Police Officers Retirement System (PORS)

Actuarial Valuation Report
as of July 1, 2021

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November 30, 2021

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

Subject: Actuarial Valuation as of July 1, 2021

Dear Members of the Board:

This report describes the current actuarial condition of the Police Officers Retirement System (PORS), determines the unfunded liability and calculated funding period based on the scheduled employer and member contribution rates, as well as analyzes changes in this 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) Statements No. 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 PORS. 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 9-11-255 of the South Carolina Code, which first came into existence by the Retirement System Funding and Administration Act of 2017 and last amended by Act 135 and a subsequent budget proviso. In accordance with that statutory schedule, as modified, the employer contribution rate in effect for the fiscal year ending June 30, 2022 is 19.24% and is scheduled to increase by 1.00% of pay for each of the next two fiscal years until an ultimate employer contribution rate of 21.24% of pay is attained for fiscal year 2024.

Additionally, the Statute specifies that the maximum amortization period is 26 years as of July 1, 2021 and the maximum amortization period will decrease by one year in each of the next six 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 increased from 62.5% to 64.3% in the most recent plan year. 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 continue to improve.

If the market value of assets had been used in the calculation instead of actuarial (smoothed) value of assets, the funded ratio for the System would have been 71.0%, compared to 58.3% in the prior year. The increase in the funded ratio on a market value basis is primarily due to favorable investment experience during the last fiscal year. Plan assets earned a 28.49% 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, 2021. The 29.9% return documented in this report was determined on a dollar-weighted basis and assumes mid-year cash flows.

ASSUMPTIONS AND METHODS

South Carolina State Code requires an experience analysis that reviews the economic and demographic assumptions be performed at least every five years. An experience study was performed for the five-year period ending June 30, 2019 and the Board has adopted the assumptions recommended in that report for first use in the July 1, 2021 actuarial valuation. The investment return assumption is a prescribed assumption in Section 9-16-335 in South Carolina State Code and the General Assembly permitted the investment return assumption at July 1, 2021 to decrease from 7.25% to 7.00%. The following is a summary of the assumptions that were adopted by the Board and used in preparing this actuarial valuation:

- Decrease the payroll growth assumption from 3.00% to 2.70%.
- Increase in the assumed rate of salary increases for members.
- Adopt new post-retirement mortality tables specific to South Carolina retiree experience for non-disabled retirees. Mortality for retirees is assumed to improve based on 80% of the ultimate rate in increase in the MP-2019 mortality improvement scale.
- Use variations of the Pub-2010 Public Retirement Plan Mortality tables for disabled retirees and active members.
- Minor increases in the rates of retirement.

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.

This report was prepared using our proprietary valuation model and related software, which in our professional judgment has the capability to provide results that are consistent with the purposes of the valuation. We performed tests to ensure that the model reasonably represents that which is intended to be modeled.

BENEFIT PROVISIONS

The benefit provisions reflected in this valuation are those which were in effect on July 1, 2021. There were no legislative changes enacted since the prior valuation that materially 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, 2021, by the PEBA staff. The staff also supplied asset information as of July 1, 2021. 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 PORS as of July 1, 2021.

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. All three are also Enrolled Actuaries and Members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries. Each are experienced in performing valuations for large public retirement systems.

Sincerely,

Gabriel, Roeder, Smith & Co.

Joseph P. Newton, FSA, MAAA, EA
Pension Market Leader and Actuary

Daniel J. White, FSA, MAAA, EA
Regional Director

Thomas Lyle, FSA, MAAA, EA
Consultant

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SECTION A

EXECUTIVE SUMMARY

Executive Summary

(Dollar amounts expressed in thousands)

	Valuation Date:	
	July 1, 2021	July 1, 2020
Membership		
• Number of		
- Active members	26,555	27,795
- Retirees and beneficiaries	20,181	19,625
- Inactive members	20,589	18,811
- Total	67,325	66,231
• Projected payroll of active members	$1,434,621	$1,440,645
• Projected payroll for all active members, including working retirees	$1,544,722	$1,556,669
Required Contribution Rates		
• Employer contribution rate [1]	20.24%	19.24%
• Member	9.75%	9.75%
Assets		
• Market value	$6,111,672	$4,730,175
• Actuarial value	5,534,837	5,069,748
• Return on market value	29.9%	-1.6%
• Return on actuarial value	9.8%	4.6%
• Ratio - actuarial value to market value	90.6%	107.2%
• External cash flow %	-0.5%	-0.1%
Actuarial Information		
• Normal cost %	15.38%	14.47%
• Actuarial accrued liability (AAL)	$8,611,516	$8,111,938
• Unfunded actuarial accrued liability (UAAL)	3,076,679	3,042,190
• Funded ratio	64.3%	62.5%
• Funding period (years) [2]	19	18
Reconciliation of UAAL		
• Beginning of Year UAAL	$3,042,190	$2,884,842
- Interest on UAAL	220,559	209,151
- Amortization payment	(228,758)	(229,602)
- Assumption/method changes	233,935	0
- Asset experience	(125,236)	130,430
- Salary experience	(32,398)	38,748
- Other liability experience	(33,613)	8,621
- Legislative Changes	0	0
• End of Year UAAL	$3,076,679	$3,042,190

[1] The employer contribution rates in effect for FY 2021, FY 2022, and FY 2023 are 18.24%, 19.24%, and 20.24% of pay, respectively. These scheduled contribution rates came into existence by the Retirement System Funding and Administration Act of 2017 and last amended by Act 135 and a subsequent budget proviso. These contribution rates include the cost of accidental and incidental death benefits.

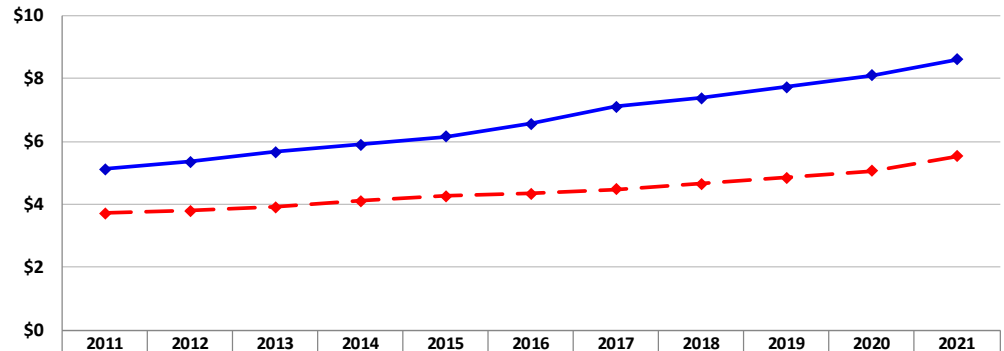
[2] The funding period for 2021 is determined on an actuarial value of asset basis and is based on the contribution rate scheduled to become effective for FY 2023 (i.e. beginning July 1, 2022 and ending June 30, 2023).

Executive Summary (Continued)

The unfunded actuarial accrued liability increased by $0.035 billion since the prior year's valuation to $3.077 billion. The largest source of this increase is $0.234 billion loss due to updated actuarial assumptions.

Below is a chart with the System's historical actuarial value of assets and actuarial accrued liability. The increased difference in the actuarial value of assets and the actuarial accrued liability 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 adopted in 2016, 2017, and again in 2021, and (iii) contributions that were less than the interest on the unfunded actuarial accrued liability.

Chart 1. - History of Actuarial Assets and Actuarial Accrued Liability
(Dollars in Billions)



	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
AAL	5.1	5.4	5.7	5.9	6.2	6.6	7.1	7.4	7.7	8.1	8.6
AVA	3.7	3.8	3.9	4.1	4.3	4.4	4.5	4.7	4.9	5.1	5.5

The employer contribution rate is scheduled to increase from 19.24% of pay in fiscal year 2022 to 20.24% of pay in fiscal year 2023. Section 9-11-225 of State Statute specifies that the employer contribution rate will increase by 1.00% in the next subsequent fiscal year until attaining 21.24% of pay for fiscal year 2024. 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, the State Statute specifies that the maximum amortization period is 26 years as of July 1, 2021 and the maximum amortization period will decrease by one year in each of the next six 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%.

SECTION B

DISCUSSION

Discussion

The results of the July 1, 2021 actuarial valuation of the Police Officers Retirement System are presented in this report. The primary purposes of the valuation report are to depict the current financial condition of the System and analyze changes in the System's financial condition. In addition, the report provides various summaries of the data.

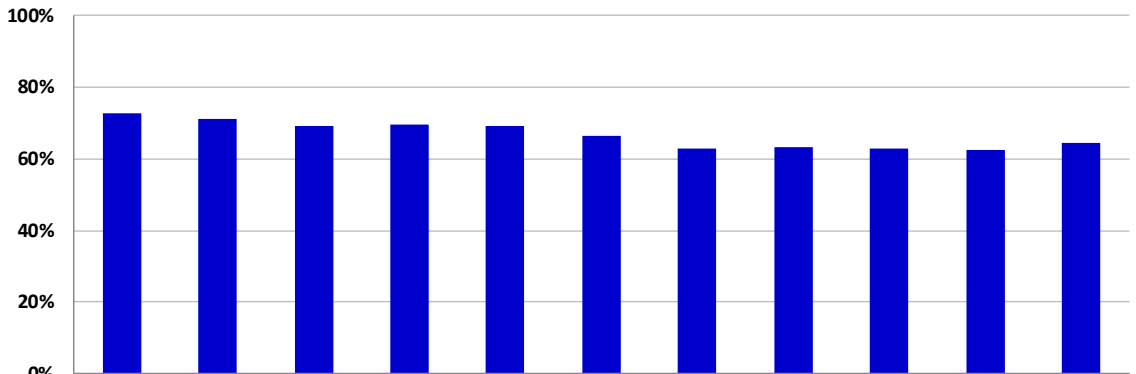
This section discusses the determination of the current funding requirements and the System's funded status, as well as changes in financial condition of the Police Officers Retirement System.

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 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 increased from 62.5% to 64.3% since the prior valuation. Chart 2 shown below, provides a 10-year history of the System's funded ratio. This 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 recommended by the actuary and adopted in 2016, 2017, and again in 2021, and (iii) contributions that were less than the interest on the unfunded actuarial accrued liability. The funded status of the System is shown in Table 10, Schedule of Funding Progress.

Chart 2. - Funded Ratio
Actuarial Assets as a Percentage of Actuarial Accrued Liability



	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Funded Ratio	72.8%	71.1%	69.2%	69.5%	69.2%	66.3%	63.0%	63.1%	62.7%	62.5%	64.3%

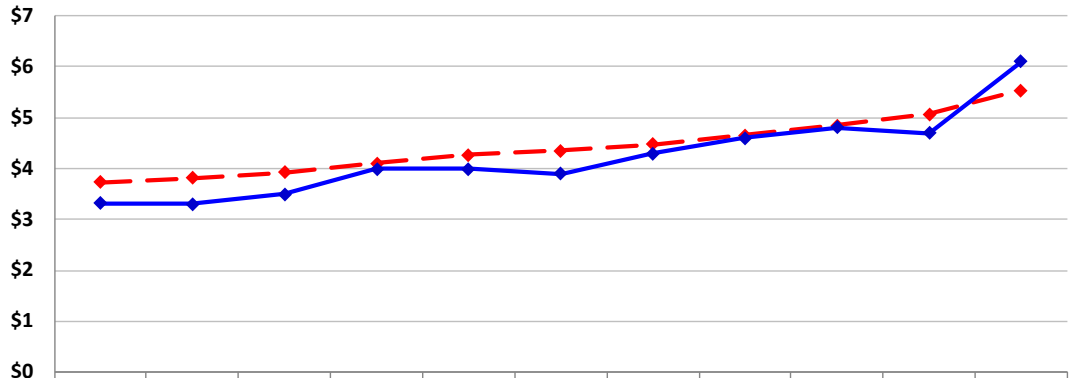
Absent future unfavorable investment or demographic experience, or legislative changes, we expect the funded ratio to begin to continue to improve in future years. Also, we expect the dollar amount of the unfunded actuarial accrued liability, or the difference between the actuarial accrued liability and the actuarial value of assets, to gradually decrease in the coming years.

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 a market value of asset basis (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 from $5.1 billion to $5.5 billion since the prior valuation. Table 8 shows the development of the actuarial value of assets.

The rate of return on the market value of assets during the prior plan year was 29.9% on a dollar-weighted basis; the return on an actuarial (smoothed) asset value was 9.8%, which is above the 7.25% expected annual return. The difference in the estimated return on market value and actuarial value illustrates the smoothing effect of the asset valuation method.

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



	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
AVA	3.7	3.8	3.9	4.1	4.3	4.4	4.5	4.7	4.9	5.1	5.5
MVA	3.3	3.3	3.5	4.0	4.0	3.9	4.3	4.6	4.8	4.7	6.1

Assets as of July 1,

Tables 6 and 7 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 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 $3.0 billion in 2020 to $3.1 billion in 2021. 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	$3,042,190
- Interest on UAAL	220,559
- Amortization payment	(228,758)
- Assumption/method changes	233,935
- Asset experience	(125,236)
- Salary experience	(32,398)
- Other liability experience	(33,613)
- Legislative changes	0
• End of Year UAAL	$3,076,679

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 2022 as well as the effect of the contribution rate increase that is scheduled for fiscal year 2023.

Change in Funding Period (Years)

• 2020 Valuation and FY 2022 Contribution Rates	18.4
- Expected experience	(1.0)
- Assumption and method changes	4.0
- Asset experience	(1.0)
- Salary and demographic experience	0.0
- Legislative changes	0.0
- Total Change	2.0
• 2021 Valuation and FY 2022 Contribution Rates	20.4
- Scheduled contribution rate increase in FY 2023	(1.9)
• 2021 Valuation and Scheduled FY 2023 Contribution Rates	18.5

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

The employer contribution rate is established in accordance with Section 9-11-225 of the South Carolina Code, which first came into existence by the Retirement System Funding and Administration Act of 2017 and last amended by Act 135 and a subsequent budget proviso. The employer contribution rate scheduled to be in effect for the fiscal year ending June 30, 2023 is 20.24%. The employer contribution rate is also scheduled to increase by 1.00% of pay for the subsequent fiscal year until an ultimate employer contribution rate of 21.24% of pay is attained for fiscal year 2024.

The calculated funding period documented in this actuarial valuation only reflects the scheduled 20.24% employer contribution that is to become effective for the 2023 fiscal year (i.e. the fiscal year beginning July 1, 2022 and ending June 30, 2023).

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 Statute requires an experience analysis that reviews the economic and demographic assumptions be performed at least every five years. An experience study was performed for the five-year period ending June 30, 2019 and the Board has adopted the assumptions that were recommended and documented in that report for first use in the July 1, 2021 actuarial valuation. The investment return assumption is a prescribed assumption in Section 9-16-335 in South Carolina State Statute and the General Assembly permitted the investment return assumption at July 1, 2021 to decrease from 7.25% to 7.00%. The following is a summary of the assumptions that were adopted by the Board and used in preparing this actuarial valuation:

- Decrease the payroll growth assumption from 3.00% to 2.70%.
- Increase in the assumed rate of salary increases for members.
- Adopt new post-retirement mortality tables specific to South Carolina retiree experience for non-disabled retirees. Mortality for retirees is assumed to improve based on 80% of the ultimate rate in increase in the MP-2019 mortality improvement scale.
- Use variations of the Pub-2010 Public Retirement Plan Mortality tables for disabled retirees and active members.
- Minor increases in the rates of retirement.

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.

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 7.00% 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 Statute.

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 Statute.

Benefit Provisions

Appendix B of this report includes a summary of the benefit provisions for PORS. There were no legislative changes enacted since the prior 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 with an effective date of membership prior to July 1, 2012)

- Average Final Compensation (AFC) is based on the highest twelve (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 is equal to 2.14% 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 their retirement benefit after they have (i) 25 years of credited service or (ii) attained age 55 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 with an effective date of membership 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 also 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 2.14% 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 their retirement benefit after they have (i) 27 years of credited service or (ii) attained age 55 with 8 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.

SECTION C

ACTUARIAL TABLES

Actuarial Tables

Summary of Cost Items

(Dollar amounts expressed in thousands)

		July 1, 2021 (1)	July 1, 2020 (2)
1.	Projected payroll of active members[1]	$ 1,434,621	$ 1,440,645
2.	Present value of future pay[1]	$ 10,664,757	$ 10,816,625
3.	Normal cost rate		
	a. Total normal cost rate	15.38%	14.47%
	b. Less: member contribution rate	-9.75%	-9.75%
	c. Employer normal cost rate	5.63%	4.72%
4.	Actuarial accrued liability for active members		
	a. Present value of future benefits	$ 4,815,416	$ 4,675,138
	b. Less: present value of future normal costs	1,596,079	1,528,263
	c. Actuarial accrued liability	$ 3,219,337	$ 3,146,875
5.	Total actuarial accrued liability for:		
	a. Retirees and beneficiaries	$ 5,039,417	$ 4,709,824
	b. Inactive members	352,762	255,239
	c. Active members (Item 4.c.)	3,219,337	3,146,875
	d. Total	$ 8,611,516	$ 8,111,938
6.	Actuarial value of assets	$ 5,534,837	$ 5,069,748
7.	Unfunded actuarial accrued liability (UAAL) (Item 5.d. - Item 6.)	$ 3,076,679	$ 3,042,190
8.	Required Contribution Rate		
	a. Employer normal cost rate	5.63%	4.72%
	b. Employer contribution rate available to amortize the UAAL	14.61%	14.52%
	c. Total employer contribution rate	20.24%	19.24%
9.	Funding period based on the required employer contribution rate (years)[2]	19	18
10.	Applicable statutorily required contribution rates[3]		
	a. Employer contribution rate	20.24%	19.24%
	b. Member contribution rate	9.75%	9.75%

[1] The projected payroll does not include payroll for working retirees.

[2] The funding period for 2021 is determined on an actuarial value of asset basis and is based on the contribution rate scheduled to become effective for FY 2023 (i.e. beginning July 1, 2022 and ending June 30, 2023).

[3] The actual employer contribution rates in effect for FY 2021, FY 2022, and FY 2023 are 18.24%, 19.24%, and 20.24% of pay, respectively. These contribution rates include the cost of accidental and incidental death benefits.

Actuarial Present Value of Future Benefits

(Dollar amounts expressed in thousands)

		July 1, 2021 (1)	July 1, 2020 (2)
1.	Active members		
	a. Service retirement	$ 3,909,069	$ 3,762,293
	b. Deferred termination benefits and refunds	416,629	399,211
	c. Survivor benefits	76,180	103,424
	d. Disability benefits	413,538	410,210
	e. Total	$ 4,815,416	$ 4,675,138
2.	Retired members		
	a. Service retirement	$ 4,076,206	$ 3,771,380
	b. Disability retirement	705,163	702,052
	c. Beneficiaries	208,823	191,112
	d. Incidental and accidental death benefits	49,225	45,280
	e. Total	$ 5,039,417	$ 4,709,824
3.	Inactive members		
	a. Vested terminations	$ 287,077	$ 202,679
	b. Nonvested terminations	65,685	52,560
	c. Total	$ 352,762	$ 255,239
4.	Total actuarial present value of future benefits	$ 10,207,595	$ 9,640,201

Analysis of Normal Cost

		July 1, 2021 (1)	July 1, 2020 (2)
1.	Total normal cost rate		
	a. Service retirement	8.68%	8.66%
	b. Deferred termination benefits and refunds	4.01%	3.95%
	c. Survivor benefits	0.28%	0.32%
	d. Disability benefits	2.23%	1.42%
	e. Total	15.20%	14.35%
2.	Administrative expense	0.18%	0.12%
3.	Less: member contribution rate	9.75%	9.75%
4.	Net employer normal cost rate	5.63%	4.72%

Note: The normal cost includes the cost of accidental and incidental death benefits.

Results of July 1, 2021 Valuation

(Dollar amounts expressed in thousands)

		July 1, 2021 (1)
1.	Actuarial Present Value of Future Benefits	
	a. Present retired members and beneficiaries	$ 5,039,417
	b. Present active and inactive members	5,168,178
	c. Total actuarial present value	$ 10,207,595
2.	Present Value of Future Normal Contributions	
	a. Member	$ 1,039,814
	b. Employer	556,265
	c. Total future normal contributions	$ 1,596,079
3.	Actuarial Liability	$ 8,611,516
4.	Current Actuarial Value of Assets	$ 5,534,837
5.	Unfunded Actuarial Liability	$ 3,076,679
6.	UAAL Amortization Rates based on an employer contribution rate of 20.24%	
	a. Active members	14.61%
	b. Re-employed retirees (including employee contributions)	29.99%
7.	Unfunded Actuarial Liability Liquidation Period	19 years

Note: The employer contribution rate includes the cost of accidential and incidental death benefits.

Actuarial Balance Sheet

(Dollar amounts expressed in thousands)

	July 1, 2021 (1)	July 1, 2020 (2)
1. Assets		
a. Current assets (actuarial value)		
i. Employee annuity savings fund	$ 1,330,653	$ 1,265,088
ii. Employer annuity accumulation fund	4,204,184	3,804,660
iii. Total current assets	$ 5,534,837	$ 5,069,748
b. Present value of future member contributions	$ 1,039,814	$ 1,054,621
c. Present value of future employer contributions		
i. Normal contributions	$ 556,265	$ 473,642
ii. Accrued liability contributions	3,076,679	3,042,190
iii. Total future employer contributions	$ 3,632,944	$ 3,515,832
d. Total assets	$ 10,207,595	$ 9,640,201
2. Liabilities		
a. Employee annuity savings fund		
i. Past member contributions	$ 1,330,653	$ 1,265,088
ii. Present value of future member contributions	1,039,814	1,054,621
iii. Total contributions to employee annuity savings fund	$ 2,370,467	$ 2,319,709
b. Employer annuity accumulation fund		
i. Benefits currently in payment	$ 5,039,417	$ 4,709,824
ii. Benefits to be provided to other members	2,797,711	2,610,668
iii. Total benefits payable from employer annuity accumulation fund	$ 7,837,128	$ 7,320,492
c. Total liabilities	$ 10,207,595	$ 9,640,201

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

Item	July 1, 2021	July 1, 2020
(1)	(2)	(3)
1. Cash and cash equivalents (operating cash)	$ 219,193	$ 536,560
2. Receivables	460,474	248,909
3. Investments		
a. Short-term securities	$ 13,215	$ 48,984
b. Fixed income (global)	473,269	576,508
c. Global public equity	2,971,752	2,098,875
d. Opportunistic	0	34,499
e. Alternative investments	2,405,580	1,609,513
f. Total investments	$ 5,863,816	$ 4,368,379
4. Securities lending cash collateral invested	$ 3,279	$ 3,094
5. Prepaid administrative expenses	135	111
6. Capital assets, net of accumulated depreciation	199	203
7. Total assets	$ 6,547,096	$ 5,157,256
8. Liabilities		
a. Due to other Systems	$ 0	$ 0
b. Accounts payable	414,402	383,449
c. Investment fees payable	627	1,178
d. Obligations under securities lending	3,279	3,094
e. Deferred retirement benefits	0	0
f. Due to South Carolina Retiree Health Insurance Trust Fund	1,437	1,447
g. Benefit payable	426	421
h. Other liabilities	15,253	37,492
i. Total liabilities	$ 435,424	$ 427,081
9. Total market value of assets available for benefits (Item 7. - Item 8.i.)	$ 6,111,672	$ 4,730,175
10. Asset allocation (investments)[1]		
a. Net invested cash	4.3%	8.7%
b. Fixed income	7.7%	12.2%
c. Public equities	48.6%	44.4%
d. Global tactical asset allocation	0.0%	0.7%
e. Alternative investments	39.4%	34.0%
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, 2021 (1)	Year Ending July 1, 2020 (2)
1.	Value of assets at beginning of year	$ 4,730,175	$ 4,815,809
2.	Revenue for the year		
	a. Contributions		
	i. Member contributions	$ 152,148	$ 151,835
	ii. Employer contributions	262,586	263,145
	iii. Nonemployer contributions	12,470	12,470
	iv. Total	$ 427,204	$ 427,450
	b. Income		
	i. Interest, dividends, and other income	$ 67,480	$ 92,079
	ii. Investment expenses	(85,661)	(34,890)
	iii. Net	$ (18,181)	$ 57,189
	c. Net realized and unrealized gains (losses)	1,429,534	(136,295)
	d. Total revenue	$ 1,838,557	$ 348,344
3.	Expenditures for the year		
	a. Disbursements		
	i. Refunds	$ 24,346	$ 22,492
	ii. Regular annuity benefits	425,232	405,790
	iii. Other benefit payments	5,762	4,211
	iv. Net transfers to other Systems	(1,401)	(984)
	v. Total	$ 453,939	$ 431,509
	b. Administrative expenses and depreciation	3,121	2,469
	c. Total expenditures	$ 457,060	$ 433,978
4.	Increase in net assets (Item 2.d.- Item 3.c.)	$ 1,381,497	$ (85,634)
5.	Value of assets at end of year (Item 1. + Item 4.)	$ 6,111,672	$ 4,730,175
6.	Net External Cash Flow		
	a. Dollar amount	$ (26,735)	$ (4,059)
	b. Percentage of market value	-0.5%	-0.1%

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

		Year Ending June 30, 2021
1.	Actuarial value of assets at beginning of year	$ 5,069,748
2.	Market value of assets at beginning of year	$ 4,730,175
3.	Net new investments	
	a. Contributions	$ 427,204
	b. Disbursements	(457,060)
	c. Subtotal	(29,856)
4.	Market value of assets at end of year	$ 6,111,672
5.	Net earnings (Item 4. - Item 2. - Item 3.c.)	$ 1,411,353
6.	Assumed investment return rate for fiscal year	7.25%
7.	Expected return (Item 6. x (Item 2. + 1/2 Item 3.c))	$ 341,855
8.	Excess/(Deficit) return (Item 5. - Item 7.)	$ 1,069,498
9.	Excess/(Deficit) return on assets as of June 30, 2021:	

	Fiscal Year Ending June 30, (1)	Excess/(Deficit) Return (2)	Percent Deferred (3)	Deferred Amount (4)
a.	2021	$ 1,069,498	80%	$ 855,598
b.	2020	(428,016)	60%	(256,810)
c.	2019	(66,348)	40%	(26,539)
d.	2018	22,932	20%	4,586
e.	2017	167,381	0%	0
f.	Total			$ 576,835

10.	Actuarial value of assets as of June 30, 2021 (Item 4. - Item 9.f.)	$ 5,534,837
11.	Expected actuarial value as of June 30, 2021	$ 5,406,366
12.	Asset gain (loss) for year (Item 10. - Item 11.)	$ 128,471
13.	Asset gain (loss) as % of the actuarial value of assets	2.3%
14.	Ratio of actuarial value to market value	90.6%

Estimation of Yields

(Dollar amounts expressed in thousands)

		Year Ending July 1, 2021 (1)	Year Ending July 1, 2020 (2)
1.	Market value yield		
a.	Beginning of year market assets	$ 4,730,175	$ 4,815,809
b.	Contributions to fund during the year	427,204	427,450
c.	Disbursements	(457,060)	(433,978)
d.	Investment income (net of investment expenses)	1,411,353	(79,106)
e.	End of year market assets	$ 6,111,672	$ 4,730,175
f.	Estimated dollar weighted market value yield	29.9%	-1.6%
2.	Actuarial value yield		
a.	Beginning of year actuarial assets	$ 5,069,748	$ 4,852,573
b.	Contributions to fund during the year	427,204	427,450
c.	Disbursements	(457,060)	(433,978)
d.	Investment income (net of investment expenses)	494,945	223,703
e.	End of year actuarial assets	$ 5,534,837	$ 5,069,748
f.	Estimated actuarial value yield	9.8%	4.6%

Schedule of Funding Progress

(Dollar amounts expressed in thousands)

July 1,	Actuarial Value of Assets (AVA)	Actuarial Accrued Liability (AAL)	Unfunded Actuarial Accrued Liability (UAAL) (3) - (2)	Funded Ratio (2)/(3)	Annual Covered Payroll[1]	UAAL as % of Payroll (4)/(6)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
2007	$ 3,160,240	$ 3,730,544	$ 570,304	84.7%	$ 992,849	57.4%
2008	3,363,136	4,318,955	955,819	77.9%	1,060,747	90.1%
2009	3,482,220	4,564,111	1,081,891	76.3%	1,084,154	99.8%
2010	3,612,700	4,850,457	1,237,757	74.5%	1,076,467	115.0%
2011	3,728,241	5,122,501	1,394,260	72.8%	1,087,587	128.2%
2012	3,808,934	5,357,492	1,548,558	71.1%	1,019,241	151.9%
2013	3,922,041	5,663,756	1,741,715	69.2%	1,033,189	168.6%
2014	4,105,308	5,905,828	1,800,520	69.5%	1,076,885	167.2%
2015	4,266,794	6,162,095	1,895,301	69.2%	1,105,703	171.4%
2016	4,354,853	6,567,397	2,212,544	66.3%	1,187,195	186.4%
2017	4,480,894	7,109,612	2,628,718	63.0%	1,263,314	208.1%
2018	4,654,193	7,378,084	2,723,891	63.1%	1,306,961	208.4%
2019	4,852,573	7,737,415	2,884,842	62.7%	1,378,255	209.3%
2020	5,069,748	8,111,938	3,042,190	62.5%	1,440,645	211.2%
2021	5,534,837	8,611,516	3,076,679	64.3%	1,434,621	214.5%

[1] Covered payroll does not include payroll attributable to 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, 2021
Actuarial cost method:	Entry Age Normal
Amortization method:	Level percentage of payroll
Amortization period for contribution rate:	26-year maximum, closed period[1]
Asset valuation method:	5-Year Smoothing
Actuarial assumptions:	
Investment rate of return[2]	7.00%
Projected salary increases	3.50% to 10.50% (varies by service)
Inflation	2.25%
Post-retirement benefit adjustments[3]	1.00%
Retiree mortality	The 2020 Public Retirees of South Carolina Mortality Table projected at 80% of the ScaleUMP from the year 2020. Male rates are multiplied by 127% and female rates are multiplied by 107%.

[1] The employer and member contribution rates are determined in accordance with Section 9-11-225 of the South Carolina Code. For 2021, the funding period determined on an actuarial value of asset basis may not exceed 26 years. Contribution rates are not permitted to decrease until the ratio of the actuarial value of assets to 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)
2007	$ 658,023	$ 1,818,914	$ 1,253,607	$ 3,160,240	100.0%	100.0%	54.5%
2008	697,423	2,183,645	1,437,887	3,363,136	100.0%	100.0%	33.5%
2009	726,214	2,348,685	1,489,212	3,482,220	100.0%	100.0%	27.4%
2010	758,695	2,577,772	1,513,990	3,612,700	100.0%	100.0%	18.2%
2011	786,724	2,784,144	1,551,633	3,728,241	100.0%	100.0%	10.1%
2012	773,710	3,118,016	1,465,766	3,808,934	100.0%	97.3%	0.0%
2013	793,414	3,385,496	1,484,846	3,922,041	100.0%	92.4%	0.0%
2014	850,383	3,490,161	1,565,284	4,105,308	100.0%	93.3%	0.0%
2015	905,768	3,624,713	1,631,614	4,266,794	100.0%	92.7%	0.0%
2016	968,722	3,881,514	1,717,161	4,354,853	100.0%	87.2%	0.0%
2017	1,034,549	4,136,503	1,938,560	4,480,894	100.0%	83.3%	0.0%
2018	1,104,572	4,307,805	1,965,707	4,654,193	100.0%	82.4%	0.0%
2019	1,179,539	4,514,202	2,043,674	4,852,573	100.0%	81.4%	0.0%
2020	1,265,088	4,709,824	2,137,026	5,069,748	100.0%	80.8%	0.0%
2021	1,330,653	5,039,417	2,241,446	5,534,837	100.0%	83.4%	0.0%

SECTION D

MEMBERSHIP INFORMATION

Membership Information

Page

Summary of Membership Data

		July 1, 2021 (1)	July 1, 2020 (2)
1.	Active members		
a.	Males	19,613	20,394
b.	Females	6,942	7,401
c.	Total members	26,555	27,795
d.	Total annualized prior year pay	$ 1,332,383,927	$ 1,381,648,891
e.	Average pay	$ 50,175	$ 49,709
f.	Average age	39.6	39.5
g.	Average service	10.0	9.8
h.	Member contributions with interest	$ 1,128,593,118	$ 1,108,769,000
i.	Average contributions with interest	$ 42,500	$ 39,891
2.	Vested inactive members		
a.	Number	3,136	2,781
b.	Total annual deferred benefits	$ 35,032,621	$ 25,360,182
c.	Average annual deferred benefit	$ 11,171	$ 9,119
3.	Nonvested inactive members		
a.	Number	17,453	16,030
b.	Member contributions with interest	$ 65,685,474	$ 52,560,220
c.	Average refund due	$ 3,764	$ 3,279
4.	Service retirees		
a.	Number	15,836	15,341
b.	Total annual benefits	$ 356,594,209	$ 337,449,531
c.	Average annual benefit	$ 22,518	$ 21,997
d.	Average age at the valuation date	66.3	66.2
e.	Average age at retirement date	55.2	55.2
5.	Disabled retirees		
a.	Number	2,774	2,773
b.	Total annual benefits	$ 60,296,962	$ 59,642,775
c.	Average annual benefit	$ 21,736	$ 21,508
d.	Average age at the valuation date	57.4	56.9
e.	Average age at retirement date	43.9	44.1
6.	Beneficiaries		
a.	Number	1,571	1,511
b.	Total annual benefits	$ 20,787,327	$ 19,686,409
c.	Average annual benefit	$ 13,232	$ 13,029
d.	Average age at the valuation date	67.3	67.6

Summary of Contributing Membership Data
(Dollar amounts expressed in thousands)

	July 1, 2021	July 1, 2020
	(1)	(2)
1. Active Members		
a. Number of State Employees	8,503	9,026
Total Annual Compensation	$ 399,000	$ 419,844
b. Number of Public School Employees	0	0
Total Annual Compensation	$ 0	$ 0
c. Number of Other Agency Employees	18,052	18,769
Total Annual Compensation	$ 933,384	$ 961,805
Total Number of Active Members	26,555	27,795
Total Annual Compensation	$ 1,332,384	$ 1,381,649
2. Rehired Retired Participants		
a. Number of State Employees	646	681
Total Annual Compensation	$ 27,503	$ 27,668
b. Number of Public School Employees	6	6
Total Annual Compensation	$ 407	$ 391
c. Number of Other Agency Employees	1,507	1,669
Total Annual Compensation	$ 82,190	$ 87,965
Total Number of Rehired Retired Members	2,159	2,356
Total Annual Compensation	$ 110,100	$ 116,024

Note: Total compensation is the annualized pay for the prior year.

Summary of Historical Active Membership

		Active Members		Covered Payroll[1]		Average Annual Pay			
July 1,	Number of Employers[2]	Number	Percent Increase /(Decrease)	Amount in Thousands	Percent Increase /(Decrease)	Amount	Percent Increase /(Decrease)	Average Age	Average Service
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
2007	313	25,645	3.4%	992,849	6.6%	38,715	3.09%	N/A	N/A
2008	313	26,427	3.0%	1,060,747	6.8%	40,139	3.68%	N/A	N/A
2009	318	26,598	0.6%	1,084,154	2.2%	40,761	1.55%	39.6	8.4
2010	322	26,568	-0.1%	1,076,467	-0.7%	40,517	-0.60%	39.8	8.7
2011	356	26,650	0.3%	1,087,587	1.0%	40,810	0.72%	39.8	9.6
2012	325	26,179	-1.8%	1,019,241	-6.3%	38,934	-4.60%	39.6	9.5
2013	356	26,194	0.1%	1,033,189	1.4%	39,444	1.31%	39.5	9.4
2014	310	26,697	1.9%	1,076,885	4.2%	40,337	2.27%	39.5	9.5
2015	312	26,575	-0.5%	1,105,703	2.7%	41,607	3.15%	39.4	9.7
2016	313	26,651	0.3%	1,187,195	7.4%	44,546	7.06%	39.5	9.8
2017	332	27,056	1.5%	1,263,314	6.4%	46,693	4.82%	39.4	9.7
2018	333	27,093	0.1%	1,306,961	3.5%	48,240	3.31%	39.4	9.7
2019	336	27,397	1.1%	1,378,255	5.5%	50,307	4.28%	39.4	9.8
2020	340	27,795	1.5%	1,440,645	4.5%	51,831	3.03%	39.5	9.8
2021	338	26,555	-4.5%	1,434,621	-0.4%	54,025	4.23%	39.6	10.0

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

[2] Number of employers and agencies that cover employees earning benefits in PORS and that contributed to the system during the last fiscal year.

Distribution of Active Members by Age and by Years of Service

Attained Age	Years of Credited Service												
	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	33	5	0	0	0	0	0	0	0	0	0	0	38
	$26,245	$38,079	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$27,802
20-24	707	482	270	143	63	38	0	0	0	0	0	0	1,703
	$32,328	$40,166	$40,672	$41,197	$42,563	$44,978	$0	$0	$0	$0	$0	$0	$37,275
25-29	612	665	610	658	544	993	15	0	0	0	0	0	4,097
	$33,335	$39,963	$42,708	$44,247	$44,994	$48,087	$43,847	$0	$0	$0	$0	$0	$42,721
30-34	358	397	377	373	365	1,870	665	31	0	0	0	0	4,436
	$35,317	$40,084	$42,908	$44,589	$46,241	$49,877	$54,700	$59,820	$0	$0	$0	$0	$47,282
35-39	196	193	194	193	228	938	1,301	607	33	0	0	0	3,883
	$35,871	$39,751	$43,395	$45,650	$46,439	$50,494	$55,517	$56,617	$58,652	$0	$0	$0	$51,098
40-44	152	151	139	129	117	516	720	977	488	16	0	0	3,405
	$34,487	$41,993	$46,402	$44,774	$46,789	$49,392	$56,127	$59,825	$62,505	$71,139	$0	$0	$54,411
45-49	120	119	128	123	103	424	503	531	1,023	276	17	0	3,367
	$34,583	$43,157	$49,242	$47,391	$46,725	$50,986	$53,218	$57,226	$63,680	$67,491	$73,592	$0	$56,438
50-54	88	95	102	116	80	335	389	394	594	492	127	6	2,818
	$39,711	$41,043	$49,618	$45,586	$44,373	$49,149	$53,440	$56,850	$61,210	$68,457	$70,797	$79,170	$56,938
55-59	62	58	68	59	67	243	261	219	242	156	138	33	1,606
	$32,415	$44,868	$45,991	$46,843	$46,429	$50,558	$51,810	$54,282	$59,097	$59,529	$69,464	$88,114	$54,416
60-64	28	34	26	34	37	134	146	113	105	73	49	37	816
	$35,296	$41,175	$43,926	$43,269	$45,765	$46,489	$50,226	$52,876	$55,441	$57,998	$63,455	$75,498	$51,704
65 & Over	14	12	9	23	12	89	62	46	39	38	25	17	386
	$33,281	$40,616	$37,548	$42,822	$41,691	$48,178	$51,245	$59,913	$53,618	$58,395	$49,168	$65,188	$50,894
Total	2,370	2,211	1,923	1,851	1,616	5,580	4,062	2,918	2,524	1,051	356	93	26,555
	$33,818	$40,514	$43,708	$44,603	$45,647	$49,546	$54,471	$57,599	$61,868	$65,829	$67,884	$78,327	$50,186

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	9,673	$ 212,347,795	$ 1,829
100% J&S	3,504	76,734,044	1,825
50% J&S	2,009	53,449,332	2,217
Level Income	650	14,063,038	1,803
Subtotal:	15,836	$ 356,594,209	1,876
Disability:			
Maximum	2,116	$ 47,540,235	$ 1,872
100% J&S	437	7,864,828	1,500
50% J&S	221	4,891,899	1,845
Subtotal:	2,774	$ 60,296,962	1,811
Beneficiaries:	1,571	$ 20,787,327	$ 1,103
Total:	20,181	$ 437,678,498	$ 1,807

Distribution of Annuitants by Monthly Benefit

Monthly Benefit Amount (1)	Number of Annuitants (2)	Female (3)	Male (4)	Average Service (5)
Under $200	897	428	469	1.87
$ 200 - 399	1,168	535	633	6.89
400 - 599	1,367	587	780	8.62
600 - 799	1,360	640	720	11.07
800 - 999	1,281	539	742	12.83
1,000 - 1,199	1,249	511	738	14.57
1,200 - 1,399	1,161	439	722	16.12
1,400 - 1,599	1,139	385	754	18.25
1,600 - 1,799	1,183	377	806	19.86
1,800 - 1,999	1,237	304	933	21.13
2,000 - 2,199	1,256	283	973	22.13
2,200 - 2,399	1,200	255	945	22.96
2,400 - 2,599	1,045	203	842	23.74
2,600 - 2,799	866	124	742	24.34
2,800 - 2,999	770	127	643	24.74
3,000 - 3,199	577	79	498	25.68
3,200 - 3,399	483	84	399	26.15
3,400 - 3,599	358	55	303	26.56
3,600 - 3,799	321	33	288	27.32
3,800 - 3,999	265	33	232	27.72
4,000 - 4,199	214	32	182	28.08
4,200 - 4,399	166	20	146	28.89
4,400 - 4,599	128	23	105	29.40
4,600 - 4,799	95	7	88	29.41
4,800 - 4,999	78	6	72	30.95
5,000 - 5,499	134	17	117	30.87
5,500 - 5,999	88	9	79	32.84
6,000 - 6,499	37	3	34	33.49
6,500 - 6,999	25	2	23	33.56
7,000 - 7,499	13	3	10	34.62
7,500 - 7,999	5	1	4	33.00
8,000 & Over	15	2	13	33.60
Total	20,181	6,146	14,035	18.02

Average age at retirement for service retirees as of July 1, 2021 is age 55.2.

Distribution of Average Annual Benefit by Age and Employee Type

Current Age	State		Other		Total	
	Number of Annuitants	Average Annual Benefit Amount	Number of Annuitants	Average Annual Benefit Amount	Number of Annuitants	Average Annual Benefit Amount
(1)	(4)	(5)	(6)	(7)	(8)	(9)
Under 40	80	$ 11,462	158	$ 15,035	238	$ 13,834
40 - 44	64	16,594	194	22,943	258	21,368
45 - 49	188	24,741	502	26,392	690	25,942
50 - 54	549	26,179	1,213	28,569	1,762	27,824
55 - 59	1,229	23,301	1,872	26,119	3,101	25,002
60 - 64	1,542	20,779	1,964	24,401	3,506	22,808
65 - 69	1,891	19,054	1,837	22,023	3,728	20,517
70 - 74	1,662	18,470	1,571	20,742	3,233	19,574
75 - 79	857	16,371	1,117	19,642	1,974	18,222
80 - 84	333	14,854	662	18,359	995	17,186
85 - 89	79	14,382	420	17,702	499	17,176
90 And Over	6	16,936	191	15,384	197	15,431
Total	8,480	$ 19,885	11,701	$ 22,994	20,181	$ 21,688

Schedule of Retirants Added to And Removed from Rolls

(Dollar amounts except average allowance expressed in thousands)

Year Ending June 30,	Added to Rolls		Removed from Rolls		Rolls End of the Year		% Increase in Annual Benefit	Average Annual Benefit
	Number	Annual Benefits	Number	Annual Benefits	Number	Annual Benefits		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
2007	772	16,474	205	2,745	10,701	188,674	7.8%	17,631
2008	779	17,458	194	2,691	11,286	203,441	7.8%	18,026
2009	931	17,937	267	3,879	11,950	217,499	6.9%	18,201
2010	943	21,877	327	5,000	12,566	234,376	7.8%	18,652
2011	1,042	22,580	250	2,970	13,358	253,986	8.4%	19,014
2012	1,566	34,086	271	4,143	14,653	283,929	11.8%	19,377
2013	1,278	27,584	314	5,106	15,617	306,407	7.9%	19,620
2014	818	16,881	332	5,650	16,103	317,638	3.7%	19,725
2015	968	19,767	362	6,076	16,709	331,329	4.3%	19,829
2016	928	19,940	349	5,394	17,288	345,874	4.4%	20,007
2017	987	22,709	388	6,662	17,887	361,921	4.6%	20,234
2018	983	24,066	379	6,621	18,491	379,365	4.8%	20,516
2019	990	25,450	387	6,670	19,094	398,145	5.0%	20,852
2020	954	25,840	423	7,207	19,625	416,779	4.7%	21,237
2021	1,124	31,477	568	10,577	20,181	437,678	5.0%	21,688

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 PORS'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 9-11-255 of the South Carolina Code which first came into existence by the Retirement System Funding and Administration Act of 2017 and last amended by Act 135 and a subsequent budget proviso. 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

These scheduled contribution rates in the Code are 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:

- Ratio of market value of assets to payroll: 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.
- Ratio of actuarial accrued liability to payroll: 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 PORS. We have also included these metrics for the prior four years so stakeholders can identify how these measures are trending.

	July 1,				
Measure	2021	2020	2019	2018	2017
Ratio of the market value of assets to total payroll	3.96	3.04	3.22	3.21	3.09
Ratio of actuarial accrued liability to payroll	5.57	5.21	5.18	5.18	5.13
Ratio of actives to retirees and beneficiaries	1.32	1.42	1.43	1.47	1.51
Ratio of net cash flow to market value of assets	-0.4%	-0.1%	-0.3%	-0.7%	-1.3%

Note: For purposes of this analysis, payroll includes the payroll received by working retirees since the System receives contributions on that payroll.

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 Police Officers Retirement System.

Investment Rate of Return

Assumed annual rate of 7.00% composed of a 2.25% inflation component and a 4.75% real rate of return, net of investment expenses.

This is a prescribed assumption 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 21 years of service to include anticipated merit and promotional increases. The assumed annual rate of increase is 3.50% for all members with 21 or more years of service.

The 3.50% rate of increase is composed of a 2.25% inflation component and a 1.25% real rate of wage increase (productivity) component.

Active Male & Female Salary Increase Rate		
Years of Service	PORS	
	Annual Promotional/Longevity Rates of Increase	Total Annual Rate of Increase Including 3.50% Wage Inflation
1	7.00%	10.50%
2	6.00%	9.50%
3	3.25%	6.75%
4	1.75%	5.25%
5	1.50%	5.00%
6	1.25%	4.75%
7	1.25%	4.75%
8	1.00%	4.50%
9	1.00%	4.50%
10 - 13	0.75%	4.25%
14	0.50%	4.00%
15 - 21	0.25%	3.75%
22+	0.00%	3.50%

Active Member Decrement Rates

a. Assumed rates of Service Retirement are shown in the following tables. The first table is for members who attain age 55 before attaining 25 years of service (27 years of service for Class Three Members). The second table is based on service and is for members who attain 25 years of service (27 years of service for Class Three Members) before age 55.

Annual Age Based Retirement Rates		
Age	PORS	
	Male	Female
55	20%	20%
56	20%	20%
57	20%	20%
58	12%	12%
59	12%	12%
60	12%	12%
61	25%	25%
62	25%	25%
63	25%	25%
64	25%	25%
65	25%	25%
66	25%	25%
67	25%	25%
68	25%	25%
69	25%	25%
70 & Over	100%	100%

Annual Service Based Retirement Rates			
Years of Service		PORS	
Class Two	Class Three	Male	Female
25	27	30%	30%
26	28	14%	14%
27	29	14%	14%
28	30	14%	14%
29	31	14%	14%
30	32	14%	14%
31	33	14%	14%
32	34	14%	14%
33	35	14%	14%
34	36	14%	14%
35	37	14%	14%
36	38	14%	14%
37	39	14%	14%
38	40	14%	14%
39	41	14%	14%
40	42	100%	100%

b. Assumed rates of disability are shown in the following table. Thirty percent of disabilities are assumed to be duty-related.

Disability Rates		
Age	PORS	
	Males	Females
25	0.1740%	0.1740%
30	0.2320%	0.2320%
35	0.4350%	0.4350%
40	0.5800%	0.5800%
45	0.8700%	0.8700%
50	1.0875%	1.0875%
55+	0.0000%	0.0000%

c. Active Member Mortality

Rates of active member mortality are based upon the amount-weighted PUB-2010 Public Retirement Plans Mortality Table for Safety with applicable multipliers to better reflect anticipated experience and provide margin for future improvement in mortality.

Active Mortality Rates (Multiplier Applied)		
Age	PORS	
	Males	Females
25	0.0370%	0.0200%
30	0.0410%	0.0270%
35	0.0470%	0.0360%
40	0.0590%	0.0490%
45	0.0820%	0.0670%
50	0.1200%	0.0910%
55	0.1750%	0.1230%
60	0.2640%	0.1680%
64	0.3750%	0.2150%
Multiplier	100%	100%

For purposes of determining active death benefits, 10% of active deaths for general employees are assumed to be duty related.

d. Rates of Withdrawal

Rates of withdrawal are service related. Sample rates are shown in the tables below.

Annual Withdrawal Rate		
Years of Service	PORS	
	Male	Female
1	25.00%	25.00%
2	18.00%	18.00%
3	14.00%	14.00%
4	12.00%	12.00%
5	10.70%	10.70%
6	9.54%	9.54%
7	8.50%	8.50%
8	7.58%	7.58%
9	6.75%	6.75%
10	6.02%	6.02%
11	5.37%	5.37%
12	4.78%	4.78%
13	4.26%	4.26%
14	3.80%	3.80%
15	3.39%	3.39%
16	3.02%	3.02%
17	2.69%	2.69%
18	2.40%	2.40%
19	2.14%	2.14%
20	1.91%	1.91%
21	1.70%	1.70%
22	1.51%	1.51%
23	1.35%	1.35%
24	1.20%	1.20%
25	1.05%	1.05%
26	0.90%	0.90%
27+	0.00%	0.00%

Post Retirement Mortality

a. Healthy retirees and beneficiaries – The gender-distinct South Carolina Retirees 2020 Mortality Tables. The rates are projected on a fully generational basis by the 80% of Scale UMP to account for future mortality improvements and adjusted with multipliers based on plan experience. The following are sample rates of the base table:

Nondisabled Annuitant Mortality Rates Before Projection (Multiplier Applied)		
Age	PORS	
	Males	Females
50	0.2513%	0.2192%
55	0.4246%	0.2824%
60	0.7530%	0.3863%
65	1.1471%	0.5616%
70	1.8988%	0.9097%
75	3.3311%	1.7869%
80	6.1765%	3.5220%
85	11.1742%	6.8204%
90	19.6279%	12.8871%
Multiplier	127%	107%

Life Expectancy for an Age 65 Retiree In Years					
Gender	Year of Retirement				
	2020	2025	2030	2035	2040
Male	18.8	19.1	19.4	19.7	20.0
Female	23.0	23.3	23.6	23.9	24.2

b. A separate table of mortality rates is used for disabled retirees based on the Pub-2010 Public Retirement Plans Disabled Mortality tables on a fully generational basis by 80% of Scale UMP to account for future mortality and with multipliers based on plan experience. The following are sample rates of the base table:

Disabled Annuitant Mortality Rates (Multiplier Applied)		
Age	PORS	
	Males	Females
50	1.6050%	1.4830%
55	2.1140%	1.7420%
60	2.5030%	1.9560%
65	3.0440%	2.2560%
70	3.9010%	2.8620%
75	5.1920%	4.0030%
80	7.3480%	6.0070%
85	10.8150%	9.3310%
90	16.2530%	13.6650%
Multiplier	100%	100%

Asset Valuation Method

The actuarial value of assets is equal to the market value, adjusted for a five-year phase in of the actual investment return in excess of (or less than) expected investment return on a market value of asset basis. 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.

Actuarial Cost Method

The contribution rate is set by statute for both employees and employers. The funding period is determined, as described below, using the Entry Age Normal 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 with the expected amount of employer contributions in excess of the employers' portion of the normal cost.

The calculation of the amortization period takes into account scheduled increases to contribution rates applicable to future years and payroll growth. Also, the calculation of the actuarial determined contribution rate and amortization period reflects additional contributions the System receives with respect to return to work retirees. These contributions are assumed to grow at the same payroll growth rate as for active employees. It is assumed that amortization payments are made monthly at the end of the month.

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 a couple differences in 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) 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.

2) 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 Average Final Compensation, liabilities for active members are increased 3.75%.

Unused Sick Leave

To account for the effect of unused sick leave on members' final 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 rehired retiree participants) is assumed to increase at an annual rate of 2.70%. This rate represents the underlying expected annual rate of wage inflation and does not anticipate increases in the number of members. The number of rehired retirees is expected to decrease over the next two years, then remain constant to reflect the pension reform legislation enacted in 2012.

Other Assumptions

1. The normal cost rate is increased by 0.18% to reflect administrative expenses that are paid with plan assets.
2. 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.
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 four 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. Members with a vested benefit are assumed to elect a refund or a deferred benefit commencing at age 65, whichever is more valuable at the valuation date
9. There will be no recoveries once disabled.

10. No surviving spouse will remarry and there will be no children's benefit.
11. Decrement timing: Decrements of all types are assumed to occur mid-year.
12. 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.
13. Decrement relativity: Decrement rates are used directly from the experience study, without adjustment for multiple decrement table effects.
14. 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.
15. Benefit service: All members are assumed to accrue one year of service each year.
16. All calculations were performed without regard to the compensation limit in IRC Section 401(a)(17) and the benefit limit under IRC Section 415.
17. Refund of Member Contributions: Members will refund their contributions if the value of their member contributions exceeds the value of their deferred monthly retirement benefit

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 Police Officers Retirement System (PORS)

Effective Date: July 1, 1962.

Administration: The South Carolina Retirement System, organizationally aligned as a Division of 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 police officers and firefighters employed by the state, and any participating political subdivision, agency, or department of the state. With the exception for magistrates and probate judges, eligible public safety employees must earn at least $2,000 per year and devote at least 1,600 hours per year, unless exempted by statute.

Employee Contributions: Members are contributing 9.75% 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 active. Members do not earn interest on their employee contribution account balance while they are inactive.

Average Final Compensation (AFC): The monthly average of the member's highest twelve (12) consecutive quarters of earnable compensation (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, overtime, sick pay, and deferrals. The calculation of a Class Two member's AFC 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**:*

a. Eligibility: A Class Two member may retire with an unreduced benefit at age 55 or after 25 years of creditable service, if earlier. The member must also have a minimum of 5 years of "earned" service to qualify for retirement. Class Three members may retire with an unreduced benefit at age 55 or after 27 years of creditable service, if earlier. Class Three members must also have a minimum of 8 years of "earned" service to qualify for retirement.

b. Monthly Benefit: 2.14% times Average Final Compensation (AFC) times years of creditable service. Class Two members will receive service credit for up to 90 days of unused sick leave where twenty days of sick leave constitutes one month of service credit.

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

***Disability Retirement**:*

a. Eligibility: Member must have five or more years of earned service (8 years for Class Three members), unless the disability is due to performing his or her job duties.

b. Monthly Benefit:

The monthly benefit is equal to the member's service retirement benefit that would have been payable based on the member's AFC determined as of the date of his disability and a projected credited service amount that assumes the member continued employment to age 55, not to exceed their current service or 25 years. However, a member must receive a disability retirement allowance equal to at least 15% of his AFC.

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 years of earned service. Class Three members are vested after eight 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. 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. five years of earned service for Class Two members and eight 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). In accordance with administrative policy, if the member met service eligibility requirements at their time of death, the beneficiary is eligible for a monthly survivor annuity benefit.

Death while an Active Member:

Members who die while actively employed will receive the regular death benefit described below. If the member was an employee of an employer participating in the Accidental Death Benefit Program and/or the Preretirement Death Benefit Program, then the beneficiary will receive additional death benefits.

Regular Death Benefit:

a. Refund: In the event of the death of an active member (duty or non-duty related), a refund of the member's accumulated contributions (with interest), subject to a minimum refund of $1,000, is paid to the beneficiary of a deceased member.

b. Beneficiary Annuity: If the deceased member (i) has 5 or more years of earned service and (ii) attained age 55 or accumulated 15 or more years of creditable service, the beneficiary 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 55 is assumed to be 55 years of age.

Accidental Death Benefit Program:

The statutory beneficiary (i.e. surviving spouse, child, or parent of the member) of an active employee of an employer participating in the Accidental Death Benefit Program who dies as a result of a duty related event is entitled to the following beneficiary annuity.

a. Beneficiary Annuity: In the event a member dies as a result of a duty related event, a monthly benefit is payable for the lifetime of the member's spouse or parent (or a child until age 18) equal to 50% of the member's compensation at the time of death.

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 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 beneficiary is living. In the event the member's designated beneficiary predeceases the member, then the member shall receive a retirement allowance equal to the maximum 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 full 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 determining eligibility for incidental death benefits, active employees include those members who are actively reemployed and contributing as a working retiree with a participating employer.

b. Post Employment: The beneficiary (or estate) of a retiree, both current and future, will receive a one-time payment upon the retiree's death if the employer was participating in the Preretirement Death Benefit Program at the time of the retired member'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 25	$4,000
25 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 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.

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.