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April 16, 2020

Mr. James A. Potvin
Executive Director
Employees' Retirement System of Georgia
Two Northside 75, Suite 300
Atlanta, GA 30318-7701

Dear Mr. Potvin:

Enclosed is the "Employees' Retirement System of Georgia Report of the Actuary on the Valuation Prepared as of June 30, 2019".

The valuation indicates that employer contributions for the fiscal year ending June 30, 2022 at the rate 19.88% of compensation for Old Plan Members, 24.63% of compensation for New Plan Members and 21.57% of compensation for GSEPS Members are sufficient to support the benefits of the System. The valuation takes into account the effect of all amendments to the System enacted through the 2019 session of the General Assembly.

Please let us know if there are any questions concerning the report.

Sincerely yours,

Edward J. Koebel

Edward J. Koebel, EA, FCA, MAAA
Chief Executive Officer

Cathy Turcot

Cathy Turcot
Principal and Managing Director

Ben Mobley

Ben Mobley, ASA, FCA, MAAA
Senior Actuary

Enclosure

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EMPLOYEES'
RETIREMENT SYSTEM
OF GEORGIA

EMPLOYEES' RETIREMENT SYSTEM OF GEORGIA
REPORT OF THE ACTUARY ON THE VALUATION
PREPARED AS OF JUNE 30, 2019

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April 16, 2020

Board of Trustees
Employees' Retirement System of Georgia
Two Northside 75, Suite 300
Atlanta, GA 30318-7701

Attention: Mr. James Potvin, Executive Director

Members of the Board:

Section 47-2-26 of the law governing the operation of the Employees' Retirement System of Georgia provides that the actuary shall make annual valuations of the contingent assets and liabilities of the Retirement System on the basis of regular interest and the tables last adopted by the Board of Trustees. We have submitted the report giving the results of the actuarial valuation of the System prepared as of June 30, 2019. The report indicates that annual employer contributions at the rate of 19.88% of compensation for Old Plan Members, 24.63% of compensation for New Plan Members, and 21.57% of compensation for GSEPS Members for the fiscal year ending June 30, 2022 are sufficient to support the benefits of the System.

In preparing the valuation, the actuary relied on data provided by the System. While not verifying data at the source, the actuary performed tests for consistency and reasonableness. Our firm, as actuary, is responsible for all of the actuarial trend data in the financial section of the annual report and the supporting schedules in the actuarial section of the annual report.

In our opinion, the valuation is complete and accurate, and the methodology and assumptions are reasonable as a basis for the valuation. The valuation takes into account the effect of all amendments to the System enacted through the 2019 session of the General Assembly. The valuation reflects two one-time 3% payments to certain retirees and beneficiaries effective July 2019 and January 2020.

Effective with the June 30, 2017 valuation, the assumed rate of return will be reduced by 0.10% (10 basis points) from the immediate prior actuarial valuation, as long as the actual rate of return for the fiscal year ending with the current valuation date exceeds the assumed rate of return from the immediate prior actuarial valuation. The assumed rate of return may not decrease below 7.00% net of investment expenses. Since the actual rate of return for the year ending June 30, 2019 was less than 7.30%, the assumed rate of return used in the current valuation remained at 7.30%.

The System is funded on an actuarial reserve basis. The actuarial assumptions recommended by the actuary and adopted by the Board are in the aggregate reasonably related to the experience under the System and to reasonable expectations of anticipated experience under the System. The assumptions and methods used for financial reporting purposes meet the parameters set by Actuarial Standards of Practice (ASOPs). The funding objective of the plan is that contribution rates over time will remain level as a percent of payroll. The valuation method used is the entry age normal cost method. The normal contribution rate to cover current cost has been determined as a level percent of payroll. Gains and losses are reflected in the total unfunded accrued liability which is being amortized on a level dollar basis in accordance with the funding policy adopted by the Board.

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The Plan and the employers are required to comply with the financial reporting requirements of GASB Statements No. 67 and 68. The necessary disclosure information is provided in separate supplemental reports.

We have provided the following information and supporting schedules for the Actuarial Section of the Comprehensive Annual Financial Report:

- Summary of Actuarial Assumptions
- Schedule of Active Members
- Schedule of Funding Progress
- Schedule of Retirees Added to and Removed from Rolls
- Analysis of Change in Unfunded Accrued Liability
- Solvency Test Results

The System is being funded in conformity with the minimum funding standard set forth in Code Section 47-20-10 of the Public Retirement Systems Standards Law and the funding policy adopted by the Board. In our opinion the System is operating on an actuarially sound basis. Assuming that contributions to the System are made by the employer from year to year in the future at the rates recommended on the basis of the successive valuations, the continued sufficiency of the retirement fund to provide the benefits called for under the System may be safely anticipated.

This is to certify that the independent consulting actuary is a member of the American Academy of Actuaries and has experience in performing valuations for public retirement systems, that the valuation was prepared in accordance with principles of practice prescribed by the Actuarial Standards Board, and that the actuarial calculations were performed by qualified actuaries in accordance with accepted actuarial procedures, based on the current provisions of the System and on actuarial assumptions that are internally consistent and reasonably based on the actual experience of the System.

Future actuarial results may differ significantly from the current results 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. Since the potential impact of such factors is outside the scope of a normal annual actuarial valuation, an analysis of the range of results is not presented herein.

The actuarial computations presented in this report are for purposes of determining the recommended funding amounts for the System. Use of these computations for purposes other than meeting these requirements may not be appropriate.

Sincerely yours,

Edward J. Koebel

Edward J. Koebel, EA, FCA, MAAA
Chief Executive Officer

Cathy Turcot

Cathy Turcot
Principal and Managing Director

Ben Mobley

Ben Mobley, ASA, FCA, MAAA
Senior Actuary

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Section I – Summary of Principal Results

1. For convenience of reference, the principal results of the valuation and a comparison with the preceding year's results are summarized below (all dollar amounts are in thousands):

Valuation Date	June 30, 2019	June 30, 2018
Number of active members	59,207	60,405
Annual earnable compensation	$ 2,611,965	$ 2,634,129
Number of retired members and beneficiaries	52,085	50,665
Annual allowances	$ 1,388,300	$ 1,362,201
Number of deferred vested members	6,370	6,399
Annual allowances	$ 74,800	$ 73,751
Assets:		
Fair Value	$ 13,617,472	$ 13,517,186
Actuarial Value	13,481,219	13,412,046
Valuation Interest Rate	7.30%	7.30%
Unfunded actuarial accrued liability	$ 4,348,001	$ 4,400,395
Blended Amortization period (years)	15.3	15.3
Funding Ratio based on Actuarial Value of Assets	75.6%	75.3%
For Fiscal Year Ending	**June 30, 2022**	**June 30, 2021**
Actuarially Determined Employer Contribution Rates (ADEC):		
Old Plan (prior to 7/1/1982)		
Initial Normal Rate*	6.23%	6.20%
Employer Paid on Behalf of Employee	(4.75)	(4.75)
Normal Rate*	1.48%	1.45%
Accrued Liability Rate	18.40%	18.46%
Total	19.88%	19.91%
New Plan (7/1/1982 through 12/31/2008)		
Normal Rate*	6.23%	6.20%
Accrued Liability Rate	18.40%	18.46%
Total	24.63%	24.66%
GSEPS (on and after 1/1/2009)		
Normal Rate*	3.17%	3.11%
Accrued Liability Rate	18.40%	18.46%
Total	21.57%	21.57%

* The normal contribution rate includes administrative expenses.

2. The major benefit and contribution provisions of the System are summarized in Schedule H. The valuation takes into account the effect of amendments of the System enacted through the 2019 session of the General Assembly. The results of the valuation reflect two one-time 3% payments to certain retirees and beneficiaries effective July 2019 and January 2020.

3. Schedule D of this report outlines the full set of actuarial assumptions used to prepare the current valuation. Effective with the June 30, 2017 valuation, the assumed rate of return will be reduced by 0.10% (10 basis points) from the immediate prior actuarial valuation, as long as the actual rate of return for the fiscal year ending with the current valuation date exceeds the assumed rate of return from the immediate prior actuarial valuation. The assumed rate of return may not decrease below 7.00% net of investment expenses. Since the actual rate of return for the year ending June 30, 2019 was less than 7.30%, the assumed rate of return used in the current valuation remained at 7.30%. The Board Funding Policy is shown in Schedule F.

4. The entry age actuarial cost method was used to prepare the valuation. Schedule E contains a brief description of this method.

5. Comments on the valuation results as of June 30, 2019 are given in Section IV and further discussion of the employer contribution levels is set out in Section V.

6. We have prepared the Solvency Test and the Schedule of Retirants Added to and Removed from Rolls for the System's Comprehensive Annual Financial Report. These tables are shown in Schedule K.

7. The funding ratio shown in the Summary of Principal Results is the ratio of the actuarial value of assets to the accrued liability and would be different if based on fair value of assets. The funding ratio is an indication of progress in funding the promised benefits. Since the ratio is less than 100%, there is a need for additional contributions toward payment of the unfunded actuarial accrued liability. In addition, this funding ratio does not have any relationship to measuring sufficiency if the plan had to settle its liabilities.

Section II – Membership

1. Data regarding the membership of the System for use as a basis for the valuation were furnished by the Retirement System office. The following table shows the number of active members, their annual compensation and average annual compensation as of June 30, 2019 on whose account benefits may be payable under the Retirement System.

THE NUMBER, ANNUAL COMPENSATION AND AVERAGE ANNUAL COMPENSATION OF ACTIVE MEMBERS AS OF JUNE 30, 2019

GROUP	NUMBER	ANNUAL COMPENSATION ($1,000's)	AVERAGE ANNUAL COMPENSATION
Old Plan	39	$ 3,096	$ 79,385
New Plan	23,179	1,182,530	51,017
GSEPS	35,989	1,426,339	39,633
Total	59,207	$ 2,611,965	$ 44,116

2. Data was provided by the Retirement System for inactive members who are eligible for deferred vested benefits. The valuation included 6,370 deferred vested members with annual allowances totaling $74,799,633. In addition, there are 54,204 inactive non-vested members included in the valuation entitled to a refund of member contributions.

3. The following table shows the number of retired members and beneficiaries on the roll as of June 30, 2019, together with the amount of their annual retirement allowances payable under the System as of that date.

THE NUMBER AND ANNUAL RETIREMENT ALLOWANCES OF RETIRED MEMBERS AND BENEFICIARIES RECEIVING BENEFITS AS OF JUNE 30, 2019

GROUP	NUMBER	ANNUAL RETIREMENT ALLOWANCES ($1,000's)
Service Retirements	40,782	$ 1,146,598
Disability Retirements	5,408	149,316
Beneficiaries of Deceased Active and Retired Members	5,895	92,386
Total	52,085	$ 1,388,300

Section III – Assets

1. The retirement law provides for the maintenance of two funds for the purpose of recording the financial transactions of the System; namely, the Annuity Savings Fund and the Pension Accumulation Fund (all amounts are in thousands).

   (a) Annuity Savings Fund

   The Annuity Savings Fund is the fund to which are credited all contributions made by members together with regular interest thereon. When a member retires, or if a death benefit allowance becomes payable to his beneficiary, his accumulated contributions are transferred from the Annuity Savings Fund to the Pension Accumulation Fund. The annuity which these contributions provide is then paid from the Pension Accumulation Fund. On June 30, 2019, the value of assets credited to the Annuity Savings Fund amounted to $469,014.

   (b) Pension Accumulation Fund

   The Pension Accumulation Fund is the fund to which all income from investments and all contributions made by employers of members of the System and by the State for members of local retirement funds are credited. All retirement allowance and death benefit allowance payments are disbursed from this fund. Upon the retirement of a member, or upon his death if a death benefit allowance is payable, his accumulated contributions are transferred from the Annuity Savings Fund to this fund to provide the annuity portion of the allowance. On June 30, 2019, the fair value of assets credited to the Pension Accumulation Fund amounted to $13,148,458.

2. As of June 30, 2019, the total fair value of assets amounted to $13,617,472 as reported by the Auditor of the System.

3. The actuarial value of assets used for the current valuation was determined to be $13,481,219 based on a five-year smoothing of investment gains and losses. Schedule B shows the development of the actuarial value of assets as of June 30, 2019.

4. Schedule C shows receipts and disbursements of the System for the two years preceding the valuation date and a reconciliation of the fund balances at fair value.

Section IV – Comments on Valuation

1. Schedule A of this report contains the valuation balance sheet which shows the present and prospective assets and liabilities of the System as of June 30, 2019 (all amounts are in thousands).

2. The valuation balance sheet shows that the System has total prospective liabilities of $18,607,000, of which $13,077,253 is for the prospective benefits payable on account of present retired members, beneficiaries of deceased members, and members entitled to deferred vested benefits, and $5,529,747 is for the prospective benefits payable on account of present active members. Against these liabilities, the System has total present assets for valuation purposes of $13,481,219 as of June 30, 2019. The difference of $5,125,781 between the total liabilities and the total present assets represents the present value of contributions to be made in the future.

3. The employer's contributions to the System consist of normal contributions and accrued liability contributions. The valuation indicates that employer normal contributions at the rate of 1.48% (6.23% less 4.75% Employer paid on behalf of Employee) of compensation for Old Plan members, 6.23% of compensation for New Plan members, and 3.17% of compensation for GSEPS members are required.

4. Estimated budgeted administrative expenses are included in the normal rates. Based on information received from the Retirement System, the expenses for the fiscal year ending June 30, 2022 are estimated to be 0.65% of payroll.

5. Prospective employer and employee normal contributions (excluding administrative expenses) have a present value of $777,780. When this amount is subtracted from $5,125,781, which is the present value of the total future contributions to be made in the future, there remains $4,348,001 as the unfunded actuarial accrued liability.

Section IV – Comments on Valuation

6. The funding policy adopted by the Board, as shown in Schedule F, provides that the unfunded actuarial accrued liability as of June 30, 2013 (Transitional UAAL) will be amortized as a level dollar amount over a closed 25-year period. In each subsequent valuation, all benefit changes, assumption and method changes, and experience gains and/or losses that have occurred since the previous valuation will combine to determine a New Incremental UAAL. Each New Incremental UAAL will be amortized as a level dollar amount over a closed 25-year period from the date it is established.

7. The funding policy also states that the employer contribution rates determined in an actuarial valuation will be at least sufficient to satisfy the normal cost of the System and amortize the UAAL as a level dollar amount over a period not to exceed 25 years (for the Transitional UAAL as of the June 30, 2013 valuation date and for each successive year of gains and losses incurred in years following the June 30, 2013 valuation date).

8. We have determined that an accrued liability contribution rate of 18.40% of active member's compensation will comply with the Board's funding policy.

9. Schedule G of this report shows the amortization schedules for the Transitional UAAL and New Incremental UAALs.

10. The following table shows the components of the total UAAL and the derivation of the UAAL contribution rate in accordance with the funding policy (all dollar amounts are in thousands):

TOTAL UAAL AND UAAL CONTRIBUTION RATE
($1,000's)

	Remaining Balance UAAL	Remaining Amortization Period	Amortization Payment
Transitional	$ 4,140,992	15.0	$ 463,430
New Incremental 6/30/2014	(150,534)	20.0	(14,542)
New Incremental 6/30/2015	(99,945)	21.0	(9,447)
New Incremental 6/30/2016	28,943	22.0	2,682
New Incremental 6/30/2017	195,559	23.0	17,796
New Incremental 6/30/2018	120,257	24.0	10,763
New Incremental 6/30/2019	112,729	25.0	9,936
Total	$ 4,348,001		$ 480,618
Blended Amortization Period (years)			15.3
Estimated Payroll			$ 2,611,965
UAAL Contribution Rate			18.40%

Section V – Contributions Payable by Employers

1. The following table summarizes the employer contribution rates, which were determined by the June 30, 2019 valuation and are recommended for use.

ACTUARIALLY DETERMINED EMPLOYER CONTRIBUTION RATES (ADEC)
FOR FISCAL YEAR ENDING JUNE 30, 2022

	Old Plan	New Plan	GSEPS
Normal Rate			
Initial Normal Rate	6.23%	6.23%	3.17%
Employer Paid on behalf of Employee	(4.75)	(0.00)	(0.00)
Employer Normal Rate	1.48%	6.23%	3.17%
Accrued Liability Rate	18.40%	18.40%	18.40%
Total	19.88%	24.63%	21.57%

2. Schedule J summarizes the contribution rates required for groups of members with special benefits.

Section VI – Accounting Information

The information required under the Governmental Accounting Standards Board (GASB) Statements No. 67 and 68 will be issued in separate reports. The following information is provided for informational purposes only.

1. The following is a distribution of the number of employees by type of membership.

NUMBER OF ACTIVE AND RETIRED MEMBERS
AS OF JUNE 30, 2019

GROUP	NUMBER
Retirees and beneficiaries currently receiving benefits	52,085
Terminated employees entitled to benefits but not yet receiving benefits	60,574
Active plan members	59,207
Total	171,866

2. The schedule of funding progress is shown below.

SCHEDULE OF FUNDING PROGRESS
(Dollar amounts in thousands)

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) - Entry Age (b)	Unfunded AAL (UAAL) (b – a)	Funded Ratio (a / b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b – a) / c)
6/30/2014	$ 12,376,120	$ 16,991,963	$ 4,615,843	72.8%	$ 2,315,625	199.3%
6/30/2015	12,675,649	17,099,527	4,423,878	74.1	2,352,920	188.0
6/30/2016	12,854,518	17,199,688	4,345,170	74.7	2,384,358	182.2
6/30/2017*	13,088,185	17,514,898	4,426,713	74.7	2,546,492	173.8
6/30/2018*	13,412,046	17,812,441	4,400,395	75.3	2,634,129	167.1
6/30/2019	13,481,219	17,829,220	4,348,001	75.6	2,611,965	166.5

* Reflects change in assumed rate of return

3. The following shows the schedule of employer and non-employer contributions (all dollar amounts are in thousands).

Year Ending	Actuarially Determined Employer Contribution	Percentage Contributed
6/30/2014	$ 429,136	100.1%
6/30/2015	517,221	100.2
6/30/2016	594,899	100.1
6/30/2017	624,623	100.1
6/30/2018	650,072	100.3
6/30/2019	649,209	100.0

An employer group within ERS did not contribute the full ADEC every year. However, this employer has made the additional contributions required and repaid this shortfall as of June 30, 2018.

4. The information presented in the required supplementary schedules was determined as part of the actuarial valuation at June 30, 2019. Additional information as of the latest actuarial valuation follows.

Valuation date	6/30/2019
Actuarial cost method	Entry age
Amortization method	Level dollar, closed
Remaining amortization period	15.3 years
Asset valuation method	5-year smoothed fair
Actuarial assumptions:	
Investment rate of return*	7.30%
Projected salary Increases*	3.25% - 7.00%
Cost-of-living adjustments	None

* Includes inflation at 2.75%

Section VII – Experience

1. Section 47-2-26 of the act governing the operation of the System provides that as an aid to the Board in adopting service and mortality tables, the actuary will prepare an experience investigation at least once in each five-year period. The last experience investigation was prepared for the five-year period ending June 30, 2014 and based on the results of the investigation, various new assumptions and methods were adopted by the Board on December 17, 2015. The next experience investigation will be prepared for the period July 1, 2014 through June 30, 2019.
2. The following table shows the estimated gain or loss from various factors that resulted in a decrease of $52,394,000 in the unfunded actuarial accrued liability (UAAL) from $4,400,395,000 to $4,348,001,000 during the fiscal year ending June 30, 2019.
3. The most significant reason for the $52.4 million decrease in the UAAL was that the accrued liability contribution was greater than the interest on the prior year UAAL by $246.2 million. This occurred due to the level dollar funding method used to amortize the UAAL (more payment applied to principal balance). There was also a gain of $43.5 million due to salary increases that were less than expected. These gains were partially offset by a loss of $108.6 million for valuation asset growth, because the rate of return on the actuarial value of assets was less than the assumed rate of 7.30% for the fiscal year ending June 30, 2019. Also, the two one-time 3% payments for certain retirees and beneficiaries effective July 2019 and January 2020 increased the UAAL approximately $61.2 million. Other smaller losses came from turnover, retirements, and data changes.

ANALYSIS OF THE CHANGE IN UNFUNDED ACTUARIAL ACCRUED LIABILITY
(in millions of dollars)

ITEM	AMOUNT OF INCREASE/ (DECREASE)
Interest (7.30%) added to previous UAAL	$ 321.2
Accrued liability contribution	(567.4)
Experience:	
Valuation asset growth	108.6
Pensioners' mortality	(1.2)
Turnover and retirements	40.7
New entrants	9.6
Salary increases	(43.5)
Method changes	0.0
Amendments	61.2
Assumption changes	0.0
Data changes	18.4
Miscellaneous changes	0.0
Total	$ (52.4)

Section VIII – Risk Assessment

Overview

Actuarial Standards of Practice (ASOP) No. 51, issued by the Actuarial Standards Board, provides guidance on assessing and disclosing risks related to pension plan funding. This guidance is binding on all credentialed actuaries practicing in the United States. This standard was issued as final in September 2017 with application to measurement dates on or after November 1, 2018.

The term "risk" frequently has a negative connotation, but from an actuarial perspective, it may be thought of as simply the fact that what actually happens in the real world will not always match what was expected, based on actuarial assumptions. Of course, when actual experience is better than expected, the favorable risk is easily absorbed. The risk of unfavorable experience will likely be unpleasant, and so there is an understandable focus on aspects of risk that are negative.

Risk usually can be reduced or eliminated at some cost. Consumers, for example, buy auto and home insurance to reduce the risk of accidents or catastrophes. Another way to express this concept, however, is that there is generally some reward for assuming risk. Thus, retirement plans invest not just in US Treasury bonds which have almost no risk, but also in equities which are considerably riskier – because they have an expected reward of a higher return that justifies the risk.

Under ASOP 51, the actuary is called on to identify the significant risks to the pension plan and provide information to help those sponsoring and administering the plan understand the implications of these risks. In this section, we identify some of the key risks for the System and provide information to help interested parties better understand these risks.

Section VIII – Risk Assessment

Investment Risk

The investment return on assets is the most obvious risk – and usually the largest risk – to funding a pension plan. To illustrate the magnitude of this risk, the following chart shows the Asset Volatility Ratio (AVR), defined as the fair value of assets divided by covered payroll.

($ in thousands)

Valuation	Fair Value of Assets	Covered Payroll	Asset Volatility Ratio
2014	$13,291,531	$2,315,625	5.74
2015	$12,967,964	$2,352,920	5.51
2016	$12,373,567	$2,384,358	5.19
2017	$13,098,299	$2,546,492	5.14
2018	$13,517,186	$2,634,129	5.13
2019	$13,617,472	$2,611,965	5.21

The asset volatility ratio is especially useful to compare across plans or through time. It is also frequently useful to consider how the AVR translates into changes in the Required Contribution Rate (actuarially determined employer contribution rate). For example, in the table below with an AVR of 5.00, if the market value return is 10% below assumed, or negative 2.70% (7.30% minus 10.00%) for the System, there will be an increase in the Required Contribution Rate of 0.88% of payroll in the first year. Without asset smoothing or without returns above the expected return in the next four years, the impact on the Required Contribution Rate would be 4.41%. A higher AVR would produce more volatility in the Required Contribution Rate.

AVR	Unsmoothed Amortization	Smoothed Amortization
4.0	3.53%	0.71%
5.0	4.41%	0.88%
6.0	5.29%	1.06%

Section VIII – Risk Assessment

Sensitivity Measures

Valuations are generally performed with a single set of assumptions that reflects the best estimate of future conditions, in the opinion of the actuary and typically the governing board. Note that under actuarial standards of practice, the set of economic assumptions used for funding must be consistent. To enhance the understanding of the importance of an assumption, a sensitivity test can be performed where the valuation results are recalculated using a different assumption or set of assumptions.

The following tables contains the key measures for the System using the valuation assumption for investment return of 7.30%, along with the results if the assumption were 6.30% or 8.30%. In this analysis, only the investment return assumption is changed. Consequently, there may be inconsistencies between the investment return and other economic assumptions such as inflation or payroll increases. In addition, simply because the valuation results under alternative assumptions are shown here, it should not be implied that CMC believes that either assumption (6.30% or 8.30%) would comply with actuarial standards of practice.

($ in thousands)

As of June 30, 2019	Current Discount Rate (7.3%)	-1% Discount Rate (6.3%)	+1% Discount Rate (8.3%)
Accrued Liability	$17,829,220	$19,572,703	$16,342,993
Unfunded Liability	$4,348,001	$6,091,484	$2,861,774
Funded Ratio (AVA)	75.6%	68.9%	82.5%
ADEC Rate*			
Old Plan	19.88%	25.93%	14.21%
New Plan	24.63%	30.68%	18.96%
GSEPs	21.57%	26.62%	16.65%

* Contribution rates are determined based on the Board's current Funding Policy

Section VIII – Risk Assessment

Mortality Risk

The mortality assumption is a significant assumption for valuation results, second only to the investment assumption in most situations. The System's mortality assumption utilizes a mortality table (with separate rates for males and females, as well as different rates by status) and a projection scale for how the mortality table is expected to improve through time.

The future, however, is not known, and actual mortality improvements may occur at a faster rate than expected, or at a slower rate than expected (or even decline). Although changes in mortality will affect the benefits paid, this assumption is carefully studied during the regular experience studies that the System conducts so that incremental changes can be made to smoothly reflect unfolding experience. The next experience study will be completed for the period July 1, 2014 – June 30, 2019

Contribution Risk

The System is primarily funded by member and employer contributions to the trust fund, together with the earnings on those accumulated contributions. Each year in the valuation, the Required Contribution Rate is determined, based on the System's funding policy. This rate is the sum of the rates for the normal cost for the plan, the amortization of the UAAL, and the administrative expenses. Since the Required Contribution Rate has always been made and that procedure is expected to continue, there is no Contribution Risk at this time.

Schedule A – Valuation Balance Sheet

VALUATION BALANCE SHEET
SHOWING THE PRESENT AND PROSPECTIVE ASSETS AND LIABILITIES OF
THE EMPLOYEES' RETIREMENT SYSTEM OF GEORGIA
AS OF JUNE 30, 2019
(Dollar amounts in thousands)

	ACTUARIAL LIABILITIES		
(1)	Present value of prospective benefits payable on account of present retired members, beneficiaries of deceased members, and members entitled to deferred vested benefits		
	- Service and disability benefits	$ 11,783,691	
	- Death and survivor benefits	759,371	
	- Deferred vested benefits	534,191	
	Total		$ 13,077,253
(2)	Present value of prospective benefits payable on account of present active members		5,529,747
(3)	TOTAL ACTUARIAL LIABILITIES		$ 18,607,000
	PRESENT AND PROSPECTIVE ASSETS		
(4)	Actuarial value of assets		$ 13,481,219
(5)	Present value of total future contributions = (3)-(4)	$ 5,125,781	
(6)	Present value of future member contributions and employer normal contributions		777,780
(7)	Prospective unfunded accrued liability contributions = (5)-(6)		4,348,001
(8)	TOTAL PRESENT AND PROSPECTIVE ASSETS		$ 18,607,000

Schedule B – Development of Actuarial Value of Assets

DEVELOPMENT OF ACTUARIAL VALUE OF ASSETS
(Dollar amounts in thousands)

(1)	Actuarial Value Beginning of Year		$	13,412,046
(2)	Fair Value End of Year		$	13,617,472
(3)	Fair Value Beginning of Year		$	13,517,186
(4)	Cash Flow			
	(a)	Contributions	$	685,471
	(b)	Benefit Payments		(1,451,447)
	(c)	Administrative Expenses		(7,142)
	(d)	Investment Expenses		(8,058)
	(e)	Net: (4)(a) + (4)(b) + (4)(c) + (4)(d)	$	(781,176)
(5)	Investment Income			
	(a)	Fair Total: (2) – (3) – (4)(e)	$	881,462
	(b)	Assumed Rate of Return for Current Year		7.30%
	(c)	Amount for Immediate Recognition: [(3) x (5)(b)] + [{(4)(a) + (4)(b) + (4)(c)} x (5)(b) x 0.5] – (4)(d)	$	966,594
	(d)	Amount for Phased-In Recognition: (5)(a) – (5)(c)		(85,132)
(6)	Phased-In Recognition of Investment Income			
	(a)	Current Year: (5)(d) / 5	$	(17,026)
	(b)	First Prior Year		44,932
	(c)	Second Prior Year		115,153
	(d)	Third Prior Year		(160,743)
	(e)	Fourth Prior Year		(98,561)
	(f)	Total Recognized Investment Gain	$	(116,245)
(7)	Actuarial Value End of Year: (1) + (4)(e) + (5)(c) + (6)(f)		$	13,481,219
(8)	Difference Between Fair & Actuarial Values: (2) – (7)		$	136,253
(9)	Rate of Return on Actuarial Value*			6.47%

* Calculated assuming cash flow occurs in the middle of the year

Schedule C – Summary of Receipts and Disbursements

SUMMARY OF RECEIPTS AND DISBURSEMENTS
(Fair Value)

	YEAR ENDING	
Receipts for the Year	June 30, 2019 ($1,000's)	June 30, 2018 ($1,000's)
Contributions:		
Members	$ 36,252	$ 37,130
Non-employer	10,220	12,865
Employer	638,989	639,302
Subtotal	$ 685,461	$ 689,297
Administrative Expense Allotment	10	10
Net Investment Earnings	873,404	1,166,013
TOTAL	$ 1,558,875	$ 1,855,320
Disbursements for the Year		
Benefit Payments	$ 1,443,756	$ 1,413,298
Refunds to Members	7,691	7,585
Administration Expense	7,142	8,056
TOTAL	$ 1,458,589	$ 1,428,939
Excess of Receipts over Disbursements	$ 100,286	$ 426,381
Reconciliation of Asset Balances		
Asset Balance as of the Beginning of Year	$ 13,517,186	$ 13,090,805
Excess of Receipts over Disbursements	100,286	426,381
Asset Balance as of the End of Year	$ 13,617,472	$ 13,517,186
Estimated Rate of Return*	6.65%	9.17%

* Calculated assuming cash flow occurs in the middle of the year

Schedule D – Outline of Actuarial Assumptions and Methods

Actuarial assumptions and methods adopted by the Board December 17, 2015. Valuation interest rate adopted by the Board March 15, 2018.

VALUATION INTEREST RATE: 7.30% per annum, compounded annually, net of investment expenses, composed of a 2.75% inflation assumption and a 4.55% real rate of investment return assumption.

SALARY INCREASES:

Age	Assumed Annual Rate of Salary Increase
20	7.00%
25	6.25
30	5.15
35	4.55
40	4.30
45	4.05
50	3.80
55	3.55
60	3.30
65	3.25

RATES OF DISABILITY: Representative values of the assumed annual rates of disability are as follows.

	Non-Law Enforcement		Law Enforcement
Age	Male	Female	
20	0.05%	0.02%	0.02%
25	0.05	0.02	0.05
30	0.05	0.02	0.08
35	0.05	0.02	0.16
40	0.25	0.10	0.85
45	0.48	0.25	1.40
50	0.70	0.45	2.00
55	1.05	0.73	2.70
60	--	--	--

RATES OF WITHDRAWAL: Representative values of the assumed annual rates of withdrawal are as follows.

Age	Non-Law Enforcement Years of Service 0-4	5-9	10 & Over
		Male	
20	35.00%		
25	27.50	15.00%	
30	23.00	11.50	7.50%
35	21.50	10.00	6.00
40	19.50	9.50	4.75
45	18.60	9.00	4.00
50	16.60	7.25	4.25
55	14.50	7.00	4.75
60	14.00	6.00	
65	15.00	10.00	
		Female	
20	30.00%		
25	25.00	17.50%	
30	21.50	12.50	8.25%
35	19.50	10.50	6.00
40	18.25	9.50	5.00
45	16.50	8.00	4.00
50	15.00	7.25	4.25
55	14.00	7.00	4.50
60	14.50	6.25	
65	17.00	11.00	

Age	Law Enforcement Years of Service 0-9	10 & Over
20	15.00%	
25	5.75	4.00%
30	5.75	4.00
35	5.75	3.75
40	5.75	3.00
45	5.75	2.00
50	5.75	2.00
55	--	--

Schedule D – Outline of Actuarial Assumptions and Methods

RATES OF RETIREMENT: Representative values of the assumed annual rates of service retirement are as follows.

	Non-Law Enforcement Old Plan							
Age	**Early Retirement**		**Age 60 or 30 years**		**34 years**		**More than 34 years**	
	Male	**Female**	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**
50	2.0%	2.0%	7.5%	6.0%	100.0%	100.0%	90.0%	100.0%
52	2.0	2.0	7.5	6.0	100.0	100.0	90.0	100.0
55	3.0	3.5	7.5	10.0	100.0	100.0	75.0	90.0
57	3.5	5.0	10.5	10.0	100.0	100.0	70.0	70.0
60			15.0	20.0	97.5	95.0	40.0	55.0
62			32.0	40.0	97.5	95.0	40.0	65.0
65			35.0	40.0	35.0	40.0	35.0	40.0
67			35.0	35.0	35.0	35.0	35.0	35.0
70			35.0	35.0	35.0	35.0	35.0	35.0
75			100.0	100.0	100.0	100.0	100.0	100.0

	Non-Law Enforcement New Plan and GSEPS				Law Enforcement***
Age	**Early Retirement**		**Normal Retirement**		
	Male	**Female**	**Male***	**Female****	
50	7.0%	4.5%	70.0%	50.0%	
52	7.0	4.5	70.0	45.0	
55	7.0	6.5	60.0	50.0	20.0%
57	8.0	8.0	50.0	40.0	12.0
60			25.0	30.0	30.0
62			40.0	40.0	35.0
65			32.0	35.0	25.0
67			32.0	32.0	25.0
70			30.0	30.0	100.0
75			100.0	100.0	

* An additional 10% for ages below 55 and 20% for ages 55 to 59 are assumed to retire in the first year eligible for unreduced retirement with 30 years of service.

** An additional 20% are assumed to retire in the first year eligible for unreduced retirement with 30 years of service before age 60.

*** In addition, 100% are assumed to retire with 30 years of service on or before age 50 and 75% are assumed to retire with 30 years of service after age 50 but before age 55.

Schedule D – Outline of Actuarial Assumptions and Methods

RATES OF DEATH BEFORE RETIREMENT: The RP-2000 Employee Mortality Table projected to 2025 with projection scale BB is used for both males and females while in active service. Representative values of the assumed annual rates of mortality while in active service are as follows:

Age	Males	Females	Age	Males	Females
20	0.0320%	0.0177%	45	0.1399%	0.1043%
25	0.0349	0.0192	50	0.1983	0.1555
30	0.0412	0.0245	55	0.2810	0.2228
35	0.0717	0.0441	60	0.4092	0.3058
40	0.1001	0.0655	65	0.5600	0.4304

RATES OF DEATHS AFTER RETIREMENT: The RP-2000 Combined Mortality Table projected to 2025 with projection scale BB and set forward 2 years for both males and females is used for the period after service retirement and for dependent beneficiaries. The RP-2000 Disabled Mortality Table projected to 2025 with projection scale BB and set back 7 years for males and set forward 3 years for females is used for the period after disability retirement. There is a margin for future mortality improvement in the tables used by the System. Based on the results of the most recent experience study adopted by the Board on December 17, 2015, the numbers of expected future deaths are 9-12% less than the actual number of deaths that occurred during the study period for service retirements and beneficiaries and for disability retirements. Representative values of the assumed annual rates of mortality after service retirement are as follows:

Age	Males	Females	Age	Males	Females
40	0.1127%	0.0790%	65	1.1300%	0.8994%
45	0.1609	0.1230	70	1.8697	1.5281
50	0.2474	0.1872	75	3.2147	2.5220
55	0.4246	0.2918	80	5.5160	4.1628
60	0.6985	0.4923	85	9.5631	7.1239

ADMINISTRATIVE EXPENSES: Budgeted administrative expenses are added to the normal contribution rate.

AMORTIZATION METHOD: Level dollar amortization.

ASSET METHOD: Actuarial value, as developed in Schedule B. The actuarial value of assets recognizes a portion of the difference between the fair value of assets and the expected actuarial value of assets, based on the assumed valuation rate of return. The actuarial value was set equal to the fair value as of June 30, 2013. The amount recognized each year beginning June 30, 2014 is 20% of the difference between fair value and expected actuarial value.

DEATH BENEFITS: It is assumed that 100% of the membership will select a beneficiary with the male three years older than the female.

VESTED TERMINATION BENEFITS: It is assumed that 50% of active members who terminate with 10 or more years of service before retirement will receive a benefit beginning at age 60 and 50% will receive a refund of member contributions.

Schedule D – Outline of Actuarial Assumptions and Methods

SICK LEAVE: Assumed load on service at retirement for the practice of allowing members to convert forfeited sick leave is as follows:

- Old Plan members who retire with 34 years of service – 4.0%
- Old Plan members who retire on normal retirement – 2.0%
- Old Plan members who retire on early retirement – 1.5%
- All New Plan and GSEPS retirements – 3.0%
- All Law Enforcement retirements – 5.0%

VALUATION METHOD: Entry age actuarial cost method. See Schedule E for a brief description of this method.

Schedule E – Actuarial Cost Method

1. The valuation is prepared on the projected benefit basis, under which the present value, at the interest rate assumed to be earned in the future (currently 7.30%), of each active member's expected benefit at retirement or death is determined, based on his age, service, sex and compensation. The calculations take into account the probability of a member's death or termination of employment prior to becoming eligible for a benefit, as well as the possibility of his terminating with a service, disability or survivor's benefit. Future salary increases are also anticipated. The present value of the expected benefits payable on account of the active members is added to the present value of the expected future payments to retired members and beneficiaries and inactive members to obtain the present value of all expected benefits payable from the System on account of the present group of members and beneficiaries.
2. The employer contributions required to support the benefits of the System are determined following a level funding approach, and consist of a normal contribution and an accrued liability contribution.
3. The normal contribution is determined using the "entry age normal" method. Under this method, a calculation is made to determine the uniform and constant percentage rate of employer contribution which, if applied to the compensation of the average new member during the entire period of his anticipated covered service, would be required in addition to the contributions of the member to meet the cost of all benefits payable on his behalf.
4. The unfunded accrued liability is determined by subtracting the present value of prospective employer normal contributions and member contributions, together with the current actuarial value of assets held, from the present value of expected benefits to be paid from the System.

Schedule F – Board Funding Policy

FUNDING POLICY OF THE ERS BOARD OF TRUSTEES

The purpose of this Funding Policy is to state the overall objectives for the Employees' Retirement System of Georgia (System), the benchmarks that will be used to measure progress in achieving those goals, and the methods and assumptions that will be employed to develop the benchmarks. It is the intent of the ERS Board of Trustees that the Funding Policy outlined herein will remain unchanged until the objectives below are met.

I. Funding Objectives

The goal in requiring employer and member contributions to the System is to accumulate sufficient assets during a member's employment to fully finance the benefits the member is expected to receive throughout retirement. In meeting this objective, the System will strive to meet the following funding objectives:

- To develop a pattern of contribution rates expressed as a percentage of employer payroll and measured by valuations prepared in accordance with applicable State laws and the principles of practice prescribed by the Actuarial Standards Board.
- To maintain an increasing funded ratio (ratio of actuarial value of assets to actuarial accrued liabilities) that reflects a trend of improved actuarial condition. The long-term objective is to obtain a 100% funded ratio over a reasonable period of future years.
- To maintain adequate asset levels to finance the benefits promised to members and monitor the future demand for liquidity.
- To promote intergenerational equity for taxpayers with respect to contributions required for the benefits provided by the System.

II. Measures of Funding Progress

To track progress in achieving the System's funding objectives, the following measures will be determined annually as of the actuarial valuation date (with due recognition that a single year's results may not be indicative of long-term trends):

- **Funded Ratio** – The funded ratio, defined as the actuarial value of assets divided by the actuarial accrued liability, should increase over time, before adjustments for changes in benefits, actuarial methods, and/or actuarial adjustments. The target funded ratio will be 100 percent within 25 years of the valuation date for the first valuation conducted following the adoption of this Policy (i.e. the June 30, 2013 valuation date).
- **Unfunded Actuarial Accrued Liability (UAAL)**
    - **Transitional UAAL** – The UAAL established as of the initial valuation date for which this funding policy is adopted shall be known as the Transitional UAAL.
    - **New Incremental UAAL** – Each subsequent valuation will produce a New Incremental UAAL consisting of all benefit changes, assumption and method changes and experience gains and/or losses that have occurred since the previous valuations.
- **UAAL Amortization Period**
    - The transitional UAAL will be amortized over a closed 25-year period beginning on the initial valuation date for which this funding policy is adopted.
    - Each New Incremental UAAL shall be amortized over a closed 25-year period beginning with the year it is incurred.
- **Employer Contribution Rates**
    - **Employer Normal Contribution Rate** – the contribution rate determined as of the valuation date each year based on the provisions of Georgia Code Section 47-2-55 (1).
    - In each valuation subsequent to the adoption of this funding policy, the required employer contribution rate will be determined as the summation of the employer Normal Contribution Rate, a contribution rate for administrative expenses, the amortization rate for the

Transitional UAAL and the individual amortization rate for each of the New Incremental UAAL bases.
- In no event shall the employer contribution rate be less than 0%.
- The valuation methodology, including the amortization of the Unfunded Actuarial Accrued Liability (UAAL), would be expected to maintain reasonably stable contribution rates.

III. Methods and Assumptions

The annual actuarial valuations providing the measures to assess funding progress will utilize the actuarial methods and assumptions last adopted by the Board based upon the advice and recommendations of the actuary. These include the following primary methods and assumptions:

- The actuarial cost method used to develop the benchmarks will be the Entry Age Normal (EAN) actuarial cost method.
- The long-term annual investment rate of return assumption will be:
  - Effective with the June 30, 2013 valuation date, 7.50% net of investment expenses.
  - Effective with the June 30, 2017 valuation date, reduced by 0.10% (10 basis points) from the immediate prior actuarial valuation, as long as the following conditions are met:
    - The actual rate of return for the fiscal year ending with the current valuation date exceeds the assumed rate of return from the immediate prior actuarial valuation, and
    - The assumed rate of return does not decrease below 7.00% net of investment expenses.
- The actuarial value of assets will be determined by recognizing the annual differences between actual and expected market value of assets over a five-year period, beginning with the June 30, 2013 actuarial valuation.
  - Prior to the June 30, 2013 valuation, the differences between actual and expected market value of assets were recognized over a seven-year period. For the June 30, 2013 valuation, all then-current deferred gains and losses will be recognized immediately, and the initial new five-year period will begin immediately thereafter.

The employer contribution rates determined in an annual actuarial valuation will be at least sufficient to satisfy the annual normal cost of the System and amortize the UAAL as a level dollar amount over a period not to exceed 25 years (for the UAAL as of the June 30, 2013 valuation date, and for each successive year of gains and losses incurred in years following the June 30, 2013 valuation date). However in no event shall the employer contribution rate be less than 0%.

The actuary shall conduct an investigation into the System's experience at least every five years and utilize the results of the investigation to form the basis for recommended assumptions and methods. Any changes to the recommended assumptions and methods that are approved by the Board will be reflected in this Policy.

IV. Funding Policy Progress

The Board will periodically have actuarial projections of the valuation results performed to assess the current and expected future progress towards the overall funding goals of the System. These periodic projections will provide the expected valuation results over at least a 30-year period. The projected measures of funding progress and the recent historical trend provided in valuations will provide important information for the Board's assessment of the System's funding progress.

Adopted: March 15, 2018

Schedule G – Amortization of UAAL

AMORTIZATION OF TRANSITIONAL UAAL
(Dollar amounts in thousands)

Valuation Date	Amortization Period	Balance of Transitional UAAL	Annual Amortization Payment
6/30/2013	25	$4,847,512	$434,874
6/30/2014	22.7	4,776,202	444,599
6/30/2015	19.6	4,689,818	464,364
6/30/2016	18.4	4,577,190	466,987
6/30/2017	16.4	4,453,493	477,279
6/30/2018	15.1	4,305,773	479,102
6/30/2019	**15.0**	**4,140,992**	**463,430**
6/30/2020	14.0	3,979,854	463,430
6/30/2021	13.0	3,806,954	463,430
6/30/2022	12.0	3,621,431	463,430
6/30/2023	11.0	3,422,365	463,430
6/30/2024	10.0	3,208,768	463,430
6/30/2025	9.0	2,979,578	463,430
6/30/2026	8.0	2,733,657	463,430
6/30/2027	7.0	2,469,784	463,430
6/30/2028	6.0	2,186,648	463,430
6/30/2029	5.0	1,882,843	463,430
6/30/2030	4.0	1,556,861	463,430
6/30/2031	3.0	1,207,081	463,430
6/30/2032	2.0	831,768	463,430
6/30/2033	1.0	429,057	460,378
6/30/2034	0	0	0
6/30/2035	0	0	0
6/30/2036	0	0	0
6/30/2037	0	0	0
6/30/2038	0	0	0

Schedule G – Amortization of UAAL

AMORTIZATION OF 2014 INCREMENTAL UAAL
(Dollar amounts in thousands)

Valuation Date	Amortization Period	Balance of New Incremental UAAL 6/30/2014	Annual Amortization Payment
6/30/2014	25	($164,722)	($14,777)
6/30/2015	24	(162,299)	(14,777)
6/30/2016	23	(159,694)	(14,777)
6/30/2017	22	(156,894)	(14,658)
6/30/2018	21	(153,846)	(14,542)
6/30/2019	**20**	**(150,534)**	**(14,542)**
6/30/2020	19	(146,981)	(14,542)
6/30/2021	18	(143,168)	(14,542)
6/30/2022	17	(139,077)	(14,542)
6/30/2023	16	(134,687)	(14,542)
6/30/2024	15	(129,977)	(14,542)
6/30/2025	14	(124,923)	(14,542)
6/30/2026	13	(119,500)	(14,542)
6/30/2027	12	(113,681)	(14,542)
6/30/2028	11	(107,438)	(14,542)
6/30/2029	10	(100,738)	(14,542)
6/30/2030	9	(93,550)	(14,542)
6/30/2031	8	(85,836)	(14,542)
6/30/2032	7	(77,560)	(14,542)
6/30/2033	6	(68,679)	(14,542)
6/30/2034	5	(59,151)	(14,542)
6/30/2035	4	(48,926)	(14,542)
6/30/2036	3	(37,956)	(14,542)
6/30/2037	2	(26,184)	(14,542)
6/30/2038	1	(13,553)	(14,542)
6/30/2039	0	0	0

Schedule G – Amortization of UAAL

AMORTIZATION OF 2015 INCREMENTAL UAAL
(Dollar amounts in thousands)

Valuation Date	Amortization Period	Balance of New Incremental UAAL 6/30/2015	Annual Amortization Payment
6/30/2015	25	($107,062)	($9,605)
6/30/2016	24	(105,487)	(9,605)
6/30/2017	23	(103,794)	(9,525)
6/30/2018	22	(101,950)	(9,447)
6/30/2019	**21**	**(99,945)**	**(9,447)**
6/30/2020	20	(97,794)	(9,447)
6/30/2021	19	(95,485)	(9,447)
6/30/2022	18	(93,008)	(9,447)
6/30/2023	17	(90,350)	(9,447)
6/30/2024	16	(87,499)	(9,447)
6/30/2025	15	(84,439)	(9,447)
6/30/2026	14	(81,155)	(9,447)
6/30/2027	13	(77,632)	(9,447)
6/30/2028	12	(73,852)	(9,447)
6/30/2029	11	(69,796)	(9,447)
6/30/2030	10	(65,444)	(9,447)
6/30/2031	9	(60,774)	(9,447)
6/30/2032	8	(55,763)	(9,447)
6/30/2033	7	(50,386)	(9,447)
6/30/2034	6	(44,617)	(9,447)
6/30/2035	5	(38,427)	(9,447)
6/30/2036	4	(31,785)	(9,447)
6/30/2037	3	(24,658)	(9,447)
6/30/2038	2	(17,010)	(9,447)
6/30/2039	1	(8,805)	(9,447)
6/30/2040	0	0	0

Schedule G – Amortization of UAAL

AMORTIZATION OF 2016 INCREMENTAL UAAL
(Dollar amounts in thousands)

Valuation Date	Amortization Period	Balance of New Incremental UAAL 6/30/2016	Annual Amortization Payment
6/30/2016	25	$30,408	$2,728
6/30/2017	24	29,961	2,705
6/30/2018	23	29,473	2,682
6/30/2019	**22**	**28,943**	**2,682**
6/30/2020	21	28,373	2,682
6/30/2021	20	27,763	2,682
6/30/2022	19	27,107	2,682
6/30/2023	18	26,404	2,682
6/30/2024	17	25,650	2,682
6/30/2025	16	24,840	2,682
6/30/2026	15	23,971	2,682
6/30/2027	14	23,039	2,682
6/30/2028	13	22,039	2,682
6/30/2029	12	20,966	2,682
6/30/2030	11	19,814	2,682
6/30/2031	10	18,579	2,682
6/30/2032	9	17,253	2,682
6/30/2033	8	15,831	2,682
6/30/2034	7	14,304	2,682
6/30/2035	6	12,666	2,682
6/30/2036	5	10,909	2,682
6/30/2037	4	9,023	2,682
6/30/2038	3	7,000	2,682
6/30/2039	2	4,829	2,682
6/30/2040	1	2,500	2,682
6/30/2041	0	0	0

Schedule G – Amortization of UAAL

AMORTIZATION OF 2017 INCREMENTAL UAAL
(Dollar amounts in thousands)

Valuation Date	Amortization Period	Balance of New Incremental UAAL 6/30/2017	Annual Amortization Payment
6/30/2017	25	$201,852	$17,950
6/30/2018	24	198,839	17,796
6/30/2019	**23**	**195,559**	**17,796**
6/30/2020	22	192,039	17,796
6/30/2021	21	188,262	17,796
6/30/2022	20	184,210	17,796
6/30/2023	19	179,862	17,796
6/30/2024	18	175,196	17,796
6/30/2025	17	170,190	17,796
6/30/2026	16	164,818	17,796
6/30/2027	15	159,054	17,796
6/30/2028	14	152,869	17,796
6/30/2029	13	146,233	17,796
6/30/2030	12	139,113	17,796
6/30/2031	11	131,472	17,796
6/30/2032	10	123,274	17,796
6/30/2033	9	114,477	17,796
6/30/2034	8	105,039	17,796
6/30/2035	7	94,911	17,796
6/30/2036	6	84,044	17,796
6/30/2037	5	72,383	17,796
6/30/2038	4	59,872	17,796
6/30/2039	3	46,447	17,796
6/30/2040	2	32,042	17,796
6/30/2041	1	16,585	17,796
6/30/2042	0	0	0

AMORTIZATION OF 2018 INCREMENTAL UAAL
(Dollar amounts in thousands)

Valuation Date	Amortization Period	Balance of New Incremental UAAL 6/30/2018	Annual Amortization Payment
6/30/2018	25	$122,106	$10,763
6/30/2019	**24**	**120,257**	**10,763**
6/30/2020	23	118,273	10,763
6/30/2021	22	116,144	10,763
6/30/2022	21	113,860	10,763
6/30/2023	20	111,409	10,763
6/30/2024	19	108,779	10,763
6/30/2025	18	105,958	10,763
6/30/2026	17	102,930	10,763
6/30/2027	16	99,681	10,763
6/30/2028	15	96,195	10,763
6/30/2029	14	92,455	10,763
6/30/2030	13	88,441	10,763
6/30/2031	12	84,135	10,763
6/30/2032	11	79,514	10,763
6/30/2033	10	74,555	10,763
6/30/2034	9	69,235	10,763
6/30/2035	8	63,527	10,763
6/30/2036	7	57,402	10,763
6/30/2037	6	50,829	10,763
6/30/2038	5	43,777	10,763
6/30/2039	4	36,210	10,763
6/30/2040	3	28,091	10,763
6/30/2041	2	19,379	10,763
6/30/2042	1	10,030	10,763
6/30/2043	0	0	0

Schedule G – Amortization of UAAL

AMORTIZATION OF 2019 INCREMENTAL UAAL
(Dollar amounts in thousands)

Valuation Date	Amortization Period	Balance of New Incremental UAAL 6/30/2019	Annual Amortization Payment
6/30/2019	**25**	**$112,729**	**$9,936**
6/30/2020	24	111,022	9,936
6/30/2021	23	109,190	9,936
6/30/2022	22	107,225	9,936
6/30/2023	21	105,116	9,936
6/30/2024	20	102,854	9,936
6/30/2025	19	100,426	9,936
6/30/2026	18	97,821	9,936
6/30/2027	17	95,025	9,936
6/30/2028	16	92,026	9,936
6/30/2029	15	88,808	9,936
6/30/2030	14	85,355	9,936
6/30/2031	13	81,649	9,936
6/30/2032	12	77,674	9,936
6/30/2033	11	73,407	9,936
6/30/2034	10	68,830	9,936
6/30/2035	9	63,918	9,936
6/30/2036	8	58,648	9,936
6/30/2037	7	52,993	9,936
6/30/2038	6	46,926	9,936
6/30/2039	5	40,415	9,936
6/30/2040	4	33,429	9,936
6/30/2041	3	25,933	9,936
6/30/2042	2	17,890	9,936
6/30/2043	1	9,260	9,936
6/30/2044	0	0	0

SUMMARY OF MAIN SYSTEM PROVISIONS
AS INTERPRETED FOR VALUATION PURPOSES

The Employees' Retirement System of Georgia (ERS) was established February 3, 1949 to provide retirement benefits and other benefits to employees of the State of Georgia. The commencement date was January 1, 1950. "Old Plan" means the plan applicable to members beginning employment prior to July 1, 1982, "New Plan" means the plan applicable to members employed on or after July 1, 1982 and before January 1, 2009, and "GSEPS" means the plan applicable to members employed on or after January 1, 2009. The following summary describes the main provisions of the System.

Normal Retirement Benefit

Eligibility	A member is eligible for normal retirement upon the attainment of age 60 and 10 years of creditable service (prior service plus membership service plus purchased service plus forfeited leave – minimum 960 hours) or 30 years of creditable service regardless of age. Certain Law Enforcement positions are eligible with attainment of age 55 and 10 years of creditable service.
Benefit	<u>Old Plan</u> (A) x (B) x (C), where (A) = Average final compensation (the average annual compensation of a member during the 24 consecutive calendar months of his creditable service that will yield the highest average) (B) = Creditable service, and (C) = .0115 + .0003 x (creditable service up to 35 years). The minimum benefit is 2.00% of average final compensation times years of creditable service. <u>New Plan</u> 2.00% of average final compensation multiplied by years of creditable service. <u>GSEPS</u> 1.00% of average final compensation multiplied by years of creditable service. Uniform division and judicial members may be eligible for additional minimum benefits. With all plans, for members with retirement dates prior to July 1, 2013, a one-time 3.0% increase on the first $37,500 is made at time of retirement.

Early Retirement Benefit

Eligibility	A member is eligible for early retirement upon the attainment of 25 years of creditable service regardless of age.
Benefit	The annual early retirement benefit is determined in the same manner as the normal retirement benefit based on creditable service and average final compensation as of the early retirement date. If the member is less than age 60, the retirement benefit is reduced by the lesser of: (i) 7% for each year by which his age is less than 60, and (ii) 7% for each year by which his creditable service at retirement is less than 30. Uniform division and judicial members may be eligible for additional minimum benefits.

Disability Retirement Benefit

Old Plan and New Plan

Eligibility	A member is eligible for disability retirement after having at least 13 years and 4 months of service and being certified by the medical board as permanently disabled for the further performance of the duties of the position held at the time of disability.
Benefit	The annual disability retirement benefit is an immediate benefit with the amount depending upon service at the time of disability. Uniform division members may be eligible for an additional benefit if disabled in line of duty.

Service at Disability	Benefit
(1) 13 years 4 months to 18 years	75% of what the normal retirement benefit would have been had the member continued to work until age 60 with no further change in compensation
(2) Over 18 years to 22 years 9 months	100% of age 60 benefit

(3) Over 22 years 9 months to 27 years 6 months	75% of age 65 benefit
(4) Over 27 years 6 months	100% of age 65 benefit

GSEPS

Eligibility	A member is eligible for disability retirement after having at least 15 years of service and being certified by the medical board as permanently disabled for the further performance of the duties of the position held at the time of disability.
Benefit	The annual disability retirement benefit is an immediate benefit equal to 1.00% of average final compensation multiplied by years of credited service at disability.

Involuntary Retirement Benefit

Eligibility	Member prior to April 1, 1972, termination is involuntary and without prejudice, and member has more than 18 years of membership service.
	For members prior to February 13, 1962, the service requirement is more than 18 years of creditable service.
Benefit	Computed as for disability retirement.

Deferred Vested Retirement Benefit

Eligibility	10 years of creditable service. Member contributions not withdrawn.
Benefit	Accrued benefit deferred to age 60.

Death Benefit

Old Plan and New Plan

Eligibility	Benefit
(1) Before retirement, before age 60, before completing 13 years 4 months service	Refund of all employee contributions plus allowable interest.
(2) Before retirement, before age 60, after completing 13 years 4 months service	Benefit equal to disability retirement immediately prior to death under Option 2.

(3) Before retirement, after age 60, more than 10 years creditable service (5 years service if member prior to July 1, 1968)	Benefit equal to retirement immediately prior to death under Option 2.
(4) After retirement	Payments continued to spouse as determined by options (if any) elected before retirement.
<u>GSEPS</u>	
Eligibility	15 years of creditable service.
Benefit	Benefit equal to disability retirement immediately prior to death under Option 2.
Termination Benefit	
Eligibility	Termination with less than 10 years creditable service.
Benefit	Return of all member contributions and employer contributions made on behalf of member with allowable interest. Life insurance premiums paid by the employee are not refundable.
Payment Options	At application for retirement, a member must choose one of the following methods of payment. All forms are of equivalent actuarial value.
Maximum Benefit	Life annuity, payable to members for the member's life with the final payment (for month of member's death) going to member's designated beneficiary.
Option 1	Full cash refund, paying a reduced retirement benefit to members so that, upon member's death, the beneficiary receives a lump sum cash settlement equal to the difference between the member's accumulated contributions at retirement and the benefit payments due to member contributions received prior to member's death.
Option 2	Joint and 100% to survivor. Member receives a reduced benefit for life with the same benefit continuing for life of beneficiary upon member's death.
Option 3	Joint and 50% to survivor. Member receives a reduced benefit for life with one-half members' benefit continuing to beneficiary for life upon member's death.
Other Options	Other options are available with certain restrictions.

Schedule H – Summary of Main System Provisions

Post-Retirement Adjustments

The Board may from time to time grant a Cost of Living Adjustment.

Contributions

By Members

Old Plan

4% of annual compensation up to $4,200 plus 6% of annual compensation over $4,200. A member with 34 or more years of service may cease contributing until age 65, when he must resume contributing if he continues employment and wishes to receive additional service credit. The State pays member contributions except for 1.25% of annual compensation. These State contributions paid on behalf of members are included in the member's account for refund purposes. Covered tax officials and their employees and covered employees of State Courts continue to pay their full member contributions.

New Plan and GSEPS

Member contributions are 1.25% of annual compensation

By Employers

The employers contribute at a specified percentage of active member payroll determined annually by actuarial valuation. The State contribution is not subject to refund upon member termination.

Schedule I – Tables of Membership Data

The Number and Average Annual Compensation of Active Members by Age and Service as of June 30, 2019

Age	Years of Service									Total	
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 & Up	No.	Avg. Pay
Under 25	754	1,496	19							2,269	$29,068
25 to 29	836	4,389	795	3						6,023	$34,828
30 to 34	548	3,540	1,963	433	15					6,499	$39,357
35 to 39	421	2,665	1,742	1,549	505	8				6,890	$43,122
40 to 44	322	2,175	1,475	1,514	1,385	476	7			7,354	$44,919
45 to 49	337	2,048	1,399	1,292	1,399	1,368	463	20		8,326	$47,278
50 to 54	260	1,649	1,142	1,230	1,171	1,083	1,105	257	3	7,900	$48,340
55 to 59	252	1,326	983	1,220	1,161	1,011	907	444	67	7,371	$47,043
60 to 64	105	772	752	807	741	558	448	300	71	4,554	$49,175
65 to 69	27	210	353	318	237	174	104	68	24	1,515	$52,035
70 & up	12	67	96	112	102	36	30	29	22	506	$55,247
Total Avg. Pay	3,874 $30,274	20,337 $37,830	10,719 $45,440	8,478 $47,503	6,716 $50,143	4,714 $52,432	3,064 $56,143	1,118 $59,113	187 $72,220	59,207	$44,116

Average Age: 44.4
Average Service: 9.5

Schedule I – Tables of Membership Data

**NUMBER OF RETIRED MEMBERS
AND THEIR BENEFITS BY AGE**

Attained Age	Number of Members	Total Annual Benefits	Average Annual Benefits
Under 50	66	$ 1,863,813	$ 28,240
50-54	780	21,342,991	27,363
55-59	2,369	71,232,973	30,069
60-64	6,828	182,672,386	26,753
65-69	9,922	269,257,755	27,137
70-74	9,412	279,043,932	29,648
75-79	5,619	165,671,932	29,484
80-84	3,261	94,302,442	28,918
85-89	1,660	42,226,283	25,438
90-94	670	15,268,952	22,789
95+	195	3,714,709	19,050
Total	40,782	$ 1,146,598,168	$ 28,115

**NUMBER OF BENEFICIARIES
AND THEIR BENEFITS BY AGE**

Attained Age	Number of Members	Total Annual Benefits	Average Annual Benefits
Under 50	813	$ 6,774,724	$ 8,333
50-54	287	2,544,813	8,867
55-59	366	4,375,584	11,955
60-64	455	6,746,193	14,827
65-69	687	12,282,498	17,878
70-74	841	16,004,886	19,031
75-79	789	15,580,027	19,747
80-84	763	12,912,876	16,924
85-89	534	9,020,017	16,891
90-94	269	4,681,112	17,402
95+	91	1,463,020	16,077
Total	5,895	$ 92,385,750	$ 15,672

Schedule I – Tables of Membership Data

**NUMBER OF DISABLED RETIREES
AND THEIR BENEFITS BY AGE**

Attained Age	Number of Members	Total Annual Benefits	Average Annual Benefits
Under 50	277	$ 8,273,634	$ 29,869
50-54	487	13,557,622	27,839
55-59	839	20,522,401	24,461
60-64	1,042	25,836,163	24,795
65-69	1,130	33,502,614	29,648
70-74	955	30,284,270	31,711
75-79	462	12,547,832	27,160
80-84	154	3,482,162	22,611
85-89	47	964,382	20,519
90-94	11	281,847	25,622
95+	4	63,326	15,832
Total	5,408	$ 149,316,253	$ 27,610

**NUMBER OF DEFERRED VESTED
AND THEIR BENEFITS BY AGE**

Attained Age	Number of Members	Total Annual Benefits	Average Annual Benefits
Under 35	48	$ 379,613	$ 7,909
35-39	384	3,659,863	9,531
40-44	752	8,118,092	10,795
45-49	1,150	13,858,421	12,051
50-54	1,509	18,623,862	12,342
55-59	1,816	22,053,663	12,144
60-64	574	6,497,351	11,319
65+	137	1,608,767	11,743
Total	6,370	$ 74,799,632	$ 11,742

Schedule J – Special Contribution Rates

Groups that have Age 55 Retirement and Line-of-Duty Disability Benefits:

Public Safety #466

Revenue Agents #474

DNR Conservation Rangers #462

GBI Officers/Agents #471

PLAN	Additional Rate	Total Rate
Old Plan	0.00%	19.88%
New Plan	5.80%	30.43%
GSEPS	2.18%	23.75%

Groups that have Line-of-Duty Disability Benefits:

Deputy DNR Conservation Rangers #462

Probation Officers #467

Parole Officers – Pardons and Paroles #465

PLAN	Additional Rate	Total Rate
Old Plan	0.00%	19.88%
New Plan	0.06%	24.69%
GSEPS	0.04%	21.61%

Group that has Age 55 Retirement:

Special Investigators Department of Revenue #474

PLAN	Additional Rate	Total Rate
New Plan	5.74%	30.37%
GSEPS	2.14%	23.71%

Appellate Court Judges: Total rate equal to 44.48% of payroll

Schedule K – CAFR Schedules

GA ERS: Solvency Test							
	Actuarial Accrued Liability for:						
Actuarial Valuation as of 6/30	Active Member Contributions	Retirants & Beneficiaries	Active Members (Employer Funded Portion)	Valuation Assets	Portion of Aggregate Accrued Liabilities Covered by Assets		
	(1)	(2)	(3)		(1)	(2)	(3)
2019	$371,147	$13,077,253	$4,380,820	$13,481,219	100%	100.0%	0.7%
2018	372,375	12,927,796	4,512,270	13,412,046	100%	100.0%	2.5%
2017	368,935	12,729,977	4,415,986	13,088,185	100%	99.9%	0.0%
2016	368,281	12,592,980	4,238,427	12,854,518	100%	99.2%	0.0%
2015	367,462	12,520,321	4,211,744	12,675,649	100%	98.3%	0.0%
2014	385,058	12,108,737	4,498,168	12,376,120	100%	99.0%	0.0%
2013	405,841	11,935,364	4,641,244	12,129,803	100%	98.2%	0.0%
2012	460,861	11,420,011	4,897,050	12,260,595	100%	100.0%	7.8%
2011	503,867	11,058,344	5,094,694	12,667,557	100%	100.0%	21.7%
2010	551,607	10,652,040	5,091,705	13,046,193	100%	100.0%	36.2%

All dollar amounts are in thousands.

GA ERS: Schedule of Retirants Added to and Removed from Rolls								
	Added to Rolls		Removed from Rolls		Roll End of Year			
Year Ended	Number	Annual Allowances (in thousands)	Number	Annual Allowances (in thousands)	Number	Annual Allowances (in thousands)	% Increase in Annual Allowances	Average Annual Allowances
June 30, 2019	2,777	$58,673	1,357	$32,574	52,085	$1,388,300	1.9%	$26,655
June 30, 2018	2,612	50,005	1,422	33,530	50,665	1,362,201	1.2%	26,886
June 30, 2017	2,630	45,833	1,420	32,372	49,475	1,345,726	1.0%	27,200
June 30, 2016	2,572	51,031	1,342	30,724	48,265	1,332,265	1.5%	27,603
June 30, 2015	2,656	54,003	1,350	30,927	47,035	1,311,958	1.8%	27,893
June 30, 2014	2,440	51,178	1,059	22,997	45,729	1,288,882	2.2%	28,185
June 30, 2013	3,664	88,855	1,176	26,334	44,348	1,260,701	5.2%	28,427
June 30, 2012	2,956	71,464	1,305	27,696	41,860	1,198,180	3.8%	28,624
June 30, 2011	2,797	69,031	1,170	25,347	40,209	1,154,412	3.9%	28,710
June 30, 2010	2,665	70,383	1,051	22,413	38,582	1,110,728	4.5%	28,789