	1,687	39,848
50% Pop-Up	5,250	125,682
Level Off	<u>8,974</u>	<u>188,001</u>
	68,569	\$1,176,577

NUMBER AND ANNUAL RETIREMENT ALLOWANCES OF  
 BENEFIT RECIPIENTS AS OF JULY 1, 2003

	<u>Number</u>	<u>Annual Retirement Allowances</u>
<b>2. <u>Disability Retirement</u></b>		
a. <u>Employees</u>		
Life Annuity	4,316	\$45,819
10 Year Certain and Life	196	1,965
100% J & S	435	3,542
100 % Pop-Up	313	2,716
50% J & S	165	2,007
50% Pop-Up	<u>277</u>	<u>3,753</u>
	5,702	\$59,802
b. <u>Teachers</u>		
Life Annuity	3,133	\$35,933
10 Year Certain and Life	107	1,232
100% J & S	166	1,290
100 % Pop-Up	129	1,146
50% J & S	65	883
50% Pop-Up	<u>122</u>	<u>1,843</u>
	3,722	\$42,327
c. <u>Total</u>		
Life Annuity	7,449	\$81,752
10 Year Certain and Life	303	3,197
100% J & S	601	4,831
100 % Pop-Up	442	3,862
50% J & S	230	2,891
50% Pop-Up	<u>399</u>	<u>5,596</u>
	9,424	\$102,129
<b>3. <u>Beneficiaries of Deceased Retired Members and Active Members</u></b>		
a. <u>Employees and Teachers</u>	6,427	58,679
<b>4. <u>Grand Total</u></b>	<b>84,420</b>	<b>\$1,337,385</b>

**DISTRIBUTION OF ACTIVE MEMBERS AND AVERAGE COMPENSATION BY AGE GROUPS AND SERVICE GROUPS AS OF JULY 1, 2003**

<u>Age Group</u>	<u>Years of Service</u>								<u>Total</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 - 34</u>	<u>35 &amp; Over</u>	
Under 25	5,357	63	-	-	-	-	-	-	5,420
	\$22,810	\$23,574	-	-	-	-	-	-	\$22,819
25 – 29	12,610	2,862	17	-	-	-	-	-	15,489
	\$27,845	\$31,931	\$29,313	-	-	-	-	-	\$28,602
30 – 34	10,487	8,455	1,914	57	-	-	-	-	20,913
	\$27,803	\$35,000	\$37,752	\$36,132	-	-	-	-	\$31,646
35 – 39	9,124	5,915	5,385	1,968	52	-	-	-	22,444
	\$26,350	\$32,173	\$38,896	\$39,347	\$33,552	-	-	-	\$32,051
40 – 44	9,208	6,064	4,756	5,734	2,182	106	-	-	28,050
	\$26,102	\$30,671	\$36,636	\$42,835	\$44,045	\$37,369	-	-	\$33,735
45 – 49	8,250	6,284	4,912	4,569	5,359	2,896	17	-	32,287
	\$27,040	\$30,662	\$35,529	\$41,303	\$47,019	\$47,854	\$43,662	-	\$36,246
50 – 54	6,542	5,245	4,617	4,192	3,758	4,007	351	3	28,715
	\$27,703	\$31,678	\$35,368	\$40,837	\$46,025	\$51,271	\$55,001	\$36,186	\$37,600
55 – 59	4,536	3,737	3,415	3,212	2,755	1,859	343	44	19,901
	\$27,993	\$31,534	\$34,832	\$38,043	\$43,020	\$48,165	\$64,388	\$51,902	\$36,098
60 – 64	2,192	1,826	1,586	1,446	1,064	749	109	53	9,025
	\$24,608	\$29,552	\$33,519	\$37,339	\$40,705	\$44,889	\$60,333	\$58,522	\$33,426
65 & Over	1,247	865	458	321	200	114	55	34	3,294
	\$15,684	\$19,336	\$26,361	\$37,294	\$38,640	\$37,446	\$45,234	\$53,099	\$23,260
<b>Total</b>	<b>69,553</b>	<b>41,316</b>	<b>27,060</b>	<b>21,499</b>	<b>15,370</b>	<b>9,731</b>	<b>875</b>	<b>134</b>	<b>185,538</b>
	\$26,605	\$31,766	\$36,159	\$40,614	\$45,045	\$48,856	\$58,510	\$54,472	\$33,636

	<u>Prior Year</u>	<u>Current Year</u>
Average Age	43.62 years	43.90 years
Average Service	9.71 years	9.76 years
Average Pay	\$32,499	\$33,636
Percent Female	69.6%	69.7%

**DISTRIBUTION OF PARTICIPANTS RECEIVING BENEFITS**

**1. Service Retirement**

Current Age Group	Number	Total Annual Benefit	Average Annual Benefit
(1)	(2)	(3)	(4)
Under 50	828	\$ 14,929,764	\$18,031
50 – 54	6,169	147,983,347	23,988
55 – 59	9,255	244,971,647	26,469
60 – 64	10,440	211,323,469	20,242
65 – 69	12,009	179,707,622	14,715
70 – 74	10,631	146,693,929	13,799
75 – 79	8,510	110,904,488	13,032
80 & Over	<u>10,727</u>	<u>123,062,855</u>	<u>11,472</u>
Total	68,569	\$1,176,577,120	\$17,159

**2. Disability Retirement**

Current Age Group	Number	Total Annual Benefit	Average Annual Benefit
(1)	(2)	(3)	(4)
Under 50	1,387	\$13,366,864	\$ 9,637
50 – 54	1,394	17,162,336	12,312
55 – 59	1,849	22,631,957	12,240
60 – 64	1,814	19,871,348	10,954
65 – 69	1,226	11,658,334	9,509
70 – 74	748	7,277,615	9,729
75 – 79	508	5,347,116	10,526
80 & Over	<u>498</u>	<u>4,813,287</u>	<u>9,665</u>
Total	9,424	\$102,128,857	\$10,837

**3. Beneficiaries**

Current Age Group	Number	Total Annual Benefit	Average Annual Benefit
(1)	(2)	(3)	(4)
Under 50	956	\$5,744,035	\$ 6,008
50 – 54	369	3,285,912	8,905
55 – 59	504	4,821,820	9,567
60 – 64	550	5,328,099	9,687
65 – 69	684	6,669,211	9,750
70 – 74	757	7,681,571	10,147
75 – 79	914	9,801,954	10,724
80 & Over	<u>1,693</u>	<u>15,345,997</u>	<u>9,064</u>
Total	6,427	\$58,678,599	\$9,130



SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS

1. **Investment Return to be Earned by Fund**

7.25% per annum, compounded annually, composed of an assumed 3.00% inflation rate and a 4.25% real rate of return, net of investment and administrative expenses.

2. **Salary Increases**

Salary increases are assumed in accordance with the following representative rates:

Years of Service	Annual Increase		Years of Service	Annual Increase	
	General Employees	Teachers		General Employees	Teachers
0	8.00%	8.00%	8	4.50%	4.75%
1	5.75%	8.00%	9	4.50%	4.75%
2	5.00%	5.50%	10	4.25%	4.75%
3	4.75%	5.25%	11	4.25%	4.50%
4	4.50%	5.00%	12	4.25%	4.40%
5	4.50%	5.00%	13	4.25%	4.40%
6	4.50%	5.00%	14	4.25%	4.40%
7	4.50%	4.75%	15+	4.00%	4.00%

3. **Decrement Rates**

a. **Service Retirement**

	Age	Annual Rates of			
		Unreduced Service Retirement*		Reduced Service Retirement	
		Male	Female	Male	Female
<b><u>Employees</u></b>	50	12%	14%		
	55	15%	18%	5%	10%
	60	20%	20%	5%	11%
	61	20%	20%	15%	15%
	62	30%	35%	27%	28%
	63	30%	30%	16%	20%
	64	30%	35%	22%	20%
	65	40%	40%		
	66	20%	25%		
	67	20%	25%		
	68	20%	25%		
	69	20%	25%		
	70	100%	100%		

		Annual Rates of			
		Unreduced Service Retirement*		Reduced Service Retirement	
<u>Teachers</u>	50	14%	15%		
	55	18%	25%	6%	9%
	60	25%	25%	14%	15%
	61	30%	40%	18%	20%
	62	20%	35%	25%	25%
	63	20%	25%	28%	20%
	64	35%	30%	28%	30%
	65	45%	40%		
	66	23%	23%		
	67	23%	23%		
	68	23%	23%		
	69	23%	23%		
	70	100%	100%		

\*Plus the following percentage in year when first become eligible for unreduced service retirement before age 65.

	<u>Teachers</u>	<u>General Employees</u>
Male	40%	30%
Female	40%	45%

b. In-service Mortality and Disability

		Annual Rates of							
		Mortality				Disability			
		<u>Employees</u>		<u>Teachers</u>		<u>Employees</u>		<u>Teachers</u>	
<u>Age</u>		<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>
25		0.04%	0.01%	0.03%	0.01%	0.06%	0.05%	0.04%	0.05%
30		0.04%	0.02%	0.03%	0.01%	0.12%	0.07%	0.06%	0.07%
35		0.08%	0.03%	0.06%	0.03%	0.17%	0.15%	0.08%	0.07%
40		0.11%	0.05%	0.08%	0.04%	0.29%	0.19%	0.16%	0.13%
45		0.15%	0.07%	0.11%	0.06%	0.40%	0.27%	0.26%	0.26%
50		0.21%	0.11%	0.16%	0.09%	0.58%	0.46%	0.42%	0.42%
55		0.30%	0.16%	0.23%	0.14%	0.92%	0.74%	0.68%	0.68%
60		0.49%	0.26%	0.37%	0.22%	1.15%	1.12%	1.05%	1.05%
64		0.70%	0.35%	0.53%	0.30%	1.44%	1.56%	1.31%	1.31%

c. Withdrawal rates (continued):

Probability of Decrement Due to Withdrawal											
Years of Service - Male Teachers											
Age	0	1	2	3	4	5	6	7	8	9	10+
25	0.2964	0.2029	0.1384	0.0973	0.0721	0.0578	0.0513	0.0508	0.0518	0.0538	0.0560
30	0.2721	0.1922	0.1356	0.0990	0.0776	0.0662	0.0607	0.0577	0.0538	0.0477	0.0387
35	0.2531	0.1823	0.1316	0.0990	0.0805	0.0708	0.0657	0.0611	0.0540	0.0429	0.0273
40	0.2371	0.1730	0.1271	0.0979	0.0817	0.0730	0.0679	0.0619	0.0529	0.0390	0.0199
45	0.2239	0.1649	0.1228	0.0960	0.0811	0.0726	0.0669	0.0600	0.0503	0.0359	0.0167
50	0.2135	0.1587	0.1192	0.0936	0.0787	0.0698	0.0628	0.0553	0.0460	0.0335	0.0174
55	0.2063	0.1549	0.1168	0.0908	0.0742	0.0645	0.0557	0.0479	0.0401	0.0317	0.0222
60	0.1996	0.1518	0.1143	0.0865	0.0669	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Probability of Decrement Due to Withdrawal											
Years of Service - Female Teachers											
Age	0	1	2	3	4	5	6	7	8	9	10+
25	0.2299	0.1608	0.1209	0.1006	0.0892	0.0841	0.0827	0.0802	0.0731	0.0660	0.0601
30	0.2269	0.1664	0.1260	0.1015	0.0878	0.0802	0.0751	0.0696	0.0618	0.0527	0.0426
35	0.2171	0.1597	0.1208	0.0966	0.0830	0.0748	0.0682	0.0615	0.0536	0.0434	0.0303
40	0.2045	0.1477	0.1106	0.0885	0.0759	0.0683	0.0616	0.0551	0.0475	0.0368	0.0215
45	0.1930	0.1361	0.1001	0.0798	0.0685	0.0619	0.0561	0.0504	0.0435	0.0329	0.0163
50	0.1866	0.1296	0.0937	0.0738	0.0633	0.0570	0.0523	0.0478	0.0417	0.0317	0.0154
55	0.1879	0.1308	0.0935	0.0727	0.0626	0.0543	0.0509	0.0474	0.0420	0.0331	0.0190
60	0.1948	0.1379	0.0986	0.0758	0.0660	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Probability of Decrement Due to Withdrawal											
Years of Service - Male Employees											
Age	0	1	2	3	4	5	6	7	8	9	10+
25	0.3288	0.2466	0.1902	0.1554	0.1345	0.1166	0.0963	0.0783	0.0650	0.0595	0.0662
30	0.2939	0.2211	0.1726	0.1425	0.1236	0.1089	0.0951	0.0821	0.0704	0.0603	0.0530
35	0.2678	0.1997	0.1553	0.1285	0.1122	0.1010	0.0916	0.0822	0.0716	0.0586	0.0424
40	0.2456	0.1804	0.1384	0.1140	0.1002	0.0922	0.0861	0.0791	0.0695	0.0549	0.0335
45	0.2257	0.1636	0.1233	0.1003	0.0882	0.0825	0.0781	0.0727	0.0639	0.0493	0.0266
50	0.2082	0.1501	0.1115	0.0891	0.0774	0.0717	0.0675	0.0626	0.0547	0.0419	0.0224
55	0.1942	0.1410	0.1041	0.0814	0.0691	0.0600	0.0543	0.0488	0.0419	0.0328	0.0212
60	0.1827	0.1351	0.1002	0.0770	0.0632	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

c. Withdrawal rates (continued):

Probability of Decrement Due to Withdrawal											
Years of Service - Female Employees											
Age	0	1	2	3	4	5	6	7	8	9	10+
25	0.2981	0.2459	0.2060	0.1772	0.1560	0.1385	0.1248	0.1159	0.1094	0.1030	0.0940
30	0.2710	0.2236	0.1864	0.1591	0.1395	0.1253	0.1145	0.1059	0.0970	0.0853	0.0688
35	0.2506	0.2015	0.1657	0.1410	0.1244	0.1130	0.1042	0.0958	0.0857	0.0712	0.0505
40	0.2329	0.1803	0.1451	0.1233	0.1101	0.1010	0.0935	0.0854	0.0748	0.0592	0.0367
45	0.2172	0.1622	0.1275	0.1080	0.0972	0.0894	0.0825	0.0746	0.0644	0.0493	0.0276
50	0.2041	0.1493	0.1151	0.0966	0.0864	0.0787	0.0715	0.0637	0.0543	0.0414	0.0234
55	0.1946	0.1429	0.1091	0.0895	0.0778	0.0688	0.0605	0.0526	0.0445	0.0353	0.0240
60	0.1873	0.1412	0.1079	0.0855	0.0701	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Note: No probability of withdrawal is applied to members eligible to retire.

**4. Mortality After Retirement**

For healthy retirees and beneficiaries, the UP-94 Mortality Table rates, with the female rates set back one year. A separate table of mortality rates is used for disabled retirees. The following are sample rates:

Age	Healthy		Disabled	
	Male	Female	Male	Female
50	0.28%	0.14%	3.06%	2.31%
55	0.48%	0.22%	3.86%	2.66%
60	0.86%	0.42%	4.82%	2.98%
65	1.56%	0.82%	5.42%	3.33%
70	2.55%	1.37%	5.91%	3.70%
75	4.00%	2.19%	6.74%	4.43%
80	6.67%	3.80%	9.02%	6.71%
85	10.46%	6.56%	13.45%	10.15%

**5. Marriage Assumption**

100% of all active members are assumed to be married, with female spouses being 3 years younger.

**6. Asset Valuation Method**

The actuarial value of assets is equal to the market value of assets less a five-year phase in of the excess (shortfall) between expected investment return and actual net income (both based on market value) with the resulting value not being less than 80% or more than 120% of the market value of assets.

**7. Cost Methods**

a. Normal Retirement, Termination, Death and Disability Benefits

The contribution rate is set by statute for both employees and for the employers. The funding period is determined, as described below, using the Entry Age Normal actuarial cost method.

The Entry Age Normal actuarial cost method assigns the plan's total unfunded liabilities (the actuarial present value of future benefits less the actuarial value of assets) to various periods. The unfunded actuarial accrued liability is assigned to years prior to the valuation, and the normal cost is assigned to the year following the valuation. The remaining costs are the normal costs for future years. Then each year's contribution is composed of (i) that year's normal cost, plus (ii) a payment used to reduce the unfunded actuarial accrued liability.

The normal cost is the level (as a percentage of pay) contribution required to fund the benefits for a new member. This is determined based upon a hypothetical group of new entrants. This group is based on the age-pay-sex distribution of new members joining SCRS during the six-year period ending June 30, 2003. Part of the normal cost is paid from the employees' own contributions. The employers pay the balance from their contributions.

The actuarial accrued liability is the difference between the total present value of future benefits and the actuarial present value of future normal costs. The unfunded actuarial accrued liability is the excess of the actuarial accrued liability over the actuarial value of assets.

The balance of the employers' contributions--the remainder after paying their share of the normal cost--is used to reduce the unfunded actuarial accrued liability. The funding period is the length of time required for the unfunded actuarial accrued liability to be completely amortized, assuming that the portion used to reduce the unfunded liability remains level as a percentage of total payroll, which is assumed to grow 4.00% per year.

The calculation of the funding period reflects additional contributions the System receives with respect to both ORP participants and return to work retirees. These contributions are assumed to grow at the same payroll growth rate as for active SCRS employees.

It is assumed that amortization payments are made monthly at the end of the month.

b. Group Life Insurance Benefit

One-year term cost method.

8. Unused Annual Leave

To account for the effect of unused annual leave on Annual Final Compensation, liabilities for active members are increased 2.50%.

9. Unused Sick Leave

To account for the effect of unused sick leave on members' final credited service, the service of active members who retire is increased 3 months.

10. Cost-of-Living Increases

None assumed.

11. Administrative and Investment Expenses

The investment return assumption represents the expected return net of all administrative and investment expenses.

12. Payroll Growth Rate

4.00% per annum.

13. Valuation of Teachers and Employees Retention Incentive (TERI)

We have assumed 80% of all members elect TERI coverage when they are first eligible for an unreduced retirement benefit before age 65. We assume members in the TERI are exposed to adjusted retirement rates during TERI coverage and we assume 100% terminate employment at the end of the TERI period (5 years). The retirement rate is adjusted by the following schedule based on number of years since entering TERI:

<u>Years Since Entering TERI Program</u>	<u>Multiple of Unreduced Retirement Table</u>
0.00 – 0.99	50%
1.00 – 1.99	65%
2.00 – 2.99	80%
3.00 – 3.99	90%
4.00 – 4.99	100%
5.00	All members assumed to retire immediately

**14. Changes from Prior Valuation**

Assumptions and methods as reflected in July 1, 2003 experience study.

**15. Adoption Date**

The current actuarial assumptions and methods were adopted by the State Budget and Control Board on April 20, 2004.

**SUMMARY OF PRINCIPAL PLAN PROVISIONS**

**1. Effective Date**

July 1, 1945.

**2. Eligibility Requirements**

All full-time, part-time, or temporary personnel who fill a permanent position as a public school employee, public higher education personnel, state employees, and city, county and other local public employees of participating employers must join as a condition of employment as of the effective date of employment, unless they elect to participate in one of the Optional Retirement Plans (ORP).

Employees in non-permanent positions may choose to join.

**3. Creditable Service**

The sum of “prior service” and “membership service.” Prior service means service rendered prior to membership for which credit is allowed. Membership service means service during which contributions have been made. This is counted in years, months, and days.

There are a number of different types of services that may be purchased by an employee under special rules, such as military service.

**4. Average Final Compensation (AFC)**

The total of the highest 12 consecutive quarters of compensation earned divided by 3. Compensation generally includes gross salary or wages, overtime, sick pay, wage deferrals, and termination pay for unused annual leave. The unused annual leave is added to the sum of the highest 12 consecutive quarters prior to dividing by 3. For member who joined the system on or after January 1, 1997, compensation for benefit and contribution purposes is limited. The 2003 limit is \$200,000, and this limit will be increased in the future as cost-of-living increases occur.

**5. Normal Retirement**

a. Eligibility                      Attainment of age 65, or completion of 28 years of creditable service.

b. Benefit                              1.82% of AFC times creditable service.



6. **Early Retirement**

- a. **Eligibility** Attainment of age 60, or attainment of age 55 with 25 years of creditable service.
- b. **Benefit** Benefit accrued to date of retirement, reduced 5% for each year prior to 65 (for age 60 eligibility), or 4% for each year prior to 28 years (for age 55 with 25 years eligibility).

7. **Teachers and Employees Retention Incentive (TERI)**

Upon meeting normal retirement eligibility, a member can elect to enter the TERI for a maximum of five (5) years, after which employment will cease. The retirement benefits will be accumulated in TERI accounts and will be paid to the members upon the earlier of actual retirement or the end of participation period. The amount credited to the TERI account is based upon the calculation and form of benefit selected by the member at TERI entry. No interest is credited to the TERI account. Member contributions cease, but employer contributions continue during TERI participation.

8. **Disability Retirement**

- a. **Eligibility** Disability prior to normal retirement age with at least 5 years of creditable service. The service requirement is waived for job related disability.
- b. **Benefit** Benefit equal to the amount that would have been payable at age 65 assuming continued employment and AFC at date of disability, less the equivalent benefit that would have been provided by the employee contributions that would have been made until age 65.

9. **Death Benefits**

- a. **Death prior to age 60 or 15 years of creditable service**

Refund of employee contributions with interest plus Group Life Insurance in a lump sum equal to annual earnable compensation at death of death. Group life Insurance only payable to those with at least 1 year of creditable service, unless death is job related, and whose employer participates.

- b. **Death after age 60 or with 15 years of creditable service**

Same as above, however, instead of the refund of employee contributions with interest, the beneficiary may elect to receive an annuity equal to the amount that would have been payable had the employee retired the day before death under Option B described below.

**10. Employee Contributions**

6% of earnable compensation.

**11. Vested Benefit upon Termination**

- a. Eligibility 100% vesting upon completion of 5 years of creditable service.
- b. Benefit Accrued benefit as of date of termination payable as of age 60.

**12. Termination Benefit**

- a. Eligibility Elect return of accumulated employee contributions.
- b. Benefit Return of employee contributions plus interest.

**13. Optional Forms of Retirement Income**

- Option A Monthly life annuity with guaranteed return of employee contributions plus interest. (This is the normal form of payment.)
- Option B Monthly life annuity with 100% of reduced benefit continued to beneficiary upon death, reverting to maximum option if beneficiary predeceases retiree.
- Option C Monthly life annuity with 50% of reduced benefit continued to beneficiary upon death, reverting to maximum option if beneficiary predeceases retiree.

Other optional payment forms were available in the past, and some retirees are still receiving benefits under these options.

**14. Cost of Living Adjustment**

Granted upon approval of State Budget and Control Board if funding objectives are met. The amount is the increase in the calendar year CPI not in excess of 4%.

**15. Changes from Prior Valuation**

None.