

***South Carolina Police Officers  
Retirement System  
(PORS)  
Actuarial Valuation  
as of July 1, 2007***



**May 2008**

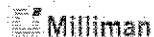
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**SOUTH CAROLINA POLICE OFFICERS RETIREMENT SYSTEM**  
Actuarial Valuation as of July 1, 2007

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May 29, 2008

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

Dear Members of the Board:

We are pleased to present the actuarial valuation report for the Police Officers Retirement System (PORS) as of July 1, 2007. The results of this report are applicable to *Fiscal Year 2009*.

#### **Applicable Laws**

The laws governing the operation of the Police Officers Retirement System provide that actuarial valuations of the assets and liabilities of the System shall be made annually. We have conducted our annual actuarial valuation of the Police Officers Retirement System as of July 1, 2007 and the results of the valuation are contained in the following report.

It is our understanding that as of the date of this report there is pending litigation concerning the contributions made by retirees returning to active employment. The outcome of this litigation is still unknown and any change to the current plan provisions is not considered in this valuation.

#### **Funding Objective**

A *funding objective of the System is that contribution rates as a percentage of payroll will remain relatively level over time. As these contribution rates are set by the Board, the valuation is used to determine the sufficiency of the contributions to maintain or improve the measures of the System's funding progress (i.e. funded ratio, funding period) and provide for the complete funding of all actuarial liabilities within 30 years.*

#### **Funding Methodology**

The entry age normal actuarial cost method is used to determine the System's normal cost, the cost of the current year's benefit accrual. The normal cost is developed as a level percentage of the active member payroll. Additionally, the method determines the actuarial liability, the value of benefits already earned by active and retired members due to past service. A smoothing technique is utilized to produce a market-related actuarial value of assets with the goal of dampening the impact of investment return

volatility. The *funded ratio* is the actuarial value of assets as a percentage of the actuarial liability.

An unfunded actuarial liability exists to the extent the System's actuarial liability exceeds its actuarial value of assets. The contribution amount in excess of the System's normal cost is the level percentage of payroll available to amortize an unfunded actuarial liability. The System's *funding period* or *amortization period* is the resulting number of years necessary to fully amortize an unfunded actuarial liability with the available contributions. The calculated amortization period assumes future growth in payroll and is rounded to the nearest year.

### **Assumptions**

Actuarial assumptions are necessary to estimate the future economic and demographic experience of the System. The actuarial assumptions were recommended by the prior actuary and adopted by the State Budget and Control Board based on a review of the System's experience completed during Fiscal Year 2004. We have reviewed these assumptions and believe they remain reasonable and are in accordance with the applicable Actuarial Standards of Practice.

The results and conclusions of this report should not be interpreted as applying in future years beyond FY 2009. Differences between our projections and actual amounts depend on the extent to which future experience conforms exactly to the assumptions used in this analysis.

### **Data Reliance**

In preparing the valuation, we, as the actuary, relied on data provided by the System. In fulfillment of the scope of our assignment, we performed a limited review of the data for consistency and reasonableness and did not find material defects in the census data. If there are material defects in the data, it is possible that they would be uncovered by a detailed, systematic review and comparison of the data to search for data values that are questionable or for relationships that are materially inconsistent. Such a review was beyond the scope of our assignment. If the underlying data or information is inaccurate or incomplete, the results of our analysis may likewise be inaccurate or incomplete.

### **Third Party Recipients**

Milliman's work product was prepared exclusively for the South Carolina Retirement Systems for a specific and limited purpose. It is a complex technical analysis that assumes a high level of knowledge concerning the Systems' operations, and uses Systems' data, which Milliman has not audited. It is not for the use or benefit of any third party for any purpose. Any third party recipient of Milliman's work product who desires professional guidance should not rely upon Milliman's work product, but should engage qualified professionals for advice appropriate to its own specific needs. Any distribution of this report must be provided in its entirety including this cover letter, unless prior written consent is obtained from Milliman.

### Certification

Based on the results of the July 1, 2007 valuation, we believe that the valuation appropriately reflects the System's long term obligations and the current schedule of contributions are sufficient to fund the liabilities of the System over a reasonable time frame, and based on these criteria, the System may be deemed actuarially sound.

We are members of the American Academy of Actuaries and meet their Qualification Standards to render the actuarial opinion contained herein.

We hereby certify that, to the best of our knowledge, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices which are consistent with the applicable Guides to Professional Conduct, Amplifying Opinions, and Supporting Recommendations and Interpretations of the American Academy of Actuaries.

Respectfully submitted,

Milliman, Inc.

A handwritten signature in cursive script, appearing to read "Hassan Ghazi".

Hassan Ghazi, FSA  
Actuary

A handwritten signature in cursive script, appearing to read "John Garrett".

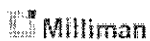
John Garrett, ASA  
Consulting Actuary

A handwritten signature in cursive script, appearing to read "Robert S. Dezube".

Robert S. Dezube, FSA  
Principal and Consulting Actuary

# Section I

## Board Summary



***SOUTH CAROLINA POLICE OFFICERS RETIREMENT SYSTEM***  
Actuarial Valuation as of July 1, 2007

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## BOARD SUMMARY

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This report presents the results of the July 1, 2007 actuarial valuation of the Police Officers Retirement System (PORS). The primary purposes of performing the annual actuarial valuation are to:

- 1) Determine whether the **contributions** to be paid into the Fund in Fiscal Year 2009 **are adequate** to amortize the unfunded actuarial liability over no more than 30 years;
- 2) **Measure and disclose**, as of the valuation date, the financial condition of the plan;
- 3) **Indicate trends** in the financial progress of the plan;
- 4) **Provide specific information** and documentation required by the Government Accounting Standards Board (GASB).

In this section of the report, we present a summary of the above information in the form of:

- The actuary's comments;
- The prior year's experience of the plan's assets, liabilities, and membership;
- A series of graphs which highlight key trends experienced by the plan; and
- A summary of all the principal results from this year's valuation, compared to the prior year's, in a single table, intended for quick reference purposes.

### Actuary's Comments

The employer contribution rate for the System is 10.70%, (rising to 11.05% in FY 2009) including a 0.20% contribution for group life benefits and a 0.20% contribution for accidental death benefits (duty-related). The 10.30% (10.65% starting in FY 2009) net contribution is used to pay the employer's portion of the normal cost and to amortize the unfunded actuarial liability. The Board sets the contribution rate based on the actuarial valuation of the plan. The amortization period for the unfunded actuarial liability varies, depending on the amount of the liability and the net contribution towards the liability after paying the normal cost contribution.

The July 1, 2007 actuarially determined employer normal cost contribution rate decreased from 7.14% for to 7.08%. As a result, the net contribution towards the unfunded actuarial liability increased from 3.16% to 3.22%. The unfunded actuarial liability increased from \$530 million to \$570 million. The net result is that the amortization period for the unfunded actuarial liability decreased from 17.6 years to 16.3

## BOARD SUMMARY

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years when taking into account the scheduled 0.35% increase to the employer contribution rate effective beginning July 1, 2008. This result is a combination of many factors:

- The plan granted a 2.4% COLA effective July 1, 2007. This increased the unfunded actuarial liability by \$40.0 million, and the amortization period by 1.8 years. Because future *ad hoc* COLAs are not reflected in the System's valuation assumptions until approved, every time an *ad hoc* COLA is granted, the unfunded actuarial liability is increased which, absent contribution increases, in turn increases the amortization period. The Board approved a 0.35% increase in the contribution rate effective July 1, 2008. This increase offsets the 1.8 year increase in the amortization period such that there is no net effect of the COLA on the amortization period.
- The plan experienced a net actuarial loss on plan liabilities. The source of the loss is net demographic experience primarily related to retirement and turnover experience being different from expected. The total net loss increased the unfunded actuarial liability by \$30.8 million, and the amortization period by 1.2 years. The loss represents 0.83% of the actuarial liability which indicates *cumulative experience closely followed the assumptions. This type of activity is normal in the course of plan experience. The plan will experience actuarial gains and losses over time because future experience will not exactly match our assumptions.*
- The plan experienced an actuarial gain related to the expected return on plan assets. There was a gain of \$29.7 million due to the investment return on the actuarial value of assets exceeding the 7.25% assumed rate of return. The gain decreased the amortization period by 1.1 years.
- Other factors, such as the one-year decrease in the amortization period due to the prior year amortization payment and the decrease in the normal cost rate, decreased the amortization period by 1.4 years.

As part of this valuation, we tested the adequacy of the 0.40% contribution rate to support the group life and accidental death funds (0.20% to each fund). There are separate funds for these benefits with assets at market value of \$26.1 million and \$32.4 million respectively as of July 1, 2007. The contribution rates are reasonable and will adequately fund the expected benefit payments for FY 2009.

The balance of this section presents summarized information regarding plan trends, details on the 2006/2007 experience, and tables presenting a summary of the principal results.



## Prior Year Experience

### ASSETS

The Plan has two measures of plan assets: (i) the market value and (ii) the actuarial value. The market value is a snapshot of the asset value as of July 1, 2007. The actuarial value is a smoothed asset value that recognizes 20% of the difference between the expected investment return and actual investment return each year for five years. The expected investment return equals the prior year's actuarial value of assets adjusted with contributions, and payments using investment earnings of 7.25%. This method is intended to dampen the effect that fluctuations in market value have on funding requirements.

The market value of assets as of July 1, 2007 exceeds the actuarial value by \$85.2 million. This results from the asset smoothing technique deferring more investment gains than investment losses.

For the plan year ending July 1, 2007, the plan earned 12.7%<sup>1</sup> on a market value basis and 8.3% on an actuarial value basis. These returns resulted in the market value of assets being \$156.6 million greater than expected and an investment gain of \$29.7 million on an actuarial value basis. The specific changes between the prior year's amounts and this year's are presented below.

Item (In Thousands)	Market Value	Actuarial Value
July 1, 2006 value	\$ 2,897,018	\$ 2,935,841
Employer Contributions	102,972	102,972
Member Contributions	70,641	70,641
Transfer of Assets	1,614	1,614
Benefit Payments and Expenses	(192,733)	(192,733)
Expected Investment Earnings (7.25%)	209,399	212,214
Expected Value July 1, 2007	3,088,911	3,130,549
Investment Gain (Loss)	156,569	29,691
July 1, 2007 value	\$ 3,245,480	\$ 3,160,240

<sup>1</sup> Differs from the CAFR report rate of return because assumes cash flow occurs mid-year.

## BOARD SUMMARY

### LIABILITIES

Two different measures of liabilities are calculated for this plan: a total value of future benefits and an actuarial liability. Section III of this report describes the development of each. The actuarial liability is used to determine the adequacy of the State's contribution rate and the Government Accounting Standards Board (GASB) disclosures. Plan experience is measured by changes in the actuarial liability. During the plan year ending in 2007, the plan experienced an actuarial loss on liabilities of \$30.8 million, which is 0.83% of the total actuarial liability.

Liabilities (In Millions)	Total Value of Future Benefits	Actuarial Liability
July 1, 2006	\$ 4,440	\$ 3,466
July 1, 2007	\$ 4,762	\$ 3,731

### UNFUNDED LIABILITIES AND FUNDED RATIOS

The difference between the actuarial liability and the actuarial value of assets is the unfunded actuarial liability. Here we show the July 1, 2006 and July 1, 2007 unfunded actuarial liability/(surplus) amounts, as well as the corresponding funded ratios for each (assets divided by liabilities).

In Millions	Unfunded Actuarial Liability	Funded Ratio
July 1, 2006 net unfunded / (surplus)	\$ 530	84.7%
July 1, 2007 net unfunded / (surplus)	\$ 570	84.7%

## BOARD SUMMARY

### MEMBERSHIP

There are three types of plan members: (i) current active members; (ii) inactive members who retain a right to either a return of contributions or a deferred vested benefit; and (iii) retired members and beneficiaries in pay status. In Section V we present details on membership statistics. Below, we compare totals in each group between July 1, 2006 and 2007.

There was an overall increase in membership during the year.

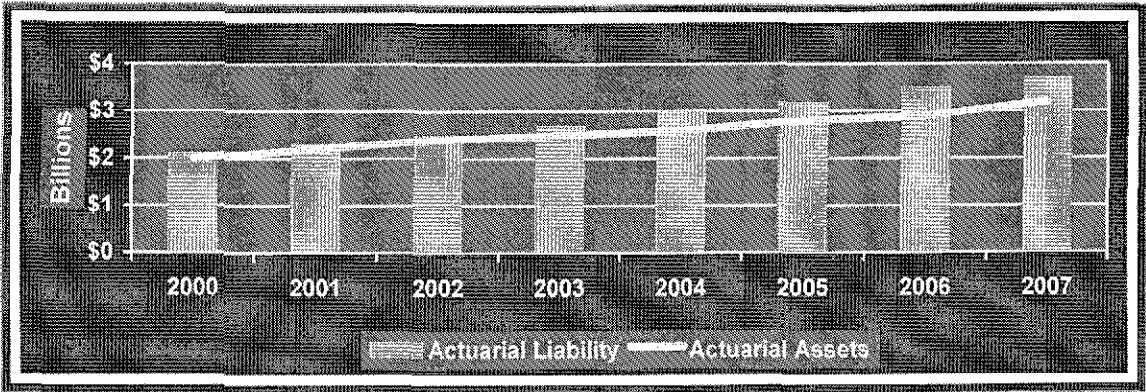
	7/1/2007	7/1/2006	Change
Active Members	25,645	24,813	3.4%
Inactive Members	11,038	10,464	5.5%
Retired Members and Beneficiaries	10,701	10,134	5.6%
Total Members	47,384	45,411	4.3%

### Trends

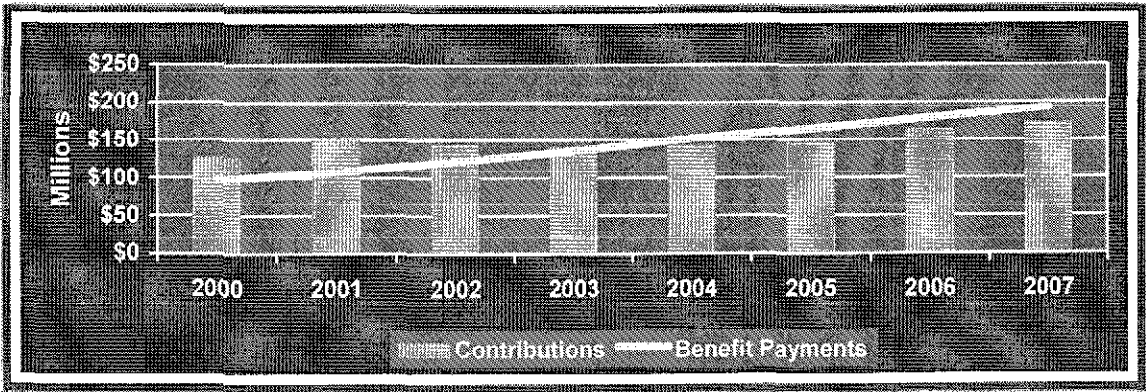
To understand the financial condition of the pension plan, a review of the trends over the last several years is helpful in evaluating the overall performance. Below, we present three charts that present trend information from past years through 2007.

The first graph shows the growth in both actuarial liability and actuarial assets. The gap between actuarial liability and actuarial assets increases in each of these years resulting in the increases in the unfunded actuarial liability. The second graph shows that contributions have increased each year over the last five years, while the benefit payments have a slight upward trend over the eight years. Benefit payments from the fund have exceeded contributions starting with the 2004 valuation. As of the current valuation, the negative cash flow represents less than 1% of the market value of assets. This degree of negative cash flow is common to mature retirement systems and we would expect the negative cash flow as a percent of market value of assets to slightly increase over time. The third graph shows that trend in the amortization period for unfunded actuarial liability has increased from 7 to 16 years over the eight-year period consistent with the information shown in the first graph.

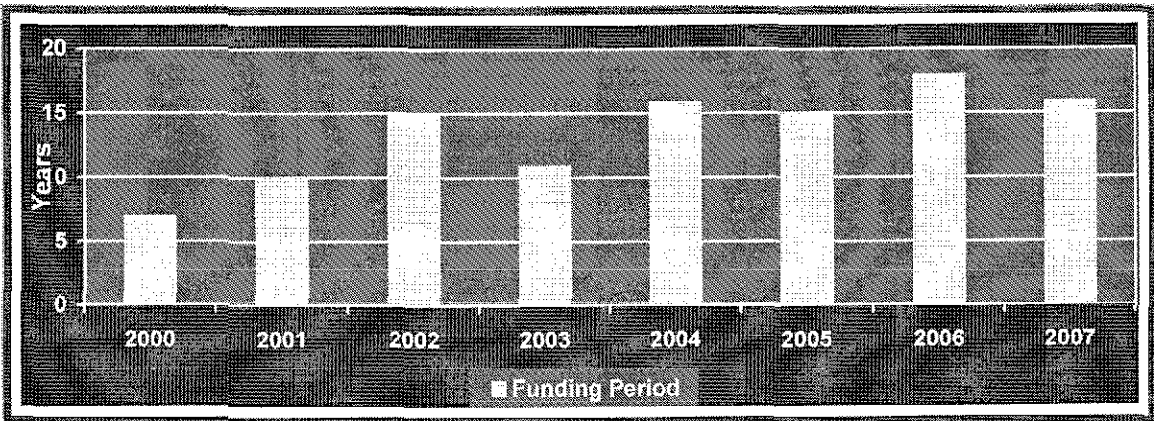
Assets and Liabilities



Cash Flows



Unfunded Actuarial Liability Funding Period

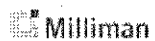


# BOARD SUMMARY

<b>PRINCIPAL RESULTS</b>		
	July 1, 2007	July 1, 2006
<b>Membership</b>		
Number of:		
Active Members	25,645	24,813
Retirees and Beneficiaries	10,701	10,134
Inactive Members	<u>11,038</u>	<u>10,464</u>
Total	47,384	45,411
Payroll	\$ 993 million	\$ 932 million
<b>Statutory Contribution Rate (Including Group Insurance)</b>		
Member	6.50%	6.50%
Employer		
Retirement Contribution	10.30%	10.30%
Group Life Contribution	0.20%	0.20%
Accidental Death Contribution	<u>0.20%</u>	<u>0.20%</u>
Total	10.70%	10.70%
<b>Assets</b>		
Market Value	\$ 3.25 billion	\$ 2.90 billion
Actuarial Value	\$3.16 billion	\$ 2.94 billion
Return on Market Value	12.7%	4.9%
Return on Actuarial Value	8.3%	6.3%
Ratio of Actuarial to Market Value	97.4%	101.3%
<b>Actuarial Information</b>		
Employer Normal Cost %	7.08%	7.14%
Unfunded Actuarial Liability (UAL)	\$ 570 million	\$ 530 million
Funded Ratio	84.7%	84.7%
Amortization Period	16 years	18 years
<b>Change in Unfunded Actuarial Liability (in millions)</b>		
Beginning of Year Unfunded Actuarial Liability	\$ 530.4	\$ 399.3
Interest on Unfunded Actuarial Liability	38.5	28.9
Amortization Payment	(42.6)	(37.9)
Asset Experience	(29.7)	27.5
Salary Experience	0.7	28.4
Other Liability Experience	30.1	26.8
COLA	42.9	57.4
Benefit Changes	0.0	0.0
Assumption/Method Changes	0.0	0.0
Total Increase / (Decrease)	39.9	131.1
End of Year Unfunded Actuarial Liability	\$ 570.3	\$ 530.4

## **Section II**

# **Assets**



***SOUTH CAROLINA POLICE OFFICERS RETIREMENT SYSTEM***

Actuarial Valuation as of July 1, 2007

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## ASSETS

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Pension plan assets and the decisions the Board may make with respect to future deployment of those assets play a key role in the financial operation of the plan. The level of assets, the allocation of assets among asset classes, and the methodology used to measure assets will likely affect benefit levels, negotiated contributions, and the ultimate security of participants' benefits.

In this section we present:

- Statement of the **changes** in market value during the year; and
- Development of the **Actuarial Value of Assets**.

### Changes in Market Value:

The components of asset change are:

- Contributions
- Benefit payments
- Expenses
- Investment income (realized and unrealized)

The first three components represent the net external cash flow during the year. The specific changes during 2007 and the three prior years are presented in Table II-1.

### Actuarial Value of Assets:

The *Actuarial Value of Assets* represents a "smoothed" value developed by the actuary to reduce, or eliminate, erratic results which could develop from short term ups and downs in the Market Value of Assets. For this plan, the Actuarial Value has been calculated by recognizing 20% of the difference between expected investment return and actual investment return each year for five years. Table II-2 shows the calculation of the Actuarial Value of Assets for the July 1, 2007 valuation.

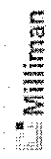
# ASSETS

**TABLE II-I**  
**CALCULATION OF EXCESS INVESTMENT INCOME**  
**FOR ACTUARIAL VALUE OF ASSETS**

PLAN YEAR ENDING JUNE 30,

Item	PLAN YEAR ENDING JUNE 30,		
	2007	2006	2005
1. Market Value of Assets at Beginning of Year	\$ 2,897,018	\$ 2,773,515	\$ 2,619,169
2. Net External Cash Flow During the Year	(17,506)	(11,956)	(8,311)
3. Market Value of Assets at End of Year	3,245,480	2,897,018	2,773,515
4. Actual Investment Income During the Year Based on Market Value	365,968	135,459	171,112
5. Assumed Earnings Rate	7.25%	7.25%	7.25%
6. Expected Earnings for the Year			
a. Market Value of Assets, Beginning of Year (5) x (1)	210,034	201,080	189,890
b. Net External Cash Flow (5) x .5 x (2)	(635)	(433)	(608)
c. Total: (a) + (b)	209,399	200,647	189,282
7. Excess Investment Income for Year: (4) - (6)	\$ 156,569	(\$ 65,188)	(\$ 18,170)
			\$ 2,420,469
			(8,311)
			2,619,169
			207,011
			7.25%
			175,484
			(301)
			175,183
			\$ 31,828

All dollar amounts are in thousands.



**SOUTH CAROLINA POLICE OFFICERS RETIREMENT SYSTEM**

Actuarial Valuation as of July 1, 2007

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**TABLE II-2  
DEVELOPMENT OF ACTUARIAL VALUE OF ASSETS**

Item	Valuation as of July 1, 2007
1. Excess (Shortfall) of Investment Income for Current Year and Previous Three Years	
a. Current Year	\$ 156,569
b. Current Year - 1	(65,188)
c. Current Year - 2	(18,170)
d. Current Year - 3	31,828
2. Deferral of Excess (Shortfall) of Investment Income for:	
a. Current Year (80% Deferral)	\$ 125,255
b. Current Year - 1 (60% Deferral)	(39,113)
c. Current Year - 2 (40% Deferral)	(7,268)
d. Current Year - 3 (20% Deferral)	<u>6,366</u>
e. Total Deferred for Year	\$ 85,240
3. Market Value of Plan Assets, End of Year	\$ 3,245,480
4. Preliminary Actuarial Value of Plan Assets, End of Year (Item 3 - Item 2.e.)	\$ 3,160,240
5. Actuarial Value of Assets Corridor:	
a. 80% of Market Value of Assets, End of Year	\$ 2,596,384
b. 120% of Market Value of Assets, End of Year	\$ 3,894,576
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.)	\$ 3,160,240

All dollar amounts are in thousands

# Section III

## Valuation Results



***SOUTH CAROLINA POLICE OFFICERS RETIREMENT SYSTEM***  
Actuarial Valuation as of July 1, 2007

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## VALUATION RESULTS

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In this section we present the principal valuation results. A pension plan is in actuarial balance if the assets on hand plus future employer and employee contributions are equal to the total value of future plan benefits. The System has assets on hand in the employee fund and the employer fund. Currently it receives contributions from employees of 6.50% of pay and contributions from the employer of 10.30% of pay (scheduled to increase to 10.65% in FY 2009), after subtracting the 0.20% of pay contribution for pre-retirement death trust (group life) and 0.20% of pay contribution for accidental death benefit trust.

The employer contribution is used to pay the normal cost and to fund the unfunded portion of the actuarial liability. The normal cost is the regular ongoing cost of the plan. The unfunded actuarial liability represents costs allocated to prior years that have not been paid by prior employer or employee contributions. A financing objective of the Board is to require sufficient contributions to fund the unfunded actuarial liability over no more than 30 years.

### Valuation Balance Sheet

Table III-1 demonstrates that the System is in actuarial balance. The assets of the System together with future employer and employee contributions are sufficient to fund all liabilities of the System.

### Summary of Actuarial Valuation Results

Table III-2 is a summary of the July 1, 2007 actuarial valuation results compared to similar results from the prior valuation. An employer contribution rate of 10.70% (increasing to 11.05% in FY 2009) including the 0.20% contribution for pre-retirement death benefits and the 0.20% contribution for accidental death benefits is sufficient to fund the unfunded actuarial liability over 16 years. Changes from last year include:

- The number of active members increased 3.4% and payroll of active members increased by 6.6%.
- The number of retirees increased 5.6%. Retirees received a 2.4% COLA effective July 1, 2007. Including the COLA, the total benefit amount for retirees increased 7.8%.
- The funding period for the unfunded actuarial liability decreased from 18 years to 16 years.

### Determination and Amortization of Unfunded Liability

In Table III-3 we show the determination of the unfunded actuarial liability and the contribution to amortize the liability. We determined the portion of the employer

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## VALUATION RESULTS

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contribution for active members by taking the total employer contribution rate and subtracting the normal cost contributions and the contribution rates for pre-retirement death benefits and accidental death benefits. The contribution for reemployed retirees is the sum of the net employer contribution rate (i.e. the total employer rate less the pre-retirement death and accidental death benefit contributions) and the employee contribution rate.

# VALUATION RESULTS

<b>TABLE III-1</b>		
<b>VALUATION BALANCE SHEET</b>		
	<b>JULY 1, 2007</b>	<b>JULY 1, 2006</b>
<b>Assets</b>		
1. Current Assets (Actuarial Value)		
a. Employee Annuity Savings Fund	\$ 658,023	\$ 622,008
b. Employer Annuity Accumulation Fund	<u>2,502,217</u>	<u>2,313,833</u>
c. Total Current Assets	\$ 3,160,240	\$ 2,935,841
2. Present Value of Future Member Contributions	\$ 502,233	\$ 473,750
3. Present Value of Future Employer Contributions		
a. Normal Cost Contributions	\$ 529,376	\$ 499,696
b. Accrued Liability Contributions	<u>570,304</u>	<u>530,440</u>
c. Total Future Employer Contributions	\$ 1,099,680	\$ 1,030,136
4. Total Assets	<u>\$ 4,762,153</u>	<u>\$ 4,439,727</u>
<b>Liabilities</b>		
1. Employee Annuity Savings Fund		
a. Past Member Contributions	\$ 658,023	\$ 622,008
b. Present Value of Future Member Contributions	<u>502,233</u>	<u>473,750</u>
c. Total Contributions to Employee Annuity Savings Fund	\$ 1,160,256	\$ 1,095,758
2. Employer Annuity Accumulation Fund		
a. Benefits Currently in Payment	\$ 1,818,914	\$ 1,668,449
b. Benefits to be Paid to Current Active Members (included vested terminated members)	<u>1,782,983</u>	<u>1,675,520</u>
c. Total Benefits Payable from Employer Annuity Accumulation Fund	\$ 3,601,897	\$ 3,343,969
3. Total Liabilities	<u>\$ 4,762,153</u>	<u>\$ 4,439,727</u>

All dollar amounts are in thousands.

# VALUATION RESULTS

<b>TABLE III-2</b>		
<b>SUMMARY OF ACTUARIAL VALUATION RESULTS</b>		
	<b>JULY 1, 2007</b>	<b>JULY 1, 2006</b>
<b>Number of Active Members and Compensation</b>		
Active Members		
Number	25,645	24,813
Compensation	\$ 992,849	\$ 931,815
Rehired Retired Members		
Number	1,519	1,829
Compensation	\$ 55,043	\$ 57,041
<b>Number of Persons Receiving Benefits and Benefits</b>		
Total Number Receiving Benefits	10,701	10,134
Total Amount of Benefits	\$ 188,674	\$ 174,945
<b>Trust Fund Assets</b>		
Market Value	\$ 3,245,480	\$ 2,897,018
Actuarial Value	\$ 3,160,240	\$ 2,935,841
<b>Unfunded Actuarial liability (UAL)</b>		
Amount	\$ 570,304	\$ 530,440
Remaining Years in Amortization Period	16	18
<b>Required Contribution as a Percent of Compensation</b>		
Normal Cost Contribution	7.08%	7.14%
UAAL Contribution	3.22%	3.16%
Pre-retirement Death Contribution	0.20%	0.20%
Accidental Death Contribution	0.20%	0.20%
Total	10.70%	10.70%

All dollar amounts are in thousands.

Contribution rate is scheduled to increase by 0.35% (to 11.05%) in FY 2009.

# VALUATION RESULTS

<b>TABLE III-3</b>		
<b>DETERMINATION AND AMORTIZATION OF UNFUNDED ACTUARIAL LIABILITY</b>		
	JULY 1, 2007	JULY 1, 2006
1. Actuarial Present Value of Future Benefits		
a. Present Retired Members and Beneficiaries	\$ 1,818,914	\$ 1,668,449
b. Present Active and Inactive Members	<u>2,943,239</u>	<u>2,771,278</u>
c. Total Actuarial Present Value	\$ 4,762,153	\$ 4,439,727
2. Present Value of Future Normal Contributions		
a. Employees	\$ 502,233	\$ 473,750
b. Employer	<u>529,376</u>	<u>499,696</u>
c. Total Future Normal Contributions	\$ 1,031,609	\$ 973,446
3. Actuarial liability	\$ 3,730,544	\$ 3,466,281
4. Current Actuarial Value of Assets	\$ 3,160,240	\$ 2,935,841
5. Unfunded Actuarial liability	\$ 570,304	\$ 530,440
6. Unfunded Actuarial Liability Rate	3.22%	3.16%
7. Unfunded Actuarial Liability Liquidation Period	16 years	18 years

All dollar amounts are in thousands.

## **Section IV**

# **Accounting Statement Information**



### **SOUTH CAROLINA POLICE OFFICERS RETIREMENT SYSTEM**

Actuarial Valuation as of July 1, 2007

This report was prepared solely for the South Carolina Retirement Systems for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work.



## ACCOUNTING STATEMENT INFORMATION

Statement No. 25 of the Governmental Standards Board (GASB) establishes standards for disclosure of pension information by public employee retirement systems (PERS) and governmental employers in notes to financial statements and supplementary information.

The GASB Statement #25 actuarial liability is the same as the actuarial liability amount calculated for funding purposes. The GASB Statement #25 liability is compared to the actuarial value of assets to determine the funded ratio. The actuarial liability is determined assuming that the employer is on going and participants continue to terminate employment, retire, etc., in accordance with the actuarial assumptions. Liabilities are discounted at the assumed valuation interest rate of 7.25% per annum.

GASB Statement #25 requires the actuarial liability be compared with the actuarial value of assets for funding purposes. The relevant amounts as of July 1, 2007 are exhibited in Table IV-1 and compared with amounts as of July 1, 2006. Table IV-2 shows the schedule of funding progress as required by GASB Statement #25.

<b>TABLE IV-1</b>		
<b>ACCOUNTING STATEMENT INFORMATION</b>		
	July 1, 2007	July 1, 2006
1. Actuarial Liabilities for Retirees and Beneficiaries Currently Receiving Benefits and Terminated Employees Not Yet Receiving Benefits	\$ 1,932,893	\$ 1,773,162
2. Actuarial Liabilities for Current Employees	<u>1,797,651</u>	<u>1,693,119</u>
3. Total Actuarial Liability (1 + 2)	\$ 3,730,544	\$ 3,466,281
4. Net Actuarial Assets Available for Benefits	\$ 3,160,240	\$ 2,935,841
5. Unfunded Actuarial Liability (3 - 4)	\$ 570,304	\$ 530,440

All dollar amounts are in thousands.

# ACCOUNTING STATEMENT INFORMATION

## TABLE IV-2

### INFORMATION FOR COMPREHENSIVE ANNUAL FINANCIAL REPORT

#### Member and Payroll Information

Actuarial Valuation Date	Number of Employers	Number of Active Members	Annual Payroll (in thousands)	Annual Average Pay	Percentage Increase in Average Pay
July 1, 2007	313	25,645	\$ 992,849	\$ 38,715	3.09%
July 1, 2006	314	24,813	931,815	37,554	5.05%
July 1, 2005	314	23,795	850,610	35,747	3.16%
July 1, 2004	314	23,734	822,448	34,653	3.35%
July 1, 2003	314	23,871	800,394	33,530	6.08%
July 1, 2002	302	23,963	757,393	31,607	3.59%
July 1, 2001	296	24,821	757,335	30,512	5.50%
July 1, 2000	297	24,782	716,749	28,922	4.82%
July 1, 1999	307	23,127	638,086	27,591	4.11%
July 1, 1998	301	22,883	606,426	26,501	2.83%

#### Schedule of Retirees Added to and Removed from Rolls

Year Ended	Added to Rolls		Removed from Rolls		Rolls End of the Year		Average Annual Allowances
	Number	Annual Allowances (in thousands)	Number	Annual Allowances	Number	Annual Allowances (in thousands)	
July 1, 2007	772	\$ 16,474	205	\$ 2,745	10,701	\$ 188,674	\$ 17,631
July 1, 2006	678	16,880	205	2,691	10,134	174,945	17,263
July 1, 2005	778	12,576	173	2,147	9,661	160,756	16,640
July 1, 2004	894	16,256	265	2,923	9,056	146,348	16,114
July 1, 2003	947	18,614	226	2,733	8,427	133,015	15,784
July 1, 2002	956	17,378	220	2,639	7,706	117,134	15,200
July 1, 2001	989	17,235	341	3,986	6,970	102,395	14,691
July 1, 2000	549	9,979	152	1,581	6,322	89,146	14,101
July 1, 1999	606	8,490	238	1,731	5,925	80,748	13,628
July 1, 1998	492	6,924	154	1,085	5,557	73,989	13,315

# ACCOUNTING STATEMENT INFORMATION

**TABLE IV-2 (CONT.)**  
INFORMATION FOR COMPREHENSIVE ANNUAL FINANCIAL REPORT

## Schedule of Funding Progress

Actuarial Valuation Date	Valuation Assets	Actuarial liability (AL)	Actuarial Assets as a % of Actuarial Liabilities		Unfunded AL (UAL)	Annual Active Member Payroll	UAL as a % of Active Member Payroll
			Valuation Assets	Actuarial liability (AL)			
July 1, 2007	\$ 3,160,240	\$ 3,730,544	84.7%		\$ 570,304	\$ 992,849	57.4%
July 1, 2006	2,935,841	3,466,281	84.7%		530,440	931,815	56.9%
July 1, 2005	2,774,606	3,173,930	87.4%		399,324	850,610	46.9%
July 1, 2004	2,616,835	2,984,584	87.7%		367,749	822,448	44.7%
July 1, 2003	2,511,369	2,744,849	91.5%		233,480	800,394	29.2%
July 1, 2002	2,351,100	2,527,876	93.0%		176,776	757,393	23.3%
July 1, 2001	2,197,982	2,324,257	94.6%		126,275	757,335	16.7%
July 1, 2000	2,008,554	2,095,991	95.8%		87,437	716,749	12.2%
July 1, 1999	1,844,517	1,898,237	97.2%		53,720	638,086	8.4%
July 1, 1998	1,684,641	1,733,578	97.2%		48,937	606,426	8.1%

## Solvency Test

Valuation Date	(1) Active Member Contributions	(2) Retirees & Beneficiaries	(3) Active Members (Employer Funded Portion)	Valuation Assets	Portion of Aggregate Accrued Liabilities Covered by Assets	
					(1)	(2)
July 1, 2007	\$ 658,023	\$ 1,818,914	\$ 1,253,607	\$ 3,160,240	100.0%	(3) 54.5%
July 1, 2006	622,008	1,668,449	1,175,824	2,935,841	100.0%	54.9%
July 1, 2005	585,701	1,530,199	1,058,030	2,774,606	100.0%	62.0%
July 1, 2004	548,699	1,415,627	1,020,258	2,616,835	100.0%	64.0%
July 1, 2003	516,313	1,265,173	963,363	2,511,369	100.0%	75.8%
July 1, 2002	492,178	1,136,998	898,700	2,351,100	100.0%	80.3%
July 1, 2001	464,217	977,769	882,271	2,197,982	100.0%	85.7%
July 1, 2000	427,449	844,631	823,911	2,008,554	100.0%	89.4%
July 1, 1999	389,456	783,042	725,739	1,844,517	100.0%	92.6%
July 1, 1998	352,424	702,155	678,999	1,684,641	100.0%	92.8%

All dollar amounts are in thousands

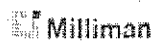
This report was prepared solely for the South Carolina Retirement Systems for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work.

## ACCOUNTING STATEMENT INFORMATION

RETIRED MEMBERS AND BENEFICIARIES AS OF JULY 1, 2007		
Group	Number	Annual Retirement Allowances
<b>Service Retirements:</b>		
Employees:		
Men	6,776	\$ 132,876,237
Women	<u>1,302</u>	<u>16,056,515</u>
Total	8,078	\$ 148,932,752
<b>Disability Retirements:</b>		
Employees:		
Men	1,233	\$ 23,455,357
Women	<u>369</u>	<u>5,055,713</u>
Total	1,602	\$ 28,511,070
<b>Beneficiaries of Deceased Retired Members and Active Members</b>		
Men	35	\$ 307,693
Women	<u>986</u>	<u>10,922,170</u>
Total	1,021	\$ 11,229,863
Grand Total	10,701	\$ 188,673,685

# **Section V**

## **Membership Information**



***SOUTH CAROLINA POLICE OFFICERS RETIREMENT SYSTEM***  
Actuarial Valuation as of July 1, 2007

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# MEMBERSHIP INFORMATION

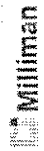
TABLE V-1 NUMBER OF ANNUAL RETIREMENT ALLOWANCES OF BENEFIT RECIPIENTS AS OF JULY 1, 2007		
	NUMBER	ANNUAL RETIREMENT ALLOWANCES
<b>Retirement</b>		
<b>a. Service Retirement</b>		
Life Annuity	4,647	\$ 81,815,899
100% J & S	197	2,958,515
100% Pop-up	911	14,617,942
50% J & S	173	4,317,468
50% Pop-up	861	19,953,661
Level Income	<u>1,289</u>	<u>25,269,267</u>
Total	8,078	\$148,932,752
<b>b. Disability Retirement</b>		
Life Annuity	1,291	\$23,735,232
100% J & S	55	655,284
100% Pop-up	112	1,434,845
50% J & S	34	529,401
50% Pop-up	<u>110</u>	<u>2,156,308</u>
Total	1,602	\$ 28,511,070
<b>Beneficiaries of Deceased Retired Members and Active Members</b>		
<b>c. Total</b>	1,021	\$ 11,229,863
<b>Total</b>		
<b>GRAND TOTAL</b>	10,701	\$ 188,673,685

# MEMBERSHIP INFORMATION

**TABLE V-2**  
**DISTRIBUTION OF ACTIVE MEMBERS AND AVERAGE COMPENSATION**  
**BY AGE GROUPS AND SERVICE GROUPS AS OF JULY 1, 2007**  
**YEARS OF SERVICE**

Age Group	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 34	35 & Over	Total
Under 25	1,691	6							1,697
	\$ 29,440	\$ 33,320							\$ 29,454
25 - 29	3,020	576	3						3,599
	\$ 32,625	\$ 36,875	\$ 36,161						\$ 33,308
30 - 34	1,734	1,704	446	3					3,887
	\$ 33,351	\$ 38,379	\$ 41,094	\$ 44,385					\$ 36,452
35 - 39	1,473	1,228	1,349	416	8	1			4,475
	\$ 33,997	\$ 38,444	\$ 42,830	\$ 47,320	\$ 50,441	\$ 37,848			\$ 39,149
40 - 44	1,044	740	749	972	422	6			3,933
	\$ 33,794	\$ 37,908	\$ 41,981	\$ 47,484	\$ 51,687	\$ 54,779			\$ 41,463
45 - 49	762	614	515	564	647	126	3		3,231
	\$ 33,673	\$ 39,147	\$ 40,601	\$ 45,771	\$ 51,430	\$ 60,935	\$ 84,612		\$ 42,596
50 - 54	590	510	450	366	324	160	48		2,448
	\$ 35,854	\$ 39,460	\$ 40,592	\$ 45,309	\$ 49,219	\$ 62,372	\$ 65,200		\$ 42,967
55 - 59	377	354	259	248	164	63	43	5	1,513
	\$ 36,055	\$ 39,794	\$ 40,485	\$ 43,193	\$ 48,738	\$ 55,965	\$ 63,338	\$ 67,955	\$ 41,943
60 - 64	184	177	108	106	78	24	16	9	702
	\$ 35,137	\$ 40,857	\$ 40,634	\$ 45,033	\$ 50,713	\$ 54,833	\$ 63,093	\$ 76,030	\$ 42,485
65 & Over	33	42	32	20	20	10	2	1	160
	\$ 37,542	\$ 41,298	\$ 40,805	\$ 44,650	\$ 48,554	\$ 58,802	\$ 68,951	\$ 74,583	\$ 43,398
TOTAL	10,908	5,951	3,911	2,695	1,663	390	112	15	25,645
	\$32,967	\$ 38,534	\$ 41,681	\$ 46,289	\$ 50,726	\$ 60,138	\$ 64,771	\$ 73,242	\$ 38,715

	Prior Year	Current Year
Average Age	39.36 years	39.37 years
Average Service	8.31 years	8.29 years
Average Pay	\$ 37,554	\$ 38,715
Percent Female	25.8%	25.9%



**SOUTH CAROLINA POLICE OFFICERS RETIREMENT SYSTEM**

Actuarial Valuation as of July 1, 2007

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**TABLE V-3**  
**DISTRIBUTION OF PARTICIPANTS RECEIVING BENEFITS**  
**SERVICE RETIREMENT**

Current Age Group	Number	Total Annual Benefit	Average Annual Benefit
Under 50	396	\$ 9,185,444	\$ 23,196
50 - 54	840	20,579,488	24,499
55 - 59	1,612	34,315,399	21,287
60 - 64	1,782	32,378,654	18,170
65 - 69	1,407	21,317,304	15,151
70 - 74	1,018	15,467,999	15,194
75 - 79	606	8,901,061	14,688
80 & Over	417	6,787,403	16,277
<b>Total</b>	<b>8,078</b>	<b>\$ 148,932,752</b>	<b>\$ 18,437</b>

**DISABILITY RETIREMENT**

Current Age Group	Number	Total Annual Benefit	Average Annual Benefit
Under 50	615	\$ 12,322,403	\$ 20,036
50 - 54	315	5,687,871	18,057
55 - 59	311	4,914,108	15,801
60 - 64	189	2,869,109	15,180
65 - 69	87	1,335,415	15,350
70 - 74	44	774,464	17,601
75 - 79	25	361,800	14,472
80 & Over	16	245,900	15,369
<b>Total</b>	<b>1,602</b>	<b>\$ 28,511,070</b>	<b>\$17,797</b>

**BENEFICIARIES**

Current Age Group	Number	Total Annual Benefit	Average Annual Benefit
Under 50	128	\$1,299,982	\$ 10,156
50 - 54	51	601,617	11,796
55 - 59	91	1,030,406	11,323
60 - 64	112	1,353,495	12,085
65 - 69	126	1,436,751	11,403
70 - 74	131	1,449,766	11,067
75 - 79	155	1,738,207	11,214
80 & Over	227	2,319,639	10,219
<b>Total</b>	<b>1,021</b>	<b>\$ 11,229,863</b>	<b>\$ 10,999</b>



# Appendix A

## Actuarial Assumptions and Methods



**SOUTH CAROLINA POLICE OFFICERS RETIREMENT SYSTEM**  
*Actuarial Valuation as of July 1, 2007*

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# ACTUARIAL ASSUMPTIONS

## 1. Investment Rate of Return

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	General Employees
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

### a. Service Retirement, Mortality, and Disability

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% for participants under age 55 in year they first become eligible for unreduced service retirement.

## ACTUARIAL ASSUMPTIONS

All employees are assumed to retire 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 (duty-related).

b. Withdrawal rates

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. Mortality After Retirement

For healthy retirees and beneficiaries, the UP-94 Mortality Table rates, with the 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:

Age	HEALTHY		DISABLED
	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. Marriage Assumption

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

# ACTUARIAL ASSUMPTIONS

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## 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 liability. The resulting amortization period is based upon payments level as a percentage of payroll and the results are rounded to the nearest year. We completed a separate valuation of the accidental (duty-related) death benefit.

### 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 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. Future 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.

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# ACTUARIAL ASSUMPTIONS

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## 13. Changes from Prior Valuation

None.

## 14. Adoption Date

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

# Appendix B

## Summary of Plan Provisions



**SOUTH CAROLINA POLICE OFFICERS RETIREMENT SYSTEM**

Actuarial Valuation as of July 1, 2007

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# SUMMARY OF 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, 1996, compensation for benefit and contribution purposes is limited in accordance with IRS Code Section 401(a)17.

## 5. Normal Retirement

- a. Eligibility    Attainment of age 55, and 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 age 55 with at least 5 years of creditable service. The service requirement is waived for job related disability.

## SUMMARY OF PLAN PROVISIONS

---

- b. Benefit      Benefit equal to the amount of retirement benefit that would have been payable assuming continued employment to 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 payable only to those whose employer participates and with at least 1 year of creditable service, unless death is job related

- 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 terminated the day before death and elected payment to commence at age 55 under Option B described below.

b. Death after 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



## SUMMARY OF PLAN PROVISIONS

---

### 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.