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EMPLOYEES' RETIREMENT SYSTEM OF GEORGIA

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REPORT OF THE ACTUARY ON THE VALUATION
PREPARED AS OF JUNE 30, 2020

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April 15, 2021

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 (ERS) 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, 2020. The report indicates that annual employer contributions at the rate of 19.92% of compensation for Old Plan Members, 24.67% of compensation for New Plan Members, and 21.59% of compensation for GSEPS Members for the fiscal year ending June 30, 2023 are sufficient to support the benefits of the System.

Since the previous valuation, various economic and demographic assumptions and actuarial methods have been revised to reflect the results of the experience investigation for the five-year period ending June 30, 2019. A complete list of these changes is provided on page 2 of this report.

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 2020 session of the General Assembly.

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, 2020 was less than 7.30%, the assumed rate of return used in the current valuation remained at 7.30%.

3550 Busbee Pkwy, Suite 250, Kennesaw, GA 30144
Phone (678) 388-1700 • Fax (678) 388-1730
www.CavMacConsulting.com
Offices in Kennesaw, GA • Bellevue, NE

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.

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.

We note that as we are preparing this report, the world is in the midst of a pandemic. We have considered available information, but do not believe that there is yet sufficient data to warrant the modification of any of our assumptions prior to the upcoming experience study.

In order to prepare the results in this report, we have utilized appropriate actuarial models that were developed for this purpose. These models use assumptions about future contingent events along with recognized actuarial approaches to develop the needed results.

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
Consulting 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, 2020**	**June 30, 2019**
Number of active members	57,059	59,207
Annual earnable compensation	$ 2,612,773	$ 2,611,965
Number of retired members and beneficiaries	53,032	52,085
Annual allowances	$ 1,403,624	$ 1,388,300
Number of deferred vested members	6,495	6,370
Annual allowances	$ 76,999	$ 74,800
Assets:		
Fair Value	$ 13,502,286	$ 13,617,472
Actuarial Value	13,556,622	13,481,219
Valuation Interest Rate	7.30%	7.30%
Unfunded actuarial accrued liability	$ 4,819,175	$ 4,348,001
Blended Amortization period (years)	19.0	15.3
Funded Ratio based on Actuarial Value of Assets	73.8%	75.6%
Contribution Rates for Fiscal Year Ending	**June 30, 2023**	**June 30, 2022**
Actuarially Determined Employer Contribution Rates (ADEC):		
Old Plan (employed prior to 7/1/1982)		
Initial Normal Rate*	6.40%	6.23%
Employer Rate Paid on Behalf of Employee	(4.75)	(4.75)
Normal Rate*	1.65%	1.48%
Accrued Liability Rate	18.27%	18.40%
Total	19.92%	19.88%
New Plan (employed 7/1/1982 through 12/31/2008)		
Normal Rate*	6.40%	6.23%
Accrued Liability Rate	18.27%	18.40%
Total	24.67%	24.63%
GSEPS (employed on and after 1/1/2009)		
Normal Rate*	3.32%	3.17%
Accrued Liability Rate	18.27%	18.40%
Total	21.59%	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 2020 session of the General Assembly.

3. Schedule D of this report outlines the full set of actuarial assumptions used to prepare the current valuation. Since the previous valuation, various assumptions and methods have been revised to reflect the results of the experience investigation for the five-year period ending June 30, 2019. These revised assumptions were adopted by the Board on December 17, 2020 and are summarized below.

Summary of Assumptions and Methods	
Economic Assumptions	
Price Inflation	Lowered assumption from 2.75% to 2.50%.
Investment Return	Lowered long-term assumption from 7.50% to 7.00%.
Wage Inflation	Lowered assumption from 3.25% to 3.00%.
Demographic Assumptions	
Withdrawal	Increased rates of withdrawal at most ages for non-Police Officers and decreased rates of withdrawal at most ages for Police Officers.
Pre-Retirement Mortality	Changed to the Pub-2010 General Employee table, with no adjustments, projected generationally with the MP-2019 scale.
Disability Retirement	Lowered rates of disability retirement for non-Police Officers and increased rates of disability retirement for Police Officers.
Service Retirement	Changed assumed rates for all members to better match experience.
Post-Retirement Mortality	Changed to the Pub-2010 family of mortality tables, with adjustments as outlined in Schedule D to better fit actual experience, projected generationally with the MP-2019 scale.
Salary Scale	Changed to a service-based table and increased rates at earlier service bands and decreased rates at later service bands
Other Actuarial Methods and Assumptions	
Administrative Expenses	Changed from budgeted administrative expenses to 0.35% of payroll.
Amortization Method	No change to current method.
Asset Smoothing	No change to current method.
Option Factors	Changed option factors to reflect change in mortality rate table.
Unused Sick Leave	Increased load on liabilities for New Plan and GSEPS members.
Termination Benefits	Changed assumption to better match experience.
Valuation Cost Method	No change to current method.

4. In addition, the Board amended the ERS Funding Policy on June 18, 2020. The ERS funding policy states that beginning with the June 30, 2017 valuation, the long-term annual expected return on assets assumption shall be reduced by 0.10% per year from the immediate prior valuation when the actual rate of return for the fiscal year exceeds the assumed rate. The minimum return assumption stated in the funding policy is 7.00%. The Board policy will continue to require a reduction in the rate of return used in future valuations until a 7.00% return, which is now the long-term annual expected rate of return assumption recommended in the latest experience study, is achieved. The asset return assumption used in the prior actuarial valuation was 7.30%. Since the actual rate of return for the year ending June 30, 2020 was less than 7.30%, the assumed rate of return used in the current valuation remained at 7.30%. The new Board Funding Policy is shown in Schedule F.

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

6. Comments on the valuation results as of June 30, 2020 are given in Section IV and further discussion of the employer contribution levels is set out in Section V.

7. 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.

8. The funded 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 funded 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 funded 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, 2020 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, 2020

GROUP	NUMBER	ANNUAL COMPENSATION ($1,000's)	AVERAGE ANNUAL COMPENSATION
Old Plan	29	$ 2,415	$ 83,276
New Plan	20,850	1,110,282	53,251
GSEPS	36,180	1,500,076	41,461
Total	57,059	$ 2,612,773	$ 45,791

2. Data was provided by the Retirement System for inactive members who are eligible for deferred vested benefits. The valuation included 6,495 deferred vested members with annual allowances totaling $76,998,949. In addition, there are 57,000 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, 2020, 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, 2020

GROUP	NUMBER	ANNUAL RETIREMENT ALLOWANCES ($1,000's)
Service Retirements	41,583	$ 1,157,916
Disability Retirements	5,418	150,714
Beneficiaries of Deceased Members	6,031	94,994
Total	53,032	$ 1,403,624

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, 2020, the value of assets credited to the Annuity Savings Fund amounted to $475,004.

   (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, 2020, the fair value of assets credited to the Pension Accumulation Fund amounted to $13,027,282.

2. As of June 30, 2020, the total fair value of assets amounted to $13,502,286 as reported by the Auditor of the System.

3. The actuarial value of assets used for the current valuation was determined to be $13,556,622 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, 2020.

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, 2020 (all amounts are in thousands).
2. The valuation balance sheet shows that the System has total prospective liabilities of $19,220,429, of which $13,406,538 is for the prospective benefits payable on account of present retired members, beneficiaries of deceased members, and members entitled to deferred vested benefits, and $5,813,891 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 $13,556,622 as of June 30, 2020. The difference of $5,663,807 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 1.65% (6.40% less 4.75% Employer paid on behalf of Employee) of compensation for Old Plan members, 6.40% of compensation for New Plan members, and 3.32% of compensation for GSEPS members are required.
4. Administrative expenses each year are assumed to be 0.35% of payroll and have been added to the normal contribution rates shown in 3. above.
5. Prospective employer and employee normal contributions (excluding administrative expenses) have a present value of $844,632. When this amount is subtracted from $5,663,807, which is the present value of the total future contributions to be made in the future, there remains $4,819,175 as the unfunded actuarial accrued liability.

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 18.27% of active member's compensation will comply with the Board's funding policy for this year's valuation.
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	$ 3,979,854	18.0	$ 404,256
New Incremental 6/30/2014	(146,981)	19.0	(14,542)
New Incremental 6/30/2015	(97,794)	20.0	(9,447)
New Incremental 6/30/2016	28,373	21.0	2,682
New Incremental 6/30/2017	192,039	22.0	17,796
New Incremental 6/30/2018	118,273	23.0	10,763
New Incremental 6/30/2019	111,022	24.0	9,936
New Incremental 6/30/2020	634,389	25.0	55,916
Total	$ 4,819,175		$ 477,360
Blended Amortization Period (years)			19.0
Estimated Payroll			$ 2,612,773
UAAL Contribution Rate			18.27%

Section V – Contributions Payable by Employers

1. The following table summarizes the employer contribution rates, which were determined by the June 30, 2020 valuation and are recommended for use.

ACTUARIALLY DETERMINED EMPLOYER CONTRIBUTION RATES (ADEC)
FOR FISCAL YEAR ENDING JUNE 30, 2023

	Old Plan	New Plan	GSEPS
Normal Rate			
Initial Normal Rate*	6.40%	6.40%	3.32%
Employer Paid on behalf of Employee	(4.75)	(0.00)	(0.00)
Employer Normal Rate	1.65%	6.40%	3.32%
Accrued Liability Rate	18.27%	18.27%	18.27%
Total	19.92%	24.67%	21.59%

* Includes administrative expense assumption rate of 0.35%.

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, 2020

GROUP	NUMBER
Retirees and beneficiaries currently receiving benefits	53,032
Terminated employees entitled to benefits but not yet receiving benefits	63,495
Active plan members	57,059
Total	173,586

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)
6/30/2015	$ 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
6/30/2020#	13,556,622	18,375,797	4,819,175	73.8	2,612,773	184.4

* Reflects change in assumed rate of return
# Reflects changes in actuarial assumptions

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
6/30/2015	$ 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
6/30/2020	643,857	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, 2020. Additional information as of the latest actuarial valuation follows.

Valuation date	6/30/2020
Actuarial cost method	Entry age
Amortization method	Level dollar, closed
Remaining amortization period	19.0 years
Asset valuation method	5-year smoothed fair
Actuarial assumptions:	
Investment rate of return*	7.30%
Projected salary Increases*	3.00% - 6.75%
Cost-of-living adjustments	None

* Includes inflation at 2.50%

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. Since the last valuation, an experience investigation was prepared for the five-year period ending June 30, 2019 and based on the results of the investigation, various new actuarial assumptions and methods were adopted by the Board on December 17, 2019. The next experience investigation will be prepared for the period July 1, 2019 through June 30, 2024.

2. The following table shows the estimated gain or loss from various factors that resulted in an increase of $471,174,000 in the unfunded actuarial accrued liability (UAAL) from $4,348,001,000 to $4,819,175,000 during the fiscal year ending June 30, 2020.

3. The breakdown of the major reasons for the $471.2 million increase in the UAAL are as follows:

    - The assumption changes due to the experience study increased the UAAL approximately $578.3 million.
    - There was a loss of $59.8 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, 2020.
    - There were other small losses due to mortality, turnover and retirement, and larger salary increases than expected.
    - Partially offsetting these increases to the UAAL was a decrease in the UAAL of $247.2 million because the accrued liability contribution was greater than the interest on the prior year UAAL. This occurred due to the level dollar funding method used to amortize the UAAL (more payment applied to principal balance).

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	$ 317.4
Accrued liability contribution	(564.6)
Experience:	
Valuation asset growth	59.8
Pensioners' mortality	13.3
Turnover and retirements	41.6
New entrants	9.3
Salary increases	9.5
Method changes	0.0
Amendments	0.0
Assumption changes	578.3
Data changes	6.5
Miscellaneous changes	0.1
Total	$ 471.2

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
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
2020	$13,502,286	$2,612,773	5.17

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, 2020	Current Discount Rate (7.3%)	-1% Discount Rate (6.3%)	+1% Discount Rate (8.3%)
Accrued Liability	$18,375,797	$20,248,536	$16,789,351
Unfunded Liability	$4,819,175	$6,691,914	$3,232,729
Funded Ratio (AVA)	73.8%	67.0%	80.7%
ADEC Rate*			
Old Plan	19.92%	26.38%	13.94%
New Plan	24.67%	31.13%	18.69%
GSEPs	21.59%	26.99%	16.38%

* 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. Since the last valuation, an experience investigation was prepared for the five-year period ending June 30, 2019 and based on the results of the investigation, a new mortality table with generational approach to future improvements in mortality was adopted. The next experience investigation will be prepared for the period July 1, 2019 through June 30, 2024.

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

THE PRESENT AND PROSPECTIVE ASSETS AND LIABILITIES OF
THE EMPLOYEES' RETIREMENT SYSTEM OF GEORGIA
AS OF JUNE 30, 2020
(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	$ 12,072,587	
	- Death and survivor benefits	756,741	
	- Deferred vested benefits	577,210	
	Total		$ 13,406,538
(2)	Present value of prospective benefits payable on account of present active members		5,813,891
(3)	TOTAL ACTUARIAL LIABILITIES		$ 19,220,429
	PRESENT AND PROSPECTIVE ASSETS		
(4)	Actuarial value of assets		$ 13,556,622
(5)	Present value of total future contributions = (3)-(4)	$ 5,663,807	
(6)	Present value of future member contributions and employer normal contributions		844,632
(7)	Prospective unfunded accrued liability contributions = (5)-(6)		4,819,175
(8)	TOTAL PRESENT AND PROSPECTIVE ASSETS		$ 19,220,429

Schedule B – Development of Actuarial Value of Assets

(Dollar amounts in thousands)

(1)	Actuarial Value Beginning of Year		$	13,481,219
(2)	Fair Value End of Year		$	13,502,286
(3)	Fair Value Beginning of Year		$	13,617,472
(4)	Cash Flow			
	(a)	Contributions	$	679,704
	(b)	Benefit Payments		(1,491,089)
	(c)	Administrative Expenses		(7,641)
	(d)	Investment Expenses		(8,961)
	(e)	Net: (4)(a) + (4)(b) + (4)(c) + (4)(d)	$	(827,987)
(5)	Investment Income			
	(a)	Fair Total: (2) – (3) – (4)(e)	$	712,801
	(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)	$	973,142
	(d)	Amount for Phased-In Recognition: (5)(a) – (5)(c)		(260,341)
(6)	Phased-In Recognition of Investment Income			
	(a)	Current Year: (5)(d) / 5	$	(52,068)
	(b)	First Prior Year		(17,026)
	(c)	Second Prior Year		44,932
	(d)	Third Prior Year		115,153
	(e)	Fourth Prior Year		(160,743)
	(f)	Total Recognized Investment Gain	$	(69,752)
(7)	Actuarial Value End of Year: (1) + (4)(e) + (5)(c) + (6)(f)		$	13,556,622
(8)	Difference Between Fair & Actuarial Values: (2) – (7)		$	(54,336)
(9)	Rate of Return on Actuarial Value*			6.84%

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

Schedule C – Summary of Receipts and Disbursements

FAIR VALUE OF ASSETS

	YEAR ENDING	
Receipts for the Year	June 30, 2020 ($1,000's)	June 30, 2019 ($1,000's)
Contributions:		
Members	$ 35,837	$ 36,252
Non-employer	9,749	10,220
Employer	634,108	638,989
Subtotal	$ 679,694	$ 685,461
Administrative Expense Allotment	10	10
Net Investment Earnings	703,840	873,404
TOTAL	$ 1,383,544	$ 1,558,875
Disbursements for the Year		
Benefit Payments	$ 1,484,445	$ 1,443,756
Refunds to Members	6,644	7,691
Administration Expense	7,641	7,142
TOTAL	$ 1,498,730	$ 1,458,589
Excess of Receipts over Disbursements	$ (115,186)	$ 100,286
Reconciliation of Asset Balances		
Asset Balance as of the Beginning of Year	$ 13,617,472	$ 13,517,186
Excess of Receipts over Disbursements	(115,186)	100,286
Asset Balance as of the End of Year	$ 13,502,286	$ 13,617,472
Estimated Rate of Return*	5.33%	6.65%

* 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 on December 17, 2020. 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 2.50% inflation assumption and a 4.80% real rate of investment return assumption.

SALARY INCREASES:

Service	Assumed Annual Rate of Salary Increase
1	6.75%
2	5.75
3	5.25
4	5.00
5	4.75
10	4.30
15	4.05
20	3.80
25	3.55
30	3.30
35 & Over	3.00

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

	Non-Law Enforcement		Law Enforcement
Age	Male	Female	
20	0.000%	0.000%	0.000%
25	0.000	0.000	0.000
30	0.010	0.005	0.050
35	0.040	0.010	0.125
40	0.200	0.085	1.125
45	0.375	0.215	2.625
50	0.625	0.365	3.625
55	0.875	0.565	4.125
60	--	--	--

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

	Non-Law Enforcement Years of Service		
Age	0-4	5-9	10 & Over
		Male	
20	40.00%		
25	30.00	16.25%	
30	25.00	12.50	8.00%
35	23.00	10.50	6.25
40	20.00	9.50	4.75
45	20.00	8.50	4.00
50	17.00	7.25	4.50
55	15.00	6.75	4.75
60	14.50	5.50	--
65	14.50	12.50	--
		Female	
20	35.00%		
25	27.00	18.00%	
30	23.00	12.50	9.00%
35	20.00	10.25	6.50
40	18.00	9.00	5.25
45	17.00	8.00	4.25
50	16.00	7.50	4.25
55	15.00	7.25	4.25
60	15.50	7.00	--
65	16.50	12.00	--

	Law Enforcement Years of Service	
Age	0-9	10 & Over
20	11.00%	
25	6.50	3.00%
30	5.25	3.00
35	5.25	3.00
40	5.25	2.50
45	5.25	2.50
50	5.25	2.50
55	--	--

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	3.0	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	5.0%	3.80%	60.0%	42.0%	75.0%
52	5.0	3.80	50.0	42.0	60.0
55	6.0	5.80	50.0	40.0	15.0
57	6.0	7.30	45.0	37.0	15.0
60			25.0	28.0	30.0
62			37.5	37.5	35.0
65			32.0	33.0	25.0
67			32.0	32.0	25.0
70			30.0	30.0	100.0
75			100.0	100.0	

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

** An additional 25% for ages below 53 and 20% for ages 53 to 59 are assumed to retire in the first year eligible for unreduced retirement with 30 years of service before age 60.

Schedule D – Outline of Actuarial Assumptions and Methods

RATES OF DEATH BEFORE RETIREMENT: The Pub-2010 General Employee Table, with no adjustments, projected generationally with the MP-2019 scale 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:

Annual Rates of Death*					
Age	Males	Females	Age	Males	Females
20	0.0370%	0.0130%	45	0.0980%	0.0560%
25	0.0280	0.0090	50	0.1490	0.0830
30	0.0360	0.0150	55	0.2190	0.1230
35	0.0470	0.0230	60	0.3190	0.1860
40	0.0660	0.0360	65	0.4680	0.2960

* Base mortality rates as of 2010 before application of the improvement scale

RATES OF DEATHS AFTER RETIREMENT: The Pub-2010 Family of Tables projected generationally with MP-2019 Scale and with further adjustments are used for post-retirement mortality assumptions as follows:

Participant Type	Membership Table	Set Forward (+)/ Setback (-)	Adjustment to Rates
Service Retirees	General Healthy Annuitant	Male: +1; Female: +1	Male: 105%; Female: 108%
Disability Retirees	General Disabled	Male: -3; Female: 0	Male: 103%; Female: 106%
Beneficiaries	General Contingent Survivors	Male: +2; Female: +2	Male: 106%; Female: 105%

Representative values of the assumed annual rates of mortality are as follows:

Annual Rates of Death*						
	Service Retirement		Disability Retirement		Beneficiaries	
Age	Males	Females	Males	Females	Males	Females
50	0.3371%	0.2516%	1.2576%	1.5720%	0.7918%	0.3843%
55	0.4861	0.3251	1.8725	1.8465	0.9402	0.5334
60	0.6941	0.4493	2.3484	2.0734	1.1978	0.7529
65	1.0532	0.7366	2.7573	2.3914	1.7257	1.1057
70	1.7882	1.2863	3.4536	3.0337	2.7157	1.7000
75	3.1448	2.2799	4.4743	4.2432	4.3036	2.7500
80	5.6427	4.0900	6.0986	6.3674	6.8879	4.6778
85	10.0958	7.6043	8.8220	9.8909	11.3049	8.4315
90	16.9785	13.8596	12.9831	14.4849	18.6083	14.6496

* Base mortality rates as of 2010 before application of the improvement scale

Schedule D – Outline of Actuarial Assumptions and Methods

ADMINISTRATIVE EXPENSES: A rate of 0.35% of payroll is 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 fair value of assets, based on the assumed valuation rate of return. The amount recognized each year is 20% of the difference between fair value and expected fair 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 75% of active members who terminate with 10 or more years of service before retirement will receive a benefit beginning at age 60 and 25% will receive a refund of member contributions.

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 – 4.00%
- Old Plan members who retire on normal retirement – 2.00%
- Old Plan members who retire on early retirement – 1.50%
- All New Plan and GSEPS retirements – 3.25%
- All Law Enforcement retirements – 7.00%

VALUATION METHOD: Entry age Normal 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.

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.
  - Effective with the June 30, 2020 valuation date, any New Incremental UAAL which is attributable to the granting of any post-retirement benefit adjustment (PRBA), including COLAs and one-time (non-compounded) payments, shall be amortized over a closed 15-year period. The amortization period shall begin with the year such PRBA is granted by the Board.

Schedule F – Board Funding Policy

- **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.
  - Effective with the June 30, 2020 valuation date, the required employer contribution rate shall not be less than the Employer Normal Contribution Rate unless the funded ratio is greater than or equal to 105%, as determined by the actuarial valuation in which the employer contribution rate is set.
  - Effective with the June 30, 2020 valuation date, in no event shall the employer contribution rate decrease by more than 2% from one fiscal year to the next fiscal year.
  - 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.

Schedule F – Board Funding 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: June 18, 2020

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	**18.0**	**3,979,854**	**404,256**
6/30/2021	17.0	3,866,128	404,256
6/30/2022	16.0	3,744,100	404,256
6/30/2023	15.0	3,613,163	404,256
6/30/2024	14.0	3,472,668	404,256
6/30/2025	13.0	3,321,917	404,256
6/30/2026	12.0	3,160,162	404,256
6/30/2027	11.0	2,986,598	404,256
6/30/2028	10.0	2,800,363	404,256
6/30/2029	9.0	2,600,534	404,256
6/30/2030	8.0	2,386,118	404,256
6/30/2031	7.0	2,156,048	404,256
6/30/2032	6.0	1,909,184	404,256
6/30/2033	5.0	1,644,299	404,256
6/30/2034	4.0	1,360,077	404,256
6/30/2035	3.0	1,055,107	404,256
6/30/2036	2.0	727,874	404,256
6/30/2037	1.0	376,753	404,256
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

Schedule G – Amortization of UAAL

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

Schedule G – Amortization of UAAL

AMORTIZATION OF 2020 INCREMENTAL UAAL
(Dollar amounts in thousands)

Valuation Date	Amortization Period	Balance of New Incremental UAAL 6/30/2020	Annual Amortization Payment
6/30/2020	**25**	**$634,389**	**$55,916**
6/30/2021	24	624,783	55,916
6/30/2022	23	614,476	55,916
6/30/2023	22	603,416	55,916
6/30/2024	21	591,549	55,916
6/30/2025	20	578,815	55,916
6/30/2026	19	565,152	55,916
6/30/2027	18	550,492	55,916
6/30/2028	17	534,761	55,916
6/30/2029	16	517,882	55,916
6/30/2030	15	499,771	55,916
6/30/2031	14	480,338	55,916
6/30/2032	13	459,486	55,916
6/30/2033	12	437,112	55,916
6/30/2034	11	413,105	55,916
6/30/2035	10	387,345	55,916
6/30/2036	9	359,705	55,916
6/30/2037	8	330,047	55,916
6/30/2038	7	298,224	55,916
6/30/2039	6	264,078	55,916
6/30/2040	5	227,439	55,916
6/30/2041	4	188,125	55,916
6/30/2042	3	145,942	55,916
6/30/2043	2	100,679	55,916
6/30/2044	1	52,112	55,916
6/30/2045	0	0	0

Schedule H – 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

Old Plan

(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.

New Plan

2.00% of average final compensation multiplied by years of creditable service.

GSEPS

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.

Schedule H – Summary of Main System Provisions

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	<u>Old Plan</u> 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. <u>New Plan and GSEPS</u> 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, 2020

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	382	1,451	17							1,850	$29,758
25 to 29	514	4,237	737	4						5,492	$36,065
30 to 34	345	3,484	2,220	333	26					6,408	$40,724
35 to 39	252	2,653	1,905	1,264	517	16				6,607	$44,478
40 to 44	223	2,124	1,591	1,276	1,436	502	8			7,160	$46,639
45 to 49	179	1,962	1,468	1,163	1,317	1,379	443	3		7,914	$48,550
50 to 54	138	1,727	1,207	1,058	1,182	1,110	1,075	252	4	7,753	$50,457
55 to 59	145	1,422	1,044	1,056	1,173	1,030	834	414	76	7,194	$48,617
60 to 64	58	806	824	741	697	593	425	283	100	4,527	$50,368
65 to 69	13	246	350	329	251	184	104	81	28	1,586	$54,109
70 & up	8	77	112	111	120	57	29	35	19	568	$56,140
Total	2,257	20,189	11,475	7,335	6,719	4,871	2,918	1,068	227	57,059	$45,791
Avg. Pay	$30,874	$38,707	$46,369	$50,068	$52,026	$53,869	$57,830	$61,804	$68,740		

Average Age: 44.7
Average Service: 9.7

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	62	$ 1,785,056	$ 28,791
50 - 54	697	19,972,990	28,656
55 - 59	2,337	69,044,233	29,544
60 - 64	6,629	172,490,848	26,021
65 - 69	9,870	259,593,809	26,301
70 - 74	9,953	292,987,144	29,437
75 - 79	5,947	176,410,355	29,664
80 - 84	3,508	102,051,184	29,091
85 - 89	1,732	44,785,351	25,858
90 - 94	645	14,688,277	22,773
95 & Over	203	4,107,250	20,233
Total	41,583	$ 1,157,916,497	$ 27,846

NUMBER OF BENEFICIARIES AND THEIR BENEFITS BY AGE

Attained Age	Number of Members	Total Annual Benefits	Average Annual Benefits
Under 50	812	$ 6,738,705	$ 8,299
50 - 54	300	2,699,356	8,998
55 - 59	375	4,222,433	11,260
60 - 64	462	6,906,010	14,948
65 - 69	674	11,388,910	16,897
70 - 74	891	17,371,164	19,496
75 - 79	846	16,858,392	19,927
80 - 84	760	13,369,350	17,591
85 - 89	549	9,304,155	16,947
90 - 94	255	4,242,303	16,636
95 & Over	107	1,892,828	17,690
Total	6,031	$ 94,993,606	$ 15,751

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	271	$ 8,411,049	$ 31,037
50 - 54	489	14,506,407	29,665
55 - 59	788	19,492,502	24,737
60 - 64	1,041	25,765,031	24,750
65 - 69	1,084	30,471,576	28,110
70 - 74	1,017	33,086,603	32,534
75 - 79	478	13,187,511	27,589
80 - 84	184	4,362,440	23,709
85 - 89	53	1,107,203	20,891
90 - 94	11	238,124	21,648
95 & Over	2	85,624	42,812
Total	5,418	$ 150,714,070	$ 27,817

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

Attained Age	Number of Members	Total Annual Benefits	Average Annual Benefits
Under 35	44	$ 323,956	$ 7,363
35 - 39	362	3,454,819	9,544
40 - 44	778	8,416,379	10,818
45 - 49	1,176	14,390,561	12,237
50 - 54	1,547	19,553,763	12,640
55 - 59	1,827	22,311,353	12,212
60 - 64	617	7,006,818	11,356
65 & Over	144	1,541,300	10,703
Total	6,495	$ 76,998,949	$ 11,855

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%	19.92%
New Plan	7.27%	31.94%
GSEPS	2.58%	24.17%

Groups that have Line-of-Duty Disability Benefits:

Deputy DNR Conservation Rangers #462

Probation Officers #467

Parole Officers – Pardons and Paroles #465

Dept of Community Supervision #477

PLAN	Additional Rate	Total Rate
Old Plan	0.00%	19.92%
New Plan	0.02%	24.69%
GSEPS	0.03%	21.62%

Group that has Age 55 Retirement:

Special Investigators Department of Revenue #474

PLAN	Additional Rate	Total Rate
New Plan	7.07%	31.74%
GSEPS	2.38%	23.97%

Appellate Court Judges: Total rate equal to 48.30% of payroll

Schedule K – Comprehensive Annual Financial Report Schedules

GA ERS: Solvency Test

Actuarial Valuation as of 6/30	Actuarial Accrued Liability for: Active Member Contributions (1)	Retirants & Beneficiaries (2)	Active Members (Employer Funded Portion) (3)	Valuation Assets	Portion of Aggregate Accrued Liabilities Covered by Assets (1)	(2)	(3)
2020	$372,510	$13,406,538	$4,596,749	$13,556,622	100%	98.3%	0.0%
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%

All dollar amounts are in thousands.

GA ERS: Schedule of Retirants Added to and Removed from Rolls

Year Ended	Added to Rolls: Number	Added to Rolls: Annual Allowances (in thousands)	Removed from Rolls: Number	Removed from Rolls: Annual Allowances (in thousands)	Roll End of Year: Number	Roll End of Year: Annual Allowances (in thousands)	% Increase in Annual Allowances	Average Annual Allowances
June 30, 2020	2,553	$53,509	1,606	$38,185	53,032	$1,403,624	1.1%	$26,467
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