South Carolina Retirement System (SCRS)

ACTUARIAL VALUATION REPORT

AS OF July 1, 2019

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December 4, 2019

Public Employee Benefit Authority
South Carolina Retirement Systems
P.O. Box 11960
Columbia, SC 29211-1960

Subject: Actuarial Valuation as of July 1, 2019

Dear Members of the Board:

This report describes the current actuarial condition of the South Carolina Retirement System (SCRS), determines the calculated employer and member contribution rates, and analyzes changes in the System's financial condition. In addition, the report provides various summaries of the data. A separate report is issued with regard to valuation results determined in accordance with Governmental Accounting Standards Board (GASB) Statement Nos. 67 and 68. 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 SCRS. This report was prepared at the request of the Board of Directors of the South Carolina Public Employee Benefit Authority (Board) and is intended for use by the Public Employee Benefit Authority (PEBA) staff and those designated or approved by the Board.

FINANCING OBJECTIVES AND FUNDING POLICY

The employer contribution rate is established in accordance with Section 9-1-1085 of the South Carolina Code, as amended by the Retirement System Funding and Administration Act of 2017. The employer contribution rate in effect for the fiscal year ending June 30, 2020 is 15.56% and is scheduled to increase by 1.00% of pay for each of the next three fiscal years until an ultimate employer contribution rate of 18.56% of pay is attained for fiscal year 2023.

Additionally, the Statute specifies that that the maximum amortization period is 28 years as of July 1, 2019 and the maximum amortization period will decrease by one year in each of the next eight years until reaching a maximum 20-year funding period on July 1, 2027. The employer contribution rate determined by an actuarial valuation must be sufficient to maintain an amortization period that does not exceed 20 years each year thereafter. Finally, the Board is not permitted to decrease the employer and member contribution rates until the funded ratio of the plan is at least 85%.

If new legislation is enacted between the valuation date and the date the contribution rate becomes effective, the Board may adjust the calculated rate before certifying them, in order to reflect this new legislation. Such adjustments are based on information supplied by the actuary.

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 55.0% to 54.4%. Absent unfavorable investment or liability experience, and assuming the increases in contribution rates continue as currently scheduled, it is currently projected that the funded ratio will gradually improve to 100% over the next 18 years.

If the market value of assets had been used in the calculation instead of the actuarial (smoothed) value of assets, the funded ratio for the System would have been 54.0%, compared to 53.8% in the prior year. The slight increase in the funded ratio on a market value basis is primarily due to the increased contributions to the System. Plan assets earned a 5.84% return on a time weighted-basis (net of fees) as reported in the financial statement of the South Carolina Retirement Systems for the year ending June 30, 2019. The 5.7% return documented in this report was determined on a dollar-weighted basis and assumes mid-year cash flows.

ASSUMPTIONS AND METHODS

There were no assumption changes since the prior actuarial valuation. It is our opinion that the current assumptions are internally consistent and reasonably reflect the anticipated future experience of the System. These assumptions are based on an experience study conducted as of June 30, 2015. The investment return assumption is a prescribed assumption in Section 9-16-335 in South Carolina State Code.

It is our opinion that the current assumptions are internally consistent and reasonably reflect the anticipated future experience of the System. 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, 2019. There were no legislative changes enacted since the prior valuation that changed or modified the benefits that members earn or receive.

DATA

Member data for retired, active and inactive members was supplied as of July 1, 2019, by the PEBA staff. The staff also supplied asset information as of July 1, 2019. 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 PEBA.

CERTIFICATION

We certify that the information presented herein is accurate and fairly portrays the actuarial position of SCRS as of July 1, 2019.

All of our work conforms with generally accepted actuarial principles and practices, and is in conformity 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.

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SECTION A

EXECUTIVE SUMMARY

Executive Summary

(Dollar amounts expressed in thousands)

	Valuation Date:	
	July 1, 2019	July 1, 2018
Membership		
• Number of		
- Active Members	200,264	196,184
- Retirees and Beneficiaries	144,292	142,278
- Inactive Members	191,113	182,933
- Total	535,669	521,395
• Projected payroll of active members	$9,272,010	$9,183,081
• Projected payroll for all members, including working retirees and members in ORP	$11,335,475	$11,128,564
Required Contribution Rates		
• Employer contribution rate[1]	16.56%	15.56%
• Member	9.00%	9.00%
Assets		
• Market value	$27,238,916	$26,414,916
• Actuarial value	27,443,804	27,030,937
• Return on market value	5.7%	7.9%
• Return on actuarial value	4.1%	4.1%
• Ratio of actuarial to market value of assets	100.8%	102.3%
• External cash flow %	-2.5%	-5.0%
Actuarial Information		
• Normal cost %	10.64%	10.66%
• Actuarial accrued liability (AAL)	$50,438,807	$49,104,763
• Unfunded actuarial accrued liability (UAAL)	22,995,003	22,073,826
• Funded ratio	54.4%	55.0%
• Funding period (years)[2]	21	22
Reconciliation of UAAL		
• Beginning of Year UAAL	$22,073,826	$21,133,155
- Interest on UAAL	1,600,352	1,532,154
- Amortization payment	(1,437,792)	(1,228,369)
- Assumption/method changes	0	0
- Asset experience	847,002	833,485
- Salary experience	(45,360)	(153,810)
- Other liability experience	(43,025)	(42,789)
- Legislative Changes	0	0
• End of Year UAAL	$22,995,003	$22,073,826

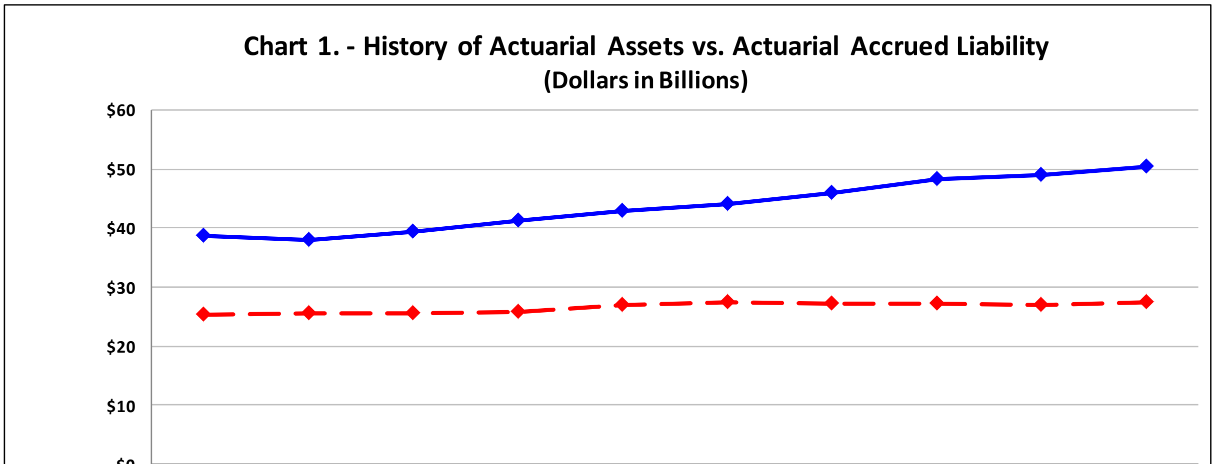
[1] The employer contribution rates in effect for FY 2018, FY 2019, FY 2020, and FY 2021, are 13.56%, 14.56%, 15.56%, and 16.56% of pay, respectively. These contribution rates include the cost of incidental death benefits.

[2] The funding period for 2019 is determined on an actuarial value of asset basis and is based on the contribution rate scheduled to become effective for FY 2021 (i.e. beginning July 1, 2020 and ending June 30, 2021).

Executive Summary (Continued)

The unfunded actuarial accrued liability increased by $0.921 billion since the prior year's valuation to $22.995 billion. The largest source of this increase is the $0.847 billion increase due to recognition of deferred investment losses in the actuarial value of assets that were experienced in prior fiscal years. Below is a chart with the historical actuarial value of assets and actuarial accrued liability for SCRS

The divergence in the assets and liabilities over the last 10 years has been due to a combination of: (i) the actual investment experience being less than the System's expected investment return assumption, (ii) assumption changes that occurred in 2011, 2016, and 2017, and (iii) contributions that were less than the interest on the unfunded actuarial accrued liability.



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
AAL	38.8	38.0	39.5	41.2	42.9	44.1	45.9	48.4	49.1	50.4
AVA	25.4	25.6	25.5	25.8	26.9	27.4	27.3	27.2	27.0	27.4

The employer contribution rate will increase from 15.56% of pay in fiscal year 2020 to 16.56% of pay in fiscal year 2021. State Statutes also specify that the employer contribution rate will increase by 1.00% for each of the next two subsequent fiscal years until attaining 18.56% of pay for fiscal year 2023. These scheduled increases in the employer contribution rate and the maximum amortization that is specified in state statute will, in time, result in improved financial security of the System.

To further strengthen the financial security of the plan in the event of adverse experience, State Statutes specifies that the maximum amortization period is 28 years as of July 1, 2019 and the maximum amortization period will decrease by one year in each of the next eight years until reaching a 20-year funding period on July 1, 2027. Finally, the Board is not permitted to decrease the employer and member contribution rates until the funded ratio of the plan is at least 85%.

Also, note that the current funding policy utilizes a level percentage of payroll amortization, which assumes that covered payroll will increase at the rate of 3.00% per year in the future. As a result, the amortization payments will not be sufficient to cover all of the interest charges on the UAAL until the funding period decreases to approximately 20 years. Therefore, stakeholders should expect the dollar amount of the unfunded actuarial accrued liability to gradually increase until the calculated funding period decreases below 20 years.

SECTION B

DISCUSSION

Discussion

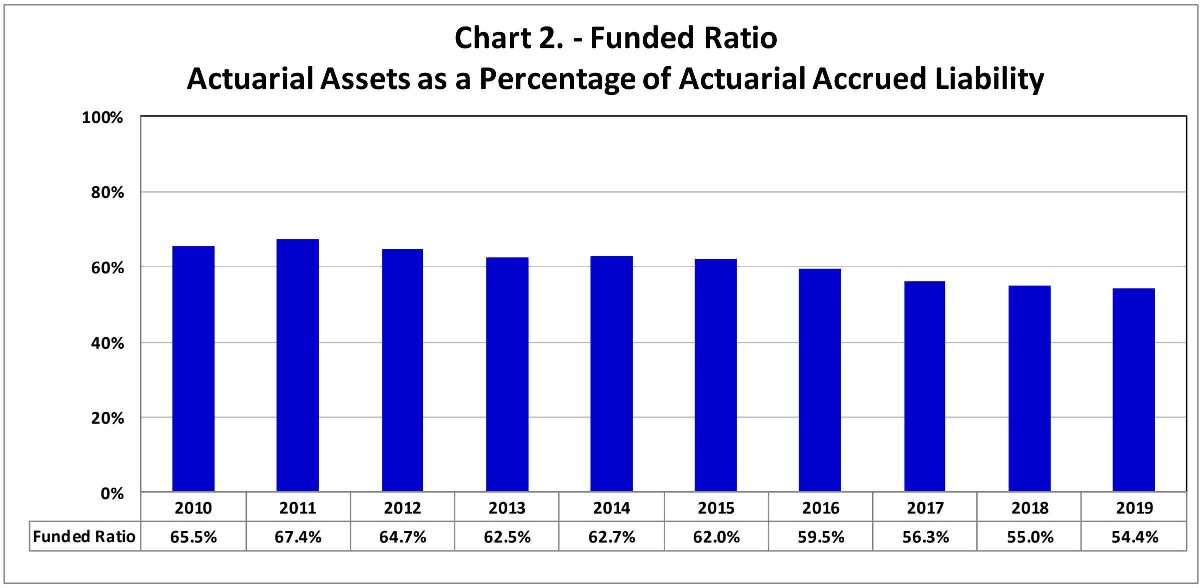
The results of the July 1, 2019 actuarial valuation of the South Carolina Retirement System are presented in this report. The primary purposes of the valuation report are to depict the current financial condition of the System, determine the annual required contribution, and analyze changes in the System's financial condition. In addition, the report provides various summaries of the data.

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.

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. Section E is new this year and provides an assessment and disclosure of risk as required by Actuarial Standards of Practice No. 51. 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 55.0% to 54.4% since the prior valuation. Chart 2, shown below provides a 10-year history of the System's funded ratio. The gradual decline in the funded ratio over the last 10 years has been due to a combination of: (i) the actual investment experience being less than the System's expected investment return assumption, (ii) assumption changes that occurred in 2011, 2016, and 2017, and (iii) contributions that were less than the interest on the unfunded actuarial accrued liability. Table 10, Schedule of Funding Progress, in the following section of the report provides additional detail regarding the funding progress of the Retirement System.



Absent future unfavorable investment or demographic experience, or legislative changes, we expect the funded ratio to remain relatively unchanged for the next year or two, then begin to gradually improve. Also, based on the new funding policy and contribution rates, we expect the dollar amount of the unfunded actuarial accrued liability, or the difference between the actuarial accrued liability and the actuarial value of assets, to gradually increase for the next two to four years before beginning to decrease.

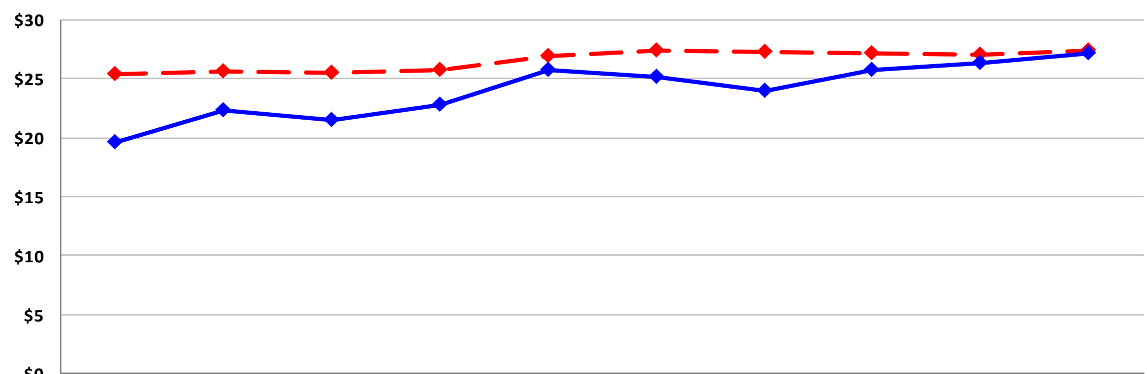
Asset Gains/ (Losses)

The actuarial value of assets ("AVA") is based on a smoothed market value of assets, using a systematic approach to phase-in the difference between the actual and expected investment return on the market value of assets (adjusted for receipts and disbursements during the year). This is appropriate because it dampens the short-term volatility inherent in investment markets. The returns are computed net of investment expenses. The actuarial value of assets increased to $27.4 billion 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 market value of assets on a dollar-weighted basis for fiscal year 2019 was 5.7%; which is less than the 7.25% expected annual return. The return on an actuarial (smoothed) asset value was 4.1%. This difference in the estimated return on market value and actuarial value illustrates the smoothing effect of the asset valuation method, meaning losses on market assets from previous years was initially deferred and ultimately recognized in this fiscal year, which in turn lowered the realized return on the smoothed asset value.

Now that the market and actuarial value of assets have converged, the funded ratio on an actuarial value of asset basis is anticipated to begin to improve assuming assumptions are met.

Chart 3. - History of Actuarial Value and Market Value of Assets
(Dollars in Billions)



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
AVA	25.4	25.6	25.5	25.8	26.9	27.4	27.3	27.2	27.0	27.4
MVA	19.7	22.4	21.5	22.8	25.7	25.1	24.0	25.7	26.4	27.2

Assets as of July 1,

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 Funding Period

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 over many years. Therefore, as long as the actual experience of the Retirement System is reasonably close to the current assumptions, the long-term funding requirements of the System will remain relatively consistent.

The unfunded actuarial accrued liability (UAAL) has increased from $22.1 billion in 2018 to $23.0 billion in 2019. The table below shows the source of the gains and losses and the impact of those gains and losses on the UAAL.

Reconciliation of UAAL
(Dollars in thousands)

• Beginning of Year UAAL	$22,073,826
- Interest on UAAL	1,600,352
- Amortization payment	(1,437,792)
- Assumption/method changes	0
- Asset Experience	847,002
- Salary Experience	(45,360)
- Other liability experience	(43,025)
- Legislative changes	0
• End of Year UAAL	$22,995,003

The following table reconciles the change in the funding period from the prior year's valuation based on the contribution rates that are currently in effect for fiscal year 2020 as well as the effect of the contribution rate increase that is scheduled for fiscal year 2021.

Change in Funding Period (Years)

• 2018 Valuation and FY 2020 Contribution Rate	22.4
- Expected experience	(1.0)
- Assumption and method changes	0.0
- Asset experience	1.4
- Salary and demographic experience[1]	0.3
- Legislative changes	0.0
- Total Change	0.7
• 2019 Valuation and FY 2020 Contribution Rates	23.1
- Scheduled contribution rate increase in FY 2021	(2.4)
• 2019 Valuation and Scheduled FY 2021 Contribution Rate	20.7

[1] The effect of the smaller than expected increase in total payroll (including ORP and working retirees) resulted in a net increase in the funding period.

Actuarial Gains/ (Losses) and the Funding Period (Continued)

The employer contribution rate is established in accordance with Section 9-1-1085 of the South Carolina Code, as amended by the Retirement System Funding and Administration Act of 2017. The employer contribution rate scheduled to be in effect for the fiscal year ending June 30, 2021 is 16.56%. The employer contribution rate is also scheduled to increase by 1.00% of pay for each of the next two fiscal years after 2021 until an ultimate employer contribution rate of 18.56% of pay is attained for fiscal year 2023.

The calculated funding period documented in this actuarial valuation only reflects the scheduled 16.56% employer contribution that is to become effective for the 2021 fiscal year (i.e. the fiscal year beginning July 1, 2020 and ending July 1, 2021).

Actuarial Assumptions and Methods

In determining costs and liabilities, actuaries use assumptions about the future, such as rates of salary increase, probabilities of retirement, termination, death and disability, and an annual investment return assumption. South Carolina State Code also requires that an experience analysis that reviews the economic and demographic assumptions be performed at least every five years and the last experience study was conducted for the five-year period ending June 30, 2015.

There were no assumption changes since the prior actuarial valuation. The investment return assumption is a prescribed assumption in Section 9-16-335 in South Carolina State Code.

Appendix A includes a summary of the actuarial assumptions and methods used in this valuation. It is our opinion that the assumptions are internally consistent, reasonable, and reflect anticipated future experience of the System. The next experience study will be conducted no later than June 30, 2020.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law. This report does not include a more robust assessment of the risks of future experience not meeting the actuarial assumptions. Additional assessment of risks was outside the scope of this assignment.

An actuarial valuation assumes that all assumptions will be met in future years, including a 7.25% return on the actuarial value of assets determined as of the actuarial valuation date. Establishing the contribution rates, funding period, and other financial metrics on an actuarial value of asset basis is consistent with applicable actuarial standards of practice, industry prevalence, and applicable provisions in South Carolina State Code.

Emerging experience due to liabilities or investments that is different than assumed (including the recognition of previously deferred investment losses) may result in a change in the required contribution rate and or funding period that is different than expected based on the prior actuarial valuation. Also, separate projections provided outside of this report that may illustrate the financial effect of future gains or losses on actuarial basis in subsequent years may be useful for business making decisions, but such projections should not be misunderstood as documentation of satisfaction of the maximum amortization period that is specified in State Code.

Benefit Provisions

Appendix B of this report includes a summary of the benefit provisions for SCRS. There were no legislative changes enacted since the prior actuarial valuation that changed or modified the benefits that members earn or receive. Below is a summary of the retirement provisions for Class Two members- members hired prior to July 1, 2012, and Class Three members- members hired after June 30, 2012.

Summary of Retirement Provisions for:

Class Two Members (members hired prior to July 1, 2012)

- Average Final Compensation (AFC) is based on the highest 12 consecutive quarters of compensation. The determination of a member's AFC also includes up to 45 days of unused annual leave paid at termination. Monthly benefits are based on one-twelfth of this amount.
- The retirement benefit amount is equal to 1.82% of the member's AFC times the member's credited service (years). Credited service may include up to 90 days of unused sick leave.
- Members are eligible to commence a normal retirement benefit after they have (i) 28 years of credited service or (ii) attained age 65 with 5 years of earned service.
- At each July 1 after their first full year of retirement, annuitants will receive a benefit adjustment equal to the lesser of 1.00% of their retirement benefit or $500 per annum.

Class Three Members (members hired after June 30, 2012)

- Average Final Compensation (AFC) is based on the highest twenty (20) consecutive quarters of compensation. The determination of a member's AFC will not include unused annual leave paid at termination. Monthly benefits are based on one-twelfth of this amount;
- The retirement benefit is equal to 1.82% of the member's AFC times the member's credited service (years). Credited service will not include unused sick leave.
- Members are eligible to commence a normal retirement benefit after they have (i) attained age 65 with eight years of earned service or (ii) the combination of the member's age and years of credited service equals or exceeds 90 (i.e. the rule of 90).
- At each July 1 after their first full year of retirement, annuitants will receive a benefit adjustment equal to the lesser of 1.00% of their retirement benefit or $500 per annum.

SECTION C

ACTUARIAL TABLES

Actuarial Tables

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Summary of Cost Items

(Dollar amounts expressed in thousands)

		July 1, 2019 (1)	July 1, 2018 (2)
1.	Projected payroll of active members[1]	$ 9,272,010	$ 9,183,081
2.	Present value of future pay	$ 73,365,374	$ 70,582,240
3.	Normal cost rate		
	a. Total normal cost rate	10.64%	10.66%
	b. Less: member contribution rate	-9.00%	-9.00%
	c. Employer normal cost rate	1.64%	1.66%
4.	Actuarial accrued liability for active members		
	a. Present value of future benefits	$ 25,649,944	$ 23,889,229
	b. Less: present value of future normal costs	(7,511,934)	(6,760,125)
	c. Actuarial accrued liability	$ 18,138,010	$ 17,129,104
5.	Total actuarial accrued liability		
	a. Retirees and beneficiaries	$ 31,051,873	$ 30,760,224
	b. Inactive members	1,248,924	1,215,435
	c. Active members (Item 4c)	18,138,010	17,129,104
	d. Total	$ 50,438,807	$ 49,104,763
6.	Actuarial value of assets	$ 27,443,804	$ 27,030,937
7.	Unfunded actuarial accrued liability (UAAL) (Item 5d - Item 6)	$ 22,995,003	$ 22,073,826
8.	Required Contribution Rate		
	a. Employer normal cost rate	1.64%	1.66%
	b. Employer contribution rate available to amortize the UAAL	14.92%	13.90%
	c. Total employer contribution rate	16.56%	15.56%
9.	Funding period based on the required employer contribution rate (years)[2]	21	22
10.	Applicable statutorily required contribution rates[3]		
	a. Employer contribution rate	16.56%	15.56%
	b. Member contribution rate	9.00%	9.00%

[1] The projected payroll does not include payroll for members in ORP or working retirees.

[2] The funding period for 2019 is determined on an actuarial value of asset basis and is based on the contribution rate scheduled to become effective for FY 2021 (i.e. beginning July 1, 2020 and ending June 30, 2021).

[3] The actual employer contribution rates in effect for FY 2019, FY 2020, and FY 2021, are 14.56%, 15.56%, and 16.56% of pay, respectively. These contribution rates include the cost of incidental death benefits.

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

		July 1, 2019 (1)	July 1, 2018 (2)
1.	Active members		
	a. Service retirement	$ 22,196,708	$ 21,078,410
	b. Deferred termination benefits and refunds	1,193,353	650,606
	c. Survivor benefits	711,480	677,563
	d. Disability benefits	1,548,403	1,482,650
	e. Total	$ 25,649,944	$ 23,889,229
2.	Retired members		
	a. Service retirement	$ 28,031,959	$ 27,935,954
	b. Disability retirement	1,631,676	1,663,001
	c. Beneficiaries	1,202,879	1,158,224
	d. Incidental death benefits	185,359	3,044
	e. Total	$ 31,051,873	$ 30,760,223
3.	Inactive members		
	a. Vested terminations	$ 942,108	$ 958,883
	b. Nonvested terminations	306,816	256,552
	c. Total	$ 1,248,924	$ 1,215,435
4.	Total actuarial present value of future benefits	$ 57,950,741	$ 55,864,887

Analysis of Normal Cost

	July 1, 2019 (1)	July 1, 2018 (2)
1. Total normal cost rate		
a. Service retirement	7.21%	7.22%
b. Deferred termination benefits and refunds	2.22%	2.22%
c. Survivor benefits	0.35%	0.35%
d. Disability benefits	0.74%	0.75%
e. Total	10.52%	10.54%
2. Administrative expenses	0.12%	0.12%
3. Less: member contribution rate	9.00%	9.00%
4. Net employer normal cost rate	1.64%	1.66%

Results of June 30, 2019 Valuation
(Dollar amounts expressed in thousands)

		July 1, 2019
		(1)
1.	Actuarial Present Value of Future Benefits	
	a. Present retired members and beneficiaries	$ 31,051,873
	b. Present active and inactive members	26,898,868
	c. Total actuarial present value	$ 57,950,741
2.	Present Value of Future Normal Contributions	
	a. Member	$ 6,602,884
	b. Employer	909,050
	c. Total future normal contributions	$ 7,511,934
3.	Actuarial Liability	$ 50,438,807
4.	Current Actuarial Value of Assets	$ 27,443,804
5.	Unfunded Actuarial Liability	$ 22,995,003
6.	UAAL Amortization Rates Based on an Employer Contribution Rate of 16.56%	
	a. Active members	14.92%
	b. ORP members	11.56%
	c. Re-employed retirees (including employee contributions)	25.56%
7.	Unfunded Actuarial Liability Liquidation Period	21 years

Note: The employer contribution rate includes the cost for incidental death benefits.

Actuarial Balance Sheet

(Dollar amounts expressed in thousands)

		July 1, 2019 (1)	July 1, 2018 (2)
1.	Assets		
	a. Current assets (actuarial value)		
	i. Employee annuity savings fund	$ 9,106,401	$ 8,501,051
	ii. Employer annuity accumulation fund	18,337,403	18,529,886
	iii. Total current assets	$ 27,443,804	$ 27,030,937
	b. Present value of future member contributions	$ 6,602,884	$ 6,352,402
	c. Present value of future employer contributions		
	i. Normal contributions	$ 909,050	$ 407,722
	ii. Accrued liability contributions	22,995,003	22,073,826
	iii. Total future employer contributions	$ 23,904,053	$ 22,481,548
	d. Total assets	$ 57,950,741	$ 55,864,887
2.	Liabilities		
	a. Employee annuity savings fund		
	i. Past member contributions	$ 9,106,401	$ 8,501,051
	ii. Present value of future member contributions	6,602,884	6,352,402
	iii. Total contributions to employee annuity savings fund	$ 15,709,285	$ 14,853,453
	b. Employer annuity accumulation fund		
	i. Benefits currently in payment	$ 31,051,873	$ 30,760,223
	ii. Benefits to be provided to other members	11,189,583	10,251,211
	iii. Total benefits payable from employer annuity accumulation fund	$ 42,241,456	$ 41,011,434
	c. Total liabilities	$ 57,950,741	$ 55,864,887

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

Item	July 1, 2019	July 1, 2018
(1)	(2)	(3)
1. Cash and cash equivalents (operating cash)	$ 2,098,978	$ 2,002,590
2. Receivables	1,542,981	863,848
3. Investments		
a. Short-term securities	$ 340,059	$ 497,097
b. Fixed income (global)	3,899,462	4,482,965
c. Global public equities	9,827,095	9,138,590
d. Opportunistic	2,300,496	2,622,481
e. Alternative investments	8,574,936	8,054,600
f. Total investments	$ 24,942,048	$ 24,795,733
4. Securities lending cash collateral invested	$ 34,886	$ 29,348
5. Prepaid administrative expenses	3,294	3,075
6. Capital assets, net of accumulated depreciation	2,010	2,126
7. Total assets	$ 28,624,197	$ 27,696,720
8. Liabilities		
a. Due to other systems	$ 119	$ 278
b. Accounts payable	1,081,545	728,900
c. Investment fees payable	9,756	10,783
d. Obligations under securities lending	34,886	29,348
e. Deferred retirement benefits	70	377,263
f. Due to employee insurance program	72,466	65,787
g. Benefit payable	4,882	4,082
h. Other liabilities	181,557	65,363
i. Total liabilities	$ 1,385,281	$ 1,281,804
9. Total market value of assets available for benefits (Item 7 - Item 8.i.)	$ 27,238,916	$ 26,414,916
10. Asset allocation (investments)[1]		
a. Short-term securities	9.7%	8.0%
b. Fixed income	14.3%	17.0%
c. Public equities	36.1%	34.6%
d. Global tactical asset allocation	8.4%	9.9%
e. Alternative investments	31.5%	30.5%
f. Total investments	100.0%	100.0%

[1] These asset allocations are calculated based on the dollar amounts shown in items 1. through 9. above and, due to cash flow and rebalancing timing, may be slightly different than the allocation percentages reported by the South Carolina Retirement System Investment Commission.

Reconciliation of System Net Assets

(Dollar amounts expressed in thousands)

	Year Ending	
	July 1, 2019	July 1, 2018
	(1)	(2)
1. Value of assets at beginning of year	$ 26,414,916	$ 25,732,829
2. Revenue for the year		
a. Contributions		
i. Member contributions	$ 880,664	$ 868,681
ii. Employer contributions	1,450,628	1,300,832
ii. Nonemployer contributions	88,706	104,974
iii. Total	$ 2,419,998	$ 2,274,487
b. Income		
i. Interest, dividends, and other income	$ 523,957	$ 509,945
ii. Investment expenses	(279,952)	(317,426)
iii. Net	$ 244,005	$ 192,519
c. Net realized and unrealized gains (losses)	1,255,386	1,794,429
d. Total revenue	$ 3,919,389	$ 4,261,435
3. Expenditures for the year		
a. Disbursements		
i. Refunds	$ 118,067	$ 113,867
ii. Regular annuity benefits	2,938,416	3,426,650
iii. Other benefit payments	22,126	22,639
iv. Transfers to other systems	1,244	1,534
v. Total	$ 3,079,853	$ 3,564,690
b. Administrative expenses and depreciation	15,536	14,658
c. Total expenditures	$ 3,095,389	$ 3,579,348
4. Increase in net assets (Item 2. - Item 3.)	$ 824,000	$ 682,087
5. Value of assets at end of year (Item 1. + Item 4.)	$ 27,238,916	$ 26,414,916
6. Net external cash flow		
a. Dollar amount	$ (675,391)	$ (1,304,861)
b. Percentage of market value	-2.5%	-5.0%

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

		Year Ending June 30, 2019
1.	Actuarial value of assets at beginning of year	$ 27,030,937
2.	Market value of assets at beginning of year	$ 26,414,916
3.	Net new investments	
	a. Contributions	$ 2,419,998
	b. Disbursements	(3,095,389)
	c. Subtotal	(675,391)
4.	Market value of assets at end of year	$ 27,238,916
5.	Net earnings (Item 4. - Item 2. - Item 3.c.)	$ 1,499,391
6.	Assumed investment return rate for fiscal year	7.25%
7.	Expected return (Item 6. x (Item 2. + 1/2 Item 3.c))	$ 1,890,598
8.	Excess return (Item 5. - Item 7.)	$ (391,207)

9. Excess return on assets as of June 30, 2019:

	Fiscal Year Ending June 30, (1)	Excess Return (2)	Percent Deferred (3)	Deferred Amount (4)
a.	2019	$ (391,207)	80%	$ (312,966)
b.	2018	168,619	60%	101,171
c.	2017	1,031,041	40%	412,416
d.	2016	(2,027,545)	20%	(405,509)
e.	2015	(2,792,616)	0%	0
f.	Total			$ (204,888)

10.	Actuarial value of assets as of June 30, 2019 (Item 4. - Item 9.f.)	$ 27,443,804
11.	Expected actuarial value as of June 30, 2019	$ 28,290,806
12.	Asset gain (loss) for year (Item 10. - Item 11.)	$ (847,002)
13.	Asset gain (loss) as % of the actuarial value of assets	-3.1%
14.	Ratio of actuarial value to market value	100.8%

Estimation of Yields
(Dollar amounts expressed in thousands)

	Year Ending	
	July 1, 2019	July 1, 2018
	(1)	(2)
1. Market value yield		
a. Beginning of year market assets	$ 26,414,916	$ 25,732,829
b. Contributions to fund during the year	2,419,998	2,274,487
c. Disbursements	(3,095,389)	(3,579,348)
d. Investment income (net of investment expenses)	1,499,391	1,986,948
e. End of year market assets	$ 27,238,916	$ 26,414,916
f. Estimated dollar-weighted market value yield	5.7%	7.9%
2. Actuarial value yield		
a. Beginning of year actuarial assets	$ 27,030,937	$ 27,241,570
b. Contributions to fund during the year	2,419,998	2,274,487
c. Disbursements	(3,095,389)	(3,579,348)
d. Investment income (net of investment expenses)	1,088,258	1,094,228
e. End of year actuarial assets	$ 27,443,804	$ 27,030,937
f. Estimated actuarial value yield	4.1%	4.1%

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[1]	UAAL as % of Payroll (4)/(6)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
2005	21,625,510	30,217,471	8,591,961	71.6%	6,356,489	135.2%
2006	22,293,446	32,018,519	9,725,073	69.6%	6,733,379	144.4%
2007	23,541,438	33,766,678	10,225,240	69.7%	7,093,181	144.2%
2008	24,699,678	35,663,419	10,963,741	69.3%	7,559,172	145.0%
2009	25,183,062	37,150,315	11,967,253	67.8%	7,761,808	154.2%
2010	25,400,331	38,774,029	13,373,698	65.5%	7,769,820	172.1%
2011	25,604,823	38,011,610	12,406,787	67.4%	7,687,558	161.4%
2012	25,540,749	39,457,708	13,916,959	64.7%	7,356,231	189.2%
2013	25,753,068	41,196,062	15,442,994	62.5%	7,434,820	207.7%
2014	26,910,740	42,889,614	15,978,874	62.7%	7,539,996	211.9%
2015	27,365,921	44,119,176	16,753,255	62.0%	7,765,588	215.7%
2016	27,293,968	45,859,906	18,565,938	59.5%	8,213,042	226.1%
2017	27,241,570	48,374,725	21,133,155	56.3%	8,592,885	245.9%
2018	27,030,937	49,104,763	22,073,826	55.0%	9,183,081	240.4%
2019	27,443,804	50,438,807	22,995,003	54.4%	9,272,010	248.0%

[1] Covered payroll does not include payroll attributable to members in ORP or working retirees.

Summary of Principle Assumptions and Methods

Below is a summary of the principle economic assumptions, cost method, and the method for financing the unfunded actuarial accrued liability:

Valuation date:	July 1, 2019
Actuarial cost method:	Entry Age Normal
Amortization method:	Level percentage of payroll
Amortization period for contribution rate:	28-year maximum, closed period[1]
Asset valuation method:	5-Year Smoothed
Actuarial assumptions:	
Investment rate of return[2]	7.25%
Projected salary increases	3.00% to 12.50% (varies by service)
Inflation	2.25%
Post-retirement benefit adjustments[3]	1.00%
Retiree Mortality	2016 Public Retirees of South Carolina Mortality Table for Males and Females, projected using AA from the year 2016. Male rates multiplied by 100% for non-educators and 92% for educators. Female rates multiplied by 111% for non-educators and 98% for educators.

[1] The employer and member contribution rates are determined in accordance with Section 9-1-1085 of the South Carolina Code. For 2019 the funding period determined on an actuarial value of asset basis may not exceed 28 years. Contribution rates are not permitted to decrease until the ratio of the actuarial value of assets and the actuarial accrued liability is at least 85%.

[2] This is a prescribed assumption in Section 9-16-335 of South Carolina State Code.

[3] The benefit increase is the lesser of 1.00% or $500 annually.

Solvency Test
(Dollar amounts expressed in thousands)

	Actuarial Accrued Liability				Portion of Aggregate Accrued Liabilities Covered by Assets		
July 1,	Active Member Contributions	Retirants & Beneficiaries	Active & Inactive Members (Employer Financed)	Valuation Assets	Active	Retirants	ER Financed
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
2005	$ 4,915,423	$ 16,891,954	$ 8,410,094	$ 21,625,510	100.0%	98.9%	0.0%
2006	5,229,175	17,800,254	8,989,090	22,293,446	100.0%	95.9%	0.0%
2007	5,464,756	19,084,672	9,217,250	23,541,438	100.0%	94.7%	0.0%
2008	5,708,022	20,624,862	9,329,937	24,699,678	100.0%	92.1%	0.0%
2009	5,980,022	21,381,561	9,788,732	25,183,062	100.0%	89.8%	0.0%
2010	6,222,854	22,585,243	9,965,932	25,400,331	100.0%	84.9%	0.0%
2011	6,472,646	23,160,658	8,378,306	25,604,823	100.0%	82.6%	0.0%
2012	6,459,192	24,732,406	8,266,110	25,540,749	100.0%	77.2%	0.0%
2013	6,491,895	26,548,472	8,155,695	25,753,068	100.0%	72.6%	0.0%
2014	6,717,327	27,942,644	8,229,643	26,910,740	100.0%	72.3%	0.0%
2015	7,054,277	28,645,954	8,418,945	27,365,921	100.0%	70.9%	0.0%
2016	7,447,442	29,830,649	8,581,815	27,293,968	100.0%	66.5%	0.0%
2017	7,938,850	30,745,598	9,690,277	27,241,570	100.0%	62.8%	0.0%
2018	8,501,051	30,760,223	9,843,489	27,030,937	100.0%	60.2%	0.0%
2019	9,106,401	31,051,873	10,280,533	27,443,804	100.0%	59.1%	0.0%

SECTION D

MEMBERSHIP DATA

Membership Tables

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Summary of Membership Data

		July 1, 2019 (1)	July 1, 2018 (2)
1.	Active members		
a.	Males	62,220	60,827
b.	Females	138,044	135,357
c.	Total members	200,264	196,184
d.	Total annualized prior year salaries	$ 8,889,143,919	$ 8,500,018,871
e.	Average salary	$ 44,387	$ 43,327
f.	Average age	45.3	45.2
g.	Average service	10.2	10.1
h.	Member contributions with interest	$ 8,047,590,539	$ 7,477,151,807
i.	Average contributions with interest	$ 40,185	$ 38,113
2.	Vested inactive members		
a.	Number	22,318	22,725
b.	Total annual deferred benefits	$ 157,996,923	$ 158,516,245
c.	Average annual deferred benefit	$ 7,079	$ 6,975
3.	Nonvested inactive members		
a.	Number	168,795	160,208
b.	Member contributions with interest	$ 306,815,527	$ 256,552,215
c.	Average contributions with interest	$ 1,818	$ 1,601
4.	Service retirees		
a.	Number	121,544	119,619
b.	Total annual benefits	$ 2,665,971,508	$ 2,600,913,042
c.	Average annual benefit	$ 21,934	$ 21,743
d.	Average age at the valuation date	71.0	70.6
e.	Average age at retirement date	59.0	59.0
5.	Disabled retirees		
a.	Number	12,394	12,623
b.	Total annual benefits	$ 177,307,639	$ 179,033,020
c.	Average annual benefit	$ 14,306	$ 14,183
d.	Average age at the valuation date	66.0	65.4
e.	Average age at retirement date	51.9	51.9
6.	Beneficiaries		
a.	Number	10,354	10,036
b.	Total annual benefits	$ 131,232,931	$ 126,197,858
c.	Average annual benefit	$ 12,675	$ 12,575
d.	Average age at the valuation date	67.9	67.9

Summary of Contributing Membership Data

(Dollar amounts expressed in thousands)

	June 30, 2019 (1)	June 30, 2018 (2)
1. Active Members		
a. Number of state employees	54,180	52,870
Total annual compensation	$ 2,634,376	$ 2,524,592
b. Number of public school employees	89,477	87,343
Total annual compensation	$ 3,775,414	$ 3,592,284
c. Number of other agency employees	56,607	55,971
Total annual compensation	$ 2,479,354	$ 2,383,143
Total number of active members	200,264	196,184
Total annual compensation	$ 8,889,144	$ 8,500,019
2. TERI Paricipants		
a. Number of state employees	-	1,419
Total annual compensation	$ -	$ 91,189
b. Number of public school employees	-	2,377
Total annual compensation	$ -	$ 140,471
c. Number of other agency employees	-	279
Total annual compensation	$ -	$ 14,876
Number of active TERI partipants	-	4,075
Total annual compensation	$ -	$ 246,536
3. Rehired Retired Participants		
a. Number of state employees	3,492	3,494
Total annual compensation	$ 133,880	$ 134,682
b. Number of public school employees	7,847	7,319
Total annual compensation	$ 278,779	$ 256,804
c. Number of other agency employees	2,495	2,461
Total annual compensation	$ 111,776	$ 109,551
Number of rehired retired members	13,834	13,274
Total annual compensation	$ 524,435	$ 501,037
4. ORP Participants		
a. Number of state employees	17,005	16,192
Total annual compensation	$ 1,078,350	$ 1,020,759
b. Number of public school employees	11,582	10,948
Total annual compensation	$ 482,316	$ 444,558
Number of ORP members	28,587	27,140
Total annual compensation	$ 1,560,666	$ 1,465,317
5. All Groups Combined		
a. Number of state employees	74,677	73,975
Total annual compensation	$ 3,846,606	$ 3,771,222
b. Number of public school employees	108,906	107,987
Total annual compensation	$ 4,536,509	$ 4,434,117
c. Number of other agency employees	59,102	58,711
Total annual compensation	$ 2,591,130	$ 2,507,570
Total number members	242,685	240,673
Total annual compensation	$ 10,974,245	$ 10,712,909

Note: Total compensation is the annualized pay for the prior year. The TERI participant information is as of June 30, 2018, the last effective date of the TERI program.

Summary of Historical Active Membership

July 1,	Number of Employers[2]	Active Members: Number	Active Members: Percent Increase /(Decrease)	Covered Payroll[1]: Amount in Thousands	Covered Payroll[1]: Percent Increase /(Decrease)	Average Annual Pay: Amount	Average Annual Pay: Percent Increase /(Decrease)	Average Age	Average Service
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
2005	768	181,022	-0.4%	6,356,489	2.8%	35,114	3.30%	44	10
2006	763	184,282	1.8%	6,733,379	5.9%	36,538	4.06%	45	10
2007	777	187,968	2.0%	7,093,181	5.3%	37,736	3.28%	45	10
2008	776	192,820	2.6%	7,559,172	6.6%	39,203	3.89%	45	10
2009	781	192,319	-0.3%	7,761,808	2.7%	40,359	2.95%	45	10
2010	800	190,239	-1.1%	7,769,820	-4.7%	40,842	1.20%	45	10
2011	803	187,611	-1.4%	7,687,558	-1.1%	40,976	0.33%	45	11
2012	806	185,748	-1.0%	7,356,231	-4.3%	39,603	-3.35%	45	10
2013	808	184,690	-0.6%	7,434,820	1.1%	40,256	1.65%	45	10
2014	810	185,265	0.3%	7,539,996	1.4%	40,698	1.10%	45	10
2015	816	187,318	1.1%	7,765,588	3.0%	41,457	1.86%	45	10
2016	812	190,923	1.9%	8,213,042	5.8%	43,018	3.77%	45	10
2017	807	193,985	1.6%	8,592,885	4.6%	44,297	2.97%	45	10
2018	812	196,184	1.1%	8,797,592	2.4%	44,844	1.23%	45	10
2019	814	200,264	2.1%	9,272,010	5.4%	46,299	3.25%	45	10

[1] Covered payroll is the annualized, projected compensation for the following year and does not include payroll attributable to members in ORP or working retirees.

[2] Based on the number of employers that made a contribution during FY 2019. Also, each agency is considered to be separate participating employer for disclosure in this schedule.

Distribution of Active Members by Age and by Years of Service

	Years of Credited Service												
Attained Age	0 Count & Avg. Comp.	1 Count & Avg. Comp.	2 Count & Avg. Comp.	3 Count & Avg. Comp.	4 Count & Avg. Comp.	5-9 Count & Avg. Comp.	10-14 Count & Avg. Comp.	15-19 Count & Avg. Comp.	20-24 Count & Avg. Comp.	25-29 Count & Avg. Comp.	30-34 Count & Avg. Comp.	35 & Over Count & Avg. Comp.	Total Count & Avg. Comp.
Under 20	450	43	5	0	0	0	0	0	0	0	0	0	498
	$11,780	$11,551	$8,696	$0	$0	$0	$0	$0	$0	$0	$0	$0	$11,730
20-24	3,355	2,130	894	305	112	45	0	0	0	0	0	0	6,841
	$21,748	$28,479	$30,594	$31,099	$32,328	$28,632	$0	$0	$0	$0	$0	$0	$25,635
25-29	3,524	3,434	3,221	2,683	1,973	2,744	34	0	0	0	0	0	17,613
	$27,158	$31,896	$35,378	$37,237	$38,305	$40,302	$38,736	$0	$0	$0	$0	$0	$34,439
30-34	2,634	2,479	2,202	2,005	1,853	7,676	2,118	41	0	0	0	0	21,008
	$28,863	$33,634	$37,760	$39,257	$40,432	$44,770	$48,566	$35,172	$0	$0	$0	$0	$40,182
35-39	2,271	2,147	1,760	1,572	1,463	5,463	6,637	1,735	47	0	0	0	23,095
	$28,380	$33,927	$38,216	$40,124	$42,158	$47,203	$52,115	$54,841	$46,093	$0	$0	$0	$44,615
40-44	1,912	1,883	1,567	1,387	1,232	4,626	4,595	4,940	1,918	27	0	0	24,087
	$28,510	$33,752	$36,248	$40,208	$41,791	$47,290	$52,324	$59,024	$61,459	$42,598	$0	$0	$47,823
45-49	1,834	1,706	1,474	1,333	1,229	4,756	4,469	4,114	5,652	1,541	32	0	28,140
	$29,165	$34,433	$36,233	$40,391	$40,073	$45,113	$51,308	$55,965	$63,710	$65,451	$52,737	$0	$49,945
50-54	1,570	1,515	1,314	1,201	1,044	4,062	4,148	3,540	3,926	3,804	779	12	26,915
	$27,965	$33,803	$36,205	$38,549	$39,585	$43,763	$47,022	$51,648	$58,228	$65,672	$66,050	$65,367	$48,918
55-59	1,323	1,264	1,190	1,094	910	3,632	4,002	3,680	3,687	2,705	1,452	197	25,136
	$27,901	$33,668	$35,339	$37,858	$38,621	$42,596	$45,122	$48,529	$53,123	$60,414	$67,264	$68,917	$47,044
60-64	773	730	710	664	701	2,889	2,886	2,600	2,781	1,938	727	307	17,706
	$26,972	$28,752	$31,958	$35,042	$36,556	$41,212	$45,136	$47,736	$51,112	$58,288	$65,049	$69,231	$45,776
65 & Over	671	568	472	493	379	1,821	1,599	1,155	926	623	275	243	9,225
	$17,222	$19,119	$21,494	$25,643	$25,678	$33,300	$42,180	$47,549	$53,663	$56,469	$64,335	$79,595	$39,008
Total	20,317	17,899	14,809	12,737	10,896	37,714	30,488	21,805	18,937	10,638	3,265	759	200,264
	$26,366	$32,115	$35,413	$38,032	$39,314	$43,986	$48,974	$53,147	$57,899	$62,360	$66,092	$72,407	$44,387

Schedule of Annuitants by Type of Benefit

Type of Benefit/ Form of Payment	Number		Annual Benefits Amount		Average Monthly Benefit
(1)	(2)		(3)		(4)
Service:					
Maximum & QDRO	82,966	$	1,703,458,752	$	1,711
100% J&S	20,596		484,629,809		1,961
50% J&S	12,686		347,232,609		2,281
10 Years C&L	293		6,665,389		1,896
Level Income	5,003		123,984,949		2,065
Subtotal:	121,544	$	2,665,971,508		1,828
Disability:					
Maximum	10,144	$	147,938,455	$	1,215
100% J&S	1,389		15,598,553		936
50% J&S	759		12,420,086		1,364
10 Years C&L	102		1,350,545		1,103
Subtotal:	12,394	$	177,307,639		1,192
Beneficiaries:	10,354	$	131,232,931	$	1,056
Total:	144,292	$	2,974,512,078	$	1,718

Distribution of Annuitants by Monthly Benefit

Monthly Benefit Amount (1)			Number of Annuitants (2)	Female (3)	Male (4)	Average Service (5)
Under $200			7,197	4,652	2,545	6.97
$ 200	-	399	12,794	9,115	3,679	10.46
400	-	599	12,628	9,077	3,551	13.45
600	-	799	10,761	7,896	2,865	16.21
800	-	999	9,513	6,865	2,648	18.60
1,000	-	1,199	8,776	6,383	2,393	20.87
1,200	-	1,399	7,762	5,648	2,114	22.69
1,400	-	1,599	7,200	5,178	2,022	23.92
1,600	-	1,799	6,834	4,895	1,939	25.25
1,800	-	1,999	6,314	4,465	1,849	26.38
2,000	-	2,199	6,542	4,647	1,895	27.03
2,200	-	2,399	7,096	5,219	1,877	27.76
2,400	-	2,599	7,504	5,671	1,833	28.16
2,600	-	2,799	7,273	5,542	1,731	28.44
2,800	-	2,999	5,786	4,198	1,588	28.89
3,000	-	3,199	4,222	2,903	1,319	29.15
3,200	-	3,399	3,257	2,043	1,214	29.42
3,400	-	3,599	2,289	1,353	936	29.55
3,600	-	3,799	1,861	1,059	802	29.81
3,800	-	3,999	1,549	804	745	29.66
4,000	-	4,199	1,296	639	657	29.87
4,200	-	4,399	1,050	499	551	30.20
4,400	-	4,599	862	352	510	30.09
4,600	-	4,799	668	264	404	30.64
4,800	-	4,999	553	223	330	30.52
5,000	-	5,499	911	337	574	30.86
5,500	-	5,999	591	210	381	31.10
6,000	-	6,499	371	95	276	31.78
6,500	-	6,999	232	69	163	31.23
7,000	-	7,499	178	40	138	31.38
7,500	-	7,999	128	24	104	31.52
8,000	&	Over	294	62	232	32.42
Total			144,292	100,427	43,865	21.77

Average age at retirement for service retirees as of July 1, 2019 is age 59.0.

Distribution of Average Annual Benefit by Employer and Age

Current Age	Public School		State		Other		Total	
	Number of Annuitants	Average Annual Benefit Amount	Number of Annuitants	Average Annual Benefit Amount	Number of Annuitants	Average Annual Benefit Amount	Number of Annuitants	Average Annual Benefit Amount
(1)	(2)	(3)	(2)	(3)	(4)	(5)	(6)	(7)
Under 50	824	$ 9,362	903	$ 9,077	737	$ 8,723	2,464	$ 9,066
50 - 54	1,092	22,770	1,075	21,668	852	18,511	3,019	21,176
55 - 59	4,153	27,935	3,184	24,793	1,789	21,883	9,126	25,652
60 - 64	9,462	24,519	6,980	23,249	3,729	19,383	20,171	23,130
65 - 69	16,044	22,257	11,527	22,150	6,359	17,045	33,930	21,244
70 - 74	15,341	21,316	11,356	22,876	5,728	14,778	32,425	20,707
75 - 79	9,040	18,971	7,595	22,574	3,565	12,923	20,200	19,258
80 - 84	5,158	17,210	4,558	21,517	2,084	11,828	11,800	17,923
85 - 89	3,102	17,462	2,618	20,695	1,185	11,456	6,905	17,657
90 And Over	2,120	17,194	1,540	19,334	592	11,291	4,252	17,147
Total	66,336	$ 21,340	51,336	$ 22,232	26,620	$ 15,689	144,292	$ 20,615

Schedule of Retirants Added to And Removed from Rolls

(Dollar amounts except average allowance expressed in thousands)

Year Ended	Added to Rolls Number	Added to Rolls Annual Benefits	Removed from Rolls Number	Removed from Rolls Annual Benefits	Rolls End of the Year Number	Rolls End of the Year Annual Benefits	% Increase in Annual Benefit	Average Annual Benefit
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
2005	7,203	$ 167,748	2,143	$ 23,537	94,667	$ 1,610,417	9.8%	$ 17,011
2006	4,621	118,271	2,083	24,099	97,205	1,704,589	5.8%	17,536
2007	5,944	130,286	2,252	28,455	100,897	1,806,420	6.0%	17,904
2008	6,021	132,856	2,396	30,178	104,522	1,909,098	5.7%	18,265
2009	6,190	101,813	2,698	36,834	108,014	1,974,077	3.4%	18,276
2010	6,596	151,348	3,216	44,049	111,394	2,081,376	5.4%	18,685
2011	6,336	141,242	2,358	31,382	115,372	2,191,236	5.3%	18,993
2012	9,523	205,050	2,968	44,099	121,927	2,352,188	7.3%	19,292
2013	9,088	204,581	3,319	50,142	127,696	2,506,627	6.6%	19,630
2014	7,084	148,060	3,270	49,971	131,510	2,604,716	3.9%	19,806
2015	6,640	133,490	3,510	54,660	134,640	2,683,547	3.0%	19,931
2016	6,515	133,741	3,300	50,824	137,855	2,766,463	3.1%	20,068
2017	6,044	132,616	3,611	57,354	140,288	2,841,725	2.7%	20,256
2018	5,841	127,882	3,851	63,463	142,278	2,906,144	2.3%	20,426
2019	5,753	130,114	3,739	61,746	144,292	2,974,512	2.4%	20,615

Annual benefits added to rolls includes the benefit adjustments provided to continuing retirees.

SECTION E

ASSESSMENT AND DISCLOSURE OF RISK

Risks Associated with Measuring the Accrued Liability And Actuarially Determined Contribution

(As Required by ASOP No. 51)

The determination of SCRS's accrued liability, actuarially determined contribution, and calculated funding period requires the use of assumptions regarding future economic and demographic experience. The risk measures illustrated in this section are intended to aid stakeholders in understanding the effects when future experience differs from the assumptions used in performing an actuarial valuation. These risk measures may also help with illustrating the potential volatility in the funded status and actuarially determined contributions that result from differences between actual experience and the expected experience based on the actuarial assumptions.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience (economic and demographic) differing from the assumptions, changes in assumptions due to changing conditions, changes in contribution requirements due to modifications to the funding policy, and changes in the liability and cost due to changes in plan provisions or applicable law. The scope of an actuarial valuation does not include an analysis of the potential range of such future measurements.

Examples of risks that may reasonably be anticipated to significantly affect the System's future financial condition include:

- Investment risk – actual investment returns may differ from expected returns;
- Longevity risk – members may live longer or shorter than expected and receive pensions for a time period different than assumed;
- Other demographic risks – members may terminate, retire or become disabled at times or with benefits other than assumed resulting in actual future accrued liabilities and contributions differing from expected;
- Salary and payroll risk – actual salaries and total payroll may differ from expected, resulting in actual future accrued liabilities and contributions differing from expected;
- Asset/Liability mismatch – changes in assets may be inconsistent with changes in liabilities, thereby altering the relative difference between the assets and liabilities, which may alter the funded status and contribution requirements;
- Contribution risk – actual contributions may differ from expected future contributions. For example, actual contributions are not made in accordance with the System's funding policy or Statute, other anticipated payments to the plan are not made, or material changes occur in the anticipated number of covered employees, covered payroll, or another relevant contribution base.

On the other hand, effects of certain experience can generally be anticipated. For example, if the investment return since the most recent actuarial valuation is less (or more) than the assumed rate of return, the funded status of the plan can be expected to decrease (or increase) more than anticipated.

The contribution rate in this report was established in accordance with Section 9-1-1085 of the South Carolina Code, as amended by the Retirement System Funding and Administration Act of 2017. However, stakeholders should be aware that the scheduled contribution rates specified in State Code do not necessarily guarantee that the contribution requirements will not increase in a future year.

Employer Risk with Contribution Rates

The funding policy, as last amended by the Retirement System Funding and Administration Act of 2017, is intended to finance the unfunded actuarial accrued liability over a reasonable time period and provide stability in the employer contribution rates so employers are better able to budget their pension cost in future years. The greater the difference between the calculated funding period based on the contribution rate specified in State Code and the maximum permitted funding period also specified in State Code, the greater the ability for the System to incur some adverse experience without requiring an increase in the employer contribution rate.

However, providing stability in the contribution rates means that projecting the year the fund actually attains a 100% funded ratio becomes less certain. If actual experience is more favorable than assumed, then the year the fund attains a 100% funded ratio will be earlier than projected, but the projected year the fund attains a 100% funded ratio will be later than projected if actual experience is less favorable than assumed.

Plan Maturity Measures

Risks faced by a pension plan evolve over time. A relatively new plan with virtually no assets and paying few benefits will experience lower investment risk than a mature plan with a significant amount of assets and large number of members receiving benefits. There are a few measures that can assist stakeholders in understanding and comparing the maturity of a plan to other systems, which include:

- <u>Ratio of market value of assets to payroll</u>: The relationship between assets and payroll is a useful indicator of the potential volatility of contributions. If assets are approximately the same as covered payroll, an investment return that is 5% different than assumed would equal 5% of payroll. In another example, if the assets are approximately twice as large as covered payroll, an investment return that is 5% different than assumed would equal 10% of payroll. A ratio that increases over time generally indicates the potential of an increasing volatility in employer contribution rates as a percentage of payroll.
- <u>Ratio of actuarial accrued liability to payroll</u>: The ratio of actuarial accrued liability to payroll can be used as a measure to indicate the potential volatility of contributions due to volatility in the liability experience. For instance, if the actuarial accrued liability is 5 times the size of the covered payroll, then a change in the liability that is 2% different than expected would be a change in magnitude that is 10% of payroll. A ratio that increases over time generally indicates the potential of an increasing volatility in employer contribution rates as a percentage of payroll.

- Ratio of active to retired members: A relatively mature open plan is likely to have close to the same number of actives to retirees resulting in a ratio that is around 1.0. On the other hand, a super-mature plan, or a plan that is closed to new entrants will have more retirees than active members resulting in a ratio below 1.0. As this ratio declines, a larger portion of the total actuarial accrued liability in the System is attributable to retirees. This metric also typically moves in tandem with the liability to payroll metric, which provides an indication of potential contribution volatility.

- Ratio of net cash flow to market value of assets: A negative net cash flow means that benefit payments exceed contributions and the plan is depending on investment earnings and possibly existing funds to make payments to retirees. A certain amount of negative net cash flow is expected to occur when benefits are prefunded and the plan has matured. However, a relatively large negative net cash flow as a percent of assets may be an indication of the need for additional contributions for a plan with a low funded ratio.

The following exhibit provides a summary of these measures for SCRS. We have also included these metrics for the prior four years so stakeholders can identify how these measures are trending.

	July 1,				
Measure	2019	2018	2017	2016	2015
Ratio of the market value of assets to total payroll	2.40	2.37	2.36	2.29	2.51
Ratio of actuarial accrued liability to payroll	4.45	4.41	4.43	4.37	4.41
Ratio of actives to retirees and beneficiaries	1.39	1.38	1.38	1.38	1.39
Ratio of net cash flow to market value of assets	-2.5%	-4.9%	-4.1%	-4.0%	-3.9%

Note: For purposes of this analysis, includes payroll for all members that the System receives contributions, including working retirees and members in the ORP.

Appendix A

Actuarial Assumptions and Methods

Summary of Actuarial Methods and Assumptions

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

Investment Rate of Return

Assumed annual rate of 7.25% composed of a 2.25% inflation component and a 5.00% real rate of return, net of investment expenses.

This is a prescribed assumption set by another party in Section 9-16-335 of the South Carolina State Code.

Rates of Annual Salary Increase

Rates of annual salary increase are assumed to vary for the first 20 years of service due to expected merit and promotional increases which differs by employee group. Beginning with the 21st year of service, the assumed annual rate of increase is 3.00% for both groups and for all future years of service.

The 3.00% rate of increase is composed of a 2.25% inflation component and a 0.75% real rate of wage increase (productivity) component.

Active Male & Female Salary Increase Rate				
Years of Service	General Employees		Teachers	
	Annual Promotional/Longevity Rates of Increase	Total Annual Rate of Increase Including 3.00% Wage Inflation	Annual Promotional/Longevity Rates of Increase	Total Annual Rate of Increase Including 3.00% Wage Inflation
1	4.00%	7.00%	7.00%	10.00%
2	3.00%	6.00%	9.50%	12.50%
3	2.25%	5.25%	3.00%	6.00%
4	1.75%	4.75%	2.75%	5.75%
5	1.50%	4.50%	2.50%	5.50%
6	1.25%	4.25%	2.25%	5.25%
7	1.00%	4.00%	2.00%	5.00%
8	1.00%	4.00%	1.75%	4.75%
9	1.00%	4.00%	1.75%	4.75%
10	0.75%	3.75%	1.50%	4.50%
11	0.50%	3.50%	1.50%	4.50%
12	0.50%	3.50%	1.25%	4.25%
13	0.50%	3.50%	1.00%	4.00%
14	0.50%	3.50%	1.00%	4.00%
15	0.50%	3.50%	0.75%	3.75%
16	0.50%	3.50%	0.75%	3.75%
17	0.50%	3.50%	0.50%	3.50%
18	0.50%	3.50%	0.50%	3.50%
19	0.25%	3.25%	0.25%	3.25%
20	0.25%	3.25%	0.25%	3.25%
21+	0.00%	3.00%	0.00%	3.00%

Active Member Decrement Rates

a. Assumed rate of Service Retirement are shown in the following tables. The first table provides retirement rates for Class Two members who attain age 65 before attaining 28 years of service. The second table is based on service and is for Class Two members who attain 28 years of service before age 65. The third table provides the retirement rates applicable to Class Three members.

Annual Age Based Retirement Rates*								
	Class Two							
	General Employees				Teachers			
	Reduced		Normal		Reduced		Normal	
Age	Male	Female	Male	Female	Male	Female	Male	Female
55	10%	9%	0%	0%	10%	9%	0%	0%
56	9%	10%	0%	0%	11%	9%	0%	0%
57	9%	10%	0%	0%	11%	10%	0%	0%
58	9%	11%	0%	0%	11%	10%	0%	0%
59	9%	11%	0%	0%	11%	10%	0%	0%
60	9%	11%	0%	0%	11%	10%	0%	0%
61	9%	11%	0%	0%	11%	13%	0%	0%
62	22%	20%	0%	0%	22%	20%	0%	0%
63	16%	18%	0%	0%	22%	20%	0%	0%
64	16%	18%	0%	0%	22%	20%	0%	0%
65	0%	0%	20%	22%	0%	0%	20%	25%
66	0%	0%	20%	22%	0%	0%	20%	25%
67	0%	0%	17%	19%	0%	0%	20%	20%
68	0%	0%	17%	19%	0%	0%	20%	20%
69	0%	0%	17%	19%	0%	0%	20%	20%
70	0%	0%	17%	19%	0%	0%	20%	20%
71	0%	0%	17%	19%	0%	0%	20%	20%
72	0%	0%	17%	19%	0%	0%	20%	20%
73	0%	0%	17%	19%	0%	0%	20%	20%
74	0%	0%	17%	19%	0%	0%	20%	20%
75	0%	0%	100%	100%	0%	0%	100%	100%

* Retirement rate is 50% at the later of age 62 or when the member is first eligible for a normal retirement benefit (i.e. the first age the member is eligible to concurrently commence benefits and continue employment.)

Class Two Service Based Retirement Rates*				
	General Employees		Teachers	
Years of Service	Male	Female	Male	Female
28	15%	18%	7%	8%
29	10%	10%	8%	9%
30	10%	10%	8%	9%
31	10%	10%	9%	10%
32	10%	10%	10%	11%
33	18%	20%	11%	12%
34	18%	20%	12%	18%
35	18%	20%	13%	18%
36	20%	20%	14%	18%
37	20%	20%	18%	18%
38	20%	20%	17%	19%
39	20%	20%	17%	20%
40+	100%	100%	100%	100%

* Retirement rate is 50% at the later of age 62 or when the member is first eligible for a normal retirement benefit (i.e. the first age the member is eligible to concurrently commence benefits and continue employment.)

Class Three Retirement Rates*									
Age	General Employees				Teachers				Ruleof 90**
	Reduced		Normal		Reduced		Normal		
	Male	Female	Male	Female	Male	Female	Male	Female	
55	0%	0%	0%	0%	0%	0%	0%	0%	20%
56	0%	0%	0%	0%	0%	0%	0%	0%	20%
57	0%	0%	0%	0%	0%	0%	0%	0%	20%
58	0%	0%	0%	0%	0%	0%	0%	0%	20%
59	0%	0%	0%	0%	0%	0%	0%	0%	20%
60	9%	11%	0%	0%	11%	10%	0%	0%	20%
61	9%	11%	0%	0%	11%	13%	0%	0%	20%
62	22%	20%	0%	0%	22%	20%	0%	0%	20%
63	16%	18%	0%	0%	22%	20%	0%	0%	20%
64	16%	18%	0%	0%	22%	20%	0%	0%	20%
65	0%	0%	20%	22%	0%	0%	20%	25%	20%
66	0%	0%	20%	22%	0%	0%	20%	25%	20%
67	0%	0%	17%	19%	0%	0%	20%	20%	20%
68	0%	0%	17%	19%	0%	0%	20%	20%	20%
69	0%	0%	17%	19%	0%	0%	20%	20%	20%
70	0%	0%	17%	19%	0%	0%	20%	20%	20%
71	0%	0%	17%	19%	0%	0%	20%	20%	20%
72	0%	0%	17%	19%	0%	0%	20%	20%	20%
73	0%	0%	17%	19%	0%	0%	20%	20%	20%
74	0%	0%	17%	19%	0%	0%	20%	20%	20%
75	0%	0%	100%	100%	0%	0%	100%	100%	100%

* Retirement rate is 50% at the later of age 62 or when the member is first eligible for a normal retirement benefit (i.e. the first age the member is eligible to concurrently commence benefits and continue employment.)

** The "Rule of 90" retirement rates do not apply if the "Rule of 90" is achieved after age 65.

b. Assumed rates of disability are shown in the following table.

Disability Rates				
Age	General Employees		Teachers	
	Males	Females	Males	Females
25	0.0504%	0.0440%	0.0419%	0.0458%
30	0.1008%	0.0616%	0.0629%	0.0616%
35	0.1512%	0.1232%	0.0838%	0.0616%
40	0.2520%	0.1584%	0.1572%	0.1074%
45	0.3528%	0.2288%	0.2620%	0.2200%
50	0.5040%	0.3872%	0.4192%	0.3520%
55	0.8064%	0.6160%	0.6812%	0.5720%
60	1.0080%	0.9416%	1.0480%	0.8800%
64	1.2600%	1.3112%	1.3100%	1.1000%

There is no differentation between duty and nonduty related disability benefits.

c. Active Member Mortality

Rates of active member mortality are based upon the RP-2014 Mortality Table for Employees with applicable multipliers to better reflect anticipated experience and provide margin for future improvement in mortality.

Active Mortality Rates (Multiplier Applied)				
Age	General Employees		Teachers	
	Males	Females	Males	Females
25	0.0460%	0.0164%	0.0460%	0.0147%
30	0.0429%	0.0207%	0.0429%	0.0185%
35	0.0497%	0.0272%	0.0497%	0.0243%
40	0.0597%	0.0376%	0.0597%	0.0337%
45	0.0924%	0.0624%	0.0924%	0.0558%
50	0.1602%	0.1047%	0.1602%	0.0937%
55	0.2649%	0.1589%	0.2649%	0.1422%
60	0.4454%	0.2320%	0.4454%	0.2076%
64	0.7008%	0.3220%	0.7008%	0.2881%
Multiplier	95%	95%	95%	85%

For purposes of determining active death benefits, 5% of active deaths for general employees are assumed to be duty related.

d. Rates of Withdrawal

Rate of withdrawal for active members prior to eligibility for retirement are for each employee group and differ by gender and service. Sample rates are shown in the tables below.

Withdrawal Rates - Male General Employees															
Age	Years of Service														
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
25	0.200	0.175	0.123	0.103	0.090	0.085	0.071	0.064	0.055	0.050	0.040	0.000	0.000	0.000	0.000
30	0.200	0.175	0.123	0.103	0.090	0.085	0.071	0.064	0.055	0.050	0.040	0.040	0.037	0.034	0.031
35	0.200	0.175	0.123	0.103	0.090	0.085	0.071	0.064	0.055	0.050	0.040	0.040	0.037	0.034	0.031
40	0.200	0.175	0.123	0.103	0.090	0.085	0.071	0.064	0.055	0.050	0.034	0.034	0.034	0.034	0.031
45	0.200	0.175	0.123	0.103	0.090	0.085	0.071	0.064	0.055	0.050	0.031	0.031	0.029	0.026	0.023
50	0.200	0.175	0.123	0.103	0.090	0.085	0.071	0.064	0.055	0.050	0.020	0.020	0.020	0.020	0.020
55	0.200	0.175	0.123	0.103	0.090	0.085	0.071	0.064	0.055	0.050	0.010	0.010	0.010	0.010	0.010
60	0.200	0.175	0.123	0.103	0.090	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Age	Years of Service (Continued)														
	15	16	17	18	19	20	21	22	23	24	25	26	27	28+	
25	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
30	0.029	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
35	0.029	0.026	0.023	0.020	0.018	0.015	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
40	0.029	0.026	0.023	0.020	0.018	0.015	0.013	0.011	0.010	0.009	0.008	0.000	0.000	0.000	
45	0.020	0.020	0.020	0.020	0.018	0.015	0.013	0.011	0.010	0.009	0.008	0.007	0.006	0.000	
50	0.020	0.018	0.015	0.013	0.011	0.010	0.010	0.010	0.010	0.009	0.008	0.007	0.006	0.000	
55	0.010	0.010	0.010	0.010	0.010	0.010	0.009	0.008	0.007	0.006	0.000	0.000	0.000	0.000	
60	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

Withdrawal Rates - Female General Employees															
Age	Years of Service														
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
25	0.230	0.217	0.141	0.118	0.101	0.097	0.084	0.075	0.067	0.057	0.046	0.000	0.000	0.000	0.000
30	0.230	0.217	0.141	0.118	0.101	0.097	0.084	0.075	0.067	0.057	0.046	0.046	0.042	0.038	0.034
35	0.230	0.217	0.141	0.118	0.101	0.097	0.084	0.075	0.067	0.057	0.046	0.046	0.042	0.038	0.034
40	0.230	0.217	0.141	0.118	0.101	0.097	0.084	0.075	0.067	0.057	0.038	0.038	0.038	0.038	0.034
45	0.230	0.217	0.141	0.118	0.101	0.097	0.084	0.075	0.067	0.057	0.034	0.034	0.030	0.026	0.023
50	0.230	0.217	0.141	0.118	0.101	0.097	0.084	0.075	0.067	0.057	0.020	0.020	0.020	0.020	0.020
55	0.230	0.217	0.141	0.118	0.101	0.097	0.084	0.075	0.067	0.057	0.012	0.012	0.012	0.012	0.012
60	0.230	0.217	0.141	0.118	0.101	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Age	Years of Service (Continued)														
	15	16	17	18	19	20	21	22	23	24	25	26	27	28+	
25	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
30	0.030	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
35	0.030	0.026	0.023	0.020	0.018	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
40	0.030	0.026	0.023	0.020	0.018	0.016	0.014	0.013	0.012	0.011	0.010	0.000	0.000	0.000	
45	0.020	0.020	0.020	0.020	0.018	0.016	0.014	0.013	0.012	0.011	0.010	0.009	0.008	0.000	
50	0.020	0.018	0.016	0.014	0.013	0.012	0.012	0.012	0.012	0.011	0.010	0.009	0.008	0.000	
55	0.012	0.012	0.012	0.012	0.012	0.012	0.011	0.010	0.009	0.008	0.000	0.000	0.000	0.000	
60	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

Withdrawal Rates - Male Teachers															
Age	Years of Service														
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
25	0.000	0.217	0.145	0.117	0.098	0.083	0.071	0.061	0.050	0.042	0.039	0.000	0.000	0.000	0.000
30	0.000	0.217	0.145	0.117	0.098	0.083	0.071	0.061	0.050	0.042	0.039	0.030	0.030	0.029	0.028
35	0.000	0.217	0.145	0.117	0.098	0.083	0.071	0.061	0.050	0.042	0.039	0.030	0.030	0.029	0.028
40	0.000	0.217	0.145	0.117	0.098	0.083	0.071	0.061	0.050	0.042	0.039	0.029	0.029	0.029	0.028
45	0.000	0.217	0.145	0.117	0.098	0.083	0.071	0.061	0.050	0.042	0.039	0.028	0.027	0.026	0.024
50	0.000	0.217	0.145	0.117	0.098	0.083	0.071	0.061	0.050	0.042	0.039	0.022	0.022	0.022	0.022
55	0.000	0.217	0.145	0.117	0.098	0.083	0.071	0.061	0.050	0.042	0.039	0.013	0.013	0.013	0.013
60	0.000	0.217	0.145	0.117	0.098	0.083	0.071	0.061	0.050	0.042	0.039	0.008	0.008	0.008	0.008
Age	Years of Service (Continued)														
	15	16	17	18	19	20	21	22	23	24	25	26	27	28+	
25	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
30	0.027	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
35	0.027	0.026	0.024	0.022	0.020	0.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
40	0.027	0.026	0.024	0.022	0.020	0.017	0.015	0.014	0.013	0.012	0.011	0.000	0.000	0.000	
45	0.022	0.022	0.022	0.022	0.020	0.017	0.015	0.014	0.013	0.012	0.011	0.010	0.009	0.000	
50	0.022	0.020	0.017	0.015	0.014	0.013	0.013	0.013	0.013	0.012	0.011	0.010	0.009	0.000	
55	0.013	0.013	0.013	0.013	0.013	0.013	0.012	0.011	0.010	0.009	0.008	0.008	0.008	0.000	
60	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.000	0.000	0.000	0.000	

Withdrawal Rates - Female Teachers															
Age	Years of Service														
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
25	0.000	0.202	0.125	0.103	0.089	0.074	0.069	0.057	0.053	0.046	0.037	0.000	0.000	0.000	0.000
30	0.000	0.202	0.125	0.103	0.089	0.074	0.069	0.057	0.053	0.046	0.037	0.030	0.030	0.027	0.024
35	0.000	0.202	0.125	0.103	0.089	0.074	0.069	0.057	0.053	0.046	0.037	0.030	0.030	0.027	0.024
40	0.000	0.202	0.125	0.103	0.089	0.074	0.069	0.057	0.053	0.046	0.037	0.030	0.027	0.027	0.024
45	0.000	0.202	0.125	0.103	0.089	0.074	0.069	0.057	0.053	0.046	0.037	0.024	0.022	0.020	0.018
50	0.000	0.202	0.125	0.103	0.089	0.074	0.069	0.057	0.053	0.046	0.037	0.018	0.016	0.016	0.016
55	0.000	0.202	0.125	0.103	0.089	0.074	0.069	0.057	0.053	0.046	0.037	0.010	0.009	0.009	0.009
60	0.000	0.202	0.125	0.103	0.089	0.074	0.069	0.057	0.053	0.046	0.037	0.006	0.006	0.006	0.006

Age	Years of Service (Continued)													
	15	16	17	18	19	20	21	22	23	24	25	26	27	28+
25	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
30	0.022	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
35	0.022	0.020	0.018	0.016	0.014	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
40	0.022	0.020	0.018	0.016	0.014	0.012	0.011	0.010	0.009	0.008	0.007	0.000	0.000	0.000
45	0.016	0.016	0.016	0.016	0.014	0.012	0.011	0.010	0.009	0.008	0.007	0.006	0.006	0.000
50	0.016	0.014	0.012	0.011	0.010	0.009	0.009	0.009	0.009	0.008	0.007	0.006	0.006	0.000
55	0.009	0.009	0.009	0.009	0.009	0.009	0.008	0.007	0.006	0.006	0.006	0.006	0.006	0.000
60	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.000	0.000	0.000	0.000

Refund of Member Contributions

The following percentage of vested members are assumed to elect to receive a refund of contributions upon termination of employment prior to becoming eligible to commence a service retirement benefit. This assumption is based on the plan's experience.

Age:	Less than 40	40 - 49	50 or More
Refund rate:	45%	40%	35%

Post Retirement Mortality

a. Healthy retirees and beneficiaries – The 2016 Public Retirees of South Carolina Mortality Table for Males and the 2016 Public Retirees of South Carolina Mortality Table for Females**,** projected using the AA projection table from the year 2016 and with multipliers based on plan experience. The following are sample rates of the base table:

Nondisabled Annuitant Mortality Rates Before Projection (Multiplier Applied)				
Age	General Employees		Teachers	
	Males	Females	Males	Females
50	0.2038%	0.1454%	0.1875%	0.1284%
55	0.3205%	0.2465%	0.2949%	0.2177%
60	0.5863%	0.4265%	0.5394%	0.3765%
65	1.0198%	0.5924%	0.9382%	0.5230%
70	1.5718%	0.9640%	1.4461%	0.8511%
75	2.7195%	1.8534%	2.5019%	1.6363%
80	5.0493%	3.7276%	4.6454%	3.2910%
85	9.1594%	7.0538%	8.4266%	6.2277%
90	15.9042%	12.3489%	14.6319%	10.9026%
Multiplier	100%	111%	92%	98%

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				
Employee Type	Year of Retirement			
	2020	2025	2030	2035
General Employee – Male	20.6	20.9	21.3	21.6
General Employee – Female	22.7	22.8	23.0	23.2
Teacher – Male	21.2	21.5	21.9	22.2
Teacher - Female	23.6	23.8	24.0	24.1

b. A separate table of mortality rates is used for disabled retirees based on the RP-2014 Disabled Mortality table projected using the AA projection table from the year 2014 and with multipliers based on plan experience. The following are sample rates of the base table:

Disabled Annuitant Mortality Rates (Multiplier Applied)				
Age	General Employees		Teachers	
	Males	Females	Males	Females
50	2.5494%	1.4884%	2.5494%	1.4884%
55	2.9211%	1.8099%	2.9211%	1.8099%
60	3.3255%	2.1249%	3.3255%	2.1249%
65	3.9606%	2.6075%	3.9606%	2.6075%
70	5.0433%	3.5254%	5.0433%	3.5254%
75	6.7859%	5.1306%	6.7859%	5.1306%
80	9.5770%	7.6295%	9.5770%	7.6295%
85	14.1629%	11.3025%	14.1629%	11.3025%
90	21.6256%	16.5815%	21.6256%	16.5815%
Multiplier	125%	125%	125%	125%

Asset Valuation Method

The actuarial value of assets is equal to the market value, adjusted for the five-year phase in of the actual investment return in excess of (or less than) the expected investment return on a market value of asset basis. This five-year phase in begins with the investment experience for the fiscal year ending June 30, 2016. The actual return is calculated net of investment expenses, and the expected investment return is equal to the assumed investment return rate multiplied by the prior year's market value of assets, adjusted for contributions, benefits paid, and refunds.

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 percent of payroll 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, on an actuarial value of asset basis, with the expected amount of employer contributions in excess of the employers' portion of the normal cost.

Note, the principle financial measurement calculations in this actuarial valuation, which include the unfunded actuarial accrued liability, funded ratio, contributions rates, and funding period, are based on an actuarial value of assets (smoothed value) basis. The actuarial value of assets is a calculated asset value which may be greater than or less than the market value of assets and is used to dampen some of the volatility in the market value of assets. As a result, many of these measures would be different if they were determined on a market value of asset basis.

Development of the Contribution Rate and Funding Period

The calculation of the employer and member contribution rate as well as the derived funding period takes into account several differences in the contributions paid by the various members as well as the delayed timing (if any) in the effective date of the new contribution rate. Specifically, the factors that are reflected in the calculation of the contribution rate include:

1) The cost (normal cost and actuarial accrued liability) due to incidental death benefits provided to members in the ORP.

2) Member and employer contributions made on the payroll of working retirees are being used to finance the unfunded actuarial accrued liability since these members do not have a normal cost. Also, the number of working retirees is expected to decrease due to changes in working after retirement provisions enacted with the 2012 legislative changes.

3) The money collected on the payroll of members in ORP that is allocated to finance the unfunded liability in SCRS, which is the SCRS employer contribution rate less 5%, is less than the money collected on the payroll of members in SCRS to finance the unfunded actuarial accrued liability.

4) For purposes of calculating the amortization cost and funding period, discrete pay increases and continuous interest was assumed, with amortization payments made at the end of each month.

Unused Annual Leave

To account for the effect of unused annual leave in Annual Final Compensation (AFC) of Class Two members, the AFC for Class Two members is increased 2.14% at their date of retirement. Unused annual leave is not included in the calculation of the AFC for Class Three members.

Unused Sick Leave

To account for the effect of unused sick leave on credited service for Class Two members, the service of active Class Two members who retire is increased 3 months. Unused sick leave is not included in determining the credited service for Class Three members.

Future Post-Retirement Benefit Adjustments

Benefits are assumed to increase by the lesser of 1.00% annually or $500 beginning on the July 1st following the receipt of 12 monthly benefit payments. The $500 limit in the annual increase is not indexed to escalate in future years.

Payroll Growth Rate

The total annual payroll of active members (also applies to ORP members and working retirees) is assumed to increase at an annual rate of 3.00%. This rate represents the underlying expected annual rate of wage inflation and does not anticipate increases in the number of members.

Other Assumptions

1. Valuation payroll (used for determining the amortization contribution rate): Prior fiscal year payroll projected forward one year using the overall payroll growth rate. This was determined for working retirees by dividing the actual member contributions received during the prior fiscal year by the member contribution rate in effect for that year, and then projecting that amount forward one year.

2. The normal cost rate is increased by 0.12% to account for administrative expenses that are paid with plan assets.

3. Individual salaries used to project benefits: Actual salaries from the past fiscal year are used to determine the final average salary as of the valuation date. For future salaries, the salary from the last fiscal year is projected forward with one year’s salary scale.

4. Pay increase timing: Beginning of (fiscal) year. This is equivalent to assuming that reported salaries represent amounts paid to members during the year ended on the valuation date.

5. Percent married: 100% of male and 100% of female employees are assumed to be married.

6. Age difference: Males are assumed to be three years older than their spouses.

7. Percent electing annuity on death (when eligible): All of the spouses of vested, married participants are assumed to elect an immediate life annuity.

8. Inactive Population: All non-vested members are assumed to take an immediate refund.

9. There will be no recoveries once disabled.

10. Decrement timing: Terminations for public school employees are assumed to occur at the beginning of the year. Decrements of all types are assumed to occur mid-year.

11. 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.

12. Decrement relativity: Decrement rates are used directly from the experience study, without adjustment for multiple decrement table effects.

13. Incidence of contributions: Contributions are assumed to be received continuously throughout the year based upon the computed percent of payroll shown in this report, and the actual payroll payable at the time contributions are made.

14. Benefit service: All members are assumed to accrue one year of service each year.

15. All calculations were performed without regard to the compensation limit in IRC Section 401(a)(17) and the benefit limit under IRC Section 415.

Participant Data

Participant data was securely 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 employer 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 or inconsistent data. These had no material impact on the results presented.

APPENDIX B

BENEFIT PROVISIONS

Summary of Benefit Provisions for South Carolina Retirement System (SCRS)

Effective Date: July 1, 1945.

Administration: The South Carolina Public Employee Benefit Authority 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. Under GASB Statement Nos. 27, 67, and 68, it is considered to be a cost-sharing multiple-employer plan.

Eligibility: This System covers all permanent full-time or part-time employees of a covered employer (i.e. public school, state employer, city, county, and other local public governmental entity), unless specifically exempted by Statute or participate in the State Optional Retirement Program (ORP). Also, beginning with the 2012 general election, newly elected officials of the South Carolina General Assembly are also covered by this system.

Employee Contributions: Members are contributing 9.00% of earnable compensation on and after July 1, 2017. These contributions are "picked-up" under Section 414(h) of the Internal Revenue Code. Contributions are credited with interest at the rate of 4.0% per annum while the member is actively employed.

Average Final Compensation (AFC): The monthly average of the member's highest 12 consecutive quarters of earnable compensation (highest 20 consecutive quarters for Class Three members, members who are hired after June 30, 2012). Earnable compensation is the compensation that would be payable to a member if the member worked a full, normal working time, which includes gross salary, sick pay, and deferrals. Compensation due to overtime earned after December 31, 2012 will not be included unless that compensation is for time that is mandated by the employer.

The calculation of the AFC for Class One and Class Two members also includes up to 45 days pay for unused annual leave paid at termination. Members joining the System after January 1, 1996, have their compensation limited in accordance with IRC Section 401(a)(17) for determining benefits.

Service Retirement (Unreduced)*:*

a. Eligibility: Class Two members may retire with an unreduced benefit at age 65 with five years of earned service or after 28 years of creditable service, if earlier. Class Three members may retire with an unreduced benefit at age 65 with eight years of earned service or after the satisfying the rule of 90 (i.e. age plus credited service equals or exceeds 90).

b. Monthly Benefit: 1.82% times the member's AFC times their years of creditable service.

c. Payment Forms: Maximum retirement allowance (Option A) and survivor allowances under Options B and C.

Service Retirement (Reduced):

a. Eligibility: Class Two members may retire with a reduced benefit upon attaining: (1) age 55 with 25 years of creditable service (minimum of 5 years of earned service), or (2) age 60 with five years of earned service. Class Three members may retire with a reduced benefit upon attaining age 60 with eight years of earned service.

b. Reduction: A Class Two member's benefit will be reduced by either an age or service based reduction factor described below, whichever results in the most favorable benefit. A Class Three member's benefit will be reduced by the age based reduction factor described below.

   Age Based: Members retiring after age 60 will have their benefit reduced at the rate of 5% per year for each year of their retirement age precedes age 65.

   Service Based: 4% per year for each year of creditable service that is less than 28.

c. Payment Forms: Maximum retirement allowance (Option A) and survivor allowances under Options B and C.

Disability Retirement:

a. Eligibility: The eligibility for a disability retirement will be based upon the member's entitlement for Social Security disability benefits.

b. Monthly Benefit: The net monthly disability benefit payable is equal to the member's benefit based on their credited service and AFC at the time of their disability.

c. Payment Form: Maximum retirement allowance (Option A) and survivor allowances under Options B and C.

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. Class Two members are vested after five (5) years of earned service. Class Three members are vested after eight (8) years of earned 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 while they were actively employed. Members do not earn interest on their employee contribution account balance while they are inactive.

***Deferred Termination Benefit*:**

a. Eligibility: Member must be vested (i.e. 5 years of earned service for Class Two members and 8 years of earned service for Class Three members) and must elect to leave his/her contributions on deposit.

b. Monthly Benefit: Same as the unreduced or reduced service retirement benefit, based on service and AFC at termination, and commencing once the member is eligible.

c. Payment Form: Maximum retirement allowance (Option A) and survivor allowances under Options B and C.

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). If the member met service eligibility requirement at their time of death, the beneficiary is eligible for a monthly survivor annuity benefit.

***Death while an Active Contributing 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 (i) attained 5 or more years of earned service and (ii) 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 determined under "Option B" described under the Optional Forms of Benefit. For purposes of the benefit calculation, a member under the age of 60 with less than 28 years of creditable service is assumed to be 60 years of age and no age reduction applies.

***Optional Forms of Benefit*:** The System permits members to elect from three forms of benefit at retirement. In each case the benefit amount is adjusted to be actuarially equivalent to the "Option A" form. The optional forms are:

a. Option A (Maximum Retirement Allowance): A life annuity. Upon the member's death, any remaining member contributions and interest will be paid to the member's designated beneficiary.

b. Option B (100% Joint & Survivor with Pop-up): A reduced annuity payable as long as either the member or his/her spouse 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 retirement allowance (Option A), plus any applicable benefit adjustments that would have been granted.

c. Option C (50% Joint & Survivor with Pop-up): 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 retirement allowance (Option A), plus any applicable benefit adjustments that would have been granted.

***Incidental Death Benefit*:**

a. Active Employees: The beneficiary (or estate) of an active employee of an employer participating in the Preretirement Death Benefit Program 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-year membership requirement is waived for members whose death is a result of an injury arising out of and in the course of performing his duties.

For purposes of incidental death benefits, active employees include those members who are receiving a retirement allowance and are actively reemployed and contributing to the system with a participating employer.

b. Post Employment: The beneficiary (or estate) of a retiree, both current and retiree, of an employer participating in the Preretirement Death Benefit Program will receive a one-time payment upon the retiree's death. The amount of the one-time payment is based on the retiree's years of credited service at retirement.

Years of Service Credit	Death Benefit
10 or more, but less than 20	$2,000
20 or more, but less than 28	$4,000
28 or more	$6,000

Postretirement Benefit Increases: Benefits paid to retired members or surviving spouses are increased annually in an amount equal to the lesser of 1.00% of the pension benefit or $500. The $500 limit in the annual increase is not indexed to escalate in future years.

A member electing a reduced early retirement is ineligible to receive a benefit increase until the second July 1 after the earlier of:

(1) the member attains age 60, or

(2) the member would have 28 years of creditable service had he not retired.

APPENDIX C

GLOSSARY

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 ADC.

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 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 that provide the financial information of the plan, such as the funded ratio, unfunded actuarial accrued liability and the ADC.

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 ADC.

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.

Actuarially Determined Contribution (ADC): The employer's periodic required contributions, expressed as a dollar amount or a percentage of covered plan compensation. The ADC consists of the Employer Normal Cost and the Amortization Payment.

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 ADC which is designed to pay interest on and to amortize the Unfunded Actuarial Accrued Liability.

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 ADC. 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 67 and ***GASB 68***: Governmental Accounting Standards Board Statement Nos. 67 and No. 68. These are the governmental accounting standards that set the accounting and reporting rules for public retirement systems and the employers that sponsor, participate in, or contribute to them. Statement No. 67 sets the accounting rules for the financial reporting of the retirement systems, while Statement No. 68 sets the rules for the employers that sponsor, participate in, or contribute to public retirement systems.

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 may not decrease by exactly one year in the subsequent year's actuarial valuation. In some instances, if the initial period is set as 30 years, the same 30-year period is used in determining the Amortization Period each year. In other instances, the amortization period may "float" from year to year, meaning it could increase, decrease, or remain relatively unchanged from the amortization period in the prior year's valuation.

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.