

**RETIREMENT SYSTEM FOR MEMBERS OF THE GENERAL  
ASSEMBLY OF THE STATE OF SOUTH CAROLINA (GARS)**  
*ACTUARIAL VALUATION REPORT*  
*AS OF JULY 1, 2011*

June 11, 2012

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

Dear Members of the Board:

**Subject: Actuarial Valuation as of July 1, 2011**

This report describes the current actuarial condition of the Retirement System for Members of the General Assembly of the State of South Carolina (GARS), determines the calculated employer contribution requirement, and analyzes changes in this amount. In addition, the report provides information required by the Retirement System in connection with Governmental Accounting Standards Board Statement No. 25 (GASB 25), and it provides various summaries of the data. Results of this report should not be used for any other purpose without consultation with the undersigned. Valuations are prepared annually as of July 1, the first day of the plan year for GARS. This report was prepared at the request of the State Budget and Control Board (Board) and is intended for use by the South Carolina Retirement System (SCRS) staff and those designated or approved by the Board.

Under SCRS statutes, the Board must certify the employer contribution annually. This amount is determined actuarially, based on the Board's funding policy. The contribution is determined by a given actuarial valuation and becomes effective twenty-four months after the valuation date. In other words, the contribution rate determined by this July 1, 2011 actuarial valuation will be used by the Board when certifying the employer contribution amount for the year beginning July 1, 2013. If new legislation is enacted between the valuation date and the date the contribution becomes effective, the Board may adjust the calculated amount before certifying them, in order to reflect this new legislation. Such adjustments are based on information supplied by the actuary.

**FINANCING OBJECTIVES AND FUNDING POLICY**

The principle objectives in the funding policy that is maintained by the Board include:

- Establish a contribution amount that remains relatively level over time.
- To set an amount so that the measures of the System's funding progress which include the unfunded actuarial accrued liability, funded ratio, and funding period will be maintained or improved.

- To set a contribution amount that will result in the unfunded actuarial accrued liability (UAAL) to be amortized over a period from the current valuation date that does not exceed 30 years.

For GARS, the Board's funding policy is to determine an employer contribution amount equal to the sum of the employer normal cost (which pays the current year's cost) and an amortization amount which will result in the UAAL to be funded by June 30, 2027.

#### **PROGRESS TOWARD REALIZATION OF FINANCING OBJECTIVES**

The funded ratio (the ratio of the actuarial value of assets to the actuarial accrued liability) is a standard measure of a plan's funded status. In the absence of benefit improvements, it should increase over time, until it reaches at least 100%.

The funded ratio of the System decreased from 63.7% to 55.6%. This decrease was primarily due to the change in valuation interest rate and mortality assumptions used to perform the 2011 valuation. Absent favorable experience, we expect the funded ratio will continue to slightly decrease for the next several years as the 2008 investment loss is fully recognized in the development of the actuarial value of assets.

If market value of assets had been used in the calculation instead of actuarial (smoothed) value of assets, the funded ratio for the System would have been 46.5%, compared to 47.7% in the prior year.

#### **ASSUMPTIONS AND METHODS**

The valuation interest rate, inflation, and the mortality assumptions were updated for calculating the actuarial valuation as of July 1, 2011. Additionally, the asset valuation method was changed from one that recognized the difference between the expected and actual return on the market value of assets over a 10-year period, to a modified 5-year asset smoothing method.

It is our opinion that the recommended assumptions are internally consistent and reasonably reflect the anticipated future experience of the System. The actuarial assumptions and methods used in this report comply with the parameters for disclosure that appear in GASB 25.

The results of the actuarial valuation are dependent on the actuarial assumptions used. Actual results can, and almost certainly will, differ as actual experience deviates from the assumptions. Even seemingly minor changes in the assumptions can materially change the liabilities, calculated contribution rate, and funding periods. The actuarial calculations are intended to provide information for rational decision making.

**BENEFIT PROVISIONS**

The benefit provisions reflected in this valuation are those which were in effect on July 1, 2011. There have been no changes in plan provisions since the preceding actuarial valuation.

**DATA**

Member data for retired, active and inactive members was supplied as of July 1, 2011, by the SCRS staff. The staff also supplied asset information as of July 1, 2011. We did not audit this data, but we did apply a number of tests to the data, and we concluded that it was reasonable and consistent with the prior year's data. GRS is not responsible for the accuracy or completeness of the information provided to us by SCRS.

**CERTIFICATION**

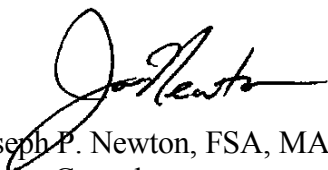
We certify that the information presented herein is accurate and fairly portrays the actuarial position of GARS as of July 1, 2011.

All of our work conforms with generally accepted actuarial principles and practices and with the Actuarial Standards of Practice issued by the Actuarial Standards Board. In our opinion, our calculations also comply with the requirements of South Carolina Code of Laws and, where applicable, the Internal Revenue Code, ERISA, and the Statements of the Governmental Accounting Standards Board.

The undersigned are independent actuaries and consultants. Mr. Newton and Mr. White are Enrolled Actuaries and Members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries. Both are experienced in performing valuations for large public retirement systems.

Sincerely,

**Gabriel, Roeder, Smith & Co.**



Joseph P. Newton, FSA, MAAA, EA  
Senior Consultant



Daniel J. White, FSA, MAAA, EA  
Senior Consultant

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## **SECTION A**

### EXECUTIVE SUMMARY

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### Executive Summary

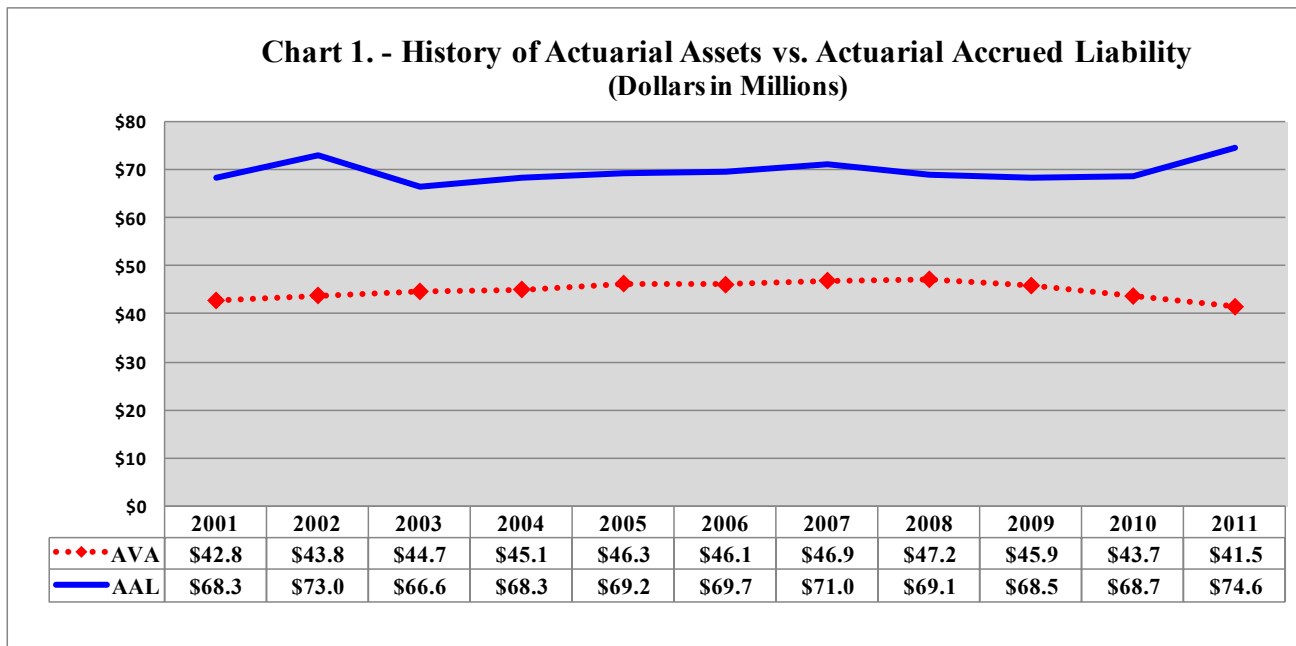
(Dollar amounts expressed in thousands)

Valuation Date:	July 1, 2011	July 1, 2010
Membership		
• Number of		
- Active positions	170	170
- Special contributors	26	26
- Retirees and beneficiaries	353	346
- Inactive members	40	36
- Total	589	578
• Projected payroll	\$3,854	\$3,854
Contribution Requirement		
• Member contribution rate	10.00%	10.00%
• Employer contribution requirement <sup>1</sup>	\$4,063	\$2,831
Assets		
• Market value	\$34,669	\$32,770
• Actuarial value	41,484	43,712
• Return on market value	17.6%	15.4%
• Return on actuarial value	3.5%	2.6%
• Ratio - actuarial value to market value	119.7%	133.4%
• External cash flow %	-11.1%	-10.4%
Actuarial Information		
• Normal cost %	21.67%	17.73%
• Actuarial accrued liability (AAL)	\$74,604	\$68,671
• Unfunded actuarial accrued liability (UAAL)	33,120	24,959
• Funded ratio	55.6%	63.7%
• Funding period from the valuation date	16 years	17 years
Reconciliation of UAAL		
• Beginning of Year UAAL	\$24,959	\$22,600
- Interest on UAAL	2,296	1,808
- Amortization payment with interest	(2,241)	(2,263)
- Assumption change	5,715	0
- Asset experience	1,704	2,373
- Liability experience	687	441
- Legislative changes	0	0
• End of Year UAAL	\$33,120	\$24,959

<sup>1</sup> The contribution requirement determined by the July 1, 2011 actuarial valuation is subject to approval and adoption by the Budget and Control Board before becoming effective for the fiscal year beginning July 1, 2013.

**EXECUTIVE SUMMARY (CONTINUED)**

The unfunded actuarial accrued liability increased by \$8.1 million since the prior year’s valuation to \$33.1 million. The single largest source of this increase is a result of updating the actuarial assumptions used in the 2011 valuation. Below is a chart with the historical actuarial value of assets and actuarial accrued liability for GARS.



There is still \$6.8 million in deferred investment losses as of the valuation date. Absent favorable investment experience, those deferred losses will be reflected in the actuarial value of assets over the next few years. Therefore, we expect the unfunded actuarial liability for the System to increase for several years and the funded ratio (on an actuarial value of asset basis) to decline before they improve.

The recommended employer contribution requirement increased from \$2.8 million in FY 2013 to \$4.1 million in FY 2014. The change in the actuarial assumptions and the asset experience (on a smoothed basis) were the two largest causes for the increase in the recommended contribution. Absent legislative changes or significantly favorable investment experience, we expect the contribution rate to continue to gradually increase as deferred investment losses becomes recognized in the actuarial value of assets.



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**SECTION B**  
DISCUSSION

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## DISCUSSION

The results of the July 1, 2011 actuarial valuation of the Retirement System for Members of the General Assembly are presented in this report. The purposes of the valuation report is to depict the current financial condition of the System, determine the annual required contribution, and analyze changes in the System's financial condition. In addition, the report provides information required by SCRS in connection with Governmental Accounting Standards Board Statement No. 25 (GASB 25), and various summaries of the members participating in the plan.

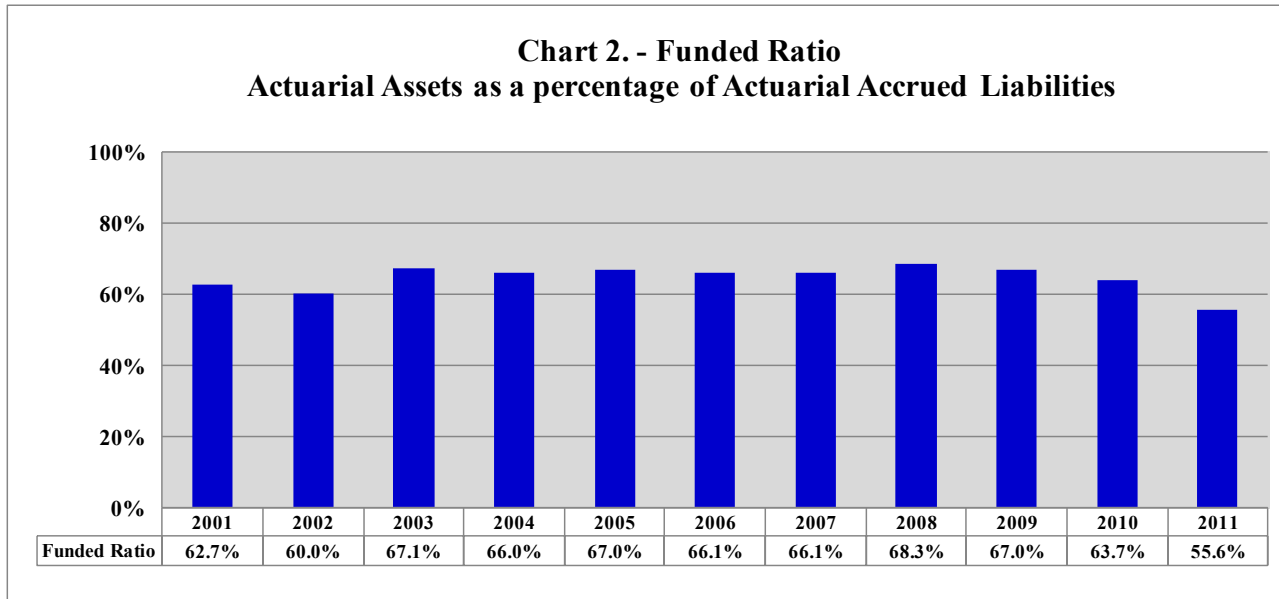
This section discusses the determination of the current funding requirements and the System's funded status, as well as changes in financial condition of the retirement system.

The valuation results for the prior year are shown in this report for comparison purposes. These were prepared by the Retirement System's prior actuary, Cavanaugh Macdonald Consulting LLC. As part of our transition work, we replicated the results and have previously communicated the results of our replication effort to the State Budget and Control Board.

All of the actuarial and financial tables referenced by the other sections of this report appear in Section C Section D provides member data and statistical information. Appendices A and B provide summaries of the principle actuarial assumptions and methods and plan provisions. Finally, Appendix C provides a glossary of technical terms that are used throughout this report.

### Funding Progress

The funded ratio decreased from 63.7% to 55.6% since the prior valuation and has generally trended downward since 2001 as shown in the graph below. Table 10, Schedule of Funding Progress, in the following section of the report provides additional detail regarding the funding progress of the Retirement System.



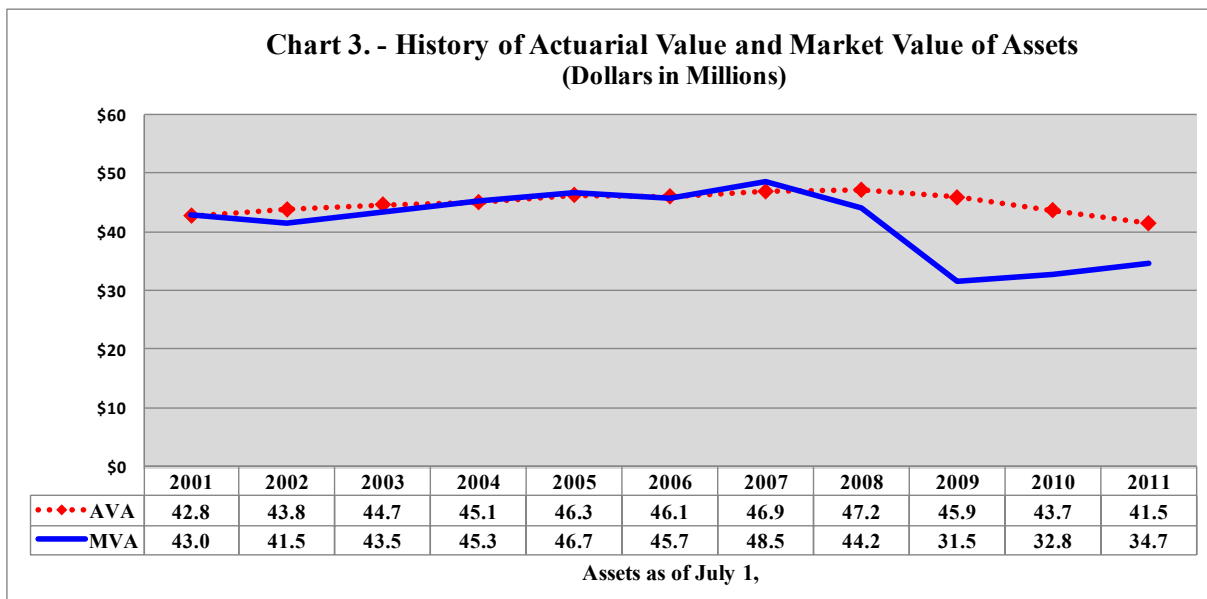
The Board’s funding policy for this plan is to fully amortize the unfunded actuarial accrued liability (UAAL) by June 30, 2027. Under this funding policy, there are 16 years remaining in the funding period from the valuation date.

### Asset Gains/ (Losses)

The actuarial value of assets (“AVA”) is based on a smoothed market value of assets, using a systematic approach to phase-in actual investment return in excess of (or less than) the expected investment income. This is appropriate because it dampens the short-term volatility inherent in investment markets. The expected investment income is determined using the assumed annual investment return rate and the actuarial value of assets (adjusted for receipts and disbursements during the year). The returns are computed net of administrative and investment expenses. The actuarial value of assets decreased from \$43.7 million to \$41.5 million since the prior valuation. Table 8 in the following section of the report provides the development of the actuarial value of assets.

The rate of return on the mean market value of assets in 2011 was 17.6%; which is significantly above the expected annual return. However, because of the recognition of prior investment experience, the actuarial (smoothed) asset value returned only 3.5%. This difference in the estimated return on market value and actuarial value illustrates the smoothing effect of the asset valuation method.

The market value of assets is less than the actuarial value of assets, which signifies that the retirement system is in a position of deferred losses. Therefore, unless the System experiences investment returns in excess of the assumed rate of return, the future recognition of these deferred losses is expected to increase the unfunded actuarial accrued liability and decrease the System’s funded ratio over the next few years.



Tables 6 and 7 in the following section of this report provide asset information that was included in the annual financial statements of the System. Also, Table 9 shows the estimated yield on a market value basis and on the actuarial asset valuation method.

### Actuarial Gains/ (Losses) and the Contribution Requirement

The annual actuarial valuation is a snapshot analysis of the benefit liabilities, assets and funded position of the System as of the first day of the plan year. In any one fiscal year, the experience can be better or worse from that which is assumed or expected. The actuarial assumptions do not necessarily attempt to model what the experience will be for any one given fiscal year, but instead try to model the overall experience on average over many years. The demographic experience for the last year is briefly summarized in the chart below.

The unfunded actuarial accrued liability (UAAL) has increased from \$25.0 million in 2010 to \$33.1 million in 2011. The table below shows the source of the gains and losses and the impact of those gains and losses on the UAAL.

<b>Reconciliation of UAAL</b>	
(Dollars in thousands)	
• Beginning of Year UAAL	\$24,959
- Interest on UAAL	2,296
- Amortization payment with interest	(2,241)
- Assumption change	5,715
- Asset experience	1,704
- Liability experience	687
- Legislative changes	<u>0</u>
- Total change	8,161
• End of Year UAAL	\$33,120

The following table provides a reconciliation of the change in the recommended contribution from 2010 to 2011. The update to the actuarial assumptions used for the 2011 valuation had the largest single impact on the change in the recommended contribution.

<b>Change in Recommended Contribution</b>	
• Prior year valuation	\$2,831
- Expected change	0
- Assumption change	814
- Asset experience	216
- Liability experience	202
- Legislative changes	<u>0</u>
- Total change	1,232
• Current year valuation	\$4,063

This funding method and contribution policy is designed to result in relatively level contribution requirements from year to year. However, the update in the actuarial assumptions used in the valuation as well as the continual recognition of the 2008 investment loss has resulted in a substantial increase in the contribution from that determined in the prior year's valuation. Furthermore, absent favorable investment experience, we expect that the contribution requirement will continue to increase over the next several years as existing deferred investment losses become fully recognized in the actuarial value of assets and calculation of the recommended contribution.

### **GASB No. 25 and No. 27 Disclosures**

Accounting requirements for GARS are provided by the Governmental Accounting Standards Board Statements No. 25 (“GASB 25”) and No. 27 (“GASB 27”). Table 10 shows a historical summary of the funded ratios and other information for the System. Table 11 shows other information needed in connection with the required disclosures under GASB 25. GASB 27 governs reporting by the employers of government-sponsored retirement plans.

GASB 25 requires that plans calculate an Annual Required Contribution (“ARC”), and, if actual contributions received are less than the ARC, this must be disclosed. The ARC is calculated in accordance with certain parameters. In particular, it includes a payment to amortize the UAAL. This amortization payment must be computed using a funding period no greater than thirty (30) years. For this disclosure, GARS treats the Board-established contribution requirement as the ARC.

### **Actuarial Assumptions and Methods**

In determining costs and liabilities, actuaries use assumptions about the future, such as probabilities of retirement, termination, death and disability, and an annual investment return assumption. The Board adopts the actual assumptions to be used in the actuarial valuation, taking into account the actuary's recommendations. The actuarial valuation as of July 1, 2011 reflects the assumptions and methods adopted by the Board in November 2011 for the South Carolina Retirement System.

The principle assumption changes were as follows:

- Decrease the investment return assumption from 8.00% to 7.50%.
- Decrease the inflation assumption from 3.00% to 2.75%.
- Update the mortality assumption and include an explicit assumption for future improvement in life expectancy in the post-retirement mortality assumption.
- The actuarial valuation of asset method was changed from one that recognized the difference between the expected and actual return on the market value of assets over a 10-year period, to a modified 5-year asset smoothing method.

It is our opinion that the recommended assumptions are internally consistent and are reasonable and reflect anticipated future experience of the System. The actuarial assumptions and methods used in this report comply with the parameters for disclosure that appear in GASB 25.



## **Benefit Provisions**

Appendix B of this report includes a summary of the benefit provisions for GARS. There have been no material changes in the benefit provisions since the prior valuation.

### **Summary of Retirement Provisions**

- Earnable compensation is comprised of \$10,400 annually plus 40 times the daily rate of remuneration (i.e. \$22,400 in total earnable compensation annually). Certain line-item additional compensation for specified offices is also included. Monthly benefits are based on one-twelfth of this amount;
- Active members who are not concurrently receiving a retirement benefit contribute 10% of earnable compensation.
- The retirement benefit amount is equal to the 4.82% of the member's earnable compensation times the member's credited service (years).
- Members are eligible for retirement after they have (i) attained age 60, or (ii) completed 30 years of creditable service. Members may commence their benefit before retiring from service upon the attainment of age 70 or after accruing 30 years of service.
- Members with eight (8) or more years of credited service that cease membership in the General Assembly may elect to continue earning future service in the system by contributing the required membership contributions (i.e. a special contributing member).

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## **SECTION C**

### ACTUARIAL TABLES

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**ACTUARIAL TABLES**

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**Summary of Cost Items**  
 (Dollar amounts expressed in thousands)

	July 1, 2011	July 1, 2010
	(1)	(2)
1. Projected payroll of active members <sup>1</sup>	\$ 3,854	\$ 3,854
2. Present value of future pay <sup>2</sup>	\$ 23,402	N/A
3. Normal cost		
a. Total normal cost	\$ 835	\$ 683
b. Less: member contribution	(385)	(385)
c. Employer normal cost	\$ 450	\$ 298
4. Actuarial accrued liability for active members		
a. Present value of future benefits	\$ 18,212	\$ 16,777
b. Less: present value of future normal costs	(4,529)	(3,873)
c. Actuarial accrued liability	\$ 13,683	\$ 12,904
5. Total actuarial accrued liability for:		
a. Retirees and beneficiaries	\$ 58,291	\$ 53,486
b. Inactive members	2,630	2,281
c. Active members (Item 4c)	13,683	12,904
d. Total	\$ 74,604	\$ 68,671
6. Actuarial value of assets	\$ 41,484	\$ 43,712
7. Unfunded actuarial accrued liability (UAAL) (Item 5d - Item 6)	\$ 33,120	\$ 24,959
8. GASB No. 25 Annual Required Contribution		
a. Employer normal cost	\$ 450	\$ 298
b. Employer contribution to amortize the UAAL	3,613	2,533
c. Total employer contribution	\$ 4,063	\$ 2,831

<sup>1</sup> The projected payroll is based on 170 filled positions.

<sup>2</sup> The present value of future pay was not disclosed in the prior actuary's report.

**Actuarial Present Value of Future Benefits**  
 (Dollar amounts expressed in thousands)

	July 1, 2011	July 1, 2010
	(1)	(2)
1. Active members		
a. Service retirement	\$ 16,973	\$ 15,826
b. Disability retirement	636	583
c. Survivors' benefits	603	368
d. Total	<u>\$ 18,212</u>	<u>\$ 16,777</u>
2. Retired members		
a. Service retirement	\$ 50,225	\$ 46,135
b. Disability retirement	94	96
c. Beneficiaries	7,774	7,255
d. Incidental death benefits <sup>1</sup>	198	N/A
e. Total	<u>\$ 58,291</u>	<u>\$ 53,486</u>
3. Inactive members		
a. Vested terminations	\$ 2,429	\$ 2,115
b. Nonvested terminations	201	166
c. Total	<u>\$ 2,630</u>	<u>\$ 2,281</u>
4. Total actuarial present value of future benefits	\$ 79,133	\$ 72,544

<sup>1</sup> The value of the incidental death benefit is included in the other reported benefits amounts for 2010.

**Analysis of Normal Cost**  
**(Dollar amounts expressed in thousands)**

	<u>July 1, 2011</u>	<u>July 1, 2010</u>
	(1)	(2)
1. Total normal cost rate		
a. Service retirement	19.39%	15.88%
c. Survivor benefits	1.02%	0.63%
d. Disability benefits	<u>1.26%</u>	<u>1.22%</u>
f. Total	21.67%	17.73%
2. Less: member contribution rate	<u>10.00%</u>	<u>10.00%</u>
3. Net employer normal cost rate	11.67%	7.73%
4. Projected valuation payroll	\$3,854	\$3,854
5. Projected employer normal cost contribution	\$450	\$298

**Results of July 1, 2011 Valuation**  
 (Dollar amounts expressed in thousands)

	July 1, 2011
	(1)
1. Actuarial Present Value of Future Benefits	
a. Present retired members and beneficiaries	\$ 58,291
b. Present active and inactive members	20,842
c. Total actuarial present value	\$ 79,133
2. Present Value of Future Normal Contributions	
a. Employee	\$ 2,340
b. Employer	2,189
c. Total future normal contributions	\$ 4,529
3. Actuarial Liability	\$ 74,604
4. Current Actuarial Value of Assets	\$ 41,484
5. Unfunded Actuarial Liability	\$ 33,120
6. Unfunded Actuarial Liability Liquidation Period from from the Valuation Date	16 years

**Actuarial Balance Sheet**  
 (Dollar amounts expressed in thousands)

	July 1, 2011 (1)	July 1, 2010 (2)
<b>1. <u>Assets</u></b>		
a. Current Assets (Actuarial Value)		
i. Employee annuity savings fund	\$ 7,100	\$ 7,265
ii. Employer annuity accumulation fund	34,384	36,447
iii. Total current assets	\$ 41,484	\$ 43,712
b. Present Value of Future Member Contributions <sup>1</sup>	\$ 2,340	\$ 2,368
c. Present Value of Future Employer Contributions		
i. Normal contributions	\$ 2,189	\$ 1,506
ii. Accrued liability contributions	33,120	24,959
iii. Total future employer contributions	\$ 35,309	\$ 26,465
d. Total Assets	\$ 79,133	\$ 72,545
<b>2. <u>Liabilities</u></b>		
a. Employee Annuity Savings Fund		
i. Past member contributions	\$ 7,100	\$ 7,265
ii. Present value of future member contributions <sup>1</sup>	2,340	2,368
iii. Total contributions to employee annuity savings fund	\$ 9,440	\$ 9,633
b. Employer Annuity Accumulation Fund		
i. Benefits currently in payment	\$ 58,291	\$ 53,486
ii. Benefits to be provided to other members	11,402	9,426
iii. Total benefits payable from employer annuity accumulation fund	\$ 69,693	\$ 62,912
c. Total Liabilities	\$ 79,133	\$ 72,545

<sup>1</sup> Includes future special contributors



**System Net Assets**  
**Assets at Market or Fair Value**  
(Dollar amounts expressed in thousands)

Item (1)	July 1, 2011 (2)	July 1, 2010 (3)
1. Cash and cash equivalents (operating cash)	\$ 4,565	\$ 6,954
2. Receivables	1,117	1,587
3. Investments		
a. Short-term securities	\$ 16	\$ 1
b. Domestic fixed income	4,955	5,327
c. Global fixed income	4,163	3,883
d. Domestic equities	2,708	2,216
e. Global equities	1,611	0
f. Alternative investments	17,537	14,326
g. Total investments	\$ 30,990	\$ 25,753
4. Securities lending cash collateral invested	\$ 298	\$ 444
5. Prepaid administrative expenses	2	2
6. Capital assets, net of accumulated depreciation	8	8
7. Total assets	\$ 36,980	\$ 34,748
8. Liabilities		
a. Due to other Systems	\$ 0	\$ 70
b. Accounts payable	1,738	1,264
c. Investment fees payable	24	24
d. Obligations under securities lending	298	444
e. Deferred retirement benefits	0	0
f. Due to employee insurance program	0	0
g. Benefit payable	0	0
h. Other liabilities	251	176
i. Total liabilities	\$ 2,311	\$ 1,978
9. Total market value of assets available for benefits (Item 7 - Item 8.i.)	\$ 34,669	\$ 32,770
10. Asset allocation (investments)		
a. Net Invested cash	10.7%	21.4%
b. Domestic fixed income	14.3%	16.3%
c. Global fixed income	12.0%	11.8%
d. Domestic equities	7.8%	6.8%
e. Global equities	4.6%	0.0%
f. Alternative investments	50.6%	43.7%
g. Total investments	100.0%	100.0%

**Reconciliation of System Net Assets**  
 (Dollar amounts expressed in thousands)

	Year Ending	
	July 1, 2011 (1)	July 1, 2010 (2)
1. Value of Assets at Beginning of Year	\$ 32,770	\$ 31,505
2. Revenue for the Year		
a. Contributions		
i. Member contributions	\$ 624	\$ 544
ii. Employer contributions	2,414	2,598
v. Total	\$ 3,038	\$ 3,142
b. Income		
i. Interest, dividends, and other income	\$ 333	\$ 398
ii. Investment expenses	(98)	(75)
iii. Net	\$ 235	\$ 323
c. Net realized and unrealized gains (losses)	\$ 5,447	\$ 4,319
d. Total revenue	\$ 8,720	\$ 7,784
3. Expenditures for the Year		
a. Disbursements		
i. Refunds	\$ 57	\$ 4
ii. Regular annuity benefits	6,528	6,512
iii. Other benefit payments	58	6
iv. Transfers to other Systems	146	(36)
iv. Total	\$ 6,789	\$ 6,486
b. Administrative expenses and depreciation	32	33
c. Total expenditures	\$ 6,821	\$ 6,519
4. Increase in Net Assets (Item 2. - Item 3.)	\$ 1,899	\$ 1,265
5. Value of Assets at End of Year (Item 1. + Item 4.)	\$ 34,669	\$ 32,770
6. Net External Cash Flow		
a. Dollar amount	\$ (3,751)	\$ (3,344)
a. Percentage of market value	-11.1%	-10.4%

**Development of Actuarial Value of Assets**  
 (Dollar amounts expressed in thousands)

		July 1, 2011
		(1)
1. Actuarial Value of Assets at the Prior Valuation Date	\$	43,712
2. Market value of Assets at the Prior Valuation Date	\$	32,770
3. Net External Cash Flow During the Year		
a. Contributions	\$	3,038
b. Disbursements		(6,789)
c. Subtotal	\$	(3,751)
4. Expected Net Investment Income at 7.50% Earned on		
a. Actuarial value of assets at the prior valuation date	\$	3,278
b. Contributions		204
c. Disbursements		(255)
d. Subtotal	\$	3,227
5. Expected Actuarial Value of Assets, End of Year (Item 1. + Item 3.c. + Item 4.d.)	\$	43,188
6. Market Value of Assets as of the Current Valuation Date	\$	34,669
7. Difference Between Expected Actuarial Assets and Market Value of Assets (Item 6. - Item 5.)	\$	(8,519)
8. Excess/(Shortfall) Recognized (20% of Item 7.)	\$	(1,704)
9. Actuarial Value of Plan Assets, End of Year (Item 5. + Item 8.)	\$	41,484
10. Asset Gain (loss) for Year (Item 9. - Item 5.)	\$	(1,704)
11. Asset Gain (Loss) as % of Actual Actuarial Assets		-4.1%
12. Ratio of AVA to MVA		119.7%

**Estimation of Yields**  
**(Dollar amounts expressed in thousands)**

	Year Ending	
	July 1, 2011 (1)	July 1, 2010 (2)
1. Market Value Yield		
a. Beginning of year market assets	\$ 32,770	\$ 31,505
b. Contributions to fund during the year	3,038	3,142
c. Disbursements	(6,789)	(6,486)
d. Investment income (net of investment and administrative expenses)	5,650	4,609
e. End of year market assets	\$ 34,669	\$ 32,770
f. Estimated dollar weighted market value yield	17.6%	15.4%
2. Actuarial Value Yield		
a. Beginning of year actuarial assets	\$ 43,712	\$ 45,891
b. Contributions to fund during the year	3,038	3,142
c. Disbursements	(6,789)	(6,486)
d. Investment income (net of investment and administrative expenses)	1,523	1,165
e. End of year actuarial assets	\$ 41,484	\$ 43,712
f. Estimated actuarial value yield	3.5%	2.6%

**Schedule of Funding Progress**  
**(Dollar amounts expressed in thousands)**

July 1,	Actuarial Value of Assets (AVA)	Actuarial Accrued Liability (AAL)	Unfunded Actuarial Accrued Liability (UAAL) (3) - (2)	Funded Ratio (2)/(3)	Annual Covered Payroll	UAAL as % of Payroll (4)/(6)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
2001	\$ 42,788	\$ 68,291	\$ 25,503	62.7%	\$ 4,761	535.6%
2002	43,841	73,046	29,205	60.0%	4,515	646.9%
2003	44,682	66,619	21,937	67.1%	3,844	570.8%
2004	45,087	68,332	23,245	66.0%	3,839	605.5%
2005	46,316	69,161	22,845	67.0%	3,853	592.9%
2006	46,075	69,734	23,659	66.1%	3,854	613.9%
2007	46,925	71,014	24,089	66.1%	3,854	625.0%
2008	47,189	69,122	21,933	68.3%	3,854	569.1%
2009	45,891	68,491	22,600	67.0%	3,854	586.4%
2010	43,712	68,671	24,959	63.7%	3,854	647.6%
2011	41,484	74,604	33,120	55.6%	3,854	859.4%

**Notes to Required Supplementary Information  
 (as required by GASB #25)**

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

Valuation date	July 1, 2011
Actuarial cost method	Entry Age Normal
Amortization method	Level dollar
Amortization period for GASB 25 ARC	16-year closed period
Asset valuation method	5-year smoothed market
Actuarial assumptions:	
Investment rate of return <sup>1</sup>	7.50%
Projected salary increases	None.
Inflation	2.75%
Cost-of-living adjustments	0.00%

<sup>1</sup> Includes inflation at 2.75%

### Solvency Test

(Dollar amounts expressed in thousands)

July 1, (1)	Actuarial Accrued Liability			Valuation Assets (5)	Portion of Aggregate Accrued Liabilities Covered by Assets		
	Active Member Contributions (2)	Retirants & Beneficiaries (3)	Active & Inactive Members (Employer Financed) (4)		Active (6)	Retirants (7)	ER Financed (8)
2001	\$ 9,329	\$ 45,013	\$ 13,949	\$ 42,788	100.0%	74.3%	0.0%
2002	9,470	47,485	16,091	43,841	100.0%	72.4%	0.0%
2003	8,324	46,781	11,515	44,682	100.0%	77.7%	0.0%
2004	8,485	48,126	11,721	45,087	100.0%	76.1%	0.0%
2005	8,024	51,353	9,784	46,316	100.0%	74.6%	0.0%
2006	8,094	51,870	9,770	46,075	100.0%	73.2%	0.0%
2007	7,735	54,115	9,164	46,925	100.0%	72.4%	0.0%
2008	7,265	53,240	8,617	47,189	100.0%	75.0%	0.0%
2009	6,822	54,586	7,083	45,891	100.0%	71.6%	0.0%
2010	7,265	53,486	7,920	43,712	100.0%	68.1%	0.0%
2011	7,100	58,291	9,213	41,484	100.0%	59.0%	0.0%

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## **SECTION D**

### **MEMBERSHIP DATA**

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**MEMBERSHIP TABLES**

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19	35	SCHEDULE OF RETIRANTS ADDED TO AND REMOVED FROM ROLLS

**Summary of Membership Data**

	July 1, 2011 (1)	July 1, 2010 (2)
1. Active Members		
a. Males	126	124
b. Females	16	17
c. Total members	142	141
d. Total annualized prior year pay	\$ 3,193,050	\$ 3,193,932
e. Average pay	\$ 22,486	\$ 22,652
f. Average age	52.7	52.3
g. Average service	9.8	10.2
h. Member contributions with interest	\$ 4,567,851	N/A
i. Average contributions with interest	\$ 32,168	N/A
2. Special Contributors		
a. Males	23	23
b. Females	3	3
c. Total members	26	26
d. Member contributions with interest	\$ 1,283,294	N/A
e. Average contributions with interest	49,357	N/A
3. Vested Inactive Members		
a. Number	18	16
b. Total annual deferred benefits	\$ 302,232	N/A
c. Average annual deferred benefit	\$ 16,791	N/A
4. Nonvested Inactive Members		
a. Number	22	20
b. Member contributions with interest	\$ 200,843	N/A
c. Average contributions with interest	\$ 9,129	N/A
5. Service Retirees		
a. Number	275	271
b. Total annual benefits	\$ 5,388,001	\$ 5,257,753
c. Average annual benefit	\$ 19,593	\$ 19,401
d. Average age at the valuation date	72.0	71.8
6. Disabled Retirees		
a. Number	1	1
b. Total annual benefits	\$ 15,432	\$ 15,432
c. Average annual benefit	\$ 15,432	\$ 15,432
d. Average age at the valuation date	74.1	73.1
7. Beneficiaries		
a. Number	77	74
b. Total annual benefits	\$ 1,138,899	\$ 1,139,207
c. Average annual benefit	\$ 14,791	\$ 15,395
d. Average age at the valuation date	76.0	76.2

**Summary of Historical Active Membership**

July 1,	Number of Employers	Active Members		Covered Payroll		Average Annual Pay		Average Age	Average Service
		Number	Percent Increase / (Decrease)	Amount in Thousands	Percent Increase / (Decrease)	Amount	Percent Increase / (Decrease)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
2001	2	209	N/A	\$ 4,761	N/A	22,781	-0.1%	N/A	N/A
2002	2	200	-4.3%	4,515	-5.2%	22,573	-0.9%	N/A	N/A
2003	2	170	-15.0%	3,844	-14.9%	22,612	0.2%	N/A	N/A
2004	2	170	0.0%	3,839	-0.1%	22,582	-0.1%	N/A	N/A
2005	2	170	0.0%	3,853	0.4%	22,668	0.4%	N/A	N/A
2006	2	170	0.0%	3,854	0.0%	22,671	0.0%	N/A	N/A
2007	2	170	0.0%	3,854	0.0%	22,671	0.0%	N/A	N/A
2008	2	170	0.0%	3,854	0.0%	22,671	0.0%	N/A	N/A
2009	2	170	0.0%	3,854	0.0%	22,671	0.0%	51.4	9.0
2010	2	170	0.0%	3,854	0.0%	22,671	0.0%	52.3	10.2
2011	2	170	0.0%	3,854	0.0%	22,671	0.0%	52.7	9.8

**Distribution of Active Members by Age and Service**

Attained Age	Years of Credited Service												Total	
	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30-34	35 & Over		
Under 20	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20-24	-	1	-	-	-	-	-	-	-	-	-	-	-	1
25-29	-	1	-	1	-	1	-	-	-	-	-	-	-	3
30-34	-	1	-	1	-	1	-	-	-	-	-	-	-	3
35-39	-	-	-	4	-	3	1	1	-	-	-	-	-	9
40-44	-	3	-	3	-	6	4	3	-	-	-	-	-	19
45-49	-	3	-	4	1	3	4	3	2	-	-	-	-	20
50-54	2	4	-	1	-	8	4	5	1	-	-	-	-	25
55-59	-	1	-	3	1	5	3	4	2	1	-	1	-	21
60-64	-	1	1	3	-	5	1	3	2	2	-	-	-	18
65 & Over	-	3	-	-	1	7	4	4	2	2	-	-	-	23
Total	2	18	1	20	3	39	21	23	9	5	-	1	-	142

**Schedule of Annuitants by Type of Benefit**

Type of Benefit/ Form of Payment <u>(1)</u>	Number <u>(2)</u>	Annual Benefits Amount <u>(3)</u>	Average Monthly Benefit <u>(4)</u>
Service :			
Maximum & QDRO	126	\$ 2,463,081	\$ 1,629
100% J&S	53	1,109,824	1,745
100% Pop-up	46	868,146	1,573
50% J&S	26	532,001	1,705
50% Pop-up	24	414,949	1,441
Subtotal:	<u>275</u>	\$ <u>5,388,001</u>	1,633
Disability:			
Maximum	1	\$ 15,432	\$ 1,286
Beneficiaries:	77	\$ 1,138,899	\$ 1,233
Total:	<u>353</u>	\$ <u>6,542,332</u>	\$ 1,544

**Distribution of Annuitants by Monthly Benefit**

Monthly Benefit Amount		Number of Annuitants	Female	Male	Average Service
(1)		(2)	(3)	(4)	(5)
	Under \$200	10	2	8	1.80
\$	200 - 399	15	7	8	9.00
	400 - 599	16	6	10	6.94
	600 - 799	24	6	18	13.96
	800 - 999	40	14	26	14.10
	1,000 - 1,199	26	11	15	15.88
	1,200 - 1,399	24	6	18	19.67
	1,400 - 1,599	33	12	21	19.88
	1,600 - 1,799	42	6	36	20.88
	1,800 - 1,999	36	6	30	22.64
	2,000 - 2,199	25	9	16	28.56
	2,200 - 2,399	12	2	10	30.92
	2,400 - 2,599	14	2	12	30.57
	2,600 - 2,799	13	2	11	33.08
	2,800 - 2,999	5	0	5	32.40
	3,000 - 3,199	6	1	5	33.17
	3,200 - 3,399	4	3	1	45.00
	3,400 - 3,599	1	0	1	41.00
	3,600 - 3,799	1	0	1	30.00
	3,800 - 3,999	2	0	2	29.50
	4,000 & Over	<u>4</u>	<u>1</u>	<u>3</u>	40.00
Total		353	96	257	20.31

**Schedule of Retirants Added to And Removed from Rolls**

July 1, (1)	Added to Rolls		Removed from Rolls		Rolls End of the Year		% Increase in Annual Benefit (8)	Average Annual Benefit (9)
	Number (2)	Annual Benefits(\$000) (3)	Number (4)	Annual Benefits(\$000) (5)	Number (6)	Annual Benefits(\$000) (7)		
2001	27	\$ 609	11	\$ 204	251	\$ 4,381	10.2%	\$ 17,454
2002	24	453	9	160	266	4,674	6.7%	17,571
2003	40	839	12	226	294	5,287	13.1%	17,983
2004	12	185	9	119	297	5,353	1.2%	18,024
2005	22	486	7	125	312	5,716	6.8%	18,321
2006	13	238	8	179	317	5,775	1.0%	18,218
2007	18	321	2	13	333	6,083	5.3%	18,267
2008	19	337	10	134	342	6,286	3.3%	18,380
2009	26	505	15	266	353	6,525	3.8%	18,484
2010	7	148	14	261	346	6,412	-1.7%	18,532
2011	12	238	5	108	353	6,542	2.0%	18,534

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## **APPENDIX A**

### ACTUARIAL ASSUMPTIONS AND METHODS

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## Summary of Actuarial Methods and Assumptions

The following presents a summary of the actuarial assumptions and methods used in the valuation of the Retirement System for Members of the General Assembly of South Carolina.

### *Investment Rate of Return*

Assumed annual rate of 7.50% net of investment and administrative expenses composed of a 2.75% inflation component and a 4.75% real rate of return, net of investment and administration expenses.

### *Rates of Annual Salary Increase*

No increases in salary are assumed.

### *Active Member Decrement Rates*

- a. Assumed rates of service retirement are shown in the following table. In addition to the rates in the table below, members with 30 years of service are assumed to immediately commence their retirement benefit. Special contributors are assumed to retire upon attaining age 60.

<b>Age Based Retirement Rates</b>	
<b>Age</b>	<b>Assumed Rate</b>
60 & Under	40.00%
61 - 64	7.00%
65 - 69	15.00%
70 & older	100.00%

- b. An abbreviated table with the assumed rates of disability and mortality while employed is shown below. There is no active employment withdrawal assumption.

Age	Disability Rates		Pre-Retirement Mortality	
	Males	Females	Males	Females
25	0.0575%	0.0525%	0.0414%	0.0166%
30	0.1150%	0.0735%	0.0488%	0.0211%
35	0.1725%	0.1470%	0.0850%	0.0380%
40	0.2875%	0.1890%	0.1187%	0.0565%
45	0.4025%	0.2730%	0.1659%	0.0899%
50	0.5750%	0.4620%	0.2352%	0.1341%
55	0.9200%	0.7350%	0.3332%	0.2021%
60	1.1500%	1.1235%	0.5366%	0.3145%
Multiplier			110%	80%

Note: The multiplier has been applied to the decrement in the illustrative table.

**Post Retirement Mortality**

- a. Healthy retirees and beneficiaries – The RP-2000 Mortality Table projected using the AA projection table with multipliers based on plan experience. The following are sample rates:

Healthy Annuitant Mortality Rates Before Projection		
Age	Males	Females
50	0.2138%	0.1508%
55	0.3624%	0.2445%
60	0.6747%	0.4550%
65	1.2737%	0.8735%
70	2.2206%	1.5068%
75	3.7834%	2.5295%
80	6.4368%	4.1291%
85	11.0757%	6.9701%
90	18.3408%	11.8514%
Multiplier	100%	90%

Note: The multiplier has been applied to the decrement in the illustrative table.

The following table provides the life expectancy for individuals retiring in future years based on the assumption with full generational projection:

Life Expectancy for an Age 65 Retiree in Years				
Gender	Year of Retirement			
	2015	2020	2025	2030
Male	19.6	20.0	20.4	20.7
Female	22.3	22.5	22.7	22.9

- b. A separate table of mortality rates is used for disabled retirees based on the RP-2000 Disabled Retiree Mortality Table. The following are sample rates:

<b>Disabled Annuitant Mortality Rates</b>		
<b>Age</b>	<b>Males</b>	<b>Females</b>
50	2.4629%	1.2689%
55	3.0126%	1.8198%
60	3.5736%	2.4023%
65	4.2648%	3.0829%
70	5.3196%	4.1398%
75	6.9757%	5.7453%
80	9.2966%	7.9543%
85	12.0363%	11.0223%
90	15.5897%	15.4054%
Multiplier	85%	110%

Note: The multiplier has been applied to the decrement in the illustrative table.

### ***Asset Valuation Method***

The actuarial value of assets is based on the market value of assets with five-year smoothing applied. This is accomplished by recognizing each year 20% of the difference between the market value of assets and the expected actuarial value of assets, based upon the assumed valuation rate of return.

Expected earnings are determined using the assumed investment rate of return and the beginning of year actuarial value of assets (adjusted for receipts and disbursements during the year). The returns are computed net of administrative and investment expenses.

### ***Actuarial Cost Method***

The Entry Age Normal actuarial cost method allocates the System's actuarial present value of future benefits to various periods based upon service. The portion of the present value of future benefits allocated to years of service prior to the valuation date is the actuarial accrued liability, and the portion allocated to years following the valuation date is the present value of future normal costs. The normal cost is determined for each active member as the level dollar amount necessary to fully fund the expected benefits to be earned over the career of each individual active member. The normal cost is partially funded with active member contributions with the remainder funded by employer contributions.

An unfunded accrued liability exists in the amount equal to the excess of accrued liability over valuation assets. The amortization period of the System is the number of years required to fully amortize the unfunded accrued liability with the expected amount of employer contributions in excess of the employers' portion of the normal cost.

***Future Cost-of-living Increases***

No increases are assumed.

***Payroll Growth Rate***

None assumed.

***Other Assumptions***

1. Percent married: 100% of male and 100% of female employees are assumed to be married.
2. Age difference: Males are assumed to be four years older than their spouses.
3. Percent electing annuity on death (when eligible): All of the spouses of vested, married participants are assumed to elect an immediate life annuity.
4. Inactive Population: All non-vested members are assumed to take an immediate refund. Members with a vested benefit are assumed to elect a refund or a deferred benefit commencing at age 60, whichever is more valuable at the valuation date.
5. There will be no recoveries once disabled.
6. Decrement timing: Decrements of all types are assumed to occur mid-year.
7. Eligibility testing: Eligibility for benefits is determined based upon the age nearest birthday and service nearest whole year on the date the decrement is assumed to occur.
8. Benefit Service: All active and special contributing members are assumed to accrue one year of eligibility service each year.

***Participant Data***

Participant data was supplied in electronic text files. There were separate files for (i) active and inactive members, and (ii) members and beneficiaries receiving benefits.

The data for active members included birth date, gender, service with the current city and total vesting service, salary, and employee contribution account balances. For retired members and beneficiaries, the data included date of birth, gender, spouse's date of birth (where applicable), amount of monthly benefit, date of retirement, and form of payment code.

Salary supplied for the current year was based on the annualized earnings for the year preceding the valuation date. Assumptions were made to correct for missing, bad, or inconsistent data. These had no material impact on the results presented.

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## **APPENDIX B**

### BENEFIT PROVISIONS

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**SUMMARY OF BENEFIT PROVISIONS FOR  
SOUTH CAROLINA GENERAL ASSEMBLY RETIREMENT SYSTEM  
(GARS)**

**Effective Date:** January 1, 1966.

**Administration:** The South Carolina Retirement System, organizationally aligned as a Division of the State Budget and Control Board, is responsible for the general administrative operations and day to day management of the Plan.

**Type of Plan:** This is a qualified governmental defined benefit retirement plan.

**Eligibility:** All members of the General Assembly are required to participate upon taking office unless exempted by Statute. Members with eight (8) or more years of credited service that cease membership in the General Assembly may elect to continue earning future service in the system by contributing the required membership contributions (i.e. special contributing member).

**Employee Contributions:** Active members contribute 10% of earnable compensation and eligible additional line item compensation. Member contributions are credited with interest at the rate of 4.0% per annum. Retired members who are serving in office do not make employee contributions to the system.

**Earnable Compensation:** \$10,400 annually plus 40 times the daily rate of remuneration (i.e. \$22,400 in total earnable compensation annually). Certain line-item additional compensation for specified offices is also included.

**Service Retirement:**

- a. **Eligibility:** A member may retire upon the attainment of age 60 or completing 30 years of credited service, if earlier. Members may commence their benefit before retiring from service upon the attainment of age 70 or after accruing 30 years of service.
- b. **Monthly Benefit:** 4.82% of earnable compensation times credited service.
- c. **Payment Form:** Standard annuity payment

***Disability Retirement:***

- a. Eligibility: Member must have five or more years of credited service, unless the disability is due to performing his or her duties.
- b. Monthly Benefit: The member will receive a service retirement benefit if they become disabled after attaining the age of 60 or completed at least 35 years of credited service. Otherwise the member will receive a benefit that is equal to the larger of 1. or 2. below.
  1. 50% of the retirement benefit that would have been payable had he continued service to the earlier of age 60 or 35 years of credited service and his earnable compensation had remained unchanged.
  2. 100% of the retirement benefit based on the member's service and earnable compensation at the time of his disability.
- c. Payment Form: Standard annuity payment
- d. Death while Disabled: A disabled member is treated as a retired member for purposes of determining a death benefit.

***Vesting and Refunds:***

- a. Eligibility: All members who are not vested are eligible for a refund when they terminate service. Members are vested after eight (8) years of credited service. Vested members may also elect to receive a refund in lieu of the deferred termination benefit described below.
- b. Amount: The refund benefit is the accumulated value of the member's contributions plus interest credited by the fund.

***Deferred Termination Benefit:***

- a. Eligibility: Member must be vested (8 years of credited service) and must elect to leave his/her contributions on deposit.
- b. Monthly Benefit: Same as the service retirement benefit, based on service and earnable compensation at termination, and commencing once the member is eligible. Note, special contributors continue to accrue benefits under the system until the earlier of 22 years of creditable service or age 60.
- c. Payment Form: standard annuity payment
- d. Death Benefit: The beneficiary of an inactive member who dies is entitled to receive the amount of the member's accumulated contributions (with interest).

***Death while an Active Member:***

- a. In General: A refund of the member's accumulated contributions (with interest) is paid to the beneficiary of a deceased member.
- b. Beneficiary Annuity: If the deceased member had attained the age of 60 or had accumulated 15 or more years of creditable service, may elect to receive, in lieu of the accumulated contributions, a monthly benefit for life of the beneficiary.

***Optional Forms of Benefit:*** The Systems permit members to elect certain optional forms of benefit at retirement. In each case the benefit amount is adjusted to be actuarially equivalent to the "Maximum Option" form. The optional forms of payment include:

- a. Maximum Option: A life annuity. Upon the member's death, any remaining member contributions will be paid to the member's designated beneficiary.
- b. Option 1 (100% Joint & Survivor): A reduced annuity payable as long as either the member or his/her beneficiary is living.
- c. Option 1A (100% Joint & Survivor with a revert to Maximum Option feature): A reduced annuity payable as long as either the member or his/her beneficiary is living. In the event the member's designated beneficiary predeceases the member, then the member shall receive a retirement allowance equal to the maximum option.
- d. Option 2 (50% Joint & Survivor): A reduced annuity payable during the member's life, and continues after the member's death at 50% of the rate paid to the member for the life of the member's designated beneficiary.
- e. Option 2B (50% Joint & Survivor with a revert to Maximum Option feature): A reduced annuity payable during the member's life, and continues after the member's death at 50% of the rate paid to the member for the life of the member's designated beneficiary. In the event the member's designated beneficiary predeceases the member, then the member shall receive a retirement allowance equal to the maximum option.



***Incidental Death Benefit:***

- a. Active Employees: The beneficiary (or estate) of an active employee who completes at least one full year of membership service, will receive a death benefit equal to the member's annual earnable compensation at the time of death.

The one full year membership requirement is waived for members whose death is a result of an injury arising out of the course of performing his duties.

- b. Post Employment: The beneficiary (or estate) of a retiree, both current and future retiree, will receive a one-time payment upon the retiree's death. The amount of the one-time payment is based on the retiree's credited service.

Years of Service Credit	Death Benefit
10 or more, but less than 20	\$1,000
20 or more, but less than 30	\$2,000
30 or more	\$3,000

***Postretirement Benefit Increases***: Retired members and beneficiaries will receive an adjustment to their benefit equal to the same percentage increase that the General Assembly approves in earnable compensation for active GARS members.

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## **APPENDIX C**

### **GLOSSARY**

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## GLOSSARY

**Actuarial Accrued Liability (AAL):** That portion, as determined by a particular Actuarial Cost Method, of the Actuarial Present Value of Future Plan Benefits which is not provided for by future Normal Costs. It is equal to the Actuarial Present Value of Future Plan Benefits minus the actuarial present value of future Normal Costs.

**Actuarial Assumptions:** Assumptions as to future experience under the Fund. These include assumptions about the occurrence of future events affecting costs or liabilities, such as:

- mortality, withdrawal, disablement, and retirement;
- future increases in salary;
- future rates of investment earnings and future investment and administrative expenses;
- characteristics of members not specified in the data, such as marital status;
- characteristics of future members;
- future elections made by members; and
- other relevant items.

**Actuarial Cost Method or Funding Method:** A procedure for allocating the Actuarial Present Value of Future Benefits to various time periods; a method used to determine the Normal Cost and the Actuarial Accrued Liability. These items are used to determine the ARC.

**Actuarial Gain or Actuarial Loss:** A measure of the difference between actual experience and that expected based upon a set of Actuarial Assumptions, during the period between two Actuarial Valuation dates. Through the actuarial assumptions, rates of decrements, rates of salary increases, and rates of fund earnings have been forecasted. To the extent that actual experience differs from that assumed, Actuarial Accrued Liabilities emerge which may be the same as forecasted, or may be larger or smaller than projected. Actuarial gains are due to favorable experience, e.g., the Fund's assets earn more than projected, salaries do not increase as fast as assumed, members retire later than assumed, etc. Favorable experience means actual results produce actuarial liabilities not as large as projected by the actuarial assumptions. On the other hand, actuarial losses are the result of unfavorable experience, i.e., actual results that produce actuarial liabilities which are larger than projected. Actuarial gains will shorten the time required for funding of the actuarial balance sheet deficiency while actuarial losses will lengthen the funding period.

**Actuarially Equivalent:** Of equal actuarial present value, determined as of a given date and based on a given set of Actuarial Assumptions.

**Actuarial Present Value (APV):** The value of an amount or series of amounts payable or receivable at various times, determined as of a given date by the application of a particular set of Actuarial Assumptions. For purposes of this standard, each such amount or series of amounts is:

- a. adjusted for the probable financial effect of certain intervening events (such as changes in compensation levels, marital status, etc.)

b. multiplied by the probability of the occurrence of an event (such as survival, death, disability, termination of employment, etc.) on which the payment is conditioned, and

c. discounted according to an assumed rate (or rates) of return to reflect the time value of money.

**Actuarial Present Value of Future Plan Benefits:** The Actuarial Present Value of those benefit amounts which are expected to be paid at various future times under a particular set of Actuarial Assumptions, taking into account such items as the effect of advancement in age and past and anticipated future compensation and service credits. The Actuarial Present Value of Future Plan Benefits includes the liabilities for active members, retired members, beneficiaries receiving benefits, and inactive, nonretired members either entitled to a refund or a future retirement benefit. Expressed another way, it is the value that would have to be invested on the valuation date so that the amount invested plus investment earnings would be provide sufficient assets to pay all projected benefits and expenses when due.

**Actuarial Valuation:** The determination, as of a valuation date, of the Normal Cost, Actuarial Accrued Liability, Actuarial Value of Assets, and related Actuarial Present Values for a plan. An Actuarial valuation for a governmental retirement system typically also includes calculations of items needed for compliance with GASB 25, such as the funded ratio and the ARC.

**Actuarial Value of Assets or Valuation Assets:** The value of the Fund's assets as of a given date, used by the actuary for valuation purposes. This may be the market or fair value of plan assets, but commonly actuaries use a smoothed value in order to reduce the year-to-year volatility of calculated results, such as the funded ratio and the ARC.

**Actuarially Determined:** Values which have been determined utilizing the principles of actuarial science. An actuarially determined value is derived by application of the appropriate actuarial assumptions to specified values determined by provisions of the law.

**Amortization Method:** A method for determining the Amortization Payment. The most common methods used are level dollar and level percentage of payroll. Under the Level Dollar method, the Amortization Payment is one of a stream of payments, all equal, whose Actuarial Present Value is equal to the UAAL. Under the Level Percentage of Pay method, the Amortization payment is one of a stream of increasing payments, whose Actuarial Present Value is equal to the UAAL. Under the Level Percentage of Pay method, the stream of payments increases at the assumed rate at which total covered payroll of all active members will increase.

**Amortization Payment:** That portion of the pension plan contribution or ARC which is designed to pay interest on and to amortize the Unfunded Actuarial Accrued Liability.

**Annual Required Contribution (ARC):** The employer's periodic required contributions, expressed as a dollar amount or a percentage of covered plan compensation, determined under GASB 25. The ARC consists of the Employer Normal Cost and the Amortization Payment

**Closed Amortization Period:** A specific number of years that is counted down by one each year, and therefore declines to zero with the passage of time. For example if the amortization period is initially set at 30 years, it is 29 years at the end of one year, 28 years at the end of two years, etc. See Funding Period and Open Amortization Period.

**Decrements:** Those causes/events due to which a member's status (active-inactive-retiree-beneficiary) changes, that is: death, retirement, disability, or termination.

**Defined Benefit Plan:** A retirement plan that is not a Defined Contribution Plan. Typically a defined benefit plan is one in which benefits are defined by a formula applied to the member's compensation and/or years of service.

**Defined Contribution Plan:** A retirement plan, such as a 401(k) plan, a 403(b) plan, or a 457 plan, in which the contributions to the plan are assigned to an account for each member, and the plan's earnings are allocated to each account, and each member's benefits are a direct function of the account balance.

**Employer Normal Cost:** The portion of the Normal Cost to be paid by the employers. This is equal to the Normal Cost less expected member contributions.

**Experience Study:** A periodic review and analysis of the actual experience of the Fund which may lead to a revision of one or more actuarial assumptions. Actual rates of decrement and salary increases are compared to the actuarially assumed values and modified as deemed appropriate by the Actuary.

**Funded Ratio:** The ratio of the actuarial value of assets (AVA) to the actuarial accrued liability (AAL). Plans sometimes calculate a market funded ratio, using the market value of assets (MVA), rather than the AVA, although GASB 25 reporting requires the use of the AVA.

**Funding Period or Amortization Period:** The term "Funding Period" is used two ways. In the first sense, it is the period used in calculating the Amortization Payment as a component of the ARC. This funding period is chosen by the Board of Trustees. In the second sense, it is a calculated item: the number of years in the future that will theoretically be required to amortize (i.e., pay off or eliminate) the Unfunded Actuarial Accrued Liability, based on the statutory employer contribution rate, and assuming no future actuarial gains or losses.

**GASB:** Governmental Accounting Standards Board.

**GASB 25 and GASB 27:** Governmental Accounting Standards Board Statements No. 25 and No. 27. These are the governmental accounting standards that set the accounting rules for public retirement systems and the employers that sponsor or contribute to them. Statement No. 27 sets the accounting rules for the employers that sponsor or contribute to public retirement systems, while Statement No. 25 sets the rules for the systems themselves.

**Normal Cost:** That portion of the Actuarial Present Value of pension plan benefits and expenses which is allocated to a valuation year by the Actuarial Cost Method. Any payment in respect of an Unfunded Actuarial Accrued Liability is not part of Normal Cost (see Amortization Payment). For pension plan benefits which are provided in part by employee contributions, Normal Cost refers to the total of employee contributions and employer Normal Cost unless otherwise specifically stated. Under the entry age normal cost method, the Normal Cost is intended to be the level cost (when expressed as a percentage of pay) needed to fund the benefits of a member from hire until ultimate termination, death, disability or retirement.

**Open Amortization Period:** An open amortization period is one which is used to determine the Amortization Payment but which does not change over time. In other words, if the initial period is set as 30 years, the same 30-year period is used in determining the Amortization Period each year. In theory, if an Open Amortization Period is used to amortize the Unfunded Actuarial Accrued Liability, the UAAL will never completely disappear, but will become smaller each year, either as a dollar amount or in relation to covered payroll.

**Unfunded Actuarial Accrued Liability:** The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. This value may be negative in which case it may be expressed as a negative Unfunded Actuarial Accrued Liability, also called the Funding Surplus.

**Valuation Date or Actuarial Valuation Date:** The date as of which the value of assets is determined and as of which the Actuarial Present Value of Future Plan Benefits is determined. The expected benefits to be paid in the future are discounted to this date.