



Cavanaugh Macdonald
CONSULTING, LLC

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Retirement Systems
of Alabama

**Report on the Actuarial Valuation of the
Employees' Retirement System of Alabama
Prepared as of September 30, 2018**





Cavanaugh Macdonald

CONSULTING, LLC

The experience and dedication you deserve

June 7, 2019

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, 2018 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, 2018 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 assumed rate of investment return has been changed from 7.75% to 7.70%. In addition, the valuation reflects the provisions of Act 2017-360, which 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.

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 14.64% of payroll for Tier I members and 14.24% for Tier II members for the fiscal year ending September 30, 2021. It is also recommended that the employer make contributions to the System for State policemen at the rate of 51.75% of payroll for Tier I members and 42.89% for Tier II members for the fiscal year ending September 30, 2021. The contribution rates for local employers for the fiscal year beginning October 1, 2020 will be submitted in a separate report and will include the impact of all assumption changes and employer-elected changes through September 30, 2018.

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

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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, 2018
- 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 'Edward Macdonald'.

Edward A. Macdonald, ASA, FCA, MAAA
President

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 'Larry Langer'.

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



TABLE OF CONTENTS

<u>Section</u>	<u>Item</u>	<u>Page No.</u>
I	Summary of Principal Results	1
II	Membership Data	5
III	Assets	10
IV	Comments on Valuation	12
V	Contributions Payable by Employers	16
VI	Analysis of Financial Experience	17
VII	Accounting Information	21
<u>Schedule</u>		
A	Valuation Balance Sheet and Solvency Test	24
B	Development of the Actuarial Value of Assets	29
C	Summary of Receipts and Disbursements	34
D	Outline of Actuarial Assumptions and Methods	35
E	Actuarial Cost Method	42
F	Board Funding Policy	43
G	Projection of Transitional UAAL and Amortization of Bases	46
H	Summary of Main Plan Provisions as Interpreted for Valuation Purposes	63
I	Schedules of Membership Data	72



**REPORT ON THE ACTUARIAL VALUATION OF
THE EMPLOYEES' RETIREMENT SYSTEM OF ALABAMA
PREPARED AS OF SEPTEMBER 30, 2018**

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, 2018	September 30, 2017
Number of active members	29,004	28,926
Annual compensation	\$ 1,295,229,592	\$ 1,271,674,805
Number of retired members and beneficiaries*	24,187	23,860
Annual retirement allowances*	\$ 537,722,343	\$ 524,315,915
Number of deferred vested members	962	965
Estimated deferred annual allowances	\$ 11,933,733	\$ 11,741,006
Assets:		
Actuarial value	\$ 4,887,402,954	\$ 4,759,601,603
Market value	5,059,401,139	4,910,512,917
Unfunded actuarial accrued liability	\$ 2,836,419,364	\$ 2,821,545,296
Funded Ratio based on Actuarial Value of Assets	63.3%	62.8%
CONTRIBUTIONS FOR FISCAL YEAR ENDING	September 30, 2021	September 30, 2020
<u>Tier I (first hired prior to January 1, 2013)</u>		
Employer contribution rate		
Normal	0.98%	0.89%
Accrued liability	13.29	13.47
Death benefit	0.02	0.02
Administration	0.35	0.35
Subtotal	14.64%	14.73%
Act 2018-355	N/A	0.51
Total	14.64%	15.24%
<u>Tier II (first hired on or after January 1, 2013)</u>		
Employer contribution rate		
Normal	0.58%	0.52%
Accrued liability	13.29	13.47
Death benefit	0.02	0.02
Administration	0.35	0.35
Subtotal	14.24%	14.36%
Act 2018-355	N/A	0.51
Total	14.24%	14.87%
Blended Amortization period	28.4 years	28.9 years

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



SUMMARY OF PRINCIPAL RESULTS FOR STATE POLICEMEN

VALUATION DATE	September 30, 2018	September 30, 2017
Number of active members	660	622
Annual compensation	\$ 41,180,794	\$ 40,366,017
Number of retired members and beneficiaries*	915	895
Annual retirement allowances*	\$ 43,597,755	\$ 42,198,295
Number of deferred vested members	15	15
Estimated deferred annual allowances	\$ 265,726	\$ 252,435
Assets:		
Actuarial value	\$ 341,388,930	\$ 333,960,260
Market value	352,887,956	343,920,208
Unfunded actuarial accrued liability	\$ 279,021,552	\$ 273,147,256
Funded Ratio based on Actuarial Value of Assets	55.0%	55.0%
CONTRIBUTION FOR FISCAL YEAR ENDING	September 30, 2021	September 30, 2020
<u>Tier I (first hired prior to January 1, 2013)**</u>		
Employer contribution rate		
Normal	10.49%	10.52%
Accrued liability	40.89	40.71
Death benefit	0.02	0.02
Administration	<u>0.35</u>	<u>0.35</u>
Subtotal	51.75%	51.60%
Act 2018-355	<u>N/A</u>	<u>0.69</u>
Total	51.75%	52.29%
<u>Tier II (first hired on or after January 1, 2013)***</u>		
Employer contribution rate		
Normal	1.63%	3.79%
Accrued liability	40.89	40.71
Death benefit	0.02	0.02
Administration	<u>0.35</u>	<u>0.35</u>
Subtotal	42.89%	44.87%
Act 2018-355	<u>N/A</u>	<u>0.69</u>
Total	42.89%	45.56%
Blended Amortization Period	28.3 years	28.8 years

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

**Includes members with Tier I FLC benefits.

***Includes members with Tier II FLC benefits.



SUMMARY OF PRINCIPAL RESULTS FOR LOCAL EMPLOYEES

VALUATION DATE	September 30, 2018	September 30, 2017
Number of active members	56,901	56,109
Annual compensation	\$ 2,342,770,725	\$ 2,272,659,180
Number of retired members and beneficiaries*	24,959	24,021
Annual retirement allowances*	\$ 503,595,109	\$ 474,528,020
Number of deferred vested members	1,426	1,398
Estimated deferred annual allowances	\$ 17,088,858	\$ 16,323,315
Assets:		
Actuarial value	\$ 7,011,805,269	\$ 6,597,389,643
Market value	7,244,442,167	6,797,752,477
Unfunded actuarial accrued liability	\$ 2,473,696,828	\$ 2,465,190,126
Funded Ratio based on Actuarial Value of Assets	73.9%	72.8%
CONTRIBUTIONS FOR FISCAL YEAR ENDING	September 30, 2021	September 30, 2020
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.



SUMMARY OF PRINCIPAL RESULTS FOR ALL GROUPS

VALUATION DATE	September 30, 2018	September 30, 2017
Number of active members	86,565	85,657
Annual compensation	\$ 3,679,181,111	\$ 3,584,700,002
Number of retired members and beneficiaries*	50,061	48,776
Annual retirement allowances*	\$ 1,084,915,207	\$ 1,041,042,230
Number of deferred vested members	2,403	2,378
Estimated deferred annual allowances	\$ 29,288,317	\$ 28,316,756
Assets:		
Actuarial value	\$ 12,240,597,153	\$ 11,690,951,506
Market value	12,656,731,262	12,052,185,602
Unfunded actuarial accrued liability	\$ 5,589,137,744	\$ 5,559,882,678
Funded Ratio based on Actuarial Value of Assets	68.7%	67.8%

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

2. Comments on the valuation results as of September 30, 2018 are given in Section IV and further discussion of the contribution levels is set out in Section V. The contribution rates for local employers for fiscal year beginning October 1, 2020 will be submitted in a separate report.
3. 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. Since the previous valuation, the total rate of investment return has changed from 7.75% to 7.70%.
4. The Board funding policy is shown in Schedule F.
5. The valuation reflects the provisions of Act 2017-360, which 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 of other state agencies and local employers. In addition, the System was also amended to extend the optional bonus payable under Act 2017-367 for local employers until October 1, 2019.
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, 2018 on the basis of which the valuation was prepared.

**TABLE 1
THE NUMBER AND ANNUAL COMPENSATION OF
ACTIVE MEMBERS AS OF SEPTEMBER 30, 2018**

GROUP	NUMBER	COMPENSATION
State Employees		
Tier 1	19,391	\$969,130,200
Tier 2	9,308	304,103,000
Post-DROP Members Still in Active Service	<u>305</u>	<u>21,996,392</u>
Total	29,004	1,295,229,592
State Policemen		
Tier 1	610	\$39,187,944
Tier 2	49	1,920,387
Post-DROP Members Still in Active Service	<u>1</u>	<u>72,463</u>
Total	660	41,180,794
Local Employees		
Tier 1	35,889	\$1,704,281,111
Tier 2	20,871	627,793,282
Post-DROP Members Still in Active Service	<u>141</u>	<u>10,696,332</u>
Total	56,901	2,342,770,725
All Groups		
Tier 1	55,890	\$2,712,599,255
Tier 2	30,228	933,816,669
Post-DROP Members Still in Active Service	<u>447</u>	<u>32,765,187</u>
Total	86,565	3,679,181,111

The table reflects the active membership for whom complete valuation data were submitted. The results of the valuation include contribution balances for an additional 10,455 non-vested inactive members who have contributed in the last 5 years, and 20,915 non-vested inactive members who have not contributed for more than 5 years.



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

TABLE 2
SCHEDULE OF ACTIVE MEMBER VALUATION DATA

STATE EMPLOYEES

Valuation Date	Number	Annual Payroll	% Increase in Total Pay*	Annual Average Pay	% Increase in Average Pay**
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%
9/30/2013	28,873	1,195,934,558	1.37%	41,421	3.74%

* 1.61% annual increase for total pay since 2013.

** 1.52% annual increase for average pay since 2013.

STATE POLICE

Valuation Date	Number	Annual Payroll	% Increase in Total Pay*	Annual Average Pay	% Increase in Average Pay**
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%
9/30/2013	745	41,373,139	-6.03%	55,534	-2.00%

* -0.09% annual increase for total pay since 2013.

** 2.36% annual increase for average pay since 2013.

LOCAL EMPLOYEES

Valuation Date	Number	Annual Payroll	% Increase in Total Pay*	Annual Average Pay	% Increase in Average Pay**
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%
9/30/2013	54,417	2,070,203,771	8.90%	38,043	7.76%

* 2.50% annual increase for total pay since 2013.

** 1.59% annual increase for average pay since 2013.



TOTAL EMPLOYEES

Valuation Date	Number	Annual Payroll	% Increase in Total Pay*	Annual Average Pay	% Increase in Average Pay**
9/30/2018 ¹	86,565	\$3,679,181,111	2.64%	\$42,502	1.56%
9/30/2017 ²	85,657	3,584,700,002	0.33%	41,849	-0.66%
9/30/2016 ³	84,814	3,572,891,196	3.23%	42,126	2.92%
9/30/2015 ⁴	84,563	3,461,155,131	2.18%	40,930	2.34%
9/30/2014 ⁵	84,694	3,387,186,858	2.41%	39,993	1.61%
9/30/2013 ⁶	84,035	3,307,511,468	5.85%	39,359	6.02%

* 2.15% annual increase for total pay since 2013.

** 1.55% annual increase for average pay since 2013.

¹There are no employees currently participating in the DROP program.

²There are no employees currently participating in the DROP program.

³There are no employees currently participating in the DROP program.

⁴In 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.

⁵In 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.

⁶In addition, there are 1,514 members with compensation of \$93,084,090 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.



TABLE 3

**THE NUMBER AND ANNUAL RETIREMENT ALLOWANCES
OF RETIRED MEMBERS AND BENEFICIARIES OF
DECEASED MEMBERS ON THE ROLL AS OF SEPTEMBER 30, 2018**

TYPE OF RETIREMENT	GROUP			
	STATE EMPLOYEES ¹	STATE POLICEMEN ²	LOCAL EMPLOYEES ³	TOTAL
Service:				
Number ⁴	20,251	773	20,661	41,685
Annual Allowances ⁴	\$ 482,679,707	\$ 40,030,550	\$ 449,631,740	\$ 972,341,997
Disability:				
Number	2,250	40	1,934	4,224
Annual Allowances	\$ 31,695,013	\$ 1,262,203	\$ 26,749,580	\$ 59,706,796
Beneficiaries:				
Number	1,686	102	2,364	4,152
Annual Allowances	\$ 23,347,623	\$ 2,305,002	\$ 27,213,789	\$ 52,866,414
DROP Participants:				
Number	-	-	-	-
Annual Allowances	\$ -	\$ -	\$ -	\$ -
Total:				
Number	24,187	915	24,959	50,061
Annual Allowances	\$ 537,722,343	\$ 43,597,755	\$ 503,595,109	\$ 1,084,915,207

¹ In addition, there are 962 vested inactive members with estimated deferred annual allowances totaling \$11,933,733.

² In addition, there are 15 vested inactive members with estimated deferred annual allowances totaling \$265,726.

³ In addition, there are 1,426 vested inactive members with estimated deferred annual allowances totaling \$17,088,858.

⁴ 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

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, 2018, the market value of assets credited to this Fund amounted to \$2,922,432,033 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 \$9,627,807,409 on September 30, 2018.

(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, 2018, the market value of assets credited to this Fund amounted to \$106,491,820.

(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, 2018, the market value of assets credited to this fund amounted to \$30,957,995. 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 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, 2018, the market value of assets credited to this fund amounted to \$(15,444,400). These assets are not included in the valuation.

2. As of September 30, 2018 the total market value of assets exclusive of the Pre-Retirement Death Benefit Fund and the Expense Fund amounted to \$12,656,731,262 as shown in the following table.

TABLE 4
MARKET VALUE OF ASSETS BY FUND
AS OF SEPTEMBER 30, 2018

FUND	MARKET VALUE OF ASSETS
Annuity Savings Fund	\$ 2,922,432,033
Pension Accumulation Fund	9,627,807,409
DROP Fund	<u>106,491,820</u>
Total Market Value of Assets	\$ 12,656,731,262

3. The five-year market related actuarial value of assets as of September 30, 2018 was \$12,240,597,153. 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, 2018 AND SEPTEMBER 30, 2017

GROUP	SEPTEMBER 30, 2018 ACTUARIAL VALUE	SEPTEMBER 30, 2017 ACTUARIAL VALUE
State Employees	\$ 4,887,402,954	\$ 4,759,601,603
State Policemen	341,388,930	333,960,260
Local Employees	<u>7,011,805,269</u>	<u>6,597,389,643</u>
Total Assets	\$ 12,240,597,153	\$ 11,690,951,506

4. 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

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, 2018. 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 \$19,967,737,100. Of this amount, \$9,944,503,121 is for the prospective benefits payable on account of present retired members, beneficiaries of deceased members, and DROP participants, \$230,007,239 is for the prospective benefits payable on account of present inactive members and \$9,793,226,740 is for the prospective benefits payable on account of present active members. Against these liabilities the System has total actuarial value of assets of \$12,240,597,153 as of September 30, 2018. The difference of \$7,727,139,947 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, \$1,654,281,977 is the present value of future contributions expected to be made by members to the Annuity Savings Fund, and the balance of \$6,072,857,970 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 0.98% of payroll for Tier I members and 0.58% 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 10.49% of payroll for Tier I members and 1.63% 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 \$483,720,226. When this amount is subtracted from \$6,072,857,970, which is the present value of the total future contributions to be made by the employers, there remains \$5,589,137,744 as the amount of future UAAL contributions.



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 13.29% of payroll for State employees and 40.89% 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, 2018.
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:



TABLE 6

TOTAL UAAL AND UAAL CONTRIBUTION RATE

STATE EMPLOYEES

	<u>UAAL</u>	<u>Amortization Period</u>	<u>Amortization Payment</u>
Open Transitional	\$1,450,765,537	30	\$92,418,952
Closed Transitional 9/30/2012	178,220,190	24	12,743,607
Closed Transitional 9/30/2013	179,316,981	25	12,536,785
Closed Transitional 9/30/2014	180,160,395	26	12,333,349
Closed Transitional 9/30/2015	180,768,512	27	12,133,243
Closed Transitional 9/30/2016	181,158,289	28	11,936,411
Closed Transitional 9/30/2017	181,345,692	29	11,742,803
Closed Transitional 9/30/2018	181,345,692	30	11,552,369
New Incremental 9/30/2013	39,129,445	25	2,735,700
New Incremental 9/30/2014	(42,199,791)	26	(2,888,897)
New Incremental 9/30/2015	57,070,741	27	3,830,607
New Incremental 9/30/2016	112,494,413	28	7,412,189
New Incremental 9/30/2017	(23,532,878)	29	(1,523,841)
New Incremental 9/30/2018	<u>(19,623,854)</u>	30	<u>(1,250,110)</u>
Total	\$2,836,419,364		\$185,713,167
Total Amortization Payment Adjusted for Timing			<u>178,828,278</u>
Total Estimated Payroll*			\$1,345,448,026
UAAL Contribution Rate			13.29%

STATE POLICE

	<u>UAAL</u>	<u>Amortization Period</u>	<u>Amortization Payment</u>
Open Transitional	\$124,406,456	30	\$7,925,136
Closed Transitional 9/30/2012	15,301,145	24	1,094,106
Closed Transitional 9/30/2013	15,387,814	25	1,075,825
Closed Transitional 9/30/2014	15,452,814	26	1,057,863
Closed Transitional 9/30/2015	15,501,312	27	1,040,453
Closed Transitional 9/30/2016	15,534,737	28	1,023,574
Closed Transitional 9/30/2017	15,550,807	29	1,006,972
Closed Transitional 9/30/2018	15,550,807	30	990,642
New Incremental 9/30/2013	173,253	25	12,113
New Incremental 9/30/2014	79,069	26	5,413
New Incremental 9/30/2015	17,634,896	27	1,183,660
New Incremental 9/30/2016	29,158,534	28	1,921,238
New Incremental 9/30/2017	(3,252,422)	29	(210,606)
New Incremental 9/30/2018	<u>2,542,330</u>	30	<u>161,956</u>
Total	\$279,021,552		\$18,288,345
Total Amortization Payment Adjusted for Timing			<u>17,610,347</u>
Total Estimated Payroll*			\$43,063,307
UAAL Contribution Rate			40.89%

* 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.
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 will continue to remain on track.



SECTION V - CONTRIBUTIONS PAYABLE BY EMPLOYERS

1. 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.
2. On the basis of the actuarial valuation prepared as of September 30, 2018 it is recommended that the State make contributions at the following rates for the fiscal year beginning October 1, 2020:

**TABLE 7
RECOMMENDED CONTRIBUTION RATES**

CONTRIBUTION	PERCENTAGE OF MEMBERS' COMPENSATION FOR FISCAL YEAR ENDING SEPTEMBER 20, 2021			
	STATE EMPLOYEES		STATE POLICEMEN	
	<u>Tier I</u>	<u>Tier II</u>	<u>Tier I</u>	<u>Tier II</u>
Employer Normal Cost	0.98%*	0.58%*	10.49%**	1.63%**
Accrued liability	13.29	13.29	40.89	40.89
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	14.64%	14.24%	51.75%	42.89%

*The total Normal Cost rate is 8.60% for Tier I and 6.67% 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 20.44% for Tier I and 9.32% 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%.

3. Contribution rates for Local Employers will be submitted in a separate report. The rates for the fiscal year beginning October 1, 2020 were determined as of September 30, 2018, and reflect any elections made pursuant to Act 2011-676 as of September 30, 2017.



SECTION VI – ANALYSIS OF FINANCIAL EXPERIENCE

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 \$14,874,068; for State policemen, the UAAL increased \$5,874,296. The most significant items contributing to the increase in the UAAL was interest and the changes in the discount rate from 7.75% to 7.70%. This increase was partially offset by gains due to investment earnings in excess of expected. 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.



**RECONCILIATION OF THE UNFUNDED ACTUARIAL ACCRUED LIABILITY
FOR THE YEAR ENDING SEPTEMBER 30, 2018**

(Dollar amounts in thousands)

	STATE EMPLOYEES	STATE POLICEMEN
(1) UAAL at beginning of year	\$ 2,821,545	\$ 273,147
(2) Total normal cost beginning of the year	97,261	8,165
(3) Actual contributions	270,737	22,026
(4) Interest accrual: $[(1) + (2)] - \frac{1}{2} [(3)] \times .07750$	215,716	20,948
(5) Expected UAAL before changes: $(1) + (2) - (3) + (4)$	2,863,785	280,234
(6) Increase from benefit changes	0	0
(7) Changes from revised actuarial assumptions and methods	35,961	2,844
(8) Expected UAAL after changes: $(5) + (6) + (7)$	2,899,746	283,078
(9) Actual UAAL at end of year	2,836,419	279,022
(10) Total (Gain)/Loss: (9) - (8)	\$ (63,328)	\$ (4,056)

**DEVELOPMENT OF (GAIN)/LOSS
FROM INVESTMENT RETURN
FOR THE YEAR ENDING SEPTEMBER 30, 2018**

(Dollar amounts in thousands)

	STATE EMPLOYEES	STATE POLICEMEN
(1) Actuarial Value of Assets (BOY)	\$ 4,759,602	\$ 333,960
(2) Adjustment for unit transfer	0	0
(3) Net Cash Flow	(294,673)	(21,851)
(4) Expected Return: $[(1) + (2) + \frac{1}{2} [(3)]] \times .07750$	357,451	25,035
(5) Expected Actuarial Value of Assets: $[(1) + (2) + (3) + (4)]$	4,822,380	337,144
(6) Actual Actuarial Value of Assets (EOY)	4,887,403	341,389
(7) (Gain)/Loss: (5) - (6)	\$ (65,023)	\$ (4,245)



**(GAINS)/ LOSSES BY SOURCE
FOR THE YEAR ENDING September 30, 2018**
(Dollar amounts in thousands)

Source	STATE EMPLOYEES		STATE POLICEMEN	
	Total	% of Actuarial Accrued Liability	Total	% of Actuarial Accrued Liability
Age and Service Retirements. Generally, earlier retirements cause losses and later retirements cause gains.	\$ (4,114)	(0.05%)	\$ 1,563	0.25%
Withdrawal. More withdrawals than expected usually cause gains and less withdrawals than expected cause losses.	(585)	(0.01%)	(1,276)	(0.21%)
Disability Retirements. More disabilities than expected generally cause losses and less disabilities than expected cause gains.	629	0.01%	50	0.01%
Death-In-Service Benefits. If survivor claims are less than assumed, there is a gain. If claims are more than assumed, there is a loss.	(754)	(0.01%)	(92)	(0.01%)
Salary Increases. If salaries increase more than expected, there is a loss. If salaries increase less than expected, there is a gain.	(6,128)	(0.08%)	(4,511)	(0.73%)
New Members/Rehires. Any past service causes losses.	12,294	0.16%	3,137	0.51%
Retiree Mortality. More deaths than expected cause gains, less than expected cause losses.	(145)	0.00%	717	0.12%
Investment Return. Investment income greater than expected causes gains while investment income less than expected cause losses.	(65,023)	(0.85%)	(4,245)	(0.69%)
Other. Miscellaneous gains and losses resulting from data corrections, timing of financial transactions, unit transfers, changes in valuation software, etc.	499	0.01%	601	0.10%
Total (Gain)/Loss	\$ (63,328)	(0.82%)	\$ (4,056)	(0.65%)



(GAINS)/ LOSSES BY SOURCE

Historical Trends

(Dollar amounts in thousands)

STATE EMPLOYEES

SOURCE	September 30	
	2018	2017
Age and Service Retirements	\$ (4,114)	\$ (5,384)
Withdrawal	(585)	3,433
Disability Retirements	629	429
Death-In-Service Benefits	(754)	626
Salary Increases	(6,128)	(2,484)
New Members/Rehires	12,294	12,475
Retiree Mortality	(145)	(10,442)
Investment Return	(65,023)	(92,749)
Other	499	(13,016)
Total (Gain)/Loss	\$ (63,328)	\$ (107,110)

STATE POLICEMEN

SOURCE	September 30	
	2018	2017
Age and Service Retirements	\$ 1,563	\$ (67)
Withdrawal	(1,276)	78
Disability Retirements	50	(251)
Death-In-Service Benefits	(92)	177
Salary Increases	(4,511)	(1,501)
New Members/Rehires	3,137	803
Retiree Mortality	717	(522)
Investment Return	(4,245)	(6,239)
Other	601	40
Total (Gain)/Loss	\$ (4,056)	\$ (7,481)



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, 2018**

GROUP	NUMBER			
	State Employees	State Police	Local Employees	Total
Retirees and beneficiaries currently receiving benefits	24,187	915	24,959	50,061
Terminated employees entitled to benefits but not yet receiving benefits	3,559	19	9,280	12,858
Non-vested inactive members who have not contributed for more than 5 years	20,915	0	0	20,915
Active Members	<u>29,004</u>	<u>660</u>	<u>56,901</u>	<u>86,565</u>
Total	77,665	1,594	91,140	170,399



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)
<u>TOTAL ALL GROUPS</u>						
9/30/2013	\$ 9,546,459	\$14,536,600	\$4,990,141	65.7 %	\$ 3,400,596	146.7%
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 ¹	11,082,280	16,728,009	5,645,729	66.2	3,572,891	158.0
9/30/2017 ¹	11,690,952	17,250,834	5,559,883	67.8	3,584,700	155.1
9/30/2018 ¹	12,240,597	17,829,735	5,589,138	68.7	3,679,181	151.9
<u>STATE EMPLOYEES</u>						
9/30/2013	\$ 4,248,068	\$ 6,808,165	\$2,560,097	62.4 %	\$1,258,862	203.4 %
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 ¹	4,598,818	7,404,587	2,805,769	62.1	1,265,311	221.7
9/30/2017 ¹	4,759,602	7,581,147	2,821,545	62.8	1,271,675	221.9
9/30/2018 ¹	4,887,403	7,723,822	2,836,419	63.3	1,295,230	219.0
<u>STATE POLICEMEN</u>						
9/30/2013	\$298,624	\$526,095	\$227,471	56.8 %	\$42,908	530.1 %
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 ¹	318,103	590,658	272,555	53.9	41,214	661.3
9/30/2017 ¹	333,960	607,107	273,147	55.0	40,366	676.7
9/30/2018 ¹	341,389	620,411	279,022	55.0	41,181	677.6
<u>LOCAL EMPLOYEES</u>						
9/30/2013	\$4,999,767	\$7,202,340	\$2,202,573	69.4 %	\$2,098,825	104.9%
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 ¹	6,165,359	8,732,588	2,567,405	70.6	2,266,367	113.3
9/30/2017 ¹	6,597,390	9,062,580	2,465,190	72.8	2,272,659	108.5
9/30/2018 ¹	7,011,805	9,485,502	2,473,697	73.9	2,342,771	105.6

¹ Reflects changes in actuarial assumptions and methods.



3. The information presented in the required supplementary schedules was determined as part of the actuarial valuation at September 30, 2018. Additional information as of the latest actuarial valuation follows.

	<u>State Employees</u>	<u>State Policemen</u>	<u>Local Employees</u>
Valuation date	9/30/2018	9/30/2018	9/30/2018
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	28.4 years	28.3 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%



SCHEDULE A

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

STATE EMPLOYEES

	SEPTEMBER 30, 2018
<u>ASSETS</u>	
Actuarial Value of Assets	\$ 4,887,402,954
Present value of future members' contributions to the Annuity Savings Fund	\$ 641,214,338
Present value of future employer contributions to the Pension Accumulation Fund	
Normal contributions	\$ 81,313,646
Unfunded accrued liability contributions	<u>2,836,419,364</u>
Total prospective employer contributions	\$ 2,917,733,010
Total Assets	<u>\$ 8,446,350,302</u>
<u>LIABILITIES</u>	
Present value of benefits payable on account of retired members and beneficiaries of deceased members now drawing retirement allowances	
Service Retirements	\$ 4,307,169,766
Disability Retirements	267,482,270
Beneficiaries of Deceased Members	177,164,595
DROP Participant Accounts	<u>75,794,701</u>
Total	\$ 4,827,611,332
Inactive Members	\$ 85,274,974
Inactive T-section accounts	\$ 16,308,476
Present value of prospective benefits payable on account of present active members:	
Service retirement allowances	\$ 3,082,023,963
Disability retirement allowances	169,931,340
Death Benefits	21,489,146
Termination Benefits	<u>243,711,071</u>
Total	\$ 3,517,155,520
Total Liabilities	<u>\$ 8,446,350,302</u>



SCHEDULE A (Continued)

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

STATE POLICEMEN

	SEPTEMBER 30, 2018
<u>ASSETS</u>	
Actuarial Value of Assets	\$ 341,388,930
Present value of future members' contributions to the Annuity Savings Fund	\$ 27,079,361
Present value of future employer contributions to the Pension Accumulation Fund	
Normal contributions	\$ 28,044,092
Unfunded accrued liability contributions	<u>279,021,552</u>
Total prospective employer contributions	\$ 307,065,644
Total Assets	<u>\$ 675,533,935</u>
<u>LIABILITIES</u>	
Present value of benefits payable on account of retired members and beneficiaries of deceased members now drawing retirement allowances	
Service Retirements	\$ 378,584,346
Disability Retirements	10,431,981
Beneficiaries of Deceased Members	16,555,037
DROP Participant Accounts	<u>350,428</u>
Total	\$ 405,921,792
Inactive Members	\$ 1,585,011
Present value of prospective benefits payable on account of present active members:	
Service retirement allowances	\$ 259,516,051
Disability retirement allowances	4,161,160
Death Benefits	762,346
Termination Benefits	<u>3,587,575</u>
Total	\$ 268,027,132
Total Liabilities	<u>\$ 675,533,935</u>



SCHEDULE A (Continued)

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

LOCAL EMPLOYEES

	SEPTEMBER 30, 2018
<u>ASSETS</u>	
Actuarial Value of Assets	\$ 7,011,805,269
Present value of future members' contributions to the Annuity Savings Fund	\$ 985,988,278
Present value of future employer contributions to the Pension Accumulation Fund	
Normal contributions	\$ 374,362,488
Unfunded accrued liability contributions	<u>2,473,696,828</u>
Total prospective employer contributions	\$ 2,848,059,316
Total Assets	<u>\$ 10,845,852,863</u>
<u>LIABILITIES</u>	
Present value of benefits payable on account of retired members and beneficiaries of deceased members now drawing retirement allowances	
Service Retirements	\$ 4,225,305,475
Disability Retirements	232,566,869
Beneficiaries of Deceased Members	222,750,962
DROP Participant Accounts	<u>30,346,691</u>
Total	\$ 4,710,969,997
Inactive Members	\$ 126,838,778
Present value of prospective benefits payable on account of present active members:	
Service retirement allowances	\$ 5,278,472,966
Disability retirement allowances	262,770,417
Death Benefits	35,525,697
Termination Benefits	<u>431,275,008</u>
Total	\$ 6,008,044,088
Total Liabilities	<u>\$ 10,845,852,863</u>



SCHEDULE A (Continued)

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

TOTAL - ALL GROUPS

	SEPTEMBER 30, 2018
<u>ASSETS</u>	
Actuarial Value of Assets	\$ 12,240,597,153
Present value of future members' contributions to the Annuity Savings Fund	\$ 1,654,281,977
Present value of future employer contributions to the Pension Accumulation Fund	
Normal contributions	\$ 483,720,226
Unfunded accrued liability contributions	<u>5,589,137,744</u>
Total prospective employer contributions	\$ 6,072,857,970
Total Assets	<u>\$ 19,967,737,100</u>
<u>LIABILITIES</u>	
Present value of benefits payable on account of retired members, beneficiaries of deceased members now drawing retirement allowances, and DROP participants	
Service Retirements	\$ 8,911,059,587
Disability Retirements	510,481,120
Beneficiaries of Deceased Members	416,470,594
DROP Participant Accounts	<u>106,491,820</u>
Total	\$ 9,944,503,121
Inactive Members	\$ 213,698,763
Inactive T-section accounts	\$ 16,308,476
Present value of prospective benefits payable on account of present active members:	
Service retirement allowances	\$ 8,620,012,980
Disability retirement allowances	436,862,917
Death Benefits	57,777,189
Termination Benefits	<u>678,573,654</u>
Total	\$ 9,793,226,740
Total Liabilities	<u>\$ 19,967,737,100</u>



SCHEDULE A (continued)

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)
9/30/2018 ¹	\$2,922,432	\$9,944,503	\$4,962,800	\$12,240,597	100%	94%	0%
9/30/2017 ¹	2,817,368	9,567,278	4,866,189	11,690,952	100	93	0
9/30/2016 ¹	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
9/30/2013	2,363,600	8,085,291	4,087,709	9,546,459	100	89	0

¹ Reflects changes in actuarial assumptions and methods.



SCHEDULE B

**DEVELOPMENT OF THE ACTUARIAL VALUE OF ASSETS
AS OF SEPTEMBER 30, 2018**

STATE EMPLOYEES

(1)	Actuarial Value of Assets on September 30, 2017	
a.	Actuarial Value on September 30, 2017	\$ 4,759,601,603
b.	Adjustment	<u>0</u>
c.	Adjusted Actuarial Value on September 30, 2017	\$ 4,759,601,603
(2)	Market Value of Assets on September 30, 2018	\$ 5,059,401,139
(3)	Market Value of Assets on September 30, 2017	
a.	Market Value on September 30, 2017	\$ 4,910,512,917
b.	Adjustment	<u>0</u>
c.	Adjusted Market Value on September 30, 2017	\$ 4,910,512,917
(4)	Cash Flow	
a.	Contributions	\$ 270,736,525
b.	Benefit Payments and DROP Disbursements	(550,723,614)
c.	Refunds to Members	(13,934,260)
d.	Transfers to Expense Fund - Interest Forfeitures	(3,162,436)
e.	Transfers to/from Police/Locals	2,410,589
f.	Investment Expenses	<u>(10,491,000)</u>
g.	Net	\$ (305,164,196)
(5)	Investment Income	
a.	Market total: (2) – (3)c – (4)g	\$ 454,052,418
b.	Assumed Rate	7.75%
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	\$ 379,637,165
d.	Amount for Phased-in Recognition (5)a – (5)c	\$ 74,415,253
(6)	Phased-In Recognition of Investment Income	
a.	Current Year: 0.20*(5)d	\$ 14,883,051
b.	First Prior Year	45,187,459
c.	Second Prior Year	19,570,629
d.	Third Prior Year	(62,123,682)
e.	Fourth Prior Year	<u>35,810,925</u>
f.	Total Recognized Investment Gain	\$ 53,328,382
(7)	Actuarial Value of Assets on September 30, 2018: (1)c + (4)g + (5)c + (6)f	\$ 4,887,402,954



SCHEDULE B (Continued)

**DEVELOPMENT OF THE ACTUARIAL VALUE OF ASSETS
AS OF SEPTEMBER 30, 2018**

STATE POLICEMEN

(1)	Actuarial Value of Assets on September 30, 2017	
	a. Actuarial Value on September 30, 2017	\$ 333,960,260
	b. Adjustment	<u>0</u>
	c. Adjusted Actuarial Value on September 30, 2017	\$ 333,960,260
(2)	Market Value of Assets on September 30, 2018	\$ 352,887,956
(3)	Market Value of Assets on September 30, 2017	
	a. Market Value on September 30, 2017	\$ 343,920,208
	b. Adjustment	<u>0</u>
	c. Adjusted Market Value on September 30, 2017	\$ 343,920,208
(4)	Cash Flow	
	a. Contributions	\$ 22,026,126
	b. Benefit Payments and DROP Disbursements	(43,716,480)
	c. Refunds to Members	(287,353)
	d. Transfers to/from State/Local	<u>127,109</u>
	e. Net	\$ (21,850,598)
(5)	Investment Income	
	a. Market total: (2) – (3)c – (4)e	\$ 30,818,346
	b. Assumed Rate	7.75%
	c. Amount of Immediate Recognition [(3)c x (5)b] + [(4)e * (5)b * 0.5]	\$ 25,807,105
	d. Amount for Phased-in Recognition (5)a – (5)c	\$ 5,011,241
(6)	Phased-In Recognition of Investment Income	
	a. Current Year: 0.20*(5)d	\$ 1,002,248
	b. First Prior Year	3,071,130
	c. Second Prior Year	1,308,785
	d. Third Prior Year	(4,336,923)
	e. Fourth Prior Year	<u>2,426,923</u>
	f. Total Recognized Investment Gain	\$ 3,472,163
(7)	Actuarial Value of Assets on September 30, 2018: (1)c + (4)e + (5)c + (6)f	\$ 341,388,930



SCHEDULE B (Continued)

**DEVELOPMENT OF THE ACTUARIAL VALUE OF ASSETS
AS OF SEPTEMBER 30, 2018**

LOCAL EMPLOYEES

(1)	Actuarial Value of Assets on September 30, 2017	
	a. Actuarial Value on September 30, 2017	\$ 6,597,389,643
	b. Adjustment	0
	c. Adjusted Actuarial Value on September 30, 2017	\$ 6,597,389,643
(2)	Market Value of Assets on September 30, 2018	\$ 7,244,442,167
(3)	Market Value of Assets on September 30, 2017	
	a. Market Value on September 30, 2017	\$ 6,797,752,477
	b. Adjustment	0
	c. Adjusted Market Value on September 30, 2017	\$ 6,797,752,477
(4)	Cash Flow	
	a. Contributions	\$ 361,812,728
	b. Benefit Payments and DROP Disbursements	(502,564,025)
	c. Refunds to Members and Employers	(31,018,624)
	d. Transfers to/from State/Police	(2,537,698)
	e. Net	\$ (174,307,619)
(5)	Investment Income	
	a. Market total: (2) – (3)c – (4)e	\$ 620,997,309
	b. Assumed Rate	7.75%
	c. Amount of Immediate Recognition [(3)c x (5)b] + [(4)e * (5)b * 0.5]	\$ 520,071,397
	d. Adjustment for Employer Lump Sums	\$ (51,408)
	e. Adjusted Amount for Immediate Recognition (5)c + (5)d	\$ 520,019,989
	f. Amount for Phased-In Recognition (5)a – (5)e	\$ 100,977,320
(6)	Phased-In Recognition of Investment Income	
	a. Current Year: 0.20*(5)f	\$ 20,195,463
	b. First Prior Year	59,966,585
	c. Second Prior Year	24,717,514
	d. Third Prior Year	(77,600,198)
	e. Fourth Prior Year	41,423,892
	f. Total Recognized Investment Gain	\$ 68,703,256
(7)	Actuarial Value of Assets on September 30, 2018: (1)c + (4)e + (5)e + (6)f	\$ 7,011,805,269



SCHEDULE B (Continued)

SEPTEMBER 30, 2018
DEVELOPMENT OF THE ACTUARIAL VALUE OF ASSETS

TOTAL - ALL GROUPS

(1)	Actuarial Value of Assets on September 30, 2017	\$ 11,690,951,506
(2)	Market Value of Assets on September 30, 2018	\$ 12,656,731,262
(3)	Market Value of Assets on September 30, 2017	\$ 12,052,185,602
(4)	Cash Flow	
	a. Contributions	\$ 654,575,379
	b. Benefit Payments and DROP Disbursements	(1,097,004,119)
	c. Refunds to Members and Employers	(45,240,237)
	d. Transfer to Expense Fund – Interest Forfeitures	(3,162,436)
	e. Investment Expenses	(10,491,000)
	f. Net	\$ (501,322,413)
(5)	Investment Income	
	a. Market total: (2) – (3) – (4)f	\$ 1,105,868,073
	b. Assumed Rate	7.75%
	c. Amount for Immediate Recognition [(3) x (5)b] + [(4)a + (4)b + (4)c + (4)d] * (5)b * 0.5 - (4)e	\$ 925,515,667
	d. Adjusted for Employer Lump Sums	\$ (51,408)
	e. Adjusted Amount for Immediate Recognition (5)c + (5)d	\$ 925,464,259
	f. Amount for Phased-In Recognition (5)a – (5)e	\$ 180,403,814
(6)	Phased-In Recognition of Investment Income	
	a. Current Year: 0.20*(5)f	\$ 36,080,762
	b. First Prior Year	108,225,174
	c. Second Prior Year	45,596,928
	d. Third Prior Year	(144,060,803)
	e. Fourth Prior Year	79,661,740
	f. Total Recognized Investment Gain	\$ 125,503,801
(7)	Actuarial Value of Assets on September 30, 2018: (1) + (4)f + (5)e + (6)f	\$ 12,240,597,153



SCHEDULE B (Continued)

SEPTEMBER 30, 2018
DEVELOPMENT OF THE ACTUARIAL VALUE OF ASSETS

<u>Date</u>	<u>Investment Gain/(Loss)</u>	<u>Amount Recognized</u>	<u>Remaining Balance as of 9/30/2018</u>
9/30/2014	\$ 398,308,701	\$ 79,661,740	\$ 0
9/30/2015	(720,304,016)	(144,060,803)	(144,060,803)
9/30/2016	227,984,639	45,596,928	91,193,855
9/30/2017	541,125,873	108,225,174	324,675,522
9/30/2018	180,403,814	36,080,762	144,323,052



SCHEDULE C

**SUMMARY OF RECEIPTS AND DISBURSEMENTS
FOR THE YEAR ENDING SEPTEMBER 30, 2018**

Receipts for the Period

Contributions:		
Members	\$ 241,741,068	
Employers	<u>412,834,311</u>	
Total		\$ 654,575,379
Investment Income*		<u>1,101,807,742</u>
TOTAL		\$ 1,756,383,121

Disbursements for the Period

Benefit Payments		\$ (1,068,275,027)
Refunds to Members		(44,890,237)
DROP Distributions		(28,729,092)
Miscellaneous:		
Transfers to Plant Fund	\$ 0	
Transfers to Expense Fund-Interest Forfeitures	(3,162,436)	
Transfers to Expense Fund-Investment Expenses	(3,440,086)	
Transfers to Pre-retirement Death Benefit Fund	(2,990,583)	
Unit Withdrawal	<u>(350,000)</u>	
TOTAL		<u>(9,943,105)</u>
TOTAL		\$(1,151,837,461)

Excess of Receipts Over Disbursements \$ 604,545,660

Reconciliation of Asset Balances

Market Value of Assets as of September 30, 2017	\$ 12,052,185,602
Excess of Receipts Over Disbursements	<u>604,545,660</u>
Market Value of Assets as of September 30, 2018	<u>\$ 12,656,731,262</u>

*Net of \$7,095,000 in investment expenses.



SCHEDULE D

OUTLINE OF ACTUARIAL ASSUMPTIONS AND 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.



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

Annual Rate of Withdrawal*
Years of Service

Age	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)

Annual Rate of Withdrawal*
Years of Service

Age	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%.



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

REGULAR MEMBERS

Age	Annual Rate ¹			
	TIER I ²		TIER II	
	<u>1ST Eligible</u>	<u>Subsequent</u>	<u>1ST Eligible</u>	<u>Subsequent</u>
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

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

²25% 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 ¹			
	TIER I ²		TIER II	
	<u>1ST Eligible</u>	<u>Subsequent</u>	<u>1ST Eligible</u>	<u>Subsequent</u>
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

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

²40% 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.



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 I			Tier II	
	Male	Female	Service < 25		Service >=25	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 I			Tier II	
	Male	Female	Service < 25		Service >=25	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					



STATE POLICEMEN

MEMBERS HIRED BEFORE JANUARY 1, 2015

Annual Rate of								
<u>Death</u>			<u>Disability</u>	<u>Withdrawal Service</u>		<u>Retirement</u>		
<u>Age</u>	<u>Male</u>	<u>Female</u>		<u>0-4</u>	<u>5+</u>	<u>10-19</u>	<u>20-24</u>	<u>25+</u>
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

Annual Rate of Withdrawal				
<u>Age</u>	<u>Years of Service</u>			
	<u>0-4</u>	<u>5-9</u>	<u>10-20</u>	<u>20+</u>
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.



RATES OF SERVICE RETIREMENT

Age	Annual Rate			
	TIER I ¹		TIER II	
	1 ST Eligible	Subsequent	1 ST 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

¹ 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	Death		Annual Rate of				
			Disability		Tier II		
			Tier I				
	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					

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:



<u>Age</u>	<u>Service Retirement</u>		<u>Disability Retirement</u>	
	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>
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.

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

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

FUNDING POLICY OF THE ERS BOARD OF CONTROL

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 30th each year with due recognition that a single year's results may not be indicative of long-term trends:

- **Funded ratio** – The funded ratio, defined as the actuarial value of assets divided by the actuarial accrued liability, should increase over time, before adjustments for changes in benefits, actuarial methods, and/or actuarial 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 1/15th 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 1/15th 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.
- 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.

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. 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.

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

PROJECTED UAAL AND TOTAL UAAL PAYMENT AS OF SEPTEMBER 30, 2018

STATE EMPLOYEES

Valuation Date	Projected UAAL	Annual Amortization Payment*
9/30/2018	\$2,836,419,364	\$185,713,167
9/30/2019	2,869,110,488	189,740,837
9/30/2020	2,900,291,158	194,064,341
9/30/2021	2,929,549,236	198,697,482
9/30/2022	2,956,427,046	203,654,575
9/30/2023	2,980,417,354	208,950,473
9/30/2024	3,000,959,016	214,600,569
9/30/2025	3,017,432,292	220,620,823
9/30/2026	3,029,153,756	227,027,787
9/30/2027	3,035,370,808	233,838,620
9/30/2028	3,035,255,740	240,853,780
9/30/2029	3,028,116,652	248,079,394
9/30/2030	3,013,202,240	255,521,774
9/30/2031	2,989,697,038	263,187,428
9/30/2032	2,956,716,282	271,083,050
9/30/2033	2,913,300,386	279,215,540
9/30/2034	2,858,408,975	287,592,007
9/30/2035	2,790,914,459	296,219,767
9/30/2036	2,709,595,106	305,106,360
9/30/2037	2,613,127,569	314,259,556
9/30/2038	2,500,078,836	323,687,339
9/30/2039	2,368,897,567	333,397,960
9/30/2040	2,217,904,719	343,399,895
9/30/2041	2,045,283,488	353,701,896
9/30/2042	1,849,068,420	338,407,822
9/30/2043	1,653,038,867	316,582,862
9/30/2044	1,463,739,998	305,712,523
9/30/2045	1,270,735,454	279,423,575
9/30/2046	1,089,158,510	243,538,084
9/30/2047	929,485,631	226,762,573
9/30/2048	774,293,452	208,559,164
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, 2018.



SCHEDULE G (Continued)

PROJECTED UAAL AND TOTAL UAAL PAYMENT AS OF SEPTEMBER 30, 2018

STATE POLICE

Valuation Date	Projected UAAL	Annual Amortization Payment*
9/30/2018	\$279,021,552	\$18,288,345
9/30/2019	282,217,862	18,704,617
9/30/2020	285,244,020	19,148,385
9/30/2021	288,059,426	19,620,895
9/30/2022	290,619,106	20,123,441
9/30/2023	292,873,336	20,657,364
9/30/2024	294,767,219	21,224,054
9/30/2025	296,240,240	21,824,951
9/30/2026	297,225,788	22,461,550
9/30/2027	297,650,624	23,135,396
9/30/2028	297,434,325	23,829,458
9/30/2029	296,507,311	24,544,341
9/30/2030	294,794,032	25,280,672
9/30/2031	292,212,501	26,039,092
9/30/2032	288,673,772	26,820,266
9/30/2033	284,081,387	27,624,872
9/30/2034	278,330,782	28,453,619
9/30/2035	271,308,633	29,307,228
9/30/2036	262,892,170	30,186,444
9/30/2037	252,948,422	31,092,038
9/30/2038	241,333,412	32,024,799
9/30/2039	227,891,286	32,985,544
9/30/2040	212,453,372	33,975,110
9/30/2041	194,837,172	34,994,363
9/30/2042	174,845,271	33,820,101
9/30/2043	154,488,256	32,556,804
9/30/2044	133,827,048	31,240,457
9/30/2045	112,891,274	27,237,272
9/30/2046	94,346,629	21,316,872
9/30/2047	80,294,448	20,079,690
9/30/2048	66,397,431	17,884,424
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, 2018.



SCHEDULE G (Continued)

**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	1,470,055,531	8	183,756,941	1,286,298,589	99,044,991	81,941,820	1,303,401,761
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 (Continued)

**PROJECTION OF TRANSITIONAL UAAL
AND AMORTIZATION OF BASES**

PROJECTION OF THE OPEN TRANSITIONAL UAAL

STATE POLICE

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	126,060,617	8	15,757,577	110,303,040	8,493,334	7,026,698	111,769,676
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 (Continued)

**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
9/30/2019	179,199,538	13,125,916	9/30/2019	15,385,227	1,126,929
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 (Continued)

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

STATE EMPLOYEES

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	\$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	180,587,604	12,975,319	39,406,713	2,831,394
9/30/2020	181,607,824	13,364,579	39,629,339	2,916,336
9/30/2021	182,317,851	13,765,516	39,784,277	3,003,826
9/30/2022	182,681,969	14,178,481	39,863,732	3,093,941
9/30/2023	182,661,340	14,603,836	39,859,230	3,186,759
9/30/2024	182,213,758	15,041,951	39,761,562	3,282,362
9/30/2025	181,293,373	15,493,209	39,560,721	3,380,833
9/30/2026	179,850,401	15,958,006	39,245,844	3,482,257
9/30/2027	177,830,801	16,436,746	38,805,140	3,586,725
9/30/2028	175,175,942	16,929,848	38,225,813	3,694,327
9/30/2029	171,822,230	17,437,744	37,493,986	3,805,157
9/30/2030	167,700,708	17,960,876	36,594,613	3,919,311
9/30/2031	162,736,637	18,499,702	35,511,385	4,036,891
9/30/2032	156,849,025	19,054,693	34,226,626	4,157,998
9/30/2033	149,950,131	19,626,334	32,721,192	4,282,737
9/30/2034	141,944,932	20,215,124	30,974,347	4,411,220
9/30/2035	132,730,540	20,821,578	28,963,639	4,543,556
9/30/2036	122,195,579	21,446,225	26,664,765	4,679,863
9/30/2037	110,219,512	22,089,612	24,051,421	4,820,259
9/30/2038	96,671,912	22,752,301	21,095,148	4,964,867
9/30/2039	81,411,684	23,434,870	17,765,154	5,113,812
9/30/2040	64,286,220	24,137,915	14,028,142	5,267,227
9/30/2041	45,130,487	24,862,053	9,848,096	5,425,244
9/30/2042	23,766,046	25,607,915	5,186,079	5,588,001
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 (Continued)

**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	15,496,850	1,108,100	174,480	12,476
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 (Continued)

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

STATE EMPLOYEES

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	\$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	181,699,397	12,766,686	(42,560,278)	(2,990,399)
9/30/2020	183,014,414	13,149,687	(42,868,301)	(3,080,111)
9/30/2021	184,048,344	13,544,177	(43,110,483)	(3,172,514)
9/30/2022	184,767,914	13,950,503	(43,279,031)	(3,267,690)
9/30/2023	185,136,924	14,369,018	(43,365,466)	(3,365,721)
9/30/2024	185,116,017	14,800,088	(43,360,569)	(3,466,692)
9/30/2025	184,662,421	15,244,091	(43,254,321)	(3,570,693)
9/30/2026	183,729,667	15,701,413	(43,035,838)	(3,677,814)
9/30/2027	182,267,304	16,172,456	(42,693,301)	(3,788,148)
9/30/2028	180,220,564	16,657,630	(42,213,884)	(3,901,793)
9/30/2029	177,530,027	17,157,358	(41,583,667)	(4,018,846)
9/30/2030	174,131,247	17,672,079	(40,787,555)	(4,139,412)
9/30/2031	169,954,339	18,202,242	(39,809,179)	(4,263,594)
9/30/2032	164,923,558	18,748,309	(38,630,796)	(4,391,502)
9/30/2033	158,956,825	19,310,758	(37,233,181)	(4,523,247)
9/30/2034	151,965,221	19,890,081	(35,595,506)	(4,658,944)
9/30/2035	143,852,445	20,486,783	(33,695,213)	(4,798,713)
9/30/2036	134,514,226	21,101,387	(31,507,879)	(4,942,674)
9/30/2037	123,837,692	21,734,428	(29,007,066)	(5,090,954)
9/30/2038	111,700,685	22,386,461	(26,164,160)	(5,243,683)
9/30/2039	97,971,027	23,058,055	(22,948,199)	(5,400,993)
9/30/2040	82,505,727	23,749,797	(19,325,691)	(5,563,023)
9/30/2041	65,150,123	24,462,290	(15,260,409)	(5,729,913)
9/30/2042	45,736,968	25,196,159	(10,713,178)	(5,901,811)
9/30/2043	24,085,424	25,952,044	(5,641,638)	(6,078,865)
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 (Continued)

**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	15,584,818	1,089,599	79,745	5,575
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 (Continued)

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

STATE EMPLOYEES

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	\$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	182,554,444	12,561,399	57,634,581	3,965,781
9/30/2020	184,141,015	12,938,241	58,135,480	4,084,754
9/30/2021	185,473,703	13,326,388	58,556,225	4,207,297
9/30/2022	186,521,527	13,726,180	58,887,036	4,333,516
9/30/2023	187,250,765	14,137,965	59,117,265	4,463,522
9/30/2024	187,624,734	14,562,104	59,235,331	4,597,427
9/30/2025	187,603,547	14,998,967	59,228,642	4,735,350
9/30/2026	187,143,855	15,448,936	59,083,512	4,877,410
9/30/2027	186,198,568	15,912,404	58,785,074	5,023,733
9/30/2028	184,716,553	16,389,776	58,317,185	5,174,445
9/30/2029	182,642,309	16,881,469	57,662,322	5,329,678
9/30/2030	179,915,619	17,387,914	56,801,473	5,489,568
9/30/2031	176,471,166	17,909,551	55,714,020	5,654,256
9/30/2032	172,238,130	18,446,837	54,377,600	5,823,883
9/30/2033	167,139,748	19,000,243	52,767,981	5,998,600
9/30/2034	161,092,836	19,570,250	50,858,900	6,178,558
9/30/2035	154,007,281	20,157,357	48,621,906	6,363,914
9/30/2036	145,785,488	20,762,078	46,026,190	6,554,832
9/30/2037	136,321,785	21,384,940	43,038,388	6,751,477
9/30/2038	125,501,784	22,026,489	39,622,386	6,954,021
9/30/2039	113,201,683	22,687,283	35,739,100	7,162,642
9/30/2040	99,287,530	23,367,902	31,346,238	7,377,521
9/30/2041	83,614,412	24,068,939	26,398,051	7,598,846
9/30/2042	66,025,590	24,791,007	20,845,053	7,826,812
9/30/2043	46,351,566	25,534,737	14,633,733	8,061,616
9/30/2044	24,409,075	26,300,779	7,706,231	8,303,464
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 (Continued)

**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	15,654,460	1,077,169	17,809,123	1,225,429
9/30/2020	15,790,512	1,109,484	17,963,901	1,262,192
9/30/2021	15,904,793	1,142,768	18,093,912	1,300,058
9/30/2022	15,994,647	1,177,051	18,196,132	1,339,059
9/30/2023	16,057,181	1,212,363	18,267,273	1,379,231
9/30/2024	16,089,249	1,248,734	18,303,756	1,420,608
9/30/2025	16,087,432	1,286,196	18,301,689	1,463,226
9/30/2026	16,048,013	1,324,782	18,256,844	1,507,123
9/30/2027	15,966,952	1,364,525	18,164,626	1,552,337
9/30/2028	15,839,866	1,405,461	18,020,048	1,598,907
9/30/2029	15,661,995	1,447,625	17,817,695	1,646,874
9/30/2030	15,428,175	1,491,053	17,551,692	1,696,280
9/30/2031	15,132,805	1,535,785	17,215,668	1,747,169
9/30/2032	14,769,813	1,581,858	16,802,714	1,799,584
9/30/2033	14,332,615	1,629,314	16,305,341	1,853,571
9/30/2034	13,814,078	1,678,194	15,715,433	1,909,178
9/30/2035	13,206,476	1,728,539	15,024,201	1,966,454
9/30/2036	12,501,438	1,780,396	14,222,123	2,025,447
9/30/2037	11,689,904	1,833,807	13,298,890	2,086,211
9/30/2038	10,762,064	1,888,822	12,243,343	2,148,797
9/30/2039	9,707,303	1,945,486	11,043,405	2,213,261
9/30/2040	8,514,132	2,003,851	9,686,008	2,279,659
9/30/2041	7,170,127	2,063,966	8,157,015	2,348,049
9/30/2042	5,661,845	2,125,885	6,441,135	2,418,490
9/30/2043	3,974,753	2,189,662	4,521,833	2,491,045
9/30/2044	2,093,134	2,255,352	2,381,231	2,565,776
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 (Continued)

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

STATE EMPLOYEES

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	\$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	183,171,067	12,294,503	113,744,294	7,634,555
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 (Continued)

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

STATE POLICE

<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	\$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	15,707,337	1,059,847	29,482,503	1,989,322
9/30/2020	15,864,809	1,091,642	29,778,075	2,049,001
9/30/2021	16,002,689	1,124,392	30,036,875	2,110,471
9/30/2022	16,118,505	1,158,124	30,254,261	2,173,785
9/30/2023	16,209,566	1,192,867	30,425,181	2,238,999
9/30/2024	16,272,940	1,228,653	30,544,134	2,306,169
9/30/2025	16,305,440	1,265,513	30,605,135	2,375,354
9/30/2026	16,303,599	1,303,478	30,601,679	2,446,615
9/30/2027	16,263,649	1,342,583	30,526,695	2,520,013
9/30/2028	16,181,500	1,382,860	30,372,501	2,595,613
9/30/2029	16,052,706	1,424,346	30,130,756	2,673,482
9/30/2030	15,872,445	1,467,076	29,792,408	2,753,686
9/30/2031	15,635,483	1,511,088	29,347,633	2,836,297
9/30/2032	15,336,144	1,556,421	28,785,778	2,921,386
9/30/2033	14,968,274	1,603,114	28,095,290	3,009,027
9/30/2034	14,525,202	1,651,207	27,263,647	3,099,298
9/30/2035	13,999,698	1,700,743	26,277,282	3,192,277
9/30/2036	13,383,931	1,751,766	25,121,494	3,288,045
9/30/2037	12,669,420	1,804,319	23,780,365	3,386,687
9/30/2038	11,846,981	1,858,448	22,236,656	3,488,287
9/30/2039	10,906,674	1,914,202	20,471,710	3,592,936
9/30/2040	9,837,739	1,971,628	18,465,331	3,700,724
9/30/2041	8,628,536	2,030,777	16,195,670	3,811,746
9/30/2042	7,266,471	2,091,700	13,639,089	3,926,098
9/30/2043	5,737,923	2,154,451	10,770,020	4,043,881
9/30/2044	4,028,161	2,219,084	7,560,815	4,165,198
9/30/2045	2,121,259	2,285,657	3,981,581	4,290,153
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 (Continued)

**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	183,566,508	12,095,087	(23,821,068)	(1,569,556)
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 (Continued)

**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	15,741,247	1,042,804	(3,292,253)	(218,100)
9/30/2020	15,918,390	1,074,088	(3,329,302)	(224,643)
9/30/2021	16,077,977	1,106,310	(3,362,679)	(231,383)
9/30/2022	16,217,710	1,139,500	(3,391,904)	(238,324)
9/30/2023	16,335,083	1,173,685	(3,416,452)	(245,474)
9/30/2024	16,427,367	1,208,895	(3,435,753)	(252,838)
9/30/2025	16,491,593	1,245,162	(3,449,186)	(260,423)
9/30/2026	16,524,529	1,282,517	(3,456,075)	(268,236)
9/30/2027	16,522,663	1,320,993	(3,455,684)	(276,283)
9/30/2028	16,482,177	1,360,622	(3,447,217)	(284,572)
9/30/2029	16,398,924	1,401,441	(3,429,805)	(293,109)
9/30/2030	16,268,399	1,443,484	(3,402,506)	(301,902)
9/30/2031	16,085,716	1,486,789	(3,364,298)	(310,959)
9/30/2032	15,845,570	1,531,392	(3,314,072)	(320,288)
9/30/2033	15,542,210	1,577,334	(3,250,624)	(329,897)
9/30/2034	15,169,397	1,624,654	(3,172,651)	(339,793)
9/30/2035	14,720,371	1,673,394	(3,078,738)	(349,987)
9/30/2036	14,187,806	1,723,596	(2,967,353)	(360,487)
9/30/2037	13,563,765	1,775,303	(2,836,836)	(371,301)
9/30/2038	12,839,653	1,828,563	(2,685,390)	(382,440)
9/30/2039	12,006,164	1,883,419	(2,511,067)	(393,914)
9/30/2040	11,053,222	1,939,922	(2,311,761)	(405,731)
9/30/2041	9,969,925	1,998,120	(2,085,191)	(417,903)
9/30/2042	8,744,474	2,058,063	(1,828,891)	(430,440)
9/30/2043	7,364,108	2,119,805	(1,540,190)	(443,353)
9/30/2044	5,815,021	2,183,399	(1,216,201)	(456,654)
9/30/2045	4,082,286	2,248,901	(853,803)	(470,354)
9/30/2046	2,149,762	2,316,368	(449,619)	(484,464)
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 (Continued)

**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	183,756,941	11,898,940	(19,884,783)	(1,287,613)
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 (Continued)

**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	15,757,577	1,020,361	2,576,131	166,814
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 H

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. There is a new tier (Tier II) of benefits for all members initially joining the System on and after January 1, 2013. Act 2013-67 provides that State policemen hired on or after January 1, 2015 will no longer be eligible for benefits under the code section covering State policemen, but instead will be covered under the provisions pertaining to State employees who are law enforcement officers. 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.

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 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 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.



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 60 (age 62 for Tier II members).

Benefits Payable upon
Death in Active Service

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).*

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 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.

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 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 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 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.

Member Contributions

Tier I

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.

Members hired after January 1, 2015: Each member contributes 8.5% of salary.

Tier II

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.

Members hired after January 1, 2015: Each member contributes 7% of salary.



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
AS OF SEPTEMBER 30, 2018**

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	522	356	6								884	\$22,718,561
25 to 29	709	1,592	239	13							2,553	81,216,930
30 to 34	445	1,352	863	318	5						2,983	110,830,043
35 to 39	363	956	708	1,169	292	1					3,489	143,706,014
40 to 44	290	750	515	944	887	174	1				3,561	160,522,900
45 to 49	249	732	479	780	794	643	202	1			3,880	183,402,478
50 to 54	203	593	427	620	634	569	671	169	3		3,889	193,911,660
55 to 59	149	515	409	617	551	470	590	442	91	4	3,838	192,738,718
60 to 64	71	360	288	432	391	314	360	231	140	30	2,617	134,167,492
65 to 69	26	157	191	157	153	88	116	35	6	7	936	49,373,663
70 & up	10	50	83	71	62	33	41	17	5	2	374	22,641,133
Total	3,037	7,413	4,208	5,121	3,769	2,292	1,981	895	245	43	29,004	\$1,295,229,592

Average Age:45.47 Average Service: 11.28



SCHEDULE I (Continued)
SCHEDULE OF MEMBERSHIP DATA
AS OF SEPTEMBER 30, 2018
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	1	4									5	\$161,796
25 to 29	9	8	12								29	974,270
30 to 34	5	8	18	21							52	2,565,636
35 to 39	2	5	20	63	28						118	6,505,152
40 to 44	2	4	10	44	42	36					138	8,840,879
45 to 49	2		7	31	34	80	11				165	11,209,355
50 to 54	2	2	1	16	20	43	14	5			103	7,400,014
55 to 59	2		4	11	4	8	4	2	2		37	2,543,096
60 & up		2	3	3	2	2	1				11	980,596
Total	25	33	75	189	130	169	30	7	2		660	\$41,180,794

Average Age:44.55 Average Service:16.36



SCHEDULE I (Continued)
SCHEDULE OF MEMBERSHIP DATA
AS OF SEPTEMBER 30, 2018
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	1,835	1,585	26								3,446	\$82,135,410
25 to 29	1,446	3,225	1,033	37							5,741	180,319,413
30 to 34	1,272	2,549	1,894	1,040	16						6,771	244,103,453
35 to 39	717	1,669	1,434	1,725	693	26					6,263	256,643,210
40 to 44	623	1,435	1,092	1,439	1,337	586	11				6,523	289,810,758
45 to 49	544	1,431	1,179	1,370	1,354	1,420	391	8			7,697	359,423,709
50 to 54	474	1,178	1,046	1,171	1,083	1,188	690	232	8		7,070	328,754,434
55 to 59	386	958	919	1,080	1,091	951	607	341	135	9	6,477	298,838,676
60 to 64	183	651	701	763	695	578	351	232	151	57	4,362	196,244,286
65 to 69	86	278	350	294	252	193	129	60	15	19	1,676	73,970,310
70 & up	70	174	163	157	116	88	58	29	9	11	875	32,527,066
Total	7,636	15,133	9,837	9,076	6,637	5,029	2,237	901	319	96	56,901	\$2,342,770,725

Average Age: 44.05 Average Service: 9.90



SCHEDULE I (Continued)
SCHEDULE OF MEMBERSHIP DATA
AS OF SEPTEMBER 30, 2018
NUMBER OF SERVICE RETIREMENTS
AND THEIR BENEFITS BY AGE

Age	Number of Members	Total Annual Benefits	Average Annual Benefits
Under 50	305	\$ 10,104,143	\$ 33,128
50 – 54	1,403	46,885,439	33,418
55 – 59	3,096	102,262,697	33,031
60 – 64	7,093	188,865,295	26,627
65 – 69	10,058	234,888,532	23,356
70 – 74	8,271	176,606,416	21,352
75 – 79	5,395	108,191,865	20,054
80 – 84	3,375	62,322,093	18,466
85 – 89	1,831	29,660,134	16,199
90 – 94	685	10,509,791	15,343
95 & Over	173	2,045,592	11,824
Total	41,685	\$ 972,341,997	\$ 23,326

Average Age:69.64

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

NUMBER OF BENEFICIARIES
AND THEIR BENEFITS BY AGE

Age	Number of Members	Total Annual Benefits	Average Annual Benefits
Under 50	187	\$ 2,068,164	\$ 11,060
50 – 54	106	1,517,239	14,314
55 – 59	207	3,024,398	14,611
60 – 64	358	5,413,081	15,120
65 – 69	539	7,626,912	14,150
70 – 74	626	8,587,360	13,718
75 – 79	689	8,832,101	12,819
80 – 84	648	8,082,660	12,473
85 – 89	457	4,598,266	10,062
90 – 94	270	2,604,996	9,648
95 & Over	65	511,237	7,865
Total	4,152	\$ 52,866,414	\$ 12,733

Average Age: 73.51



SCHEDULE I (Continued)
SCHEDULE OF MEMBERSHIP DATA
AS OF SEPTEMBER 30, 2018
NUMBER OF DISABLED RETIREES
AND THEIR BENEFITS BY AGE

Age	Number of Members	Total Annual Benefits	Average Annual Benefits
Under 50	348	\$ 5,214,291	\$ 14,984
50 – 54	472	7,733,851	16,385
55 – 59	727	11,370,696	15,641
60 – 64	928	13,058,611	14,072
65 – 69	797	10,992,411	13,792
70 – 74	536	6,584,023	12,284
75 – 79	240	2,737,470	11,406
80 – 84	114	1,352,052	11,860
85 – 89	46	482,538	10,490
90 – 94	13	152,553	11,735
95 & Over	3	28,300	9,433
Total	4,224	\$ 59,706,796	\$ 14,135

Average Age:62.67