



**Cavanaugh Macdonald**  
CONSULTING, LLC

*The experience and dedication you deserve*



Retirement Systems  
of Alabama

**Report on the Actuarial Valuation of the  
Employees' Retirement System of Alabama  
Prepared as of September 30, 2019**





# Cavanaugh Macdonald

CONSULTING, LLC

*The experience and dedication you deserve*

June 23, 2020

Board of Control  
Employees' Retirement System of Alabama  
Montgomery, Alabama

Members of the Board:

In this report are submitted the results of the annual actuarial valuation of the assets and liabilities of the Employees' Retirement System of Alabama, prepared as of September 30, 2019 in accordance with Section 36-27-23(p) of the act governing the operation of the System.

The purpose of this report is to provide a summary of the funded status of the System as of September 30, 2019 and to recommend rates of employer contribution. While not verifying the data at the source, the actuary performed tests for consistency and reasonability.

Since the previous valuation, the System has been amended to allow local employers that participate in the System to elect to provide Tier I retirement benefits to their Tier II employees, upon approval by the Board of Control, under Act 2019-132 until May 8, 2021. However, this valuation does not reflect the provisions of Act 2019-132. The contribution rates for local employers for the fiscal year beginning October 1, 2021 will be submitted in a separate report and will include the impact of any employer elections of Act 2019-132 approved by the Board through the September 2020 Board meeting.

On the basis of the valuation, it is recommended that the employer make contributions to the System for State employees (members other than State policemen) at the rate of 14.83% of payroll for Tier I members and 14.44% for Tier II members for the fiscal year ending September 30, 2022. It is also recommended that the employer make contributions to the System for State policemen at the rate of 52.22% of payroll for Tier I members and 42.86% for Tier II members for the fiscal year ending September 30, 2022. The contribution rates for local employers for the fiscal year beginning October 1, 2021 will be submitted in a separate report and will include the impact of the employer-elected changes through September 30, 2019.

The promised benefits of the System are included in the actuarially calculated contribution rates which are developed using the Entry Age Normal cost method. Five-year smoothed market value of assets is used for actuarial valuation purposes. Gains and losses are reflected in the unfunded actuarial accrued liability that is being amortized by regular annual contributions as a level percentage of payroll, on the assumption that payroll will increase by 3.00% annually. The 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 funding purposes meet the parameters outlined in the Board's funding policy.

In this report we provide the following information and supporting schedules in the Actuarial and Statistical Sections of the Comprehensive Annual Financial Report (CAFR):

- Summary of Actuarial Assumptions and Methods
- Actuarial Cost Method
- Summary of Plan Provisions as Interpreted for Valuation Purposes
- Schedule of Funding Progress
- Solvency Test
- Schedule of Active Member Valuation Data



We also provide the following schedules for the CAFR in a separate supplemental report:

- Analysis of Actuarial Gains and Losses
- Schedule of Retirants and Beneficiaries Added and Removed from Rolls
- Retired Members by Type of Benefit as of September 30, 2019
- Ten-Year History of Average Monthly Benefit Payments as of September 30

The necessary GASB Statements No. 67 and 68 disclosure information is provided in separate supplemental reports.

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 retirement 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 amount for the System. Use of these computations for purposes other than meeting these requirements may not be appropriate.

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 actuarial valuations, the continued sufficiency of the retirement fund to provide the benefits called for under the System may be safely anticipated.

The Table of Contents, which immediately follows, outlines the material contained in the report.

Respectfully submitted,

A handwritten signature in blue ink, appearing to read 'LL'.

Larry Langer, ASA, EA, FCA, MAAA  
Principal and Consulting Actuary

A handwritten signature in blue ink, appearing to read 'Cathy Turcot'.

Cathy Turcot  
Principal and Managing Director

A handwritten signature in blue ink, appearing to read 'Edward J. Koebel'.

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



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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 for State Employees, State Policemen and Local Employees are summarized below:

### SUMMARY OF PRINCIPAL RESULTS FOR STATE EMPLOYEES

VALUATION DATE	September 30, 2019	September 30, 2018
Number of active members	28,533	29,004
Annual compensation	\$ 1,357,895,545*	\$ 1,295,229,592
Number of retired members and beneficiaries**	24,544	24,187
Annual retirement allowances**	\$ 551,824,432	\$ 537,722,343
Number of deferred vested members	1,069	962
Estimated deferred annual allowances	\$ 13,722,266	\$ 11,933,733
Assets:		
Actuarial value	\$ 4,964,556,132	\$ 4,887,402,954
Market value	4,917,294,862	5,059,401,139
Unfunded actuarial accrued liability	\$ 2,999,575,340	\$ 2,836,419,364
Funded Ratio based on Actuarial Value of Assets	62.3%	63.3%
<b>CONTRIBUTIONS FOR FISCAL YEAR ENDING</b>	<b>September 30, 2022</b>	<b>September 30, 2021</b>
<b><u>Tier I (first hired prior to January 1, 2013)</u></b>		
Employer contribution rate		
Normal	0.94%	0.98%
Accrued liability	13.52	13.29
Death benefit	0.02	0.02
Administration	<u>0.35</u>	<u>0.35</u>
Total	14.83%	14.64%
<b><u>Tier II (first hired on or after January 1, 2013)</u></b>		
Employer contribution rate		
Normal	0.55%	0.58%
Accrued liability	13.52	13.29
Death benefit	0.02	0.02
Administration	<u>0.35</u>	<u>0.35</u>
Total	14.44%	14.24%
Blended Amortization period	27.9 years	28.4 years

\*RSA implemented a new pension administration system for contribution reporting within this year, which resulted in larger than expected payroll amounts. This will not occur in subsequent years.

\*\*Includes post-DROP members in suspended status who are also active with a second retirement account.





## Section I: Summary of Principal Results

### SUMMARY OF PRINCIPAL RESULTS FOR STATE POLICEMEN

VALUATION DATE	September 30, 2019	September 30, 2018
Number of active members	681	660
Annual compensation	\$ 43,004,849 <sup>1</sup>	\$ 41,180,794
Number of retired members and beneficiaries <sup>2</sup>	938	915
Annual retirement allowances <sup>2</sup>	\$ 44,980,968	\$ 43,597,755
Number of deferred vested members	22	15
Estimated deferred annual allowances	\$ 447,157	\$ 265,726
Assets:		
Actuarial value	\$ 346,308,908	\$ 341,388,930
Market value	342,665,108	352,887,956
Unfunded actuarial accrued liability	\$ 292,878,123	\$ 279,021,552
Funded Ratio based on Actuarial Value of Assets	54.2%	55.0%
<b>CONTRIBUTION FOR FISCAL YEAR ENDING</b>	<b>September 30, 2022</b>	<b>September 30, 2021</b>
<b><u>Tier I (first hired prior to January 1, 2013)<sup>3</sup></u></b>		
Employer contribution rate		
Normal	10.36%	10.49%
Accrued liability	41.49	40.89
Death benefit	0.02	0.02
Administration	<u>0.35</u>	<u>0.35</u>
Total	52.22%	51.75%
<b><u>Tier II (first hired on or after January 1, 2013)<sup>4</sup></u></b>		
Employer contribution rate		
Normal	1.00%	1.63%
Accrued liability	41.49	40.89
Death benefit	0.02	0.02
Administration	<u>0.35</u>	<u>0.35</u>
Total	42.86%	42.89%
Blended Amortization Period	27.8 years	28.3 years

<sup>1</sup>RSA implemented a new pension administration system for contribution reporting within this year, which resulted in larger than expected payroll amounts. This will not occur in subsequent years.

<sup>2</sup>Includes post-DROP members in suspended status who are also active with a second retirement account.

<sup>3</sup>Includes members with Tier I FLC benefits.

<sup>4</sup>Includes members with Tier II FLC benefits.





## Section I: Summary of Principal Results

### SUMMARY OF PRINCIPAL RESULTS FOR LOCAL EMPLOYEES

VALUATION DATE	September 30, 2019	September 30, 2018
Number of active members	55,320	56,901
Annual compensation	\$ 2,393,056,664	\$ 2,342,770,725
Number of retired members and beneficiaries*	25,969	24,959
Annual retirement allowances*	\$ 534,122,137	\$ 503,595,109
Number of deferred vested members	1,794	1,426
Estimated deferred annual allowances	\$ 22,058,692	\$ 17,088,858
Assets:		
Actuarial value	\$ 7,334,924,344	\$ 7,011,805,269
Market value	7,246,690,148	7,244,442,167
Unfunded actuarial accrued liability	\$ 2,605,299,189	\$ 2,473,696,828
Funded Ratio based on Actuarial Value of Assets	73.8%	73.9%
<b>CONTRIBUTIONS FOR FISCAL YEAR ENDING</b>	<b>September 30, 2022</b>	<b>September 30, 2021</b>
Employer contribution rate		
Normal	Varies	Varies
Accrued liability	Varies	Varies
Death benefit	0.02%	0.02%
Administration	<u>0.35</u>	<u>0.35</u>
Total	Varies	Varies
Amortization period	Varies	Varies

\*Includes post-DROP members in suspended status who are also active with a second retirement account.





## Section I: Summary of Principal Results

### SUMMARY OF PRINCIPAL RESULTS FOR ALL GROUPS

VALUATION DATE	September 30, 2019	September 30, 2018
Number of active members	84,534	86,565
Annual compensation	\$ 3,793,957,058*	\$ 3,679,181,111
Number of retired members and beneficiaries**	51,451	50,061
Annual retirement allowances**	\$ 1,130,927,537	\$ 1,084,915,207
Number of deferred vested members	2,885	2,403
Estimated deferred annual allowances	\$ 36,228,115	\$ 29,288,317
Assets:		
Actuarial value	\$ 12,645,789,384	\$ 12,240,597,153
Market value	12,506,650,118	12,656,731,262
Unfunded actuarial accrued liability	\$ 5,897,752,652	\$ 5,589,137,744
Funded Ratio based on Actuarial Value of Assets	68.2%	68.7%

\*RSA implemented a new pension administration system for contribution reporting within this year, which resulted in larger than expected payroll amounts. This will not occur in subsequent years.

\*\*Includes post-DROP members in suspended status who are also active with a second retirement account.

- Comments on the valuation results as of September 30, 2019 are given in Section IV and further discussion of the contribution levels is set out in Section V.
- Schedule B of this report shows the development of the actuarial value of assets. Schedule D outlines the full set of actuarial assumptions and methods used in the current valuation. There have been no changes since the previous valuation.
- The Board funding policy is shown in Schedule F.







## Section I: Summary of Principal Results

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5. Since the previous valuation, the System has been amended to allow local employers to elect to provide Tier I retirement benefits to their Tier II employees, upon approval by the Board of Control, under Act 2019-132 until May 8, 2021. However, this valuation does not reflect the provisions of Act 2019-132. The contribution rates for local employers for the fiscal year beginning October 1, 2021 will be submitted in a separate report and will include the impact of any employer elections of Act 2019-132 approved by the Board through the September 2020 Board meeting.
6. The funded ratio shown in the Summary of Principal Results is the ratio of the actuarial value of assets to the actuarial accrued liability. The funded status would be different based on market 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 towards 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 Data

1. Data regarding the membership of the System for use as a basis of the valuation were furnished by the Retirement System office. The following table shows the number of active members and their annual compensation as of September 30, 2019 on the basis of which the valuation was prepared.

**TABLE 1**  
**THE NUMBER AND ANNUAL COMPENSATION OF**  
**ACTIVE MEMBERS AS OF SEPTEMBER 30, 2019**

GROUP	NUMBER	COMPENSATION*
State Employees		
Tier 1	18,231	\$978,216,042
Tier 2	10,061	361,373,650
Post-DROP Members Still in Active Service	241	18,305,853
Total	28,533	1,357,895,545
State Policemen		
Tier 1	582	\$39,258,038
Tier 2	99	3,746,811
Post-DROP Members Still in Active Service	0	0
Total	681	43,004,849
Local Employees		
Tier 1	33,165	\$1,658,827,909
Tier 2	22,057	726,466,024
Post-DROP Members Still in Active Service	98	7,762,731
Total	55,320	2,393,056,664
All Groups		
Tier 1	51,978	\$2,676,301,989
Tier 2	32,217	1,091,586,485
Post-DROP Members Still in Active Service	339	26,068,584
Total	84,534	3,793,957,058

\*RSA implemented a new pension administration system for contribution reporting within this year, which resulted in larger than expected payroll amounts. This will not occur in subsequent years.

The table reflects the active membership for whom complete valuation data were submitted. The results of the valuation include an estimated liability for an additional 30 vested inactive members where complete data was not available (with liabilities equal to contribution balances multiplied by a factor of 3), contribution balances for an additional 14,603 non-vested inactive members who have contributed in the last 5 years, and 19,076 non-vested inactive members who have not contributed for more than 5 years.





## Section II: Membership Data

2. The following table shows a six-year history of active member valuation data.

**TABLE 2**  
**SCHEDULE OF ACTIVE MEMBER VALUATION DATA**

### STATE EMPLOYEES

<u>Valuation Date</u>	<u>Number</u>	<u>Annual Payroll</u>	<u>% Increase in Total Pay*</u>	<u>Annual Average Pay</u>	<u>% Increase in Average Pay**</u>
9/30/2019	28,533	\$1,357,895,545	4.84%	\$ 47,590	6.57%
9/30/2018	29,004	1,295,229,592	1.85%	44,657	1.58%
9/30/2017	28,926	1,271,674,805	0.50%	43,963	1.11%
9/30/2016	29,101	1,265,310,969	1.08%	43,480	1.55%
9/30/2015	29,235	1,251,768,254	3.49%	42,817	2.58%
9/30/2014	28,977	1,209,550,191	1.14%	41,742	0.77%

\* 2.34% annual increase for total pay since 2014.

\*\* 2.66% annual increase for average pay since 2014.

### STATE POLICE

<u>Valuation Date</u>	<u>Number</u>	<u>Annual Payroll</u>	<u>% Increase in Total Pay*</u>	<u>Annual Average Pay</u>	<u>% Increase in Average Pay**</u>
9/30/2019	681	\$43,004,849	4.43%	\$ 63,150	1.21%
9/30/2018	660	41,180,794	2.02%	62,395	-3.86%
9/30/2017	622	40,366,017	-2.06%	64,897	3.14%
9/30/2016	655	41,213,571	-0.26%	62,921	6.75%
9/30/2015	701	41,320,289	1.48%	58,945	3.51%
9/30/2014	715	40,716,289	-1.59%	56,946	2.54%

\* 1.10% annual increase for total pay since 2014.

\*\* 2.09% annual increase for average pay since 2014.

### LOCAL EMPLOYEES

<u>Valuation Date</u>	<u>Number</u>	<u>Annual Payroll</u>	<u>% Increase in Total Pay*</u>	<u>Annual Average Pay</u>	<u>% Increase in Average Pay**</u>
9/30/2019	55,320	\$2,393,056,664	2.15%	\$ 43,258	5.06%
9/30/2018	56,901	2,342,770,725	3.09%	41,173	1.65%
9/30/2017	56,109	2,272,659,180	0.28%	40,504	-1.60%
9/30/2016	55,058	2,266,366,656	4.53%	41,163	3.71%
9/30/2015	54,627	2,168,066,588	1.46%	39,689	2.15%
9/30/2014	55,002	2,136,920,378	3.22%	38,852	2.13%

\* 2.29% annual increase for total pay since 2014.

\*\* 2.17% annual increase for average pay since 2014.





## Section II: Membership Data

### TOTAL EMPLOYEES

<u>Valuation Date</u>	<u>Number</u>	<u>Annual Payroll</u>	<u>% Increase in Total Pay*</u>	<u>Annual Average Pay</u>	<u>% Increase in Average Pay**</u>
9/30/2019 <sup>1</sup>	84,534	\$3,793,957,058	3.12%	\$ 44,881	5.60%
9/30/2018 <sup>2</sup>	86,565	3,679,181,111	2.64%	42,502	1.56%
9/30/2017 <sup>3</sup>	85,657	3,584,700,002	0.33%	41,849	-0.66%
9/30/2016 <sup>4</sup>	84,814	3,572,891,196	3.23%	42,126	2.92%
9/30/2015 <sup>5</sup>	84,563	3,461,155,131	2.18%	40,930	2.34%
9/30/2014 <sup>6</sup>	84,694	3,387,186,858	2.41%	39,993	1.61%

\* 2.29% annual increase for total pay since 2014.

\*\* 2.33% annual increase for average pay since 2014.

<sup>1</sup>There are no employees currently participating in the DROP program.

<sup>2</sup>There are no employees currently participating in the DROP program.

<sup>4</sup>There are no employees currently participating in the DROP program.

<sup>4</sup> There are no employees currently participating in the DROP program.

<sup>5</sup> In addition, there are 396 members with compensation of \$26,861,749 who are currently participating in the DROP. Employers of the Retirement System contribute on this payroll.

<sup>6</sup> In addition, there are 891 members with compensation of \$57,153,873 who are currently participating in the DROP. Employers of the Retirement System contribute on this payroll.

3. The following table shows the number and annual retirement allowances payable to retired members and their beneficiaries on the roll of the Retirement System as of the valuation date.





## Section II: Membership Data

TABLE 3

THE NUMBER AND ANNUAL RETIREMENT ALLOWANCES  
OF RETIRED MEMBERS AND BENEFICIARIES OF  
DECEASED MEMBERS ON THE ROLL AS OF SEPTEMBER 30, 2019

TYPE OF RETIREMENT	GROUP			
	STATE EMPLOYEES <sup>1</sup>	STATE POLICEMEN <sup>2</sup>	LOCAL EMPLOYEES <sup>3</sup>	TOTAL
Service:				
Number <sup>4</sup>	20,542	794	21,501	42,837
Annual Allowances <sup>4</sup>	\$ 494,854,644	\$ 41,365,948	\$ 476,843,677	\$ 1,013,064,269
Disability:				
Number	2,250	41	1,979	4,270
Annual Allowances	\$ 31,893,609	\$ 1,301,451	\$ 27,885,324	\$ 61,080,384
Beneficiaries:				
Number	1,752	103	2,489	4,344
Annual Allowances	\$ 25,076,179	\$ 2,313,569	\$ 29,393,136	\$ 56,782,884
DROP Participants:				
Number	-	-	-	-
Annual Allowances	\$ -	\$ -	\$ -	\$ -
Total:				
Number	24,544	938	25,969	51,451
Annual Allowances	\$ 551,824,432	\$ 44,980,968	\$ 534,122,137	\$ 1,130,927,537

<sup>1</sup> In addition, there are 1,069 vested inactive members with estimated deferred annual allowances totaling \$13,722,266.

<sup>2</sup> In addition, there are 22 vested inactive members with estimated deferred annual allowances totaling \$447,157.

<sup>3</sup> In addition, there are 1,794 vested inactive members with estimated deferred annual allowances totaling \$22,058,692.

<sup>4</sup> Includes post-DROP members in suspended status who are also active with a second retirement account.

4. Tables in Schedule I show the distribution by age and service of the number and average annual compensation of active members included in the valuation. In addition, tables in Schedule I show the distribution by age and benefit type of the number, annual benefits, and average annual benefits of retired members included in the valuation.





## Section III: Assets

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1. The current retirement law provides for the maintenance of five funds for the purpose of recording the fiscal transactions of the System, namely, the Annuity Savings Fund, the Pension Accumulation Fund, the Deferred Retirement Option Plan Fund, the Pre-Retirement Death Benefit Fund, and the Expense Fund.

(a) Annuity Savings Fund

The Annuity Savings Fund is the fund to which are credited all contributions made by members, except those contributions made by members who are participating in DROP, together with regular interest thereon. When a member retires or when a survivor allowance becomes payable or a member enters DROP, the amount of the member's accumulated contributions are transferred from the Annuity Savings Fund to the Pension Accumulation Fund. On September 30, 2019, the market value of assets credited to this Fund amounted to \$3,038,593,639 which represent the contributions of members to this date.

(b) Pension Accumulation Fund

The Pension Accumulation Fund is the fund to which are credited all contributions made by the employers, except those contributions made to the Pre-Retirement Death Benefit Fund which was created October 1, 1983. When a member retires or when a survivor allowance becomes payable, the pension is paid from this fund. The market value of assets credited to this fund amounted to \$9,380,019,838 on September 30, 2019.

(c) DROP Fund

The DROP Fund is the fund to which are credited deferred retirement benefits on behalf of members who elect to participate in the DROP, together with regular interest thereon. In addition, member contributions while participating in the DROP, together with regular interest therein, are credited to the Fund. At the end of the DROP deferral period, the member receives the amount of the deferred retirement benefits and contributions plus interest in the member's DROP account. The DROP is closed to new participants as of June 1, 2011. On September 30, 2019, the market value of assets credited to this Fund amounted to \$88,036,641.

(d) Pre-Retirement Death Benefit Fund

The Pre-Retirement Death Benefit Fund is the fund to which are credited contributions made by the employer for the special pre-retirement death benefit which became effective October 1, 1983. On September 30, 2019, the market value of assets credited to this fund amounted to \$27,623,662. These assets are not included in the valuation and the liabilities associated with these death benefits are not included in the valuation.

(e) Expense Fund

The Expense Fund is the fund from which the expenses of the administration of the Retirement System are paid. Any amounts credited to the accounts of members withdrawing





## Section III: Assets

before retirement and not returnable under the provisions of Code Section 36-27-16(c) are credited to the Expense Fund. Additional contributions required to meet the expenses of the Retirement System made by the employer are also credited to this fund. On September 30, 2019, the market value of assets credited to this fund amounted to \$(15,065,634). These assets are not included in the valuation.

2. As of September 30, 2019 the total market value of assets exclusive of the Pre-Retirement Death Benefit Fund and the Expense Fund amounted to \$12,506,650,118 as shown in the following table.

**TABLE 4**

**MARKET VALUE OF ASSETS BY FUND  
AS OF SEPTEMBER 30, 2019**

<b>FUND</b>	<b>MARKET VALUE OF ASSETS</b>
Annuity Savings Fund	\$ 3,038,593,639
Pension Accumulation Fund	9,380,019,838
DROP Fund	<u>88,036,641</u>
Total Market Value of Assets	\$ 12,506,650,118

3. The five-year market related actuarial value of assets as of September 30, 2019 was \$12,645,789,384. The following table shows the actuarial value of assets used for the current valuation allocated among State employees, State policemen and local employees.

**TABLE 5**

**COMPARISON OF ACTUARIAL VALUE OF ASSETS  
AT SEPTEMBER 30, 2019 AND SEPTEMBER 30, 2018**

<b>GROUP</b>	<b>SEPTEMBER 30, 2019 ACTUARIAL VALUE</b>	<b>SEPTEMBER 30, 2018 ACTUARIAL VALUE</b>
State Employees	\$ 4,964,556,132	\$ 4,887,402,954
State Policemen	346,308,908	341,388,930
Local Employees	<u>7,334,924,344</u>	<u>7,011,805,269</u>
Total Assets	\$ 12,645,789,384	\$ 12,240,597,153

2. Schedule C shows the receipts and disbursements of the System for the year preceding the valuation date and a reconciliation of the fund balances at market value.





## Section IV: Comments on Valuation

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1. Schedule A of this report contains the valuation balance sheets which show the present and prospective assets and liabilities of the System as of September 30, 2019. Separate balance sheets are shown for each employee group as well as in total for all groups.
2. The total valuation balance sheet shows that the System has total prospective liabilities of \$20,708,035,769. Of this amount, \$10,300,063,435 is for the prospective benefits payable on account of present retired members, beneficiaries of deceased members, and DROP participants, \$283,818,480 is for the prospective benefits payable on account of present inactive members and \$10,124,153,854 is for the prospective benefits payable on account of present active members. Against these liabilities the System has total actuarial value of assets of \$12,645,789,384 as of September 30, 2019. The difference of \$8,062,246,385 between the total liabilities and the total present actuarial value of assets represents the present value of contributions to be made in the future. Of this amount, \$1,701,789,212 is the present value of future contributions expected to be made by members to the Annuity Savings Fund, and the balance of \$6,360,457,173 represents the present value of future contributions payable by the employers.
3. The employers' contributions to the System consist of normal contributions and unfunded actuarial accrued liability (UAAL) contributions. The valuation indicates that employer normal contributions at the rate of 0.94% of payroll for Tier I members and 0.55% of payroll for Tier II members are required to provide the benefits of the System for State employees. For State policemen, employer normal contributions at the rate of 10.36% of payroll for Tier I members and 1.00% of payroll for Tier II members are required. For local employees, varying rates of employer normal contributions are required.
4. Prospective employer normal contributions at the above rates have a present value of \$462,704,521. When this amount is subtracted from \$6,360,457,173, which is the present value of the total future contributions to be made by the employers, there remains \$5,897,752,652 as the amount of future UAAL contributions.







## Section IV: Comments on Valuation

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5. The funding policy adopted by the Board, as shown in Schedule F, provides that one-fifteenth of the unfunded actuarial accrued liability as of September 30, 2012 (Transitional UAAL) will be amortized as a level percent of payroll over a closed period. The closed period shall be the amortization period for the September 30, 2012 valuation, not to exceed 30 years. The remaining Transitional UAAL each year will be amortized over an open period. The open period shall be the amortization period for the September 30, 2012 valuation, not to exceed 30 years. Each year the new closed transitional base is calculated by dividing the remaining transitional UAAL at the beginning of the year by a declining value from 15 initially to 1 in the year 2026. After 15 years, the entire Transitional UAAL will be closed. 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 determine a New Incremental UAAL. Each New Incremental UAAL will be amortized over a closed 30-year period from the date it is established.
6. The total UAAL rate payable by the State is 13.52% of payroll for State employees and 41.49% of payroll for State Policemen determined in accordance with the Board's funding policy. The UAAL contribution rate has been calculated on the assumption that the aggregate amount of accrued liability contribution will increase by 3.00% each year. Schedule G of this report shows a projection of the open Transitional UAAL and amortization schedules for all closed bases as of September 30, 2019.
7. The following table shows the components of the total UAAL and the derivation of the accrued liability contribution rate in accordance with the funding policy for State employees and State policemen:





## Section IV: Comments on Valuation

TABLE 6

### TOTAL UAAL AND UAAL CONTRIBUTION RATE

#### STATE EMPLOYEES

	<b>UAAL</b>	<b>Amortization Period</b>	<b>Amortization Payment</b>
Open Transitional	\$1,286,298,589	30	\$81,941,820
Closed Transitional 9/30/2012	179,199,538	23	13,125,916
Closed Transitional 9/30/2013	180,587,604	24	12,912,889
Closed Transitional 9/30/2014	181,699,397	25	12,703,350
Closed Transitional 9/30/2015	182,554,444	26	12,497,240
Closed Transitional 9/30/2016	183,171,067	27	12,294,503
Closed Transitional 9/30/2017	183,566,508	28	12,095,087
Closed Transitional 9/30/2018	183,756,941	29	11,898,940
Closed Transitional 9/30/2019	183,756,941	30	11,705,974
New Incremental 9/30/2013	39,406,713	24	2,817,771
New Incremental 9/30/2014	(42,560,278)	25	(2,975,564)
New Incremental 9/30/2015	57,634,581	26	3,945,525
New Incremental 9/30/2016	113,744,294	27	7,634,555
New Incremental 9/30/2017	(23,821,068)	28	(1,569,556)
New Incremental 9/30/2018	(19,884,783)	29	(1,287,613)
New Incremental 9/30/2019	<u>130,464,852</u>	30	<u>8,311,078</u>
Total	\$2,999,575,340		\$198,051,915
Total Amortization Payment Adjusted for Timing			<u>190,709,596</u>
Total Estimated Payroll*			\$1,410,549,209
UAAL Contribution Rate			13.52%

\* Estimated payroll based on applying the assumed salary scale to current salaries.





## Section IV: Comments on Valuation

TABLE 6 (continued)

### TOTAL UAAL AND UAAL CONTRIBUTION RATE

#### STATE POLICE

	<u>UAAL</u>	<u>Amortization Period</u>	<u>Amortization Payment</u>
Open Transitional	\$110,303,040	30	\$7,026,698
Closed Transitional 9/30/2012	15,385,227	23	1,126,929
Closed Transitional 9/30/2013	15,496,850	24	1,108,100
Closed Transitional 9/30/2014	15,584,818	25	1,089,599
Closed Transitional 9/30/2015	15,654,460	26	1,071,667
Closed Transitional 9/30/2016	15,707,337	27	1,054,282
Closed Transitional 9/30/2017	15,741,247	28	1,037,181
Closed Transitional 9/30/2018	15,757,577	29	1,020,361
Closed Transitional 9/30/2019	15,757,577	30	1,003,814
New Incremental 9/30/2013	174,480	24	12,476
New Incremental 9/30/2014	79,745	25	5,575
New Incremental 9/30/2015	17,809,123	26	1,219,170
New Incremental 9/30/2016	29,482,503	27	1,978,875
New Incremental 9/30/2017	(3,292,253)	28	(216,925)
New Incremental 9/30/2018	2,576,131	29	166,814
New Incremental 9/30/2019	<u>10,660,261</u>	30	<u>679,097</u>
Total	\$292,878,123		\$19,383,713
Total Amortization Payment Adjusted for Timing			<u>18,665,106</u>
Total Estimated Payroll*			\$44,983,844
UAAL Contribution Rate			41.49%

\* Estimated payroll based on applying the assumed salary scale to current salaries.

8. The Pre-Retirement Death Benefit Program was established October 1, 1983 under Act No. 83-616. The liabilities and assets associated with the pre-retirement death benefit are not included in the annual actuarial valuation of the System; however, the sufficiency of the Fund to provide the promised benefits is reviewed annually. The contribution requirements are determined every five years during our experience investigation. For all employers, an additional contribution of 0.02% of payroll will be required to meet the cost of the pre-retirement death benefit program this year.
9. For all employers, an additional contribution of 0.35% is required to cover the expenses of administering the System.





## Section IV: Comments on Valuation

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10. In our opinion, the current experience, assumptions and methods adopted by the Board support the funding policy and generally accepted and emerging practice. Assuming that required contributions continue to be made each year, the funding of the System and the objectives of the Funding Policy will continue to remain on track.





## Section V: Contributions Payable by Employers

- The retirement act provides that the Board of Control shall certify to the Chief Fiscal Officer of each employer the rates of contribution required to be paid by the employer.
- On the basis of the actuarial valuation prepared as of September 30, 2019 it is recommended that the State make contributions at the following rates for the fiscal year beginning October 1, 2021:

**TABLE 7**  
**ACTUARIALLY DETERMINED CONTRIBUTION RATES**

CONTRIBUTION	PERCENTAGE OF MEMBERS' COMPENSATION FOR FISCAL YEAR ENDING SEPTEMBER 20, 2022			
	STATE EMPLOYEES		STATE POLICEMEN	
	<u>Tier I</u>	<u>Tier II</u>	<u>Tier I</u>	<u>Tier II</u>
Employer Normal Cost	0.94%*	0.55%*	10.36%**	1.00%**
Accrued liability	13.52	13.52	41.49	41.49
Death benefit	0.02	0.02	0.02	0.02
Administration	<u>0.35</u>	<u>0.35</u>	<u>0.35</u>	<u>0.35</u>
Total	14.83%	14.44%	52.22%	42.86%

\* The total Normal Cost rate is 8.56% for Tier I and 6.65% for Tier II. Tier I members contribute 7.50% (8.50% for FLC members) and Tier II members contribute 6.00% (7.00% for FLC members).

\*\* The total Normal Cost rate is 20.28% for Tier I and 8.20% for Tier II. All Police Group 1 members contribute 10.00%. Tier I Police Group 2 members contribute 8.50% and Tier II Police Group 2 members contribute 7.00%.

- Contribution rates for Local Employers will be submitted in a separate report. The rates for the fiscal year beginning October 1, 2021 were determined as of September 30, 2019, and will reflect any elections made pursuant to Act 2011-676 as of September 30, 2019 and any elections made pursuant to Act 2019-132 as of the September 2020 Board meeting.





## **Section VI: Analysis of Financial Experience**

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The calculation of the System's liabilities and actuarial value of assets requires the use of several assumptions concerning the future experience of the System and its members. In each annual actuarial valuation, the experience of the System is compared with what was expected based on the actuarial assumptions. The differences between the actual and expected experience are called actuarial gains or losses depending on whether the difference increases or decreases the UAAL. For State employees, the UAAL increased \$163,155,976; for State policemen, the UAAL increased \$13,856,571. The most significant items contributing to the increase was interest on the UAAL and losses due to salary increases which were more than expected. There were also losses due to investment earnings less than expected as well as retiree mortality losses. Other sources of gains and losses were relatively small and there appear to be no trends developing that would be of concern to the System.

The following tables show the reconciliation of the UAAL of the System and a breakdown by source of the actuarial gains and losses for State employees and State policemen. These sources include the expected return on assets, salary increases, retirement, withdrawal, disability and mortality.

Since the benefits, assumptions and accrued liability rates vary by location for the Local employees, we do not develop an analysis of financial experience for this group.





## Section VI: Analysis of Financial Experience

### RECONCILIATION OF THE UNFUNDED ACTUARIAL ACCRUED LIABILITY FOR THE YEAR ENDING SEPTEMBER 30, 2019 (Dollar amounts in thousands)

	STATE EMPLOYEES	STATE POLICEMEN
(1) UAAL at beginning of year	\$ 2,836,419	\$ 279,022
(2) Total normal cost beginning of the year	99,781	8,103
(3) Actual contributions	297,457	25,321
(4) Interest accrual: [ [(1) + (2) ] - ½ [ (3) ] ] x .07700	214,635	21,134
(5) Expected UAAL before changes: (1) + (2) - (3) + (4)	2,853,378	282,938
(6) Increase from benefit changes	0	0
(7) Changes from revised actuarial assumptions and methods	0	0
(8) Expected UAAL after changes: (5) + (6) + (7)	2,853,378	282,938
(9) Actual UAAL at end of year	2,999,575	292,878
(10) Total (Gain)/Loss: (9) - (8)	\$ 146,197	\$ 9,940





## Section VI: Analysis of Financial Experience

**DEVELOPMENT OF (GAIN)/LOSS  
FROM INVESTMENT RETURN  
FOR THE YEAR ENDING SEPTEMBER 30, 2019**  
(Dollar amounts in thousands)

	STATE EMPLOYEES	STATE POLICEMEN
(1) Actuarial Value of Assets (BOY)	\$ 4,887,403	\$ 341,389
(2) Adjustment for unit transfer	(5)	0
(3) Net Cash Flow	(269,286)	(19,040)
(4) Expected Return: [ (1) + (2) + ½ [ (3) ] ] x .07700	365,962	25,554
(5) Expected Actuarial Value of Assets: [ (1) + (2) + (3) + (4) ]	4,984,074	347,903
(6) Actual Actuarial Value of Assets (EOY)	4,964,556	346,309
(7) (Gain)/Loss: (5) – (6)	\$ 19,518	\$ 1,594







## Section VI: Analysis of Financial Experience

**(GAINS)/ LOSSES BY SOURCE  
FOR THE YEAR ENDING September 30, 2019**  
(Dollar amounts in thousands)

Source	<u>STATE EMPLOYEES</u>		<u>STATE POLICEMEN</u>	
	Total	% of Actuarial Accrued Liability	Total	% of Actuarial Accrued Liability
<b>Age and Service Retirements.</b> Generally, earlier retirements cause losses and later retirements cause gains.	\$ (9,517)	(0.12%)	\$ 487	0.08%
<b>Withdrawal.</b> More withdrawals than expected usually cause gains and less withdrawals than expected cause losses.	(4,000)	(0.05%)	(2,371)	(0.37%)
<b>Disability Retirements.</b> More disabilities than expected generally cause losses and less disabilities than expected cause gains.	485	0.01%	244	0.04%
<b>Death-In-Service Benefits.</b> If survivor claims are less than assumed, there is a gain. If claims are more than assumed, there is a loss.	305	0.00%	187	0.03%
<b>Salary Increases.</b> If salaries increase more than expected, there is a loss. If salaries increase less than expected, there is a gain.	99,221	1.25%	7,061	1.10%
<b>New Members/Rehires.</b> Any past service causes losses.	18,713	0.23%	1,226	0.19%
<b>Retiree Mortality.</b> More deaths than expected cause gains, less than expected cause losses.	27,728	0.35%	1,204	0.19%
<b>Investment Return.</b> Investment income greater than expected causes gains while investment income less than expected cause losses.	19,518	0.25%	1,594	0.25%
<b>Other.</b> Miscellaneous gains and losses resulting from data corrections, timing of financial transactions, unit transfers, changes in valuation software, etc.	(6,256)	(0.08%)	308	0.05%
<b>Total (Gain)/Loss</b>	<b>\$ 146,197</b>	<b>1.84%</b>	<b>\$ 9,940</b>	<b>1.56%</b>





## Section VI: Analysis of Financial Experience

### (GAINS)/ LOSSES BY SOURCE

#### Historical Trends

(Dollar amounts in thousands)

#### STATE EMPLOYEES

<b>SOURCE</b>	<b>September 30</b>		
	<b>2019</b>	<b>2018</b>	<b>2017</b>
Age and Service Retirements	\$ (9,517)	\$ (4,114)	(5,384)
Withdrawal	(4,000)	(585)	3,433
Disability Retirements	485	629	429
Death-In-Service Benefits	305	(754)	626
Salary Increases	99,221	(6,128)	(2,484)
New Members/Rehires	18,713	12,294	12,475
Retiree Mortality	27,728	(145)	(10,442)
Investment Return	19,518	(65,023)	(92,749)
Other	(6,256)	499	(13,016)
<b>Total (Gain)/Loss</b>	<b>\$ 146,197</b>	<b>\$ (63,328)</b>	<b>(107,110)</b>

#### STATE POLICEMEN

<b>SOURCE</b>	<b>September 30</b>		
	<b>2019</b>	<b>2018</b>	<b>2017</b>
Age and Service Retirements	\$ 487	\$ 1,563	(67)
Withdrawal	(2,371)	(1,276)	78
Disability Retirements	244	50	(251)
Death-In-Service Benefits	187	(92)	177
Salary Increases	7,061	(4,511)	(1,501)
New Members/Rehires	1,226	3,137	803
Retiree Mortality	1,204	717	(522)
Investment Return	1,594	(4,245)	(6,239)
Other	308	601	40
<b>Total (Gain)/Loss</b>	<b>\$ 9,940</b>	<b>\$ (4,056)</b>	<b>(7,481)</b>





## Section VII: Accounting Information

The information required under Governmental Accounting Standards Board (GASB) Statements No. 67 and 68 is 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 SEPTEMBER 30, 2019

GROUP	NUMBER			
	State Employees	State Police	Local Employees	Total
Retirees and beneficiaries currently receiving benefits	24,544	938	25,969	51,451
Terminated employees entitled to benefits but not yet receiving benefits	4,688	34	12,796	17,518
Non-vested inactive members who have not contributed for more than 5 years	19,076	0	0	19,076
Active Members	<u>28,533</u>	<u>681</u>	<u>55,320</u>	<u>84,534</u>
Total	76,841	1,653	94,085	172,579





## Section VII: Accounting Information

2. The schedule of funding progress is shown below.

### SCHEDULE OF FUNDING PROGRESS (Dollar amounts in thousands)

Actuarial Valuation Date	Actuarial Value of Plan Assets (a)	Actuarial 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)
<b><u>TOTAL ALL GROUPS</u></b>						
9/30/2014	\$ 10,134,581	\$ 15,138,294	\$ 5,003,713	66.9 %	\$ 3,444,341	145.3 %
9/30/2015	10,589,258	15,723,720	5,134,462	67.3	3,488,017	147.2
9/30/2016 <sup>1</sup>	11,082,280	16,728,009	5,645,729	66.2	3,572,891	158.0
9/30/2017 <sup>1</sup>	11,690,952	17,250,834	5,559,883	67.8	3,584,700	155.1
9/30/2018 <sup>1</sup>	12,240,597	17,829,735	5,589,138	68.7	3,679,181	151.9
9/30/2019	12,645,789	18,543,542	5,897,753	68.2	3,793,957	155.5
<b><u>STATE EMPLOYEES</u></b>						
9/30/2014	\$ 4,388,746	\$ 6,949,245	\$ 2,560,499	63.2 %	\$ 1,246,901	205.3 %
9/30/2015	4,504,338	7,159,668	2,655,330	62.9	1,270,556	209.0
9/30/2016 <sup>1</sup>	4,598,818	7,404,587	2,805,769	62.1	1,265,311	221.7
9/30/2017 <sup>1</sup>	4,759,602	7,581,147	2,821,545	62.8	1,271,675	221.9
9/30/2018 <sup>1</sup>	4,887,403	7,723,822	2,836,419	63.3	1,295,230	219.0
9/30/2019	4,964,556	7,964,131	2,999,575	62.3	1,357,896	220.9
<b><u>STATE POLICEMEN</u></b>						
9/30/2014	\$ 309,000	\$ 540,142	\$ 231,142	57.2 %	\$ 42,047	549.7 %
9/30/2015	313,373	559,795	246,422	56.0	41,861	588.7
9/30/2016 <sup>1</sup>	318,103	590,658	272,555	53.9	41,214	661.3
9/30/2017 <sup>1</sup>	333,960	607,107	273,147	55.0	40,366	676.7
9/30/2018 <sup>1</sup>	341,389	620,411	279,022	55.0	41,181	677.6
9/30/2019	346,309	639,187	292,878	54.2	43,005	681.0
<b><u>LOCAL EMPLOYEES</u></b>						
9/30/2014	\$ 5,436,835	\$ 7,648,907	\$ 2,212,072	71.1 %	\$ 2,155,393	102.6 %
9/30/2015	5,771,547	8,004,257	2,232,710	72.1	2,175,599	102.6
9/30/2016 <sup>1</sup>	6,165,359	8,732,588	2,567,405	70.6	2,266,367	113.3
9/30/2017 <sup>1</sup>	6,597,390	9,062,580	2,465,190	72.8	2,272,659	108.5
9/30/2018 <sup>1</sup>	7,011,805	9,485,502	2,473,697	73.9	2,342,771	105.6
9/30/2019	7,334,924	9,940,224	2,605,299	73.8	2,393,057	108.9

<sup>1</sup> Reflects changes in actuarial assumptions and methods.





## Section VII: Accounting Information

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

	<b>State Employees</b>	<b>State Policemen</b>	<b>Local Employees</b>
Valuation date	9/30/2019	9/30/2019	9/30/2019
Actuarial cost method	Entry age	Entry age	Entry age
Amortization method	Level percent Closed	Level percent Closed	Level percent Closed
Single equivalent remaining amortization period	27.9 years	27.8 years	Within 30 years - Varies by employer
Asset valuation method	Five-year market related value	Five-year market related value	Five-year market related value
Actuarial assumptions:			
Investment rate of return*	7.70%	7.70%	7.70%
Projected salary increases*	3.25 – 5.00%	4.50%	3.25 – 5.00%
Cost-of-living adjustment	None	None	None
*Includes price inflation at	2.75%	2.75%	2.75%





## Section VIII: Risk Assessment

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### *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 can simply be considered 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 understandably, there is a focus on aspects of risk that are negative.

Risk can usually 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 upon 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.

#### STATE EMPLOYEES (\$ in thousands)

Valuation	Fair Value of Assets	Covered Payroll	Asset Volatility Ratio
2014	\$4,689,942	\$1,246,900	3.76
2015	\$4,469,806	\$1,270,556	3.52
2016	\$4,615,916	\$1,265,311	3.65
2017	\$4,910,513	\$1,271,675	3.86
2018	\$5,059,401	\$1,295,230	3.91
2019	\$4,917,295	\$1,357,896	3.62

#### STATE POLICE (\$ in thousands)

Valuation	Fair Value of Assets	Covered Payroll	Asset Volatility Ratio
2014	\$329,832	\$42,047	7.84
2015	\$310,719	\$41,861	7.42
2016	\$318,885	\$41,214	7.74
2017	\$343,920	\$40,366	8.52
2018	\$352,888	\$41,181	8.57
2019	\$342,665	\$43,005	7.97

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). The greater the AVR, the more volatility there is in the Required Contribution Rate. For plans with low AVRs, the impact of investment gains and losses on Required Contribution Rates is less than for plans with high AVRs. The AVR for State Employees as of September 30, 2019 is 3.62 and the AVR for State Police is 7.97. As shown in the table below, if the market value return is 5% below assumed, or 2.70% (7.70% minus 5.00%) for the System, there will be an





## Section VIII: Risk Assessment

increase in the Required Contribution Rate of 0.45% of payroll in the first year for State Employees and 0.99% for State Police. Without asset smoothing or without returns above the expected return in the next four years, the impact on the Required Contribution Rate would be 2.24% for State Employees and 4.93% for State Police.

### STATE EMPLOYEES

AVR	Unsmoothed Amortization	Smoothed Amortization
3.00	1.86%	0.37%
3.62	2.24%	0.45%
4.00	2.47%	0.49%

### STATE POLICE

AVR	Unsmoothed Amortization	Smoothed Amortization
7.00	4.33%	0.87%
7.97	4.93%	0.99%
9.00	5.57%	1.11%







## Section VIII: Risk Assessment

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### *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 7.70%, along with the results if the assumption were 6.70% or 8.70%. 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 (6.70% or 8.70%) would comply with actuarial standards of practice.





## Section VIII: Risk Assessment

### STATE EMPLOYEES (\$ in thousands)

As of September 30, 2019	Current Discount Rate (7.70%)	-1% Discount Rate (6.70%)	+1% Discount Rate (8.70%)
Accrued Liability	\$7,964,131	\$8,779,335	\$7,270,299
Unfunded Liability	\$2,999,575	\$3,814,778	\$2,305,743
Funded Ratio (AVA)	62.3%	56.5%	68.3%
ADEC Rate*			
Tier I	14.83%	19.09%	10.85%
Tier II	14.44%	18.14%	10.89%

### STATE POLICE (\$ in thousands)

As of September 30, 2019	Current Discount Rate (7.70%)	-1% Discount Rate (6.70%)	+1% Discount Rate (8.70%)
Accrued Liability	\$639,187	\$702,533	\$585,042
Unfunded Liability	\$292,878	\$356,224	\$238,733
Funded Ratio (AVA)	54.2%	49.3%	59.2%
ADEC Rate*			
Tier I	52.22%	60.75%	44.47%
Tier II	42.86%	48.26%	37.62%

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





## Section VIII: Risk Assessment

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### ***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 unknown, and actual mortality improvements may occur at a faster rate than expected, or at a slower rate than expected. Although changes in mortality will affect the benefits paid, this assumption is reviewed carefully during the regular experience studies that the System conducts so that incremental changes can be made to smoothly reflect emerging experience. The next actuarial experience study will be for the period from October 1, 2015 – September 30, 2020.

### ***Contribution Risk***

The System is funded primarily by member and employer contributions to the trust fund, together with the earnings on those accumulated contributions. Each year in the valuation, the Actuarial Determined Employer Contribution (ADEC) 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 (which includes expected administrative expenses), and the rate necessary to amortize the UAAL. Since the level percentage of payroll method is used to determine the UAAL amortization amounts, there is an expectation that future payments will grow at the assumed 3.00% annual rate of increase in covered payroll. If payroll grows at a slower rate, under this amortization method, less than expected UAAL amortization payments would result in a greater UAAL in future years and may require increases to either the amortization rate or the amortization period. From a policy perspective, since the ADEC rate has always been made by the plan sponsors, and that procedure is expected to continue, there is no risk to the System associated with the contribution amounts being less than the ADEC.





## Schedule A: Valuation Balance Sheet & Solvency Test

### VALUATION BALANCE SHEET SHOWING THE PRESENT AND PROSPECTIVE ASSETS AND LIABILITIES OF THE EMPLOYEES' RETIREMENT SYSTEM OF ALABAMA

#### STATE EMPLOYEES

	SEPTEMBER 30, 2019
<b><u>ASSETS</u></b>	
Actuarial Value of Assets	\$ 4,964,556,132
Present value of future members' contributions to the Annuity Savings Fund	\$ 667,809,664
Present value of future employer contributions to the Pension Accumulation Fund	
Normal contributions	\$ 78,342,909
Unfunded accrued liability contributions	<u>2,999,575,340</u>
Total prospective employer contributions	\$ 3,077,918,249
Total Assets	<u>\$ 8,710,284,045</u>
<b><u>LIABILITIES</u></b>	
Present value of benefits payable on account of retired members and beneficiaries of deceased members now drawing retirement allowances	
Service Retirements	\$ 4,381,807,684
Disability Retirements	267,335,457
Beneficiaries of Deceased Members	189,683,147
DROP Participant Accounts	<u>64,717,866</u>
Total	\$ 4,903,544,154
Inactive Members	\$ 99,005,973
Inactive T-section accounts	\$ 16,889,955
Present value of prospective benefits payable on account of present active members:	
Service retirement allowances	\$ 3,236,811,602
Disability retirement allowances	178,791,043
Death Benefits	22,542,729
Termination Benefits	<u>252,698,589</u>
Total	\$ 3,690,843,963
Total Liabilities	<u>\$ 8,710,284,045</u>





## Schedule A: Valuation Balance Sheet & Solvency Test

### VALUATION BALANCE SHEET SHOWING THE PRESENT AND PROSPECTIVE ASSETS AND LIABILITIES OF THE EMPLOYEES' RETIREMENT SYSTEM OF ALABAMA

#### STATE POLICEMEN

	SEPTEMBER 30, 2019
<b><u>ASSETS</u></b>	
Actuarial Value of Assets	\$ 346,308,908
Present value of future members' contributions to the Annuity Savings Fund	\$ 27,126,576
Present value of future employer contributions to the Pension Accumulation Fund	
Normal contributions	\$ 26,458,625
Unfunded accrued liability contributions	<u>292,878,123</u>
Total prospective employer contributions	\$ 319,336,748
Total Assets	<u>\$ 692,772,232</u>
<b><u>LIABILITIES</u></b>	
Present value of benefits payable on account of retired members and beneficiaries of deceased members now drawing retirement allowances	
Service Retirements	\$ 391,327,768
Disability Retirements	10,829,745
Beneficiaries of Deceased Members	16,028,132
DROP Participant Accounts	<u>0</u>
Total	\$ 418,185,645
Inactive Members	\$ 2,745,536
Present value of prospective benefits payable on account of present active members:	
Service retirement allowances	\$ 262,913,064
Disability retirement allowances	4,021,225
Death Benefits	768,067
Termination Benefits	<u>4,138,695</u>
Total	\$ 271,841,051
Total Liabilities	<u>\$ 692,772,232</u>





## Schedule A: Valuation Balance Sheet & Solvency Test

### VALUATION BALANCE SHEET SHOWING THE PRESENT AND PROSPECTIVE ASSETS AND LIABILITIES OF THE EMPLOYEES' RETIREMENT SYSTEM OF ALABAMA

#### LOCAL EMPLOYEES

	SEPTEMBER 30, 2019
<b><u>ASSETS</u></b>	
Actuarial Value of Assets	\$ 7,334,924,344
Present value of future members' contributions to the Annuity Savings Fund	\$ 1,006,852,972
Present value of future employer contributions to the Pension Accumulation Fund	
Normal contributions	\$ 357,902,987
Unfunded accrued liability contributions	<u>2,605,299,189</u>
Total prospective employer contributions	\$ 2,963,202,176
Total Assets	<u>\$ 11,304,979,492</u>
<b><u>LIABILITIES</u></b>	
Present value of benefits payable on account of retired members and beneficiaries of deceased members now drawing retirement allowances	
Service Retirements	\$ 4,474,955,782
Disability Retirements	241,719,833
Beneficiaries of Deceased Members	238,339,246
DROP Participant Accounts	<u>23,318,775</u>
Total	\$ 4,978,333,636
Inactive Members	\$ 165,177,016
Present value of prospective benefits payable on account of present active members:	
Service retirement allowances	\$ 5,426,966,784
Disability retirement allowances	265,303,550
Death Benefits	36,055,958
Termination Benefits	<u>433,142,548</u>
Total	\$ 6,161,468,840
Total Liabilities	<u>\$ 11,304,979,492</u>





## Schedule A: Valuation Balance Sheet & Solvency Test

### VALUATION BALANCE SHEET SHOWING THE PRESENT AND PROSPECTIVE ASSETS AND LIABILITIES OF THE EMPLOYEES' RETIREMENT SYSTEM OF ALABAMA

#### TOTAL - ALL GROUPS

	SEPTEMBER 30, 2019
<b><u>ASSETS</u></b>	
Actuarial Value of Assets	\$ 12,645,789,384
Present value of future members' contributions to the Annuity Savings Fund	\$ 1,701,789,212
Present value of future employer contributions to the Pension Accumulation Fund	
Normal contributions	\$ 462,704,521
Unfunded accrued liability contributions	<u>5,897,752,652</u>
Total prospective employer contributions	\$ 6,360,457,173
Total Assets	<u>\$ 20,708,035,769</u>
<b><u>LIABILITIES</u></b>	
Present value of benefits payable on account of retired members, beneficiaries of deceased members now drawing retirement allowances, and DROP participants	
Service Retirements	\$ 9,248,091,234
Disability Retirements	519,885,035
Beneficiaries of Deceased Members	444,050,525
DROP Participant Accounts	<u>88,036,641</u>
Total	\$ 10,300,063,435
Inactive Members	\$ 266,928,525
Inactive T-section accounts	\$ 16,889,955
Present value of prospective benefits payable on account of present active members:	
Service retirement allowances	\$ 8,926,691,450
Disability retirement allowances	448,115,818
Death Benefits	59,366,754
Termination Benefits	<u>689,979,832</u>
Total	\$ 10,124,153,854
Total Liabilities	<u>\$ 20,708,035,769</u>





## Schedule A: Valuation Balance Sheet & Solvency Test

### SOLVENCY TEST (\$1000's)

Valuation Date	Aggregate Accrued Liabilities For			Reported Assets	Portion of Accrued Liabilities Covered by Reported Asset		
	(1) Active Member Contributions	(2) Retirants and Beneficiaries	(3) Active Members (Employer Financed Portion)		(1)	(2)	(3)
9/30/2019	\$3,038,594	\$10,300,063	\$5,204,885	\$12,645,789	100%	93%	0%
9/30/2018 <sup>1</sup>	2,922,432	9,944,503	4,962,800	12,240,597	100	93	0
9/30/2017 <sup>1</sup>	2,817,368	9,567,278	4,866,189	11,690,952	100	93	0
9/30/2016 <sup>1</sup>	2,707,129	9,209,857	4,811,023	11,082,280	100	91	0
9/30/2015	2,591,066	8,666,490	4,466,164	10,589,258	100	92	0
9/30/2014	2,484,050	8,366,277	4,287,967	10,134,581	100	91	0

<sup>1</sup> Reflects changes in actuarial assumptions and methods.







## Schedule B: Actuarial Value of Assets

### DEVELOPMENT OF THE ACTUARIAL VALUE OF ASSETS AS OF SEPTEMBER 30, 2019

#### STATE EMPLOYEES

(1)	Actuarial Value of Assets on September 30, 2018	
a.	Actuarial Value on September 30, 2018	\$ 4,887,402,954
b.	Adjustment	(4,773)
c.	Adjusted Actuarial Value on September 30, 2018	\$ 4,887,398,181
(2)	Market Value of Assets on September 30, 2019	\$ 4,917,294,862
(3)	Market Value of Assets on September 30, 2018	
a.	Market Value on September 30, 2018	\$ 5,059,401,139
b.	Adjustment	(3,000)
c.	Adjusted Market Value on September 30, 2018	\$ 5,059,398,139
(4)	Cash Flow	
a.	Contributions	\$ 297,456,829
b.	Benefit Payments and DROP Disbursements	(550,703,981)
c.	Refunds to Members	(13,585,479)
d.	Transfers to Expense Fund - Interest Forfeitures	(3,923,069)
e.	Transfers to/from Police/Locals	1,469,914
f.	Investment Expenses	(14,402,000)
g.	Net	\$ (283,687,786)
(5)	Investment Income	
a.	Market total: (2) – (3)c – (4)g	\$ 141,584,509
b.	Assumed Rate	7.70%
c.	Amount for Immediate Recognition [(3)c x (5)b] + [(4)a +(4)b +(4)c + (4)d + (4)e] * (5)b * 0.5) - (4)f	\$ 393,608,154
d.	Amount for Phased-in Recognition (5)a – (5)c	\$ (252,023,645)
(6)	Phased-In Recognition of Investment Income	
a.	Current Year: 0.20*(5)d	\$ (50,404,729)
b.	First Prior Year	15,007,906
c.	Second Prior Year	45,187,459
d.	Third Prior Year	19,570,629
e.	Fourth Prior Year	(62,123,682)
f.	Total Recognized Investment Gain	\$ (32,762,417)
(7)	Actuarial Value of Assets on September 30, 2019: (1)c + (4)g + (5)c + (6)f	\$ 4,964,556,132





## Schedule B: Actuarial Value of Assets

### DEVELOPMENT OF THE ACTUARIAL VALUE OF ASSETS AS OF SEPTEMBER 30, 2019

#### STATE POLICEMEN

(1)	Actuarial Value of Assets on September 30, 2018	
a.	Actuarial Value on September 30, 2018	\$ 341,388,930
b.	Adjustment	<u>0</u>
c.	Adjusted Actuarial Value on September 30, 2018	\$ 341,388,930
(2)	Market Value of Assets on September 30, 2019	\$ 342,665,108
(3)	Market Value of Assets on September 30, 2018	
a.	Market Value on September 30, 2018	\$ 352,887,956
b.	Adjustment	<u>0</u>
c.	Adjusted Market Value on September 30, 2018	\$ 352,887,956
(4)	Cash Flow	
a.	Contributions	\$ 25,321,110
b.	Benefit Payments and DROP Disbursements	(44,638,613)
c.	Refunds to Members	(218,446)
d.	Transfers to/from State/Local	<u>495,758</u>
e.	Net	\$ (19,040,191)
(5)	Investment Income	
a.	Market total: (2) – (3)c – (4)e	\$ 8,817,343
b.	Assumed Rate	7.70%
c.	Amount of Immediate Recognition [(3)c x (5)b] + [(4)e * (5)b * 0.5]	\$ 26,439,325
d.	Amount for Phased-in Recognition (5)a – (5)c	\$ (17,621,982)
(6)	Phased-In Recognition of Investment Income	
a.	Current Year: 0.20*(5)d	\$ (3,524,396)
b.	First Prior Year	1,002,248
c.	Second Prior Year	3,071,130
d.	Third Prior Year	1,308,785
e.	Fourth Prior Year	(4,336,923)
f.	Total Recognized Investment Gain	\$ (2,479,156)
(7)	Actuarial Value of Assets on September 30, 2019: (1)c + (4)e + (5)c + (6)f	\$ 346,308,908





## Schedule B: Actuarial Value of Assets

### DEVELOPMENT OF THE ACTUARIAL VALUE OF ASSETS AS OF SEPTEMBER 30, 2019

#### LOCAL EMPLOYEES

(1)	Actuarial Value of Assets on September 30, 2018	
a.	Actuarial Value on September 30, 2018	\$ 7,011,805,269
b.	Adjustment	1,773
c.	Adjusted Actuarial Value on September 30, 2018	\$ 7,011,807,042
(2)	Market Value of Assets on September 30, 2019	\$ 7,246,690,148
(3)	Market Value of Assets on September 30, 2018	
a.	Market Value on September 30, 2018	\$ 7,244,442,167
b.	Adjustment	0
c.	Adjusted Market Value on September 30, 2018	\$ 7,244,442,167
(4)	Cash Flow	
a.	Contributions	\$ 385,000,626
b.	Benefit Payments and DROP Disbursements	(527,932,710)
c.	Refunds to Members and Employers	(36,559,542)
d.	Transfers to/from State/Police	(1,965,672)
e.	Net	\$ (181,457,298)
(5)	Investment Income	
a.	Market total: (2) – (3)c – (4)e	\$ 183,705,279
b.	Assumed Rate	7.70%
c.	Amount of Immediate Recognition [(3)c x (5)b] + [(4)e * (5)b * 0.5]	\$ 550,835,941
d.	Adjustment for Employer Lump Sums	\$ 12,853
e.	Adjusted Amount for Immediate Recognition (5)c + (5)d	\$ 550,848,794
f.	Amount for Phased-In Recognition (5)a – (5)e	\$ (367,143,515)
(6)	Phased-In Recognition of Investment Income	
a.	Current Year: 0.20*(5)f	\$ (73,428,703)
b.	First Prior Year	20,070,608
c.	Second Prior Year	59,966,585
d.	Third Prior Year	24,717,514
e.	Fourth Prior Year	(77,600,198)
f.	Total Recognized Investment Gain	\$ (46,274,194)
(7)	Actuarial Value of Assets on September 30, 2019: (1)c + (4)e + (5)e + (6)f	\$ 7,334,924,344





## Schedule B: Actuarial Value of Assets

### SEPTEMBER 30, 2019 DEVELOPMENT OF THE ACTUARIAL VALUE OF ASSETS

#### TOTAL - ALL GROUPS

(1)	Beginning Actuarial Value of Assets on September 30, 2018	\$ 12,240,597,153
	Adjustment (CAFR)	(3,000)
	Ending Actuarial Value of Assets on September 30, 2018	\$ 12,240,594,153
(2)	Market Value of Assets on September 30, 2019	\$ 12,506,650,118
(3)	Beginning Market Value of Assets on September 30, 2018	\$ 12,656,731,262
	Adjustment (CAFR)	(3,000)
	Ending Market Value of Assets on September 30, 2018	\$ 12,656,728,262
(4)	Cash Flow	
a.	Contributions	\$ 707,778,565
b.	Benefit Payments and DROP Disbursements	(1,123,275,304)
c.	Refunds to Members and Employers	(50,363,467)
d.	Transfer to Expense Fund – Interest Forfeitures	(3,923,069)
e.	Investment Expenses	(14,402,000)
f.	Net	\$ (484,185,275)
(5)	Investment Income	
a.	Market total: (2) – (3) – (4)f	\$ 334,107,131
b.	Assumed Rate	7.70%
c.	Amount for Immediate Recognition [(3) x (5)b] + [(4)a + (4)b + (4)c + (4)d] * (5)b * 0.5) - (4)e	\$ 970,883,420
d.	Adjusted for Employer Lump Sums	\$ 12,853
e.	Adjusted Amount for Immediate Recognition (5)c + (5)d	\$ 970,896,273
f.	Amount for Phased-In Recognition (5)a – (5)e	\$ (636,789,142)
(6)	Phased-In Recognition of Investment Income	
a.	Current Year: 0.20*(5)f	\$ (127,357,828)
b.	First Prior Year	36,080,762
c.	Second Prior Year	108,225,174
d.	Third Prior Year	45,596,928
e.	Fourth Prior Year	(144,060,803)
f.	Total Recognized Investment Gain	\$ (81,515,767)
(7)	Actuarial Value of Assets on September 30, 2019: (1) + (4)f + (5)e + (6)f	\$ 12,645,789,384





## Schedule B: Actuarial Value of Assets

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SEPTEMBER 30, 2019  
DEVELOPMENT OF THE ACTUARIAL VALUE OF ASSETS

<u>Date</u>	<u>Investment Gain/(Loss)</u>	<u>Amount Recognized</u>	<u>Remaining Balance as of 9/30/2019</u>
9/30/2015	\$(720,304,016)	\$(720,304,016)	\$ 0
9/30/2016	227,984,639	182,387,712	45,596,927
9/30/2017	541,125,873	324,675,525	216,450,348
9/30/2018	180,403,814	72,161,524	108,242,290
9/30/2019	(636,789,142)	(127,357,828)	(509,431,314)





## Schedule C: Summary of Receipts & Disbursements

### SUMMARY OF RECEIPTS AND DISBURSEMENTS FOR THE YEAR ENDING SEPTEMBER 30, 2019

#### Receipts for the Period

Contributions:		
Members	\$ 254,439,719	
Employers	<u>453,338,846</u>	
Total		\$ 707,778,565
Investment Income*		<u>324,246,335</u>
TOTAL		\$ 1,032,024,900

#### Disbursements for the Period

Benefit Payments		\$ (1,101,443,837)
Refunds to Members		(49,983,142)
DROP Distributions		(21,831,467)
Miscellaneous:		
Transfers to Plant Fund	\$ 0	
Transfers to Expense Fund-Interest Forfeitures	(3,923,069)	
Transfers to Expense Fund-Investment Expenses	(3,662,687)	
Transfers to Pre-retirement Death Benefit Fund	(878,517)	
Unit Withdrawal	<u>(380,325)</u>	
TOTAL		<u>(8,844,598)</u>
TOTAL		\$(1,182,103,044)

Excess of Receipts Over Disbursements \$ (150,078,144)

#### Reconciliation of Asset Balances

Market Value of Assets as of September 30, 2018	\$ 12,656,731,262
Adjustment (CAFR)	(3,000)
Excess of Receipts Over Disbursements	<u>(150,078,144)</u>
Market Value of Assets as of September 30, 2019	<u>\$ 12,506,650,118</u>

\*Net of \$10,740,665 in investment expenses.





## Schedule D: Outline of Actuarial Assumptions & Methods

The assumptions and methods used in the valuation were selected based on the actuarial experience study prepared as of September 30, 2015, submitted to and adopted by the Board on September 29, 2016. The discount rate of 7.70% was subsequently adopted by the Board on December 19, 2018.

INVESTMENT RATE OF RETURN: 7.70% per annum, compounded annually, including price inflation at 2.75%.

SALARY INCREASES: Representative values of the assumed annual rates of future salary increases are as follows:

### STATE AND LOCAL EMPLOYEES

Service	Annual Rate*
0	5.000 %
1-5	4.000
6-10	3.750
11-15	3.500
16 & Over	3.250

*\*Includes wage inflation at 3.00% per annum.*

### STATE POLICEMEN

4.50% per year for all years of service, including wage inflation at 3.00% per annum.





## Schedule D: Outline of Actuarial Assumptions & Methods

### SEPARATIONS FROM ACTIVE SERVICE- STATE AND LOCAL EMPLOYEES

TERMINATION: Representative values of the assumed annual rates of withdrawal are shown in the following tables:

#### REGULAR MEMBERS

Age	<u>Annual Rate of Withdrawal*</u>							
	Years of Service							
	0-4		5-9		10-20		20+	
	Male	Female	Male	Female	Male	Female	Male	Female
20	24.00%	33.00%	9.00%	12.00%	5.00%	6.50%	1.50%	1.50%
25	19.50	23.00	8.50	11.00	5.00	6.50	1.50	1.50
30	17.50	20.00	7.00	8.25	4.00	5.25	1.50	1.50
35	16.00	18.00	6.50	7.50	3.25	5.25	1.50	1.50
40	15.50	17.00	5.50	7.25	3.00	3.50	1.50	1.50
45	13.50	15.50	5.00	6.50	2.75	3.50	1.50	1.50
50	13.00	14.50	5.00	6.25	2.50	3.50	1.50	1.50
55	11.50	14.00	5.00	5.50	2.50	3.50	1.50	1.50
60	11.50	15.00	5.50	6.00	2.50	3.50	1.50	1.50
65	15.50	16.00	7.50	8.50	2.75	3.50	1.50	1.50
69	15.50	16.00	7.50	8.50	2.75	3.50	1.50	1.50

*There are no withdrawal decrements after eligibility for service retirement.*

#### CERTIFIED FIREFIGHTERS, POLICE OFFICERS, OR CORRECTIONAL OFFICERS (FLC MEMBERS)

Age	<u>Annual Rate of Withdrawal*</u>			
	Years of Service			
	0-4	5-9	10-20	20+
20	17.00%	6.50%	3.25%	1.25%
25	14.50	6.50	3.25	1.25
30	13.50	6.00	3.25	1.25
35	13.50	5.50	3.25	1.25
40	13.00	5.00	2.50	1.25
45	12.50	4.50	2.25	1.25
50	11.00	4.50	2.25	1.25
55	10.00	4.50	2.00	1.25
60	12.00	5.50	2.00	1.25
65	17.00	6.00	2.00	1.25
69	17.00	6.00	2.00	1.25

*There are no withdrawal decrements after eligibility for service retirement.*

\* For local employers with fewer than 25 employees the rates are multiplied by 50%.







## Schedule D: Outline of Actuarial Assumptions & Methods

SERVICE RETIREMENT: The assumed annual rates of service retirement are as follows:

### REGULAR MEMBERS

Age	Annual Rate <sup>1</sup>			
	TIER I <sup>2</sup>		TIER II	
	1 <sup>ST</sup> Eligible	Subsequent	1 <sup>ST</sup> Eligible	Subsequent
50 & Under	18.00%	11.50%		
51 to 56	20.00	11.50		
57	25.00	11.50		
58 to 59	25.00	15.00		
60	13.00	17.00		
61	13.00	13.00		
62	25.00	25.00	50.00%	
63	25.00	20.00	25.00	20.00%
64	25.00	20.00	25.00	20.00
65	35.00	25.00	35.00	25.00
66	35.00	30.00	35.00	30.00
67	35.00	25.00	35.00	25.00
68	35.00	21.00	35.00	21.00
69 to 74	35.00	21.00	35.00	20.00
75 & Above	100.00	100.00	100.00	100.00

<sup>1</sup>For local employers with fewer than 25 employees we assume that all members retire upon first eligibility for a service retirement benefit.

<sup>2</sup>25% are assumed to retire at age 60 with 25 years of service and 17% are assumed to retire at age 60 with 26 or more years of service.

### FLC MEMBERS

Age	Annual Rate <sup>1</sup>			
	TIER I <sup>2</sup>		TIER II	
	1 <sup>ST</sup> Eligible	Subsequent	1 <sup>ST</sup> Eligible	Subsequent
50 & Under	40.00%	25.00%		
51 to 55	40.00	20.00		
56	40.00	20.00	15.00%	15.00%
57 to 59	40.00	17.00	15.00	15.00
60	15.00	15.00	15.00	15.00
61	40.00	18.00	15.00	15.00
62	40.00	28.00	40.00	28.00
63	40.00	28.00	40.00	28.00
64	40.00	21.00	40.00	21.00
65	40.00	25.00	40.00	25.00
66	40.00	40.00	40.00	40.00
67 to 74	40.00	30.00	40.00	30.00
75 & Above	100.00	100.00	100.00	100.00

<sup>1</sup>For local employers with fewer than 25 employees we assume that all members retire upon first eligibility for a service retirement benefit.

<sup>2</sup>40% are assumed to retire at age 60 with 25 years of service and 20% are assumed to retire at age 60 with 26 or more years of service.





## Schedule D: Outline of Actuarial Assumptions & Methods

DEATH AND DISABILITY: Representative values of the assumed annual rates of death and disability are as follows:

### STATE EMPLOYEES

Age	Death		Annual Rate of				
			Disability			Tier II	
			Tier I				
			Service < 25	Service >=25			
Male	Female	Male	Female		Male	Female	
20	0.023%	0.009%	0.060%	0.052%		0.060%	0.052%
25	0.025	0.010	0.090	0.074		0.090	0.074
30	0.029	0.012	0.117	0.100		0.117	0.100
35	0.051	0.022	0.151	0.187		0.151	0.187
40	0.071	0.033	0.405	0.372		0.405	0.372
45	0.099	0.053	0.630	0.559	0.250%	0.630	0.559
50	0.141	0.079	1.155	0.898	0.250	1.155	0.898
55	0.200	0.114	1.530	1.400	0.250	1.530	1.400
60	0.297	0.161	0.500	1.000	0.250	2.000	1.000
65	0.416	0.229	0.500	1.000	0.250	0.500	1.000
69	0.492	0.286					

### LOCAL EMPLOYEES

Age	Death		Annual Rate of				
			Disability			Tier II	
			Tier I				
			Service < 25	Service >=25			
Male	Female	Male	Female		Male	Female	
20	0.023%	0.009%	0.040%	0.040%		0.040%	0.040%
25	0.025	0.010	0.060	0.057		0.060	0.057
30	0.029	0.012	0.078	0.077		0.078	0.077
35	0.051	0.022	0.101	0.144		0.101	0.144
40	0.071	0.033	0.270	0.286		0.270	0.286
45	0.099	0.053	0.500	0.430	0.250%	0.500	0.430
50	0.141	0.079	0.900	0.691	0.250	0.900	0.691
55	0.200	0.114	1.400	1.000	0.250	1.400	1.000
60	0.297	0.161	0.500	0.250	0.250	2.000	1.000
65	0.416	0.229	0.500	0.250	0.250	0.500	0.250
69	0.492	0.286					





## Schedule D: Outline of Actuarial Assumptions & Methods

### SEPARATION FROM ACTIVE SERVICE - STATE POLICEMEN

#### MEMBERS HIRED BEFORE JANUARY 1, 2015

Annual Rate of								
Death			Disability	Withdrawal Service		Retirement		
Age	Male	Female		0-4	5+	10-19	20-24	25+
20	0.023%	0.009%	0.080%	2.00%	2.00%			
25	0.025	0.010	0.100	2.00	2.00			
30	0.029	0.012	0.140	2.00	2.00			
35	0.051	0.022	0.220	2.00	1.00			
40	0.071	0.033	0.340	2.00	1.00			40.00%
45	0.099	0.053	0.460	5.00	1.00			40.00
50	0.141	0.079	0.600					40.00
55	0.200	0.114				5.00%	35.00%	35.00
60	0.297	0.161				25.00	25.00	25.00
62	0.346	0.183				25.00	25.00	25.00
65	0.416	0.229				100.00	100.00	100.00

#### MEMBERS HIRED AFTER JANUARY 1, 2015

#### RATES OF WITHDRAWAL

Age	Annual Rate of Withdrawal			
	Years of Service			
	0-4	5-9	10-20	20+
20	17.00%	6.50%	3.25%	1.25%
25	14.50	6.50	3.25	1.25
30	13.50	6.00	3.25	1.25
35	13.50	5.50	3.25	1.25
40	13.00	5.00	2.50	1.25
45	12.50	4.50	2.25	1.25
50	11.00	4.50	2.25	1.25
55	10.00	4.50	2.00	1.25
60	12.00	5.50	2.00	1.25
65	17.00	6.00	2.00	1.25
69	17.00	6.00	2.00	1.25

*There are no withdrawal decrements after eligibility for service retirement.*





## Schedule D: Outline of Actuarial Assumptions & Methods

### RATES OF SERVICE RETIREMENT

Age	Annual Rate			
	TIER I <sup>1</sup>		TIER II	
	1 <sup>ST</sup> Eligible	Subsequent	1 <sup>ST</sup> Eligible	Subsequent
50 & Under	40.00%	25.00%		
51 to 55	40.00	20.00		
56	40.00	20.00	15.00%	15.00%
57 to 59	40.00	17.00	15.00	15.00
60	15.00	15.00	15.00	15.00
61	40.00	18.00	15.00	15.00
62	40.00	28.00	40.00	28.00
63	40.00	28.00	40.00	28.00
64	40.00	21.00	40.00	21.00
65	40.00	25.00	40.00	25.00
66	40.00	40.00	40.00	40.00
67 to 74	40.00	30.00	40.00	30.00
75 & Above	100.00	100.00	100.00	100.00

<sup>1</sup> 40% are assumed to retire at age 60 with 25 years of service and 20% are assumed to retire at age 60 with 26 or more years of service.

### RATES OF DEATH AND DISABILITY

Age	Annual Rate of						
	Death		Disability				
			Tier I		Tier II		
	Male	Female	Service < 25	Service >=25	Male	Female	
20	0.023%	0.009%	0.060%	0.052%	0.060%	0.052%	
25	0.025	0.010	0.090	0.074	0.090	0.074	
30	0.029	0.012	0.117	0.100	0.117	0.100	
35	0.051	0.022	0.151	0.187	0.151	0.187	
40	0.071	0.033	0.405	0.372	0.405	0.372	
45	0.099	0.053	0.630	0.559	0.250%	0.630	0.559
50	0.141	0.079	1.155	0.898	0.250	1.155	0.898
55	0.200	0.114	1.530	1.400	0.250	1.530	1.400
60	0.297	0.161	0.500	1.000	0.250	2.000	1.000
65	0.416	0.229	0.500	1.000	0.250	0.500	1.000
69	0.492	0.286					





## Schedule D: Outline of Actuarial Assumptions & Methods

DEATH AFTER RETIREMENT: The rates of mortality for the period after service retirement are according to the sex distinct RP-2000 Blue Collar Mortality Table Projected with Scale BB to 2020 with an adjustment of 125% at all ages for males and 120% for females at ages on and after age 78. The rates of mortality for the period after disability retirement are according to the sex distinct RP-2000 Disabled Retiree Mortality Table Projected with Scale BB to 2020 with an adjustment of 130% at all ages for females. Representative values of assumed mortality are as follows:

Age	Service Retirement		Disability Retirement	
	Male	Female	Male	Female
55	0.4939%	0.2528%	3.3375%	1.9456%
60	0.8983	0.4048	3.6532	2.3221
65	1.5257	0.8167	3.9411	2.8618
70	2.4722	1.4637	4.6257	3.8430
75	3.9850	2.4262	6.0659	5.3334
80	6.5180	4.6142	8.0841	7.3840
85	10.6322	7.8329	10.4664	10.2321
90	18.2107	13.1471	14.7009	14.5932

DEATH IN ACTIVE SERVICE BENEFIT: For those eligible for service retirement who die in active service, it is assumed that 75% of beneficiaries will elect the lump sum death benefit and 25% will elect the Option 3 allowance.

BENEFITS PAYABLE UPON SEPARATION FROM SERVICE: For active members who separate from service prior to eligibility for a service retirement allowance, the liability is assumed to be the greater of the value of the refund of contributions and the value of the deferred annuity.

UNUSED SICK LEAVE: 2.25% load on service retirement liabilities for active members (No load for Tier II members).

PERCENT MARRIED: 100% of employees are assumed to be married, with the wife 3 years younger than the husband.

ACTUARIAL METHOD: Individual entry age normal cost method. Actuarial gains and losses are reflected in the unfunded actuarial accrued liability.

ASSET METHOD: Actuarial value, as developed in Schedule B. The actuarial value of assets recognizes a portion of the difference between the market value of assets and the expected value of assets, based on the assumed valuation rate of return. The amount recognized each year is 20% of the difference between market value and expected market value. In order to reduce short-term volatility in valuation results and because the market value and actuarial value of assets were close in value, the actuarial value of assets was set equal to the market value on September 30, 2012. 5-year smoothing commenced again beginning September 30, 2013.

LIABILITY FOR CURRENT INACTIVE MEMBERS: Member Contribution Balance is multiplied by a factor of 3.0 for vested local employees with incomplete data and by a factor of 1.0 for all non-vested inactive members.

LIABILITY FOR POST-DROP ACTIVE MEMBERS: Members are assumed to retire immediately and receive their accrued benefit.





## **Schedule D: Outline of Actuarial Assumptions & Methods**

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COLA: No future ad hoc cost of living adjustments (COLAs) are assumed.

FUTURE SERVICE CREDIT: One year of creditable service per year of employment.





## Schedule E: Actuarial Cost Method

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1. The valuation is prepared on the projected benefit basis, which is used to determine the present value of each member's expected benefit payable at retirement or death. The calculations are based on the member's age, years of service, sex, compensation, expected future salary increases, and an assumed future interest earnings rate (currently 7.70%). The calculations consider the probability of a member's death or termination of employment prior to becoming eligible for a benefit and the probability of the member terminating with a service, disability, or survivor's benefit. The present value of the expected benefits payable to active members is added to the present value of the expected future payments to retired members and beneficiaries to obtain the present value of all expected benefits payable to 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 "individual 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 each 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 current assets and the present value of prospective employer normal contributions and member contributions from the present value of expected benefits to be paid from the System. The accrued liability contribution amortizes the balance of the unfunded accrued liability over a period of years from the valuation date.





## Schedule F: Board Funding Policy

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### FUNDING POLICY OF THE EMPLOYEES' RETIREMENT SYSTEM BOARD OF CONTROL

Effective 9/30/2019

The purpose of the funding policy is to state the overall funding objectives for the Employees Retirement System of Alabama (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.

The Board's funding policy applies to all plans administered by the Board of Control. The funding policy reflects the Board's long-term strategy for stability in funding of the plans.

#### 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 maintain an increasing funded ratio (ratio of system actuarial value of assets to actuarial accrued liabilities) that reflects a trend of improved actuarial condition. The long-term objective is to attain a funded ratio which is consistent with the fiscal health and long-term stability of the System..
- To maintain adequate asset levels to finance the benefits promised to members and monitor the future demands for liquidity.
- To develop a pattern of contribution rates expressed as a percentage of member payroll or as a dollar amount for employers with no active members as measured by valuations prepared in accordance with applicable State laws and the principles of practice prescribed by the Actuarial Standards Board. In no event will the employer contribution rate be negative.
- To provide intergenerational equity for taxpayers with respect to System costs.

#### II. Benchmarks

To track progress in achieving the previously outlined funding objectives, the following benchmarks will be measured annually as of the valuation date. The valuation date is the date that the annual actuarial valuation of the System's assets and liabilities is prepared. This date is currently September 30<sup>th</sup> each year with due recognition that a single year's results may not be indicative of long-term trends:







## Schedule F: Board Funding Policy

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- **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 assumptions. An open amortization period is one for which the amortization period is recalculated on a yearly basis and the ending date of the amortization period is a variable with each recalculation. A closed amortization period is one which is calculated over a fixed period and at the end of that period, the amount is fully amortized.
- 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 (applicable only to employers participating in the System as of the adoption date of the funding policy).
  - **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 valuation.
- UAAL Amortization Period and Contribution Rates for All Employers
  - For those employers with a funded percentage less than 100% in the valuation prior to the adoption of the funding policy: In each valuation 1/15<sup>th</sup> of the Transitional UAAL will be amortized over a closed period. The closed period shall be the amortization period for the valuation preceding the adoption of the funding policy not to exceed 30 years. The remaining Transitional UAAL each year will be amortized over an open period. The open period shall be the amortization period for the valuation preceding the adoption of the funding policy not to exceed 30 years. After 15 years the entire Transitional UAAL will be closed.
  - For those employers with a funded percentage 100% or greater in the valuation prior to the adoption of the funding policy: In each valuation 1/15<sup>th</sup> of the Transitional UAAL will be amortized over a 30 year closed period. The remaining Transitional UAAL each year will be amortized over a 30 year open period. After 15 years the entire Transitional UAAL will be closed.
  - Each New Incremental UAAL shall be amortized over a closed 30 year period.
  - Incremental UAAL resulting from plan changes that grant benefit improvements shall be amortized over a period not to exceed 15 years.





## Schedule F: Board Funding Policy

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- Employer Normal Contribution Rate – the contribution rate determined as of the valuation date each year based on the provisions of Alabama Code Section 36-27-24.
- In each valuation subsequent to the adoption of this funding policy the required employer contribution rate will be determined by the summation of the employer Normal Contribution Rate, a contribution rate for administrative expenses, a contribution rate for the pre-retirement death benefit fund, the individual amortization rate for each of the New Incremental UAAL bases, the individual amortization rate for each of the 15 closed periods for the Transitional UAAL and the amortization of any remaining open portion of the Transitional UAAL. If the resulting contribution rate will not support the cash flow and projected benefit payment needs of a particular unit or employer then the RSA staff may approve a more aggressive funding policy for these units or employers.
- UAAL Amortization Period for Employers joining the System after the Implementation of this Funding Policy
  - For Employers joining the System after the implementation of this Funding Policy, the employer contribution rate shall be computed as the sum of the employer Normal Contribution rate, a contribution rate for administrative expenses, a contribution rate for the pre-retirement death benefit fund and the initial UAAL contribution rate. The initial UAAL contribution rate shall be determined by amortizing the initial UAAL over a closed period equal to the expected future working lifetime of the active membership. This initial amortization period shall not be less than 10 years nor greater than 30 years.
  - In subsequent years the UAAL and employer contribution rate shall be determined in accordance with the rules of the Funding Policy described in the previous section.
- **Special Consideration**--If the resulting contribution rate will not support the cash flow and projected benefit payment needs of a particular unit or employer then the RSA staff may approve a more aggressive funding policy for these units or employers. In addition, If the resulting contribution rate is determined to be in excess of the cash flow and projected benefit payment needs of a particular unit or employer then the RSA staff may approve a less aggressive funding policy for these units or employers.





## Schedule F: Board Funding Policy

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### III. Methods and Assumptions

The actuarial funding method used to develop the benchmarks will be the Entry Age Normal (EAN) actuarial cost method. The actuarial methods and assumptions used will be those last adopted by the Board based upon the advice and recommendation of the actuary including the Interest Smoothing methodology. 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 those recommendations which shall include the Interest Smoothing Methodology.

### IV. Funding Policy Progress

The Board will periodically have projections of funded status performed to assess the current and expected future progress towards the overall funding goals of the System.





## Schedule G: Amortization of Bases

PROJECTED UAAL AND TOTAL UAAL PAYMENT AS OF SEPTEMBER 30, 2019

### STATE EMPLOYEES

<u>Valuation Date</u>	<u>Projected UAAL</u>	<u>Annual Amortization Payment*</u>
9/30/2019	\$2,999,575,340	\$198,051,915
9/30/2020	3,032,490,727	202,624,751
9/30/2021	3,063,367,762	207,514,704
9/30/2022	3,091,732,376	212,736,314
9/30/2023	3,117,059,455	218,304,664
9/30/2024	3,138,768,368	224,235,386
9/30/2025	3,156,218,147	230,544,684
9/30/2026	3,168,702,261	237,249,364
9/30/2027	3,175,442,971	244,366,845
9/30/2028	3,175,585,234	251,697,851
9/30/2029	3,168,407,446	259,248,787
9/30/2030	3,153,126,033	267,026,249
9/30/2031	3,128,890,488	275,037,038
9/30/2032	3,094,778,017	283,288,148
9/30/2033	3,049,787,777	291,786,791
9/30/2034	2,992,834,644	300,540,395
9/30/2035	2,922,742,517	309,556,607
9/30/2036	2,838,237,084	318,843,305
9/30/2037	2,737,938,035	328,408,609
9/30/2038	2,620,350,654	338,260,864
9/30/2039	2,483,856,791	348,408,691
9/30/2040	2,326,705,072	358,860,948
9/30/2041	2,147,000,415	369,626,780
9/30/2042	1,942,692,666	354,810,453
9/30/2043	1,737,469,549	333,477,572
9/30/2044	1,537,777,132	323,114,074
9/30/2045	1,333,071,897	297,347,172
9/30/2046	1,138,371,262	261,999,389
9/30/2047	964,026,460	245,777,717
9/30/2048	792,478,781	228,144,763
9/30/2049	625,354,884	186,402,466
9/30/2050	487,104,744	163,203,271
9/30/2051	361,408,540	138,925,280
9/30/2052	250,311,717	113,531,035
9/30/2053	156,054,684	86,981,897
9/30/2054	81,088,998	59,237,986
9/30/2055	28,094,865	30,258,170
9/30/2056	0	0

\*Includes amortization of bases that will be closed subsequent to September 30, 2019.





## Schedule G: Amortization of Bases

PROJECTED UAAL AND TOTAL UAAL PAYMENT AS OF SEPTEMBER 30, 2019

### STATE POLICEMEN

<u>Valuation Date</u>	<u>Projected UAAL</u>	<u>Annual Amortization Payment*</u>
9/30/2019	\$292,878,123	\$19,383,713
9/30/2020	296,046,019	19,847,854
9/30/2021	298,993,708	20,341,348
9/30/2022	301,674,876	20,865,508
9/30/2023	304,038,333	21,421,693
9/30/2024	306,027,591	22,011,313
9/30/2025	307,580,403	22,635,828
9/30/2026	308,628,266	23,296,753
9/30/2027	309,095,890	23,995,655
9/30/2028	308,900,618	24,715,525
9/30/2029	307,970,441	25,456,990
9/30/2030	306,227,175	26,220,700
9/30/2031	303,585,968	27,007,321
9/30/2032	299,954,767	27,817,541
9/30/2033	295,233,742	28,652,067
9/30/2034	289,314,674	29,511,629
9/30/2035	282,080,275	30,396,979
9/30/2036	273,403,478	31,308,887
9/30/2037	263,146,658	32,248,155
9/30/2038	251,160,796	33,215,598
9/30/2039	237,284,579	34,212,067
9/30/2040	221,343,425	35,238,429
9/30/2041	203,148,440	36,295,582
9/30/2042	182,495,288	35,160,357
9/30/2043	161,387,069	33,937,267
9/30/2044	139,876,606	32,662,334
9/30/2045	117,984,771	28,701,806
9/30/2046	98,367,793	22,825,341
9/30/2047	83,116,772	21,633,413
9/30/2048	67,883,350	19,484,759
9/30/2049	53,625,609	15,984,437
9/30/2050	41,770,344	13,995,053
9/30/2051	30,991,607	11,913,160
9/30/2052	21,464,801	9,735,545
9/30/2053	13,382,045	7,458,896
9/30/2054	6,953,567	5,079,793
9/30/2055	2,409,199	2,594,707
9/30/2056	0	0

\*Includes amortization of bases that will be closed subsequent to September 30, 2019.





## Schedule G: Amortization of Bases

PROJECTION OF TRANSITIONAL UAAL  
AND AMORTIZATION OF BASES  
PROJECTION OF THE OPEN TRANSITIONAL UAAL  
STATE EMPLOYEES

Valuation Date	Transitional UAAL Beginning of Year (1)	Years (2)	Transitional closed (3)=(1)/(2)	Transitional remaining open (4)=(1)-(3)	Interest (5)=(4) x ROR*	Amortization Payment (6)	Transitional Open UAAL End of Year (7)=(4)+(5)-(6)
9/30/2012	\$2,483,987,366	15	\$165,599,158	\$2,318,388,208	\$185,471,057	\$148,697,195	\$2,355,162,070
9/30/2013	2,355,162,070	14	168,225,862	2,186,936,208	174,954,897	140,266,104	2,221,625,001
9/30/2014	2,221,625,001	13	170,894,231	2,050,730,770	164,058,462	131,530,135	2,083,259,097
9/30/2015	2,083,259,097	12	173,604,925	1,909,654,172	152,772,334	122,481,739	1,939,944,767
9/30/2016	1,939,944,767	11	176,358,615	1,763,586,152	138,882,409	113,049,923	1,789,418,638
9/30/2017	1,789,418,638	10	178,941,864	1,610,476,774	124,811,950	103,177,495	1,632,111,229
9/30/2018	1,632,111,229	9	181,345,692	1,450,765,537	111,708,946	92,418,952	1,470,055,531
9/30/2019	<b>1,470,055,531</b>	<b>8</b>	<b>183,756,941</b>	<b>1,286,298,589</b>	<b>99,044,991</b>	<b>81,941,820</b>	<b>1,303,401,761</b>
9/30/2020	1,303,401,761	7	186,200,252	1,117,201,510	86,024,516	71,169,731	1,132,056,295
9/30/2021	1,132,056,295	6	188,676,049	943,380,246	72,640,279	60,096,695	955,923,829
9/30/2022	955,923,829	5	191,184,766	764,739,064	58,884,908	48,716,613	774,907,358
9/30/2023	774,907,358	4	193,726,840	581,180,519	44,750,900	37,023,277	588,908,142
9/30/2024	588,908,142	3	196,302,714	392,605,428	30,230,618	25,010,370	397,825,676
9/30/2025	397,825,676	2	198,912,838	198,912,838	15,316,289	12,671,459	201,557,668
9/30/2026	201,557,668	1	201,557,668	0	0	0	0





## Schedule G: Amortization of Bases

PROJECTION OF TRANSITIONAL UAAL  
AND AMORTIZATION OF BASES  
PROJECTION OF THE OPEN TRANSITIONAL UAAL  
STATE POLICEMEN

Valuation Date	Transitional UAAL Beginning of Year (1)	Years (2)	Transitional closed (3)= (1) / (2)	Transitional remaining open (4)=(1)-(3)	Interest (5)=(4) x ROR*	Amortization Payment (6)	Transitional Open UAAL End of Year (7)=(4)+(5)-(6)
9/30/2012	\$223,751,421	15	\$14,916,761	\$208,834,660	\$16,706,773	\$13,394,275	\$212,147,158
9/30/2013	212,147,158	14	15,153,368	196,993,790	15,759,503	12,634,823	200,118,470
9/30/2014	200,118,470	13	15,393,728	184,724,742	14,777,979	16,408,625	183,094,096
9/30/2015	183,094,096	12	15,257,841	167,836,255	13,426,900	14,908,464	166,354,691
9/30/2016	166,354,691	11	15,123,154	151,231,537	11,909,484	9,694,289	153,446,732
9/30/2017	153,446,732	10	15,344,673	138,102,058	10,702,910	8,847,706	139,957,263
9/30/2018	139,957,263	9	15,550,807	124,406,456	9,579,297	7,925,136	126,060,617
9/30/2019	<b>126,060,617</b>	<b>8</b>	<b>15,757,577</b>	<b>110,303,040</b>	<b>8,493,334</b>	<b>7,026,698</b>	<b>111,769,676</b>
9/30/2020	111,769,676	7	15,967,097	95,802,579	7,376,799	6,102,967	97,076,411
9/30/2021	97,076,411	6	16,179,402	80,897,009	6,229,070	5,153,429	81,972,651
9/30/2022	81,972,651	5	16,394,530	65,578,120	5,049,515	4,177,561	66,450,075
9/30/2023	66,450,075	4	16,612,519	49,837,556	3,837,492	3,174,831	50,500,217
9/30/2024	50,500,217	3	16,833,406	33,666,812	2,592,344	2,144,696	34,114,459
9/30/2025	34,114,459	2	17,057,230	17,057,230	1,313,407	1,086,607	17,284,030
9/30/2026	17,284,030	1	17,284,030	0	0	0	0

\*The assumed rate of return (ROR) and the assumed rate of payroll growth are as follows:

2012-2015: 8.00%/3.25%

2016: 7.875%/3.125%

2017: 7.75%/3.00%

2018 and later: 7.70%/3.00%





## Schedule G: Amortization of Bases

### AMORTIZATION SCHEDULE FOR BASES CLOSED ON SEPTEMBER 30, 2012\*

STATE EMPLOYEES			STATE POLICE**		
Valuation Date	Balance of Transitional Closed 9/30/2012	Annual Amortization Payment	Valuation Date	Balance of Transitional Closed 9/30/2012	Annual Amortization Payment
9/30/2012	\$165,599,158	\$10,621,228	9/30/2012	\$14,916,761	\$956,734
9/30/2013	168,225,863	10,966,418	9/30/2013	15,153,368	987,828
9/30/2014	170,717,514	11,322,827	9/30/2014	15,377,809	1,391,521
9/30/2015	173,052,088	11,690,819	9/30/2015	15,216,513	1,391,521
9/30/2016	175,205,436	12,063,244	9/30/2016	15,042,313	1,035,693
9/30/2017	176,939,620	12,432,251	9/30/2017	15,191,202	1,067,375
9/30/2018	178,220,190	12,743,607	9/30/2018	15,301,145	1,094,106
<b>9/30/2019</b>	<b>179,199,538</b>	<b>13,125,916</b>	<b>9/30/2019</b>	<b>15,385,227</b>	<b>1,126,929</b>
9/30/2020	179,871,986	13,519,693	9/30/2020	15,442,960	1,160,737
9/30/2021	180,202,436	13,925,284	9/30/2021	15,471,331	1,195,559
9/30/2022	180,152,740	14,343,042	9/30/2022	15,467,064	1,231,426
9/30/2023	179,681,459	14,773,334	9/30/2023	15,426,602	1,268,369
9/30/2024	178,743,597	15,216,534	9/30/2024	15,346,081	1,306,420
9/30/2025	177,290,320	15,673,030	9/30/2025	15,221,309	1,345,612
9/30/2026	175,268,645	16,143,221	9/30/2026	15,047,738	1,385,981
9/30/2027	172,621,110	16,627,517	9/30/2027	14,820,433	1,427,560
9/30/2028	169,285,418	17,126,343	9/30/2028	14,534,046	1,470,387
9/30/2029	165,194,052	17,640,133	9/30/2029	14,182,781	1,514,498
9/30/2030	160,273,861	18,169,337	9/30/2030	13,760,357	1,559,933
9/30/2031	154,445,611	18,714,417	9/30/2031	13,259,971	1,606,731
9/30/2032	147,623,506	19,275,850	9/30/2032	12,674,258	1,654,934
9/30/2033	139,714,666	19,854,125	9/30/2033	11,995,242	1,704,581
9/30/2034	130,618,570	20,449,749	9/30/2034	11,214,295	1,755,719
9/30/2035	120,226,451	21,063,241	9/30/2035	10,322,077	1,808,391
9/30/2036	108,420,647	21,695,138	9/30/2036	9,308,486	1,862,642
9/30/2037	95,073,899	22,345,993	9/30/2037	8,162,597	1,918,522
9/30/2038	80,048,596	23,016,372	9/30/2038	6,872,595	1,976,077
9/30/2039	63,195,966	23,706,864	9/30/2039	5,425,708	2,035,360
9/30/2040	44,355,191	24,418,069	9/30/2040	3,808,128	2,096,421
9/30/2041	23,352,472	25,150,612	9/30/2041	2,004,933	2,159,313
9/30/2042	0	0	9/30/2042	0	0

\*Reflects changes in interest rate and payroll growth assumptions as noted in the first exhibit in Schedule G

\*\*Amortization method is level dollar for 9/30/2014 and 9/30/2015. Amortization method is level percent of payroll for other years.







## Schedule G: Amortization of Bases

### AMORTIZATION SCHEDULE FOR BASES CLOSED ON SEPTEMBER 30, 2013\*

#### STATE EMPLOYEES

Valuation <u>Date</u>	Balance of Transitional <u>Closed 9/30/2013</u>	Annual Amortization <u>Payment</u>	Balance of New Incremental UAAL <u>9/30/2013</u>	Annual Amortization <u>Payment</u>
9/30/2013	\$168,225,862	\$10,789,700	\$36,709,210	\$2,354,462
9/30/2014	170,894,231	11,140,366	37,291,485	2,430,982
9/30/2015	173,425,404	11,502,427	37,843,822	2,509,989
9/30/2016	175,797,009	11,869,048	38,361,339	2,589,990
9/30/2017	177,771,975	12,232,322	38,792,304	2,669,262
9/30/2018	179,316,981	12,536,785	39,129,445	2,735,700
9/30/2019	<b>180,587,604</b>	<b>12,912,889</b>	<b>39,406,713</b>	<b>2,817,771</b>
9/30/2020	181,579,960	13,300,276	39,623,259	2,902,304
9/30/2021	182,261,341	13,699,284	39,771,946	2,989,373
9/30/2022	182,596,180	14,110,262	39,845,012	3,079,054
9/30/2023	182,545,824	14,533,570	39,834,024	3,171,426
9/30/2024	182,068,283	14,969,577	39,729,818	3,266,569
9/30/2025	181,117,963	15,418,665	39,522,445	3,364,566
9/30/2026	179,645,382	15,881,225	39,201,107	3,465,503
9/30/2027	177,596,851	16,357,661	38,754,090	3,569,468
9/30/2028	174,914,147	16,848,391	38,168,687	3,676,552
9/30/2029	171,534,146	17,353,843	37,431,124	3,786,849
9/30/2030	167,388,432	17,874,458	36,526,471	3,900,454
9/30/2031	162,402,883	18,410,692	35,438,555	4,017,468
9/30/2032	156,497,213	18,963,013	34,149,856	4,137,992
9/30/2033	149,584,486	19,531,903	32,641,403	4,262,131
9/30/2034	141,570,588	20,117,860	30,892,660	4,389,995
9/30/2035	132,353,663	20,721,396	28,881,400	4,521,695
9/30/2036	121,823,500	21,343,038	26,583,573	4,657,346
9/30/2037	109,860,871	21,983,330	23,973,162	4,797,067
9/30/2038	96,336,828	22,642,829	21,022,028	4,940,978
9/30/2039	81,111,935	23,322,114	17,699,746	5,089,208
9/30/2040	64,035,440	24,021,778	13,973,419	5,241,884
9/30/2041	44,944,391	24,742,431	9,807,488	5,399,141
9/30/2042	23,662,678	25,484,704	5,163,524	5,561,115
9/30/2043	0	0	0	0

\*Reflects changes in interest rate and payroll growth assumptions as noted in the first exhibit in Schedule G





## Schedule G: Amortization of Bases

### AMORTIZATION SCHEDULE FOR BASES CLOSED ON SEPTEMBER 30, 2013\*

#### STATE POLICE

Valuation Date	Balance of Transitional Closed 9/30/2013	Annual Amortization Payment	Balance of New Incremental UAAL 9/30/2013	Annual Amortization Payment
9/30/2013	\$15,153,368	\$971,909	\$170,613	\$10,943
9/30/2014	15,393,728	1,379,563	173,319	15,533
9/30/2015	15,245,663	1,379,563	171,652	15,533
9/30/2016	15,085,753	1,018,524	169,852	11,468
9/30/2017	15,255,231	1,049,698	171,760	11,819
9/30/2018	15,387,814	1,075,825	173,253	12,113
9/30/2019	<b>15,496,850</b>	<b>1,108,100</b>	<b>174,480</b>	<b>12,476</b>
9/30/2020	15,582,008	1,141,343	175,439	12,850
9/30/2021	15,640,479	1,175,583	176,097	13,236
9/30/2022	15,669,213	1,210,851	176,421	13,633
9/30/2023	15,664,892	1,247,176	176,372	14,042
9/30/2024	15,623,912	1,284,591	175,911	14,463
9/30/2025	15,542,362	1,323,129	174,993	14,897
9/30/2026	15,415,995	1,362,823	173,570	15,344
9/30/2027	15,240,203	1,403,708	171,591	15,804
9/30/2028	15,009,991	1,445,819	168,999	16,279
9/30/2029	14,719,941	1,489,194	165,733	16,767
9/30/2030	14,364,183	1,533,869	161,728	17,270
9/30/2031	13,936,356	1,579,886	156,911	17,788
9/30/2032	13,429,570	1,627,282	151,205	18,322
9/30/2033	12,836,365	1,676,101	144,526	18,871
9/30/2034	12,148,664	1,726,384	136,783	19,437
9/30/2035	11,357,728	1,778,175	127,878	20,021
9/30/2036	10,454,098	1,831,520	117,704	20,621
9/30/2037	9,427,543	1,886,466	106,145	21,240
9/30/2038	8,266,998	1,943,060	93,079	21,877
9/30/2039	6,960,497	2,001,352	78,369	22,533
9/30/2040	5,495,104	2,061,392	61,870	23,209
9/30/2041	3,856,834	2,123,234	43,424	23,906
9/30/2042	2,030,577	2,186,931	22,862	24,623
9/30/2043	0	0	0	0

\*Reflects changes in interest rate and payroll growth assumptions as noted in the first exhibit in Schedule G. Amortization method is level dollar for 9/30/2014 and 9/30/2015. Amortization method is level percent of payroll for other years.





## Schedule G: Amortization of Bases

### AMORTIZATION SCHEDULE FOR BASES CLOSED ON SEPTEMBER 30, 2014\*

#### STATE EMPLOYEES

Valuation <u>Date</u>	Balance of Transitional <u>Closed 9/30/2014</u>	Annual Amortization <u>Payment</u>	Balance of New Incremental UAAL <u>9/30/2014</u>	Annual Amortization <u>Payment</u>
9/30/2014	\$170,894,231	\$10,960,845	(\$40,029,335)	(\$2,567,409)
9/30/2015	173,604,925	11,317,072	(40,664,273)	(2,650,849)
9/30/2016	176,176,247	11,677,974	(41,266,566)	(2,735,385)
9/30/2017	178,372,152	12,035,599	(41,780,923)	(2,819,153)
9/30/2018	180,160,395	12,333,349	(42,199,791)	(2,888,897)
9/30/2019	<b>181,699,397</b>	<b>12,703,350</b>	<b>(42,560,278)</b>	<b>(2,975,564)</b>
9/30/2020	182,986,900	13,084,450	(42,861,855)	(3,064,830)
9/30/2021	183,992,441	13,476,984	(43,097,388)	(3,156,775)
9/30/2022	184,682,875	13,881,293	(43,259,112)	(3,251,479)
9/30/2023	185,022,164	14,297,732	(43,338,585)	(3,349,023)
9/30/2024	184,971,138	14,726,664	(43,326,633)	(3,449,494)
9/30/2025	184,487,252	15,168,464	(43,213,290)	(3,552,978)
9/30/2026	183,524,307	15,623,518	(42,987,735)	(3,659,568)
9/30/2027	182,032,160	16,092,224	(42,638,223)	(3,769,355)
9/30/2028	179,956,412	16,574,990	(42,152,011)	(3,882,436)
9/30/2029	177,238,066	17,072,240	(41,515,280)	(3,998,909)
9/30/2030	173,813,157	17,584,407	(40,713,047)	(4,118,876)
9/30/2031	169,612,363	18,111,939	(39,729,076)	(4,242,442)
9/30/2032	164,560,576	18,655,298	(38,545,773)	(4,369,715)
9/30/2033	158,576,443	19,214,956	(37,144,082)	(4,500,807)
9/30/2034	151,571,873	19,791,405	(35,503,369)	(4,635,831)
9/30/2035	143,451,502	20,385,147	(33,601,298)	(4,774,906)
9/30/2036	134,112,121	20,996,702	(31,413,692)	(4,918,153)
9/30/2037	123,442,052	21,626,603	(28,914,393)	(5,065,698)
9/30/2038	111,320,487	22,275,401	(26,075,103)	(5,217,668)
9/30/2039	97,616,764	22,943,663	(22,865,218)	(5,374,198)
9/30/2040	82,189,591	23,631,973	(19,251,642)	(5,535,425)
9/30/2041	64,886,217	24,340,932	(15,198,593)	(5,701,487)
9/30/2042	45,541,524	25,071,160	(10,667,398)	(5,872,532)
9/30/2043	23,977,061	25,823,295	(5,616,256)	(6,048,707)
9/30/2044	0	0	0	0

\*Reflects changes in interest rate and payroll growth assumptions as noted in the first exhibit in Schedule G





## Schedule G: Amortization of Bases

### AMORTIZATION SCHEDULE FOR BASES CLOSED ON SEPTEMBER 30, 2014\*

#### STATE POLICE

Valuation Date	Balance of Transitional Closed 9/30/2014	Annual Amortization Payment	Balance of New Incremental UAAL 9/30/2014	Annual Amortization Payment
9/30/2014	\$15,393,728	\$1,367,385	\$78,767	\$6,997
9/30/2015	15,257,841	1,367,385	78,072	6,997
9/30/2016	15,111,083	1,001,649	77,321	5,125
9/30/2017	15,299,432	1,032,324	78,284	5,282
9/30/2018	15,452,814	1,057,863	79,069	5,413
9/30/2019	<b>15,584,818</b>	<b>1,089,599</b>	<b>79,745</b>	<b>5,575</b>
9/30/2020	15,695,250	1,122,286	80,310	5,743
9/30/2021	15,781,498	1,155,955	80,751	5,915
9/30/2022	15,840,718	1,190,634	81,054	6,092
9/30/2023	15,869,820	1,226,353	81,203	6,275
9/30/2024	15,865,443	1,263,143	81,181	6,463
9/30/2025	15,823,939	1,301,038	80,968	6,657
9/30/2026	15,741,345	1,340,069	80,546	6,857
9/30/2027	15,613,360	1,380,271	79,891	7,063
9/30/2028	15,435,318	1,421,679	78,980	7,274
9/30/2029	15,202,158	1,464,329	77,787	7,493
9/30/2030	14,908,395	1,508,259	76,284	7,717
9/30/2031	14,548,082	1,553,507	74,440	7,949
9/30/2032	14,114,778	1,600,112	72,223	8,187
9/30/2033	13,601,503	1,648,116	69,597	8,433
9/30/2034	13,000,704	1,697,559	66,522	8,686
9/30/2035	12,304,199	1,748,486	62,958	8,947
9/30/2036	11,503,136	1,800,940	58,860	9,215
9/30/2037	10,587,938	1,854,969	54,177	9,492
9/30/2038	9,548,240	1,910,618	48,857	9,776
9/30/2039	8,372,837	1,967,936	42,842	10,070
9/30/2040	7,049,610	2,026,974	36,072	10,372
9/30/2041	5,565,455	2,087,783	28,477	10,683
9/30/2042	3,906,212	2,150,417	19,987	11,003
9/30/2043	2,056,573	2,214,929	10,523	11,333
9/30/2044	0	0	0	0

\*Reflects changes in interest rate and payroll growth assumptions as noted in the first exhibit in Schedule G. Amortization method is level dollar for 9/30/2014 and 9/30/2015. Amortization method is level percent of payroll for other years.





## Schedule G: Amortization of Bases

### AMORTIZATION SCHEDULE FOR BASES CLOSED ON SEPTEMBER 30, 2015\*

#### STATE EMPLOYEES

Valuation <u>Date</u>	Balance of Transitional <u>Closed 9/30/2015</u>	Annual Amortization <u>Payment</u>	Balance of New Incremental <u>UAAL</u> <u>9/30/2015</u>	Annual Amortization <u>Payment</u>
9/30/2015	\$173,604,925	\$11,134,704	\$54,809,112	\$3,515,357
9/30/2016	176,358,615	11,489,972	55,678,484	3,627,519
9/30/2017	178,756,885	11,842,031	56,435,646	3,738,668
9/30/2018	180,768,512	12,133,243	57,070,741	3,830,607
9/30/2019	<b>182,554,444</b>	<b>12,497,240</b>	<b>57,634,581</b>	<b>3,945,525</b>
9/30/2020	184,113,897	12,872,157	58,126,918	4,063,891
9/30/2021	185,418,510	13,258,322	58,538,800	4,185,808
9/30/2022	186,437,413	13,656,072	58,860,480	4,311,382
9/30/2023	187,137,022	14,065,754	59,081,355	4,440,724
9/30/2024	187,480,818	14,487,727	59,189,895	4,573,945
9/30/2025	187,429,115	14,922,358	59,173,572	4,711,164
9/30/2026	186,938,798	15,370,029	59,018,773	4,852,499
9/30/2027	185,963,057	15,831,130	58,710,720	4,998,074
9/30/2028	184,451,082	16,306,064	58,233,371	5,148,016
9/30/2029	182,347,751	16,795,246	57,569,325	5,302,456
9/30/2030	179,593,282	17,299,103	56,699,707	5,461,530
9/30/2031	176,122,862	17,818,076	55,604,054	5,625,376
9/30/2032	171,866,246	18,352,619	54,260,190	5,794,137
9/30/2033	166,747,328	18,903,197	52,644,088	5,967,961
9/30/2034	160,683,676	19,470,293	50,729,721	6,147,000
9/30/2035	153,586,026	20,054,402	48,488,910	6,331,410
9/30/2036	145,357,748	20,656,034	45,891,146	6,521,352
9/30/2037	135,894,260	21,275,715	42,903,412	6,716,993
9/30/2038	125,082,403	21,913,987	39,489,982	6,918,503
9/30/2039	112,799,761	22,571,406	35,612,208	7,126,058
9/30/2040	98,913,937	23,248,548	31,228,290	7,339,839
9/30/2041	83,281,762	23,946,005	26,293,029	7,560,035
9/30/2042	65,748,453	24,664,385	20,757,557	7,786,835
9/30/2043	46,146,699	25,404,316	14,569,054	8,020,441
9/30/2044	24,295,679	26,166,446	7,670,430	8,261,054
9/30/2045	0	0	(0)	0

\*Reflects changes in interest rate and payroll growth assumptions as noted in the first exhibit in Schedule G





## Schedule G: Amortization of Bases

### AMORTIZATION SCHEDULE FOR BASES CLOSED ON SEPTEMBER 30, 2015\*

#### STATE POLICE

Valuation Date	Balance of Transitional Closed 9/30/2015	Annual Amortization Payment	Balance of New Incremental UAAL 9/30/2015	Annual Amortization Payment
9/30/2015	\$15,257,841	\$1,355,315	\$17,357,914	\$1,541,859
9/30/2016	15,123,154	985,291	17,204,688	1,120,906
9/30/2017	15,328,811	1,015,481	17,438,652	1,155,251
9/30/2018	15,501,312	1,040,453	17,634,896	1,183,660
9/30/2019	<b>15,654,460</b>	<b>1,071,667</b>	<b>17,809,123</b>	<b>1,219,170</b>
9/30/2020	15,788,187	1,103,817	17,961,256	1,255,745
9/30/2021	15,900,060	1,136,931	18,088,527	1,293,417
9/30/2022	15,987,434	1,171,039	18,187,927	1,332,220
9/30/2023	16,047,427	1,206,171	18,256,177	1,372,186
9/30/2024	16,076,908	1,242,356	18,289,716	1,413,352
9/30/2025	16,072,474	1,279,626	18,284,672	1,455,753
9/30/2026	16,030,429	1,318,015	18,236,839	1,499,425
9/30/2027	15,946,756	1,357,556	18,141,651	1,544,408
9/30/2028	15,817,101	1,398,282	17,994,150	1,590,740
9/30/2029	15,636,736	1,440,231	17,788,959	1,638,462
9/30/2030	15,400,534	1,483,438	17,520,246	1,687,616
9/30/2031	15,102,937	1,527,941	17,181,689	1,738,245
9/30/2032	14,737,923	1,573,779	16,766,434	1,790,392
9/30/2033	14,298,964	1,620,992	16,267,058	1,844,104
9/30/2034	13,778,992	1,669,622	15,675,517	1,899,427
9/30/2035	13,170,352	1,719,711	14,983,105	1,956,410
9/30/2036	12,464,759	1,771,302	14,180,394	2,015,102
9/30/2037	11,653,243	1,824,441	13,257,183	2,075,555
9/30/2038	10,726,101	1,879,174	12,202,430	2,137,822
9/30/2039	9,672,837	1,935,550	11,004,196	2,201,957
9/30/2040	8,482,096	1,993,616	9,649,562	2,268,015
9/30/2041	7,141,601	2,053,425	8,124,563	2,336,056
9/30/2042	5,638,080	2,115,027	6,414,099	2,406,137
9/30/2043	3,957,185	2,178,478	4,501,847	2,478,321
9/30/2044	2,083,410	2,243,832	2,370,168	2,552,671
9/30/2045	0	0	0	0

\*Reflects changes in interest rate and payroll growth assumptions as noted in the first exhibit in Schedule G  
Amortization method is level dollar for 9/30/2015. Amortization method is level percent of payroll for other years.





## Schedule G: Amortization of Bases

### AMORTIZATION SCHEDULE FOR BASES CLOSED ON SEPTEMBER 30, 2016\*

#### STATE EMPLOYEES

<u>Valuation Date</u>	<u>Balance of Transitional Closed 9/30/2016</u>	<u>Annual Amortization Payment</u>	<u>Balance of New Incremental UAAL 9/30/2016</u>	<u>Annual Amortization Payment</u>
9/30/2016	\$176,358,615	\$11,304,992	\$109,513,946	\$7,020,096
9/30/2017	178,941,864	11,651,569	111,118,073	7,235,310
9/30/2018	181,158,289	11,936,411	112,494,413	7,412,189
9/30/2019	<b>183,171,067</b>	<b>12,294,503</b>	<b>113,744,294</b>	<b>7,634,555</b>
9/30/2020	184,980,736	12,663,338	114,868,050	7,863,592
9/30/2021	186,560,914	13,043,238	115,849,298	8,099,499
9/30/2022	187,882,867	13,434,536	116,670,195	8,342,484
9/30/2023	188,915,311	13,837,572	117,311,316	8,592,759
9/30/2024	189,624,218	14,252,699	117,751,528	8,850,542
9/30/2025	189,972,584	14,680,280	117,967,854	9,116,058
9/30/2026	189,920,193	15,120,688	117,935,320	9,389,540
9/30/2027	189,423,360	15,574,309	117,626,800	9,671,226
9/30/2028	188,434,650	16,041,538	117,012,838	9,961,363
9/30/2029	186,902,580	16,522,784	116,061,463	10,260,204
9/30/2030	184,771,295	17,018,468	114,737,992	10,568,010
9/30/2031	181,980,216	17,529,022	113,004,807	10,885,050
9/30/2032	178,463,671	18,054,892	110,821,127	11,211,601
9/30/2033	174,150,482	18,596,539	108,142,753	11,547,949
9/30/2034	168,963,530	19,154,435	104,921,796	11,894,388
9/30/2035	162,819,286	19,729,068	101,106,386	12,251,220
9/30/2036	155,627,303	20,320,941	96,640,358	12,618,756
9/30/2037	147,289,665	20,930,569	91,462,910	12,997,319
9/30/2038	137,700,400	21,558,486	85,508,235	13,387,238
9/30/2039	126,744,845	22,205,240	78,705,131	13,788,855
9/30/2040	114,298,958	22,871,398	70,976,571	14,202,521
9/30/2041	100,228,580	23,557,539	62,239,246	14,628,597
9/30/2042	84,388,641	24,264,266	52,403,071	15,067,455
9/30/2043	66,622,301	24,992,193	41,370,652	15,519,478
9/30/2044	46,760,025	25,741,960	29,036,714	15,985,063
9/30/2045	24,618,587	26,514,218	15,287,478	16,464,614
9/30/2046	0	0	(0)	0

\*Reflects changes in interest rate and payroll growth assumptions as noted in the first exhibit in Schedule G





## Schedule G: Amortization of Bases

### AMORTIZATION SCHEDULE FOR BASES CLOSED ON SEPTEMBER 30, 2016\*

#### STATE POLICE

Valuation Date	Balance of Transitional Closed 9/30/2016	Annual Amortization Payment	Balance of New Incremental UAAL 9/30/2016	Annual Amortization Payment
9/30/2016	\$15,123,154	\$969,429	\$28,385,997	\$1,819,608
9/30/2017	15,344,673	999,149	28,801,787	1,875,391
9/30/2018	15,534,737	1,023,574	29,158,534	1,921,238
9/30/2019	<b>15,707,337</b>	<b>1,054,282</b>	<b>29,482,503</b>	<b>1,978,875</b>
9/30/2020	15,862,520	1,085,910	29,773,780	2,038,242
9/30/2021	15,998,024	1,118,487	30,028,119	2,099,389
9/30/2022	16,111,385	1,152,042	30,240,896	2,162,371
9/30/2023	16,199,919	1,186,603	30,407,074	2,227,242
9/30/2024	16,260,710	1,222,201	30,521,177	2,294,059
9/30/2025	16,290,583	1,258,867	30,577,249	2,362,881
9/30/2026	16,286,090	1,296,634	30,568,816	2,433,767
9/30/2027	16,243,485	1,335,533	30,488,848	2,506,780
9/30/2028	16,158,701	1,375,599	30,329,709	2,581,984
9/30/2029	16,027,323	1,416,866	30,083,113	2,659,443
9/30/2030	15,844,560	1,459,372	29,740,069	2,739,226
9/30/2031	15,605,219	1,503,154	29,290,828	2,821,403
9/30/2032	15,303,667	1,548,248	28,724,819	2,906,045
9/30/2033	14,933,801	1,594,696	28,030,584	2,993,227
9/30/2034	14,489,008	1,642,537	27,195,713	3,083,023
9/30/2035	13,962,125	1,691,813	26,206,759	3,175,514
9/30/2036	13,345,396	1,742,567	25,049,166	3,270,780
9/30/2037	12,630,425	1,794,844	23,707,172	3,368,903
9/30/2038	11,808,124	1,848,689	22,163,721	3,469,970
9/30/2039	10,868,660	1,904,150	20,400,357	3,574,069
9/30/2040	9,801,397	1,961,275	18,397,116	3,681,291
9/30/2041	8,594,829	2,020,113	16,132,403	3,791,730
9/30/2042	7,236,519	2,080,716	13,582,868	3,905,482
9/30/2043	5,713,014	2,143,138	10,723,267	4,022,646
9/30/2044	4,009,779	2,207,432	7,526,312	4,143,326
9/30/2045	2,111,100	2,273,655	3,962,512	4,267,625
9/30/2046	0	0	0	0

\*Reflects changes in interest rate and payroll growth assumptions as noted in the first exhibit in Schedule G







## Schedule G: Amortization of Bases

### AMORTIZATION SCHEDULE FOR BASES CLOSED ON SEPTEMBER 30, 2017\*

#### STATE EMPLOYEES

Valuation Date	Balance of Transitional Closed 9/30/2017	Annual Amortization Payment	Balance of New Incremental UAAL 9/30/2017	Annual Amortization Payment
9/30/2017	\$178,941,864	\$11,464,166	(\$23,220,938)	(\$1,487,683)
9/30/2018	181,345,692	11,742,803	(23,532,878)	(1,523,841)
9/30/2019	<b>183,566,508</b>	<b>12,095,087</b>	<b>(23,821,068)</b>	<b>(1,569,556)</b>
9/30/2020	185,606,042	12,457,940	(24,085,735)	(1,616,643)
9/30/2021	187,439,767	12,831,678	(24,323,693)	(1,665,142)
9/30/2022	189,040,951	13,216,628	(24,531,475)	(1,715,096)
9/30/2023	190,380,476	13,613,127	(24,705,303)	(1,766,549)
9/30/2024	191,426,646	14,021,521	(24,841,062)	(1,819,545)
9/30/2025	192,144,977	14,442,166	(24,934,279)	(1,874,132)
9/30/2026	192,497,974	14,875,431	(24,980,087)	(1,930,356)
9/30/2027	192,444,887	15,321,694	(24,973,197)	(1,988,266)
9/30/2028	191,941,449	15,781,345	(24,907,868)	(2,047,914)
9/30/2029	190,939,596	16,254,785	(24,777,859)	(2,109,352)
9/30/2030	189,387,159	16,742,429	(24,576,403)	(2,172,632)
9/30/2031	187,227,542	17,244,702	(24,296,154)	(2,237,811)
9/30/2032	184,399,360	17,762,043	(23,929,146)	(2,304,946)
9/30/2033	180,836,068	18,294,904	(23,466,745)	(2,374,094)
9/30/2034	176,465,541	18,843,751	(22,899,590)	(2,445,317)
9/30/2035	171,209,637	19,409,064	(22,217,541)	(2,518,676)
9/30/2036	164,983,715	19,991,336	(21,409,616)	(2,594,237)
9/30/2037	157,696,125	20,591,076	(20,463,920)	(2,672,064)
9/30/2038	149,247,651	21,208,808	(19,367,577)	(2,752,226)
9/30/2039	139,530,912	21,845,072	(18,106,655)	(2,834,792)
9/30/2040	128,429,720	22,500,424	(16,666,075)	(2,919,836)
9/30/2041	115,818,385	23,175,437	(15,029,527)	(3,007,432)
9/30/2042	101,560,963	23,870,700	(13,179,369)	(3,097,654)
9/30/2043	85,510,457	24,586,821	(11,096,526)	(3,190,584)
9/30/2044	67,507,942	25,324,426	(8,760,375)	(3,286,302)
9/30/2045	47,381,627	26,084,159	(6,148,621)	(3,384,890)
9/30/2046	24,945,853	26,866,684	(3,237,175)	(3,486,438)
9/30/2047	0	0	0	0

\*Reflects changes in interest rate and payroll growth assumptions as noted in the first exhibit in Schedule G





## Schedule G: Amortization of Bases

### AMORTIZATION SCHEDULE FOR BASES CLOSED ON SEPTEMBER 30, 2017\*

#### STATE POLICE

Valuation Date	Balance of Transitional Closed 9/30/2017	Annual Amortization Payment	Balance of New Incremental UAAL 9/30/2017	Annual Amortization Payment
9/30/2017	\$15,344,673	\$983,078	(\$3,209,308)	(\$205,609)
9/30/2018	15,550,807	1,006,972	(3,252,422)	(210,606)
9/30/2019	<b>15,741,247</b>	<b>1,037,181</b>	<b>(3,292,253)</b>	<b>(216,925)</b>
9/30/2020	15,916,142	1,068,297	(3,328,832)	(223,432)
9/30/2021	16,073,388	1,100,346	(3,361,719)	(230,135)
9/30/2022	16,210,693	1,133,356	(3,390,436)	(237,039)
9/30/2023	16,325,560	1,167,357	(3,414,461)	(244,150)
9/30/2024	16,415,272	1,202,377	(3,433,224)	(251,475)
9/30/2025	16,476,870	1,238,449	(3,446,107)	(259,019)
9/30/2026	16,507,141	1,275,602	(3,452,438)	(266,790)
9/30/2027	16,502,588	1,313,870	(3,451,486)	(274,794)
9/30/2028	16,459,417	1,353,286	(3,442,457)	(283,037)
9/30/2029	16,373,506	1,393,885	(3,424,489)	(291,528)
9/30/2030	16,240,381	1,435,701	(3,396,646)	(300,274)
9/30/2031	16,055,189	1,478,773	(3,357,913)	(309,283)
9/30/2032	15,812,666	1,523,136	(3,307,190)	(318,561)
9/30/2033	15,507,106	1,568,830	(3,243,282)	(328,118)
9/30/2034	15,132,323	1,615,895	(3,164,897)	(337,961)
9/30/2035	14,681,617	1,664,372	(3,070,633)	(348,100)
9/30/2036	14,147,730	1,714,303	(2,958,972)	(358,543)
9/30/2037	13,522,803	1,765,732	(2,828,269)	(369,300)
9/30/2038	12,798,327	1,818,704	(2,676,746)	(380,379)
9/30/2039	11,965,094	1,873,265	(2,502,477)	(391,790)
9/30/2040	11,013,142	1,929,463	(2,303,378)	(403,544)
9/30/2041	9,931,691	1,987,347	(2,077,195)	(415,650)
9/30/2042	8,709,084	2,046,967	(1,821,489)	(428,119)
9/30/2043	7,332,717	2,108,376	(1,533,624)	(440,963)
9/30/2044	5,788,960	2,171,627	(1,210,750)	(454,192)
9/30/2045	4,063,083	2,236,776	(849,786)	(467,818)
9/30/2046	2,139,164	2,303,879	(447,402)	(481,852)
9/30/2047	0	0	0	0

\*Reflects changes in interest rate and payroll growth assumptions as noted in the first exhibit in Schedule G





## Schedule G: Amortization of Bases

### AMORTIZATION SCHEDULE FOR BASES CLOSED ON SEPTEMBER 30, 2018

#### STATE EMPLOYEES

Valuation Date	Balance of Transitional Closed 9/30/2018	Annual Amortization Payment	Balance of New Incremental UAAL 9/30/2018	Annual Amortization Payment
9/30/2018	\$181,345,692	\$11,552,369	(\$19,623,854)	(\$1,250,110)
9/30/2019	<b>183,756,941</b>	<b>11,898,940</b>	<b>(19,884,783)</b>	<b>(1,287,613)</b>
9/30/2020	186,007,286	12,255,908	(20,128,298)	(1,326,241)
9/30/2021	188,073,939	12,623,586	(20,351,936)	(1,366,029)
9/30/2022	189,932,046	13,002,293	(20,553,006)	(1,407,010)
9/30/2023	191,554,521	13,392,362	(20,728,578)	(1,449,220)
9/30/2024	192,911,857	13,794,133	(20,875,458)	(1,492,696)
9/30/2025	193,971,937	14,207,957	(20,990,172)	(1,537,477)
9/30/2026	194,699,819	14,634,195	(21,068,939)	(1,583,602)
9/30/2027	195,057,510	15,073,221	(21,107,645)	(1,631,110)
9/30/2028	195,003,717	15,525,418	(21,101,824)	(1,680,043)
9/30/2029	194,493,586	15,991,181	(21,046,621)	(1,730,444)
9/30/2030	193,478,411	16,470,916	(20,936,767)	(1,782,358)
9/30/2031	191,905,332	16,965,043	(20,766,540)	(1,835,828)
9/30/2032	189,717,000	17,473,995	(20,529,736)	(1,890,903)
9/30/2033	186,851,214	17,998,215	(20,219,622)	(1,947,630)
9/30/2034	183,240,542	18,538,161	(19,828,903)	(2,006,059)
9/30/2035	178,811,903	19,094,306	(19,349,670)	(2,066,241)
9/30/2036	173,486,114	19,667,135	(18,773,353)	(2,128,228)
9/30/2037	167,177,409	20,257,149	(18,090,673)	(2,192,075)
9/30/2038	159,792,921	20,864,864	(17,291,580)	(2,257,838)
9/30/2039	151,232,112	21,490,809	(16,365,194)	(2,325,573)
9/30/2040	141,386,175	22,135,534	(15,299,741)	(2,395,340)
9/30/2041	130,137,377	22,799,600	(14,082,481)	(2,467,200)
9/30/2042	117,358,355	23,483,588	(12,699,632)	(2,541,216)
9/30/2043	102,911,360	24,188,095	(11,136,288)	(2,617,452)
9/30/2044	86,647,440	24,913,738	(9,376,330)	(2,695,976)
9/30/2045	68,405,555	25,661,150	(7,402,331)	(2,776,855)
9/30/2046	48,011,633	26,430,985	(5,195,456)	(2,860,161)
9/30/2047	25,277,543	27,223,914	(2,735,345)	(2,945,966)
9/30/2048	0	0	0	0





## Schedule G: Amortization of Bases

### AMORTIZATION SCHEDULE FOR BASES CLOSED ON SEPTEMBER 30, 2018

#### STATE POLICE

Valuation Date	Balance of Transitional Closed 9/30/2018	Annual Amortization Payment	Balance of New Incremental UAAL 9/30/2018	Annual Amortization Payment
9/30/2018	\$15,550,807	\$990,642	\$2,542,330	\$161,956
9/30/2019	<b>15,757,577</b>	<b>1,020,361</b>	<b>2,576,131</b>	<b>166,814</b>
9/30/2020	15,950,549	1,050,972	2,607,679	171,818
9/30/2021	16,127,769	1,082,501	2,636,652	176,973
9/30/2022	16,287,106	1,114,976	2,662,701	182,282
9/30/2023	16,426,237	1,148,426	2,685,447	187,751
9/30/2024	16,542,632	1,182,878	2,704,476	193,383
9/30/2025	16,633,536	1,218,365	2,719,337	199,185
9/30/2026	16,695,954	1,254,916	2,729,542	205,160
9/30/2027	16,726,627	1,292,563	2,734,556	211,315
9/30/2028	16,722,014	1,331,340	2,733,802	217,654
9/30/2029	16,678,269	1,371,280	2,726,650	224,184
9/30/2030	16,591,215	1,412,419	2,712,418	230,910
9/30/2031	16,456,320	1,454,791	2,690,365	237,837
9/30/2032	16,268,666	1,498,435	2,659,686	244,972
9/30/2033	16,022,918	1,543,388	2,619,510	252,321
9/30/2034	15,713,295	1,589,690	2,568,891	259,891
9/30/2035	15,333,529	1,637,380	2,506,805	267,687
9/30/2036	14,876,830	1,686,502	2,432,142	275,718
9/30/2037	14,335,844	1,737,097	2,343,699	283,990
9/30/2038	13,702,608	1,789,210	2,240,174	292,509
9/30/2039	12,968,499	1,842,886	2,120,158	301,285
9/30/2040	12,124,187	1,898,173	1,982,125	310,323
9/30/2041	11,159,577	1,955,118	1,824,426	319,633
9/30/2042	10,063,747	2,013,771	1,645,274	329,222
9/30/2043	8,824,884	2,074,184	1,442,738	339,098
9/30/2044	7,430,216	2,136,410	1,214,730	349,271
9/30/2045	5,865,932	2,200,502	958,993	359,750
9/30/2046	4,117,107	2,266,517	673,086	370,542
9/30/2047	2,167,607	2,334,513	354,372	381,658
9/30/2048	0	0	0	0





## Schedule G: Amortization of Bases

### AMORTIZATION SCHEDULE FOR BASES CLOSED ON SEPTEMBER 30, 2019

#### STATE EMPLOYEES

<u>Valuation Date</u>	<u>Balance of Transitional Closed 9/30/2019</u>	<u>Annual Amortization Payment</u>	<u>Balance of New Incremental UAAL 9/30/2019</u>	<u>Annual Amortization Payment</u>
9/30/2019	\$183,756,941	\$11,705,974	\$130,464,852	\$8,311,078
9/30/2020	186,200,252	12,057,153	132,199,569	8,560,410
9/30/2021	188,480,518	12,418,868	133,818,525	8,817,222
9/30/2022	190,574,650	12,791,434	135,305,330	9,081,739
9/30/2023	192,457,464	13,175,177	136,642,101	9,354,191
9/30/2024	194,101,512	13,570,433	137,809,352	9,634,817
9/30/2025	195,476,895	13,977,546	138,785,855	9,923,861
9/30/2026	196,551,070	14,396,872	139,548,505	10,221,577
9/30/2027	197,288,631	14,828,778	140,072,163	10,528,225
9/30/2028	197,651,077	15,273,641	140,329,495	10,844,071
9/30/2029	197,596,569	15,731,851	140,290,795	11,169,393
9/30/2030	197,079,654	16,203,806	139,923,793	11,504,475
9/30/2031	196,050,981	16,689,920	139,193,450	11,849,610
9/30/2032	194,456,987	17,190,618	138,061,736	12,205,098
9/30/2033	192,239,557	17,706,336	136,487,391	12,571,251
9/30/2034	189,335,667	18,237,527	134,425,669	12,948,388
9/30/2035	185,676,986	18,784,652	131,828,058	13,336,840
9/30/2036	181,189,462	19,348,192	128,641,978	13,736,945
9/30/2037	175,792,859	19,928,638	124,810,466	14,149,053
9/30/2038	169,400,271	20,526,497	120,271,818	14,573,525
9/30/2039	161,917,595	21,142,292	114,959,223	15,010,731
9/30/2040	153,242,958	21,776,560	108,800,353	15,461,053
9/30/2041	143,266,105	22,429,857	101,716,927	15,924,884
9/30/2042	131,867,739	23,102,753	93,624,246	16,402,631
9/30/2043	118,918,801	23,795,835	84,430,682	16,894,710
9/30/2044	104,279,714	24,509,710	74,037,135	17,401,551
9/30/2045	87,799,542	25,245,002	62,336,443	17,923,597
9/30/2046	69,315,105	26,002,352	49,212,752	18,461,305
9/30/2047	48,650,016	26,782,423	34,540,829	19,015,144
9/30/2048	25,613,644	27,585,895	18,185,329	19,585,599
9/30/2049	0	0	0	0





## Schedule G: Amortization of Bases

### AMORTIZATION SCHEDULE FOR BASES CLOSED ON SEPTEMBER 30, 2019

#### STATE POLICE

<b>Valuation Date</b>	<b>Balance of Transitional Closed 9/30/2019</b>	<b>Annual Amortization Payment</b>	<b>Balance of New Incremental UAAL 9/30/2019</b>	<b>Annual Amortization Payment</b>
9/30/2019	\$15,757,577	\$1,003,814	\$10,660,261	\$679,096
9/30/2020	15,967,097	1,033,928	10,801,998	699,469
9/30/2021	16,162,635	1,064,946	10,934,283	720,453
9/30/2022	16,342,211	1,096,895	11,055,769	742,067
9/30/2023	16,503,667	1,129,802	11,164,997	764,329
9/30/2024	16,644,648	1,163,696	11,260,372	787,259
9/30/2025	16,762,590	1,198,606	11,340,162	810,877
9/30/2026	16,854,703	1,234,565	11,402,478	835,203
9/30/2027	16,917,950	1,271,602	11,445,266	860,259
9/30/2028	16,949,031	1,309,750	11,466,293	886,067
9/30/2029	16,944,357	1,349,042	11,463,131	912,649
9/30/2030	16,900,030	1,389,513	11,433,143	940,028
9/30/2031	16,811,819	1,431,199	11,373,467	968,229
9/30/2032	16,675,130	1,474,135	11,280,995	997,276
9/30/2033	16,484,981	1,518,359	11,152,355	1,027,194
9/30/2034	16,235,966	1,563,910	10,983,892	1,058,010
9/30/2035	15,922,225	1,610,827	10,771,642	1,089,750
9/30/2036	15,537,410	1,659,152	10,511,308	1,122,443
9/30/2037	15,074,639	1,708,926	10,198,236	1,156,116
9/30/2038	14,526,460	1,760,194	9,827,384	1,190,800
9/30/2039	13,884,803	1,813,000	9,393,293	1,226,524
9/30/2040	13,140,933	1,867,390	8,890,053	1,263,319
9/30/2041	12,285,396	1,923,411	8,311,268	1,301,219
9/30/2042	11,307,960	1,981,114	7,650,017	1,340,255
9/30/2043	10,197,559	2,040,547	6,898,813	1,380,463
9/30/2044	8,942,223	2,101,764	6,049,558	1,421,877
9/30/2045	7,529,011	2,164,817	5,093,497	1,464,533
9/30/2046	5,943,928	2,229,761	4,021,163	1,508,469
9/30/2047	4,171,850	2,296,654	2,822,324	1,553,723
9/30/2048	2,196,428	2,365,553	1,485,919	1,600,335
9/30/2049	0	0	0	0





## Schedule H: Summary of Main System Provisions

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### SUMMARY OF MAIN SYSTEM PROVISIONS AS INTERPRETED FOR VALUATION PURPOSES

The Employees' Retirement System of Alabama was established on October 1, 1945. The valuation took into account amendments to the System effective through the valuation date, with the exception of Act 2019-132. This act allows local employers that participate in the System to elect to provide Tier I retirement benefits to their Tier II employees, upon approval by the Board of Control, until May 8, 2021 and will be reflected in the valuations prepared for the individual employers. There is a new tier (Tier II) of benefits for all members initially joining the System on and after January 1, 2013. Act 2017-360 revised the definition of "state policemen" to include any employee hired by the Alabama State Law Enforcement Agency after January 1, 2015, who is certified by the Alabama Peace Officers' Standards and Training Commission and performs law enforcement duties. These members pay the same employee contribution rate and receive the same benefits as certified law enforcement officers (FLC) of other state agencies and local employers. The following summary describes the main benefit and contribution provisions of the System as interpreted for the valuation.

#### 1 – DEFINITIONS

Average Final Compensation – the average compensation of a member for:

- Tier 1 - the 3 highest years in the last 10 years of creditable service
- Tier 2 - the 5 highest years in the last 10 years of creditable service

Membership Service – all service rendered while a member of the Retirement System and for which contributions are made.

Creditable Service – the sum of membership service, prior service, and any other previous service established as creditable in accordance with the provisions of the retirement law.

Annuity – payments for life derived from accumulated contributions of a member.

Pension – payments for life derived from the accumulated contributions of an employer.

Retirement Allowance – the sum of the annuity and pension payments.





## Schedule H: Summary of Main System Provisions

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### 2 - BENEFITS

#### MEMBERS CLASSIFIED OTHER THAN STATE POLICEMEN

##### Service Retirement Allowance

###### Condition for Allowance

Tier I A retirement allowance is payable upon the request of any member who has completed 25 years of creditable service, (except for employees of local employers who did not elect 25-year retirement), or who has attained age 60 and completed at least 10 years of creditable service.

Tier II A retirement allowance is payable upon the request of any member who has attained age 62 and completed at least 10 years of creditable service (age 56 with 10 years of creditable service for a full-time certified firefighter, police officer or correctional officer).

###### Amount of Allowance

Tier I Upon service retirement a member receives a retirement allowance equal to 2.0125% of the member's average final compensation multiplied by the number of years of his creditable service. At retirement, a member receives one additional year of creditable service in determining the retirement allowance for each five years of service as a full-time certified firefighter, police officer or correctional officer.

Tier II Upon service retirement a member receives a retirement allowance equal to 1.65% of the member's average final compensation multiplied by the number of years of creditable service. The benefit is capped at 80% of the member's average final compensation.

##### Disability Retirement Allowance

###### Condition for Allowance

A disability retirement allowance may be granted to a member who has 10 or more years of creditable service and becomes permanently incapacitated for duty before reaching eligibility for service retirement.

###### Amount of Allowance

Tier I Upon retirement for disability, a member receives a retirement allowance equal to 2.0125% of the member's







## Schedule H: Summary of Main System Provisions

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	<p>average final compensation multiplied by the number of years of his creditable service. At retirement, a member receives one additional year of creditable service in determining the retirement allowance for each five years of service as a full-time certified firefighter, police officer or correctional officer.</p>
Tier II	<p>Upon disability retirement a member receives a retirement allowance equal to 1.65% of the member's average final compensation multiplied by the number of years of creditable service. The benefit is capped at 80% of the member's average final compensation.</p>
Benefits Payable on Separation from Service	<p>Any member who withdraws from service is entitled to receive a return of member contributions with allowable interest. A member who has completed 10 years of creditable service may, after separation from service, continue in the membership of the System and file for service retirement after reaching age 60 (age 62 for Tier II members).</p>
Benefits Payable upon Death in Active Service	<p>In the event of the death of a member eligible for service retirement, the designated beneficiary may elect: (1) to exercise option 3 as defined below under "Special Privileges at Retirement – All Employees" or (2) to receive a return of member contributions and total interest earned plus a death benefit payable from the pre-retirement death benefit fund equal to the salary on which the member made retirement contributions for the previous fiscal year (October 1 – September 30).*</p> <p>In the event of the death of a member with more than one year of service who is not eligible for retirement, the designated beneficiary shall receive a return of member contributions and total interest earned. Also, the designated beneficiary shall receive an additional death benefit payable from the pre-retirement death benefit fund equal to the salary on which their retirement contributions were made for the previous fiscal year (October 1 – September 30).*</p> <p>In the event of a job-related death of a member at any age with less than 1 year of service, the designated beneficiary shall receive the return of member contributions and total earned interest plus a death benefit payable from the pre-retirement death benefit fund equal to the annual earnable compensation of the member at the time death occurs.*</p>





## Schedule H: Summary of Main System Provisions

In the event of a non job-related death of a member with less than 1 year of service, the beneficiary shall receive the return of member contributions and total interest earned plus a matching death benefit which is limited to a maximum of \$5,000.

- \* However, if the death occurred more than 180 calendar days after the member's last day in pay status, or if the deceased had applied for a refund of contributions or terminated employment, the lump sum will be the same as if the member had less than one year of service and the death was not job-related.

### Deferred Retirement Option Plan (DROP)

A member may elect to participate in the Deferred Retirement Option Plan (DROP) upon completion of at least 25 years of service (at least 30 years for employers that did not elect 25 year retirement) of creditable service (excluding sick leave) and attainment of at least 55 years of age. Under the DROP, the member may defer receipt of a retirement allowance and continue employment for a period not to exceed five years, nor to be less than three years. At the end of this period, the member may withdraw from active service and receive the retirement benefit based on his or her years of service credit at the time of enrollment in the DROP, and also receive a payment for the deferred retirement benefits, employee contributions while participating in the DROP, and interest earned on DROP deposits.

The effect of Act 2011-27 is that no new participants will be allowed to enter DROP with an effective participation date after June 1, 2011.

### Member Contributions

#### Tier I

Prior to October 1, 2011, regular members contributed 5.0% of salary. Full-time certified police officers, firefighters and correctional officers contributed 6.0% of salary. DROP participants continue to contribute during the DROP period, but receive a refund of these contributions and regular interest upon retirement.

Beginning October 1, 2011, the contribution rates were increased to 7.25% for regular members and 8.25% for full-time certified police officers, firefighters and correctional officers, for all State employees and for local employees whose employers elect to do so.





## Schedule H: Summary of Main System Provisions

	Beginning October 1, 2012, the contribution rates were increased to 7.50% for regular members and 8.50% for full-time certified police officers, firefighters and correctional officers, for all State employees and for local employees whose employers elect to do so.
Tier II	Regular members contribute 6% of salary and full-time certified firefighters, police officers and correctional officers contribute 7% of salary.
Both	If positive investment performance results in a decrease in the total contribution rate paid by employers and employees participating in the System, the Retirement System of Alabama shall first reduce the employee contribution rate.  "Regular Interest" is 4% which is the rate adopted by the Board and applied to the balance in each member's account every year; however, if a member receives a refund of contributions, the interest rate applied to the refund is lower than the 4% regular rate (Based on Section 36-27-16.3(c)(1)).

### MEMBERS CLASSIFIED AS STATE POLICEMEN

#### Service Retirement Allowance

##### Condition for Allowance

Tier I	Members hired prior to January 1, 2015: A retirement allowance is payable upon the request of any member who has completed 25 years of creditable service or who has attained age 52 and completed at least 10 years of creditable service.  Members hired after January 1, 2015: A retirement allowance is payable upon the request of any member who has completed 25 years of creditable service or who has attained age 60 and completed at least 10 years of creditable service.
Tier II	A retirement allowance is payable upon the request of any member who has attained age 56 and completed at least 10 years of creditable service.

##### Amount of Allowance

Tier I	Members hired prior to January 1, 2015: Upon service retirement a member receives a retirement allowance equal
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## Schedule H: Summary of Main System Provisions

to 2.875% of the member's average final compensation multiplied by the number of years of his creditable service.

A member who has attained 20 or more years of creditable service and retires prior to age 60 is eligible to receive a "bonus service credit" up to 4 years as follows:

- Age 56 or older – bonus service of 4 years reduced by 1 month for each month over the age of 56.
- Age 52 to 56 – bonus service of 4 years.
- Age 52 or less (disability retirement only) – bonus service of 4 years.
- Age 52 or less with 25 or more years of service – bonus service of 4 years.

Members hired after January 1, 2015: Upon service retirement a member receives a retirement allowance equal to 2.0125% of the member's average final compensation multiplied by the number of years of his creditable service. At retirement, a member receives one additional year of creditable service in determining the retirement allowance for each five years of service as an officer.

Tier II

Members hired prior to January 1, 2015: Upon service retirement a member receives a retirement allowance equal to 2.375% of the member's average final compensation multiplied by the number of years of his creditable service. The benefit is capped at 80% of the member's average final compensation.

Members hired after January 1, 2015: Upon service retirement a member receives a retirement allowance equal to 1.65% of the member's average final compensation multiplied by the number of years of his creditable service. The benefit is capped at 80% of the member's average final compensation.

### Disability Retirement Allowance

#### Condition for Allowance

A disability retirement allowance may be granted to a member who has 10 or more years of creditable service or who becomes disabled as a result of his employment in line of duty without regard to his years of creditable service, and who becomes permanently incapacitated, mentally or





## Schedule H: Summary of Main System Provisions

physically, for the further performance of duty before reaching the minimum age for service retirement.

### Amount of Allowance

#### Tier I

Members hired prior to January 1, 2015: Upon retirement for disability, a member receives a retirement allowance equal to 2.875% of the member's average final compensation multiplied by the number of years of his creditable service.

Members hired after January 1, 2015: Upon retirement for disability, a member receives a retirement allowance equal to 2.0125% of the member's average final compensation multiplied by the number of years of his creditable service. At retirement, a member receives one additional year of creditable service in determining the retirement allowance for each five years of service as a full-time officer.

#### Tier II

Members hired prior to January 1, 2015: Upon retirement for disability, a member receives a retirement allowance equal to 2.375% of the member's average final compensation multiplied by the number of years of his creditable service. The benefit is capped at 80% of the member's average final compensation.

Members hired after January 1, 2015: Upon retirement for disability, a member receives a retirement allowance equal to 1.65% of the member's average final compensation multiplied by the number of years of his creditable service. The benefit is capped at 80% of the member's average final compensation.

### Benefits Payable on Separation from Service

Any member who withdraws from service is entitled to receive a return of member contributions with allowable interest. A member who has completed 10 years of creditable service may, after separation from service, continue in the membership of the System and file for service retirement after reaching age 52 (age 56 for Tier II members).

### Benefits Payable upon Death in Active Service

In the event of the death of a member who is eligible for service retirement, the designated beneficiary may elect: (1) to exercise option 3 as defined below under "Special Privileges at Retirement – All Employees" or (2) to receive a return of member contributions and total interest earned plus a death benefit payable from the pre-retirement death benefit fund equal to the salary on which the member made





## Schedule H: Summary of Main System Provisions

retirement contributions for the previous fiscal year (October 1 – September 30).\*

In the event of the death of a member with more than one year of service who is not eligible for retirement, the designated beneficiary shall receive a return of member contributions and total interest earned. Also, the designated beneficiary shall receive an additional death benefit payable from the pre-retirement death benefit fund equal to the salary on which their retirement contributions were made for the previous fiscal year (October 1 – September 30).\*

In the event of a job-related death of a member at any age with less than 1 year of service, the designated beneficiary shall receive the return of member contributions and total earned interest plus a death benefit payable from the pre-retirement death benefit fund equal to the annual earnable compensation of the member at the time death occurs.\*

In the event of a non job-related death of a member with less than 1 year of service, the beneficiary shall receive the return of member contributions and total interest earned plus a matching death benefit which is limited to a maximum of \$5,000.

- \* However, if the death occurred more than 180 calendar days after the member's last day in pay status, or if the deceased had applied for a refund of contributions or terminated employment, the lump sum will be the same as if the member had less than one year of service and the death was not job-related.

### Deferred Retirement Option Plan (DROP)

A member may elect to participate in the Deferred Retirement Option Plan (DROP) upon completion of at least 25 years of creditable service (excluding sick leave) and attainment of at least 52 years of age. Under the DROP, the member may defer receipt of a retirement allowance and continue employment for a period not to exceed five years, nor to be less than three years. At the end of this period, the member may withdraw from active service and receive the retirement benefit based on his or her years of service credit at the time of enrollment in the DROP, and also receive a payment for the deferred retirement benefits, employee contributions while participating in the DROP, and interest earned on DROP deposits.

The effect of Act 2011-27 is that no new participants will be allowed to enter DROP with an effective participation date after June 1, 2011.





## Schedule H: Summary of Main System Provisions

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### Member Contributions

Tier I	<p>Members hired prior to January 1, 2015: Each member contributes 10% of salary. DROP participants continue to contribute during the DROP period, but receive a refund of these contributions with interest upon retirement.</p> <p>Members hired after January 1, 2015: Each member contributes 8.5% of salary.</p>
Tier II	<p>Members hired prior to January 1, 2015: Each member contributes 10% of salary. DROP participants continue to contribute during the DROP period, but receive a refund of these contributions with interest upon retirement.</p> <p>Members hired after January 1, 2015: Each member contributes 7% of salary.</p>

### 3 - SPECIAL PRIVILEGES AT RETIREMENT – ALL MEMBERS

In lieu of the full retirement allowance, any member may, at retirement, elect to receive a reduced retirement allowance equal in value to the full allowance, with the provision that:

Option 1. If the member dies before the annuity payments equal or exceed the present value of the member's annuity at the date of retirement, the balance is paid to a designated beneficiary or to the estate, or

Option 2. After the member's death, the member's allowance is continued throughout the life of the designated beneficiary, or

Option 3. After the member's death, one half of the member's allowance is continued throughout the life of the designated beneficiary, or

Option 4. Some other benefit is paid either to the member or to the designated beneficiary provided such benefit, together with the reduced retirement allowance, is of equivalent actuarial value to his retirement allowance and is approved by the Board of Control.





## Schedule I: Schedule of Membership Data

### SCHEDULE OF MEMBERSHIP DATA AS OF SEPTEMBER 30, 2019

#### ACTIVE STATE EMPLOYEES

Attained Age	Completed Years of Service										Total	Payroll
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up		
Under 25	570	334	4								908	\$25,305,088
25 to 29	653	1,443	269	3							2,368	81,923,588
30 to 34	461	1,303	977	295	2						3,038	120,326,096
35 to 39	296	866	772	1,008	281	3					3,226	143,490,125
40 to 44	276	727	581	861	949	190	5				3,589	171,245,941
45 to 49	241	697	531	761	755	598	204	6			3,793	191,844,971
50 to 54	200	534	494	566	629	562	605	182	1		3,773	197,778,308
55 to 59	134	505	463	580	551	462	587	469	92	2	3,845	206,207,190
60 to 64	59	325	294	419	391	293	335	277	174	42	2,609	141,267,932
65 to 69	22	147	201	159	159	96	110	50	7	9	960	52,778,669
70 & up	12	46	88	92	70	30	53	25	5	3	424	25,727,637
<b>Total</b>	<b>2,924</b>	<b>6,927</b>	<b>4,674</b>	<b>4,744</b>	<b>3,787</b>	<b>2,234</b>	<b>1,899</b>	<b>1,009</b>	<b>279</b>	<b>56</b>	<b>28,533</b>	<b>\$1,357,895,545</b>

Average Age:45.62      Average Service:11.42







## Schedule I: Schedule of Membership Data

### SCHEDULE OF MEMBERSHIP DATA AS OF SEPTEMBER 30, 2019

#### ACTIVE STATE POLICE

Attained Age	Completed Years of Service										Total	Payroll
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up		
Under 25	12	7									19	\$626,874
25 to 29	17	16	13								46	1,730,587
30 to 34	3	15	20	20	1						59	2,666,016
35 to 39	5	3	12	65	26						111	6,202,736
40 to 44	3	3	6	36	52	29					129	8,624,792
45 to 49	3	2	2	31	37	74	11				160	11,250,600
50 to 54	1	2	4	18	24	37	18	3			107	7,983,126
55 to 59		2	3	8	4	9	7	3	2		38	2,967,284
60 & up		1	2	3	4	1	1				12	952,836
<b>Total</b>	44	51	62	181	148	150	37	6	2		681	\$43,004,849

Average Age: 42.69      Average Service: 14.73





## Schedule I: Schedule of Membership Data

### SCHEDULE OF MEMBERSHIP DATA AS OF SEPTEMBER 30, 2019

#### ACTIVE LOCAL EMPLOYEES

Attained Age	Completed Years of Service										Total	Payroll
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up		
Under 25	1,863	1,541	27								3,431	\$89,086,498
25 to 29	1,375	3,005	1,062	18							5,460	182,391,300
30 to 34	937	2,258	1,996	927	20						6,138	238,793,509
35 to 39	706	1,596	1,430	1,632	651	24					6,038	259,467,774
40 to 44	597	1,384	1,089	1,395	1,319	577	9				6,370	294,642,248
45 to 49	563	1,364	1,171	1,246	1,299	1,445	369	10			7,467	363,280,132
50 to 54	481	1,122	1,042	1,104	1,025	1,184	716	189	6		6,869	331,682,647
55 to 59	395	1,002	911	1,041	980	1,008	560	398	122	5	6,422	309,106,530
60 to 64	238	598	723	722	708	609	372	253	140	58	4,421	208,033,780
65 to 69	127	268	339	318	245	187	138	84	23	24	1,753	80,525,247
70 & up	115	183	168	158	123	90	61	30	12	11	951	36,046,999
<b>Total</b>	7,397	14,321	9,958	8,561	6,370	5,123	2,225	964	303	98	55,320	\$2,393,056,664

Average Age: 44.18

Average Service: 9.97





## Schedule I: Schedule of Membership Data

### SCHEDULE OF MEMBERSHIP DATA AS OF SEPTEMBER 30, 2019

#### NUMBER OF SERVICE RETIREMENTS AND THEIR BENEFITS BY AGE

Age	Number of Members	Total Annual Benefits	Average Annual Benefits
Under 50	286	\$ 9,668,871	\$ 33,807
50 – 54	1,391	47,223,282	33,949
55 – 59	3,071	103,602,966	33,736
60 – 64	6,900	188,975,888	27,388
65 – 69	10,258	242,710,016	23,663
70 – 74	8,998	195,548,414	21,732
75 – 79	5,568	112,812,964	20,261
80 – 84	3,519	66,736,830	18,965
85 – 89	1,925	31,860,202	16,551
90 – 94	726	11,417,589	15,727
95 & Over	195	2,507,247	12,858
Total	42,837	\$ 1,013,064,269	\$ 23,649

Average Age:69.89

\*Includes post-DROP members in suspended status who are also active with a second retirement account.





## Schedule I: Schedule of Membership Data

### NUMBER OF BENEFICIARIES AND THEIR BENEFITS BY AGE

Age	Number of Members	Total Annual Benefits	Average Annual Benefits
Under 50	215	\$ 2,330,078	\$ 10,838
50 – 54	104	1,421,613	13,669
55 – 59	203	3,149,606	15,515
60 – 64	371	5,937,069	16,003
65 – 69	531	7,596,116	14,305
70 – 74	666	9,520,202	14,295
75 – 79	719	8,838,660	12,293
80 – 84	697	9,169,057	13,155
85 – 89	490	5,378,275	10,976
90 – 94	271	2,749,916	10,147
95 & Over	77	692,292	8,991
Total	4,344	\$ 56,782,884	\$ 13,072

Average Age: 73.54





## Schedule I: Schedule of Membership Data

### SCHEDULE OF MEMBERSHIP DATA AS OF SEPTEMBER 30, 2019

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

Age	Number of Members	Total Annual Benefits	Average Annual Benefits
Under 50	333	\$ 5,154,891	\$ 15,480
50 – 54	460	7,658,065	16,648
55 – 59	696	10,838,653	15,573
60 – 64	925	13,542,650	14,641
65 – 69	822	11,292,801	13,738
70 – 74	572	7,385,866	12,912
75 – 79	280	3,143,996	11,229
80 – 84	118	1,369,068	11,602
85 – 89	51	547,968	10,744
90 – 94	11	134,720	12,247
95 & Over	2	11,706	5,853
Total	4,270	\$ 61,080,384	\$ 14,305

Average Age:62.99

