# South Carolina Police Officers Retirement System (PORS)

## 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 PORS**

This is the July 1, 2003, actuarial valuation for the South Carolina Police Officers Retirement System (PORS). 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 PORS in good actuarial condition. The current plan benefits are adequately funded by the current contribution levels which consist of employee contributions of 6.5% of pay and employer contributions of 10.30% of pay for Class II members.

The 10.30% employer contribution rate is the sum of a 7.05% rate for the employer's share of the normal cost contributions, and a 3.25% rate used to amortize the unfunded liability. (These are the rates for Class II members.) The calculated funding period is now 11 years. This is the theoretical length of time that will be required to amortize the unfunded liability, based on the current amortization rate and the current benefit structure. Based on the previous actuarial valuation, the funded liability was expected to be eliminated in 15 years. The decrease in the amortization period is due to the changes adopted in the July 1, 2003 experience study, offset by the 2.4% cost-of-living adjustment, made effective July 1, 2003, and the actuarial investment losses.

We have also determined that the Group Life Insurance employer contribution of 0.20% and the accidental death benefit employer contribution of 0.20% are both reasonable and will adequately fund the expected benefit payments. The separate funds for these benefits have 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. The principal benefit provisions have remained the same since the last actuarial valuation.

The actuarial assumptions and methods are outlined in Table X. These assumptions and methods have changed since the July 1, 2002 valuation. The changes, described in detail in the July 1, 2003 experience study, were adopted on April 20, 2004.

## Valuation Data

This valuation was based on 23,871 active members with a payroll of $800.4 million. This represents a decrease in the number of active members of about 0.4% and an increase of 5.7% in covered payroll since the previous year's valuation.

The number of people receiving benefits increased since the last valuation by 9.4%. The annual benefits being paid increased by about 13.6%. This takes into account the 2.4% COLA that was effective July 1, 2003.

## Valuation Assets

The market value of the PORS assets as of July 1, 2003, was $2.46 billion. The comparable figure one year before was $2.24 billion. The market value rate of investment return on assets for the 2002-2003 year was 9.8%, 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 $2.51 billion as compared to $2.35 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 102.0% of market value. The difference will be recognized over the next four years, and this will result in a longer amortization period, in the absence of offsetting actuarial gains.

## Unfunded Liability and Experience Factors

After recognizing the actuarial value of assets, the unfunded liability as of July 1, 2003, was $233.5 million. There was an increase in unfunded liability of $56.7 million. The factors causing the increase (in millions) are:

| | |
|---|---|
| Required amortization payment | $ (1.3) |
| Assumption/method change | 69.3 |
| 2.4% COLA | 27.3 |
| Asset experience | 13.1 |
| Salary experience | (32.0) |
| Other experience | (19.7) |
| Net change | $ 56.7 |

## Governmental Accounting Standards Board (GASB) Calculations

Our report includes information that is required by GASB. The System's funded ratio has deceased slightly since the previous valuation. As of the last valuation the funded ratio was 93.0%, while the current value is 91.5%. In addition, the unfunded liability as a percentage of covered payroll has increased from 23.3% to 29.2%. Both of these effects were principally due to the 2.4% cost-of-living adjustment, effective as of July 1, 2003, the actuarial investment loss, the liability (retirement) losses, and the adoption of the new assumptions.

## 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 Police Officers 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

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# EXECUTIVE SUMMARY

| Item | 2003 | 2002 |
|---|---|---|
| Membership | | |
| • Number of | | |
| – Active Members | 23,871 | 23,963 |
| – Retirees and Beneficiaries | 8,427 | 7,706 |
| – Inactive Members | 8,965 | 8,675 |
| – Total | 41,263 | 40,344 |
| • Payroll | $800 million | $757 million |
| Statutory contribution rate | | |
| • Member | 6.50% | 6.50% |
| • Employer (including group life and ADB) | 10.70% | 10.70% |
| Assets | | |
| • Market value | $2.46 billion | $2.24 billion |
| • Actuarial value | 2.51 billion | 2.35 billion |
| • Return on market value | 9.8% | 0.8% |
| • Return on actuarial value | 6.2% | 6.0% |
| • Ratio of actuarial to market value | 102.0% | 105.1% |
| Actuarial Information | | |
| • Employer normal cost % | 7.05% | 8.43% |
| • Unfunded actuarial accrued liability (UAAL) | $233 million | $177 million |
| • Funded ratio | 91.5% | 93.0% |
| • Funding period | 11 years | 15 years |
| Gains/(Losses) | | |
| • Asset experience | $(13.1) million | $(28.7) million |
| • Salary experience | 32.0 million | 3.7 million |
| • Other liability experience | 19.7 million | (17.8) million |
| • COLA | (27.3) million | (12.7) million |
| • Benefit changes | 0.0 million | 0.0 million |
| • Assumption/method changes | (69.3) million | N/A |
| • Total | $(58.0) million | $(55.5) million |

## SUMMARY OF ACTUARIAL VALUATION RESULTS

| | | July 1, 2003 | July 1, 2002 |
|---|---|---|---|
| 1. | **Number of Active Members and Compensation** | | |
| | a. Total number of active members | 23,871 | 23,963 |
| | b. Total compensation | $ 800,394 | $ 757,393 |
| 2. | **Number of Persons Receiving Benefits and Benefits** | | |
| | a. Total number receiving benefits | 8,427 | 7,706 |
| | b. Total amount of benefits | $ 133,015 | $ 117,134 |
| 3. | **Trust Fund Assets** | | |
| | a. Market value | $ 2,461,222 | $ 2,236,350 |
| | b. Actuarial value | $ 2,511,369 | $ 2,351,100 |
| 4. | **Unfunded Actuarial Accrued Liability (UAAL)** | $ 233,480 | $ 176,776 |
| 5. | **Remaining Liquidation Period (Years)** | 11 | 15 |
| 6. | **Required Contribution as a Percent of Compensation** | | |
| | a. Normal cost contribution | 7.05% | 8.43% |
| | b. UAAL contribution | 3.25% | 1.87% |
| | c. Pre-retirement death contribution | 0.20% | 0.20% |
| | d. Accidental death contribution | 0.20% | 0.20% |
| | e. Total | 10.70% | 10.70% |

*All dollar amounts in thousands*

## DETERMINATION AND AMORTIZATION OF UNFUNDED LIABILITY

| | July 1, 2003 | July 1, 2002 |
|---|---|---|
| **1. Actuarial Present Value of Future Benefits** | | |
| a. Present retired members and beneficiaries | $ 1,265,173 | $ 1,136,998 |
| b. Present active and inactive members | 2,333,660 | 2,413,079 |
| c. Total Actuarial Present Value | $ 3,598,833 | $ 3,550,077 |
| **2. Present Value of Future Normal Contributions** | | |
| a. Employee at 6.50% | $ 416,563 | $ 445,031 |
| b. Employer at 7.05% | 437,421 | 577,170 |
| c. Total Future Normal Contributions | $ 853,984 | $ 1,022,201 |
| **3. Actuarial Accrued Liability = 1.c. – 2.c.** | $ 2,744,849 | $ 2,527,876 |
| **4. Current Actuarial Value of Assets** | $ 2,511,369 | $ 2,351,100 |
| **5. Unfunded Actuarial Accrued Liability = 3. – 4.** | $ 233,480 | $ 176,776 |
| **6. Unfunded Accrued Liability Rate** | 3.25% | 1.87% |
| **7. Unfunded Accrued Liability Liquidation Period** | 11 years | 15 years |

*All dollar amounts in thousands*

## DEVELOPMENT OF ACTUARIAL VALUE OF ASSETS

| Item<br>(1) | | | | Valuation as of July 1, 2003<br>(2) |
|---|---|---|---|---|
| 1. | Excess (shortfall) of investment income for current year and previous three years (see Table IV): | | | |
| | a. | Current year | | $ 57,490 |
| | b. | Current year -1 | | (143,238) |
| | c. | Current year -2 | | (1,635) |
| | d. | Current year -3 | | (47,712) |
| 2. | Deferral of excess (shortfall) of investment income for: | | | |
| | a. | Current year | (80% deferral) | $ 45,992 |
| | b. | Current year -1 | (60% deferral) | (85,943) |
| | c. | Current year -2 | (40% deferral) | (654) |
| | d. | Current year -3 | (20% deferral) | (9,542) |
| | e. | Total deferred for year | | $ (50,147) |
| 3. | Market value of plan assets, end of year | | | $ 2,461,222 |
| 4. | Preliminary actuarial value of plan assets, end of year (Item 3 - Item 2.e.) | | | $ 2,511,369 |
| 5. | Actuarial value of assets corridor | | | |
| | a. | 80% of market value of assets, end of year | | $ 1,968,978 |
| | b. | 120% of market value of assets, end of year | | $ 2,953,466 |
| 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.) | | | $ 2,511,369 |

*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 | $ 2,236,350 | $ 2,197,795 | $ 2,009,860 | $ 1,890,526 |
| 2. Net eternal cash flow during the year | 5,063 | 21,667 | 42,321 | 28,934 |
| 3. Market value of assets at end of year | 2,461,222 | 2,236,350 | 2,197,795 | 2,009,860 |
| 4. Actual investment of income during the year based on market value: (3) – (2) – (1) | 219,809 | 16,888 | 145,614 | 90,400 |
| 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) | 162,135 | 159,340 | 145,715 | 137,063 |
| b. Net external cash flow: (5) x .5 x (2) | 184 | 786 | 1,534 | 1,049 |
| c. Total: (a) + (b) | 162,319 | 160,126 | 147,249 | 138,112 |
| 7. Excess investment income for year: (4) – (6) | $ 57,490 | $ (143,238) | $ (1,635) | $ (47,712) |

*All dollar amounts in thousands*

## ACCOUNTING INFORMATION

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

| Group | Number |
|---|---|
| Retiree and Beneficiaries Currently Receiving Benefits | 8,427 |
| Terminated Employees Entitled to Benefits But not yet Receiving Benefits | 8,965 |
| Active Members | 23,871 |
| Total | 41,263 |

### 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 | UAAL as a % of Covered Payroll (c / e) |
|---|---|---|---|---|---|---|
| | (a) | (b) | (c) | (d) | (e) | (f) |
| 7/1/03 | $2,511,369 | $2,744,849 | $233,480 | 91.5% | $800,394 | 29.2% |
| 7/1/02 | 2,351,100 | 2,527,876 | 176,776 | 93.0% | 757,393 | 23.3% |
| 7/1/01 | 2,197,982 | 2,324,257 | 126,275 | 94.6% | 757,335 | 16.7% |
| 7/1/00 | 2,008,554 | 2,095,991 | 87,437 | 95.8% | 716,749 | 12.2% |
| 7/1/99 | 1,844,517 | 1,898,237 | 53,720 | 97.2% | 638,086 | 8.4% |
| 7/1/98 | 1,684,641 | 1,733,578 | 48,937 | 97.2% | 606,426 | 8.1% |

*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 | 11 years |
| Asset valuation method | 5 year smoothed market |
| Actuarial assumptions | |
| Investment rate of return* | 7.25% |
| Projected salary increases* | 4.50% - 11.50% |
| *Including inflation at | 3.00% |
| Cost-of-living adjustments | None |

## VALUATION BALANCE SHEET

| | July 1, 2003 | July 1, 2002 |
|---|---|---|
| **1. Assets** | | |
| a. Current Assets (Actuarial Value) | | |
| i) Employee Annuity Savings Fund | $ 516,262 | $ 492,178 |
| ii) Employer Annuity Accumulation Fund | 1,995,107 | 1,858,922 |
| iii) Total Current Assets | $ 2,511,369 | $ 2,351,100 |
| b. Future Member Contributions to Employee Annuity Savings Fund | $ 416,563 | $ 445,031 |
| c. Prospective Contributions to Employer Annuity Accumulation Fund | | |
| i) Normal Contributions | $ 437,421 | $ 577,170 |
| ii) Accrued Liability Contributions | 233,480 | 176,776 |
| iii) Total Prospective Employer Contributions | $ 670,901 | $ 753,946 |
| d. Total Assets | $ 3,598,833 | $ 3,550,077 |
| **2. Liabilities** | | |
| a. Employee Annuity Savings Fund | | |
| i) Past Member Contributions | $ 516,262 | $ 492,178 |
| ii) Future Member Contributions | 416,563 | 445,031 |
| iii) Total Contributions to Employee Annuity Savings Fund | $ 932,825 | $ 937,209 |
| b. Employer Annuity Accumulation Fund | | |
| i) Benefits Currently in Payment | $ 1,265,173 | $ 1,136,998 |
| ii) Benefits to be Paid to Current Active Members | 1,400,835 | 1,475,870 |
| iii) Total Benefits Payable from Employer Annuity Accumulation Fund | $ 2,666,008 | $ 2,612,868 |
| c. Total Liabilities | $ 3,598,833 | $ 3,550,077 |

*All dollar amounts in thousands*

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

| | Number | Annual Retirement Allowances |
|---|---|---|
| **1. Service Retirement** | | |
| Life Annuity | 3,197 | $48,537,442 |
| 100% J & S | 252 | 3,222,834 |
| 100 % Pop-Up | 498 | 6,927,790 |
| 50% J & S | 218 | 4,568,004 |
| 50% Pop-Up | 644 | 13,761,712 |
| Level Income | 1,396 | 26,910,125 |
| | 6,205 | $103,927,948 |
| **2. Disability Retirement** | | |
| Life Annuity | 1,021 | $16,656,617 |
| 100% J & S | 73 | 787,514 |
| 100 % Pop-Up | 68 | 775,025 |
| 50% J & S | 47 | 629,133 |
| 50% Pop-Up | 78 | 1,405,034 |
| | 1,287 | $20,253,323 |
| **3. Beneficiaries of Deceased Retired Members and Active Members** | | |
| Total | 935 | $8,833,907 |
| **4. Grand Total** | **8,426** | **$133,015,136** |

**TABLE VIII**

## DISTRIBUTION OF ACTIVE MEMBERS BY AGE GROUPS AND SERVICE GROUPS AS OF JULY 1, 2003
### Years of Service

| Age Group | 0 - 4 | 5 - 9 | 10 - 14 | 15 - 19 | 20 - 24 | 25 - 29 | 30 - 34 | 35 & Over | Total |
|---|---|---|---|---|---|---|---|---|---|
| Under 25 | 1,231 | 6 | - | - | - | - | - | - | 1,237 |
| | $24,219 | $26,580 | - | - | - | - | - | - | $24,231 |
| 25 – 29 | 2,750 | 652 | 3 | - | - | - | - | - | 3,405 |
| | $27,870 | $32,205 | $35,543 | - | - | - | - | - | $28,707 |
| 30 – 34 | 2,083 | 1,939 | 450 | 7 | - | - | - | - | 4,479 |
| | $28,451 | $33,322 | $37,546 | $39,148 | - | - | - | - | $31,490 |
| 35 – 39 | 1,286 | 1,125 | 1,139 | 478 | 4 | - | - | - | 4,032 |
| | $27,793 | $32,861 | $38,222 | $41,655 | $43,955 | - | - | - | $33,812 |
| 40 – 44 | 1,000 | 697 | 668 | 962 | 249 | 17 | - | - | 3,593 |
| | $28,554 | $31,957 | $37,510 | $41,658 | $47,656 | $49,762 | - | - | $35,812 |
| 45 – 49 | 847 | 600 | 442 | 499 | 413 | 151 | 4 | - | 2,956 |
| | $29,431 | $33,143 | $37,549 | $39,973 | $48,021 | $53,163 | $65,985 | - | $37,037 |
| 50 – 54 | 590 | 489 | 389 | 343 | 204 | 158 | 40 | 1 | 2,214 |
| | $32,273 | $33,322 | $38,160 | $39,326 | $44,632 | $51,775 | $60,908 | $62,926 | $37,693 |
| 55 – 59 | 379 | 270 | 243 | 224 | 101 | 69 | 38 | 7 | 1,331 |
| | $31,762 | $35,036 | $36,742 | $39,823 | $43,360 | $49,350 | $59,402 | $62,315 | $37,434 |
| 60 – 64 | 122 | 116 | 94 | 92 | 42 | 20 | 7 | 5 | 498 |
| | $33,179 | $34,610 | $38,548 | $40,893 | $43,895 | $48,392 | $45,936 | $61,170 | $37,926 |
| 65 & Over | 35 | 25 | 23 | 22 | 12 | 6 | 2 | 1 | 126 |
| | $36,732 | $36,250 | $36,153 | $38,985 | $53,280 | $50,269 | $45,169 | $65,205 | $39,505 |
| **Total** | 10,323 | 5,919 | 3,451 | 2,627 | 1,025 | 421 | 91 | 14 | 23,871 |
| | $28,224 | $33,042 | $37,791 | $40,820 | $46,675 | $51,612 | $59,005 | $62,156 | $33,530 |

| | Prior Year | Current Year |
|---|---|---|
| Average Age | 38.93 years | 39.03 years |
| Average Service | 7.99 years | 8.07 years |
| Average Pay | $31,607 | $33,530 |
| Percent Female | 25.2% | 25.3% |

**TABLE IX**

## DISTRIBUTION OF PARTICIPANTS RECEIVING BENEFITS

### 1. Service Retirement

| Current Age Group | Number | Total Annual Benefit | Average Annual Benefit |
|---|---|---|---|
| (1) | (2) | (3) | (4) |
| Under 50 | 305 | $ 6,252,035 | $20,498 |
| 50 – 54 | 754 | 17,400,794 | 23,078 |
| 55 – 59 | 1,186 | 23,798,994 | 20,067 |
| 60 – 64 | 1,245 | 20,142,924 | 16,179 |
| 65 – 69 | 1,134 | 15,227,300 | 13,428 |
| 70 – 74 | 782 | 10,041,227 | 12,840 |
| 75 – 79 | 458 | 6,706,144 | 14,642 |
| 80 & Over | 341 | 4,358,530 | 12,782 |
| Total | 6,205 | $103,927,948 | $16,749 |

### 2. Disability Retirement

| Current Age Group | Number | Total Annual Benefit | Average Annual Benefit |
|---|---|---|---|
| (1) | (2) | (3) | (4) |
| Under 50 | 523 | $ 9,447,189 | $18,063 |
| 50 – 54 | 278 | 4,132,079 | 14,864 |
| 55 – 59 | 244 | 3,473,754 | 14,237 |
| 60 – 64 | 115 | 1,464,577 | 12,735 |
| 65 – 69 | 57 | 867,141 | 15,213 |
| 70 – 74 | 36 | 464,511 | 12,903 |
| 75 – 79 | 22 | 301,731 | 13,715 |
| 80 & Over | 12 | 102,341 | 8,528 |
| Total | 1,287 | $ 20,253,323 | $15,737 |

### 3. Beneficiaries

| Current Age Group | Number | Total Annual Benefit | Average Annual Benefit |
|---|---|---|---|
| (1) | (2) | (3) | (4) |
| Under 50 | 123 | $ 1,076,585 | $ 8,753 |
| 50 – 54 | 60 | 617,900 | 10,298 |
| 55 – 59 | 84 | 846,718 | 10,080 |
| 60 – 64 | 92 | 882,567 | 9,593 |
| 65 – 69 | 115 | 1,247,282 | 10,846 |
| 70 – 74 | 121 | 1,288,303 | 10,647 |
| 75 – 79 | 136 | 1,163,018 | 8,552 |
| 80 & Over | 204 | 1,711,534 | 8,390 |
| Total | 935 | $ 8,833,907 | $ 9,448 |

## SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS

### 1. Interest 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 |
|---|---|---|---|
| 0 | 11.50% | 8 | 4.75% |
| 1 | 6.75% | 9 | 4.75% |
| 2 | 5.75% | 10 | 4.75% |
| 3 | 5.50% | 11 | 4.75% |
| 4 | 5.25% | 12 | 4.50% |
| 5 | 5.00% | 13 | 4.50% |
| 6 | 4.75% | 14 | 4.50% |
| 7 | 4.75% | 15+ | 4.50% |

### 3. Decrement Rates

The following are representative values of the assumed annual rates of withdrawal, in-service mortality, disability and service retirement.

| | Annual Rate of | | |
|---|---|---|---|
| **Age** | **Service Retirement *** | **Mortality** | **Disability** |
| 20 | | 0.03% | 0.12% |
| 25 | | 0.03% | 0.14% |
| 30 | | 0.04% | 0.18% |
| 35 | | 0.07% | 0.35% |
| 40 | | 0.10% | 0.46% |
| 45 | 20.00% | 0.14% | 0.69% |
| 50 | 20.00% | 0.19% | 0.86% |
| 55 | 14.00% | 0.27% | |
| 60 | 15.00% | 0.44% | |
| 64 | 25.00% | 0.63% | |

*Plus an additional 22% in year when first become eligible for unreduced service retirement.

All employees are assumed to retiree at age 65.

In addition, 25% of disabilities are assumed to be duty related, and 5% of pre-retirement deaths are assumed to be accidental.

Probability of Decrement Due to Withdrawal

| | Years of Service | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Age | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10+ |
| 25 | 0.2494 | 0.1816 | 0.1342 | 0.1047 | 0.0885 | 0.0780 | 0.0715 | 0.0640 | 0.0545 | 0.0524 | 0.0618 |
| 30 | 0.2478 | 0.1822 | 0.1376 | 0.1107 | 0.0959 | 0.0876 | 0.0810 | 0.0732 | 0.0633 | 0.0545 | 0.0481 |
| 35 | 0.2450 | 0.1795 | 0.1359 | 0.1104 | 0.0967 | 0.0899 | 0.0837 | 0.0763 | 0.0665 | 0.0539 | 0.0381 |
| 40 | 0.2398 | 0.1739 | 0.1304 | 0.1055 | 0.0927 | 0.0868 | 0.0814 | 0.0747 | 0.0653 | 0.0510 | 0.0305 |
| 45 | 0.2312 | 0.1649 | 0.1212 | 0.0964 | 0.0845 | 0.0783 | 0.0738 | 0.0681 | 0.0595 | 0.0458 | 0.0256 |
| 50 | 0.2193 | 0.1532 | 0.1090 | 0.0839 | 0.0730 | 0.0646 | 0.0610 | 0.0564 | 0.0490 | 0.0382 | 0.0236 |
| 55 | 0.2050 | 0.1393 | 0.0944 | 0.0684 | 0.0587 | | | | | | |
| 60 | 0.1871 | 0.1228 | 0.0773 | 0.0503 | 0.0419 | | | | | | |

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

**4. <u>Mortality After Retirement</u>**

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

| | Healthy | | Disabled |
|---|---|---|---|
| Age | Male | Female | All |
| 50 | 0.39% | 0.14% | 2.30% |
| 55 | 0.68% | 0.22% | 2.89% |
| 60 | 1.23% | 0.42% | 3.62% |
| 65 | 2.14% | 0.82% | 4.07% |
| 70 | 3.35% | 1.37% | 4.43% |
| 75 | 5.40% | 2.19% | 5.05% |
| 80 | 8.87% | 3.80% | 6.77% |
| 85 | 13.65% | 6.56% | 10.09% |

**5. <u>Marriage Assumption</u>**

100% of all active members are assumed to be married, with female spouses being 4 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

Projected benefit method with level percentage entry age normal cost. Gains and losses are reflected in the period remaining to liquidate the unfunded actuarial accrued liability.

b. Group Life Insurance Benefit and Accidental Death Benefits

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 3.75%.

**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. Changes from Prior Valuation**

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

**14.** **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, 1962.

## 2. Eligibility Requirements

All police officers or firefighters who work at least 1,600 hours as a police officer or firefighter and whose compensation is at least $2,000 during the fiscal year.

## 3. Creditable Service

Creditable 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 members 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 55 and the completion of 5 years of creditable service or completion of 25 years of creditable service.

b. Benefit — 2.14% of AFC times creditable service (Class II).

## 6. 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 of retirement benefit that would have been payable assuming continued employment at age 55 and AFC at date of disability.

**7. Death Benefits**

a. Death prior to age 55

i) Prior to completion of 15 years of creditable service

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

ii) After completion of 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 member retired the day before death under elected payment to commence at age 55 under Option B described below.

b. Death after age 55

Same as Item a(ii) above.

**8. Accidental Death Benefit**

If death occurs and is duty related, then a monthly annuity equal to 50% of the member's compensation at the time of death is paid to the statutory beneficiary until the beneficiary's death.

**9. Member Contribution**

6.5% of compensation

**10. Vested Benefit upon Termination**

a. Eligibility — 100% vesting upon completion of 5 years of creditable service and refund benefit declined.

b. Benefit — Accrued service retirement benefit as of date of termination payable as of age 55.

## 11. Refund Benefit

a. Eligibility — All nonvested members, and at members election, vested members.

b. Benefit — Return of employee contributions plus interest.

## 12. 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. |

Options B and C are actuarially reduced.

## 13. 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%.

## 14. Changes from Prior Valuation

None.