



Cavanaugh Macdonald
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Retirement Systems
of Alabama

**Teachers' Retirement System of Alabama
Report of the Actuary on the Annual Valuation
Prepared as of September 30, 2016**





Cavanaugh Macdonald

CONSULTING, LLC

The experience and dedication you deserve

June 9, 2017

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

Members of the Board:

In this report are submitted the results of the annual valuation of the assets and liabilities of the Teachers' Retirement System of Alabama, prepared as of September 30, 2016 in accordance with Section 16-25-19(q) 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, 2016 and to recommend rates of State contribution. While not verifying the data at the source, the actuary performed tests for consistency and reasonability.

Since the previous valuation, various assumptions and methods have been revised to reflect the results of the experience investigation for the five-year period ending September 30, 2015.

On the basis of the valuation, we have determined employer contribution rates of 12.41% of payroll for Tier I members and 11.35% of payroll for Tier II members for the fiscal year ending September 30, 2019.

The promised benefits of the System are included in the actuarially calculated contribution rates which are developed using the Entry Age Normal cost method. Five-year smoothed market value of assets is used for actuarial valuation purposes. Gains and losses are reflected in the unfunded actuarial accrued liability that is being amortized by regular annual contributions as a level percentage of payroll, on the assumption that payroll will increase by 3.125% 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 provided the following information and supporting schedules in the Actuarial and Statistical Sections of the Comprehensive Annual Financial Report (CAFR):

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

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

- Analysis of Actuarial Gains and Losses
- Schedule of Retirants and Beneficiaries Added and Removed from Rolls
- Retired Members by Type of Benefit as of September 30, 2016
- Ten-Year History of Average Monthly Benefit Payments as of September 30

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June 9, 2017
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The necessary GASB Statement Nos. 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 amounts 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 'Jonathan T. Craven'.

Jonathan T. Craven, ASA, EA, FCA, MAAA
Consulting Actuary

EAM/mjn



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**TEACHERS' RETIREMENT SYSTEM OF ALABAMA
REPORT OF THE ACTUARY ON THE ANNUAL VALUATION
PREPARED AS OF SEPTEMBER 30, 2016**

SECTION I - SUMMARY OF PRINCIPAL RESULTS

1. For convenience of reference, the principal results of the valuation and a comparison with the preceding year's results are summarized below:

VALUATION DATE	September 30, 2016	September 30, 2015
Active members		
Number	136,731	135,986
Annual compensation	\$ 6,430,999,445	\$ 6,297,938,621
Retired members and beneficiaries		
Number	91,574	88,633
Annual allowances	\$ 2,053,762,261	\$ 1,964,212,008
DROP participants		
Number	0	699
Annual compensation	\$ 0	\$ 52,847,343
Annual allowances	0	26,937,787
Deferred vested members		
Number	5,001	N/A
Estimated deferred annual allowances	\$ 65,824,827	N/A
Assets		
Actuarial value	\$ 22,645,511,571	\$ 21,740,279,791
Market value	22,758,953,967	21,574,652,720
Unfunded actuarial accrued liability	\$ 10,498,321,874	\$ 10,104,562,691
Funded Ratio based on Actuarial Value of Assets	68.3%	68.3%
CONTRIBUTIONS FOR FISCAL YEAR ENDING	September 30, 2019	September 30, 2018
<u>Tier I</u> (first hired prior to January 1, 2013)		
Employer contribution rate		
Normal	2.20%	2.43%
Unfunded actuarial accrued liability	9.85	9.45
Death benefit	0.02	0.02
Term life	0.01	0.01
Administration	<u>0.33</u>	<u>0.33</u>
Total	12.41%	12.24%
<u>Tier II</u> (first hired on or after January 1, 2013)		
Employer contribution rate		
Normal	1.14%	1.20%
Unfunded actuarial accrued liability	9.85	9.45
Death benefit	0.02	0.02
Term life	0.01	0.01
Administration	<u>0.33</u>	<u>0.33</u>
Total	11.35%	11.01%
Blended Amortization period	29.2 years	29.5 years



2. Comments on the valuation results as of September 30, 2016, are shown in Section IV and further discussion of the contribution levels is set out in Section V.
3. Schedule B shows the development of the actuarial value of assets. Schedule D of this report outlines the full set of actuarial assumptions and methods used in the current valuation. Since the previous valuation, various assumptions and methods have been revised to reflect the results of the experience investigation for the five-year period ending September 30, 2015. These revised assumptions, as summarized in the following table, were adopted by the Board on September 13, 2016.

Summary of Recommended Assumptions	
Economic Assumptions	
Price Inflation	Changed from 3.00% to 2.875% on September 30, 2016. Change to 2.75% on September 30, 2017.
Real Rate of Investment Return	No change in the current rate of 5.00%
Total Rate of Investment Return	Changed from an ultimate rate of 8.00% to 7.875% on September 30, 2016. Change to 7.75% on September 30, 2017.
Real Rate of Wage Inflation	No change in the current rate of 0.25%.
Wage Inflation	Changed from 3.25% to 3.125% on September 30, 2016. Change to 3.00% on September 30, 2017.
Payroll Growth	Changed from 3.25% to 3.125% on September 30, 2016. Change to 3.00% on September 30, 2017.
Demographic Assumptions	
Withdrawal	Changed assumed rates.
Retirement	Changed assumed rates.
Mortality	Changed assumed rates.
Disability	Changed assumed rates.
Merit/Promotion Scale	Changed assumed rates.
Other Assumptions and Methods and Administrative Changes	
Unused Sick Leave	No change in assumption.
Asset Smoothing	No change in method.
Interest Smoothing Method	Changed to use a static discount rate.
Pre-retirement Death Benefit	Changed assumption.
Administrative Expenses	Changed assumption.
Term-Life Insurance	No change in assumption.
Separation from Service	No change in assumption.
All others	No change to other actuarial methods.

In addition, for this valuation we have received data from the Retirement System in order to estimate benefits for vested inactive members. We have revised our method of determining liabilities for these members to reflect the estimated deferred benefit payments.



4. The Board funding policy is shown in Schedule F.
5. Provisions of the System, as summarized in Schedule H, were taken into account in the current valuation. There have been no changes since the previous valuation. Section VI of this report shows the certification of the liquidation period used to determine the accrued liability contribution rate.
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 the 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

1. The following table shows the number of active members and their annual compensation as of September 30, 2016 on the basis of which the valuation was prepared.

**TABLE 1
THE NUMBER AND ANNUAL COMPENSATION OF
ACTIVE MEMBERS AS OF SEPTEMBER 30, 2016**

GROUP	NUMBER	COMPENSATION
Tier I	107,356	\$ 5,364,266,392
Tier II	<u>29,375</u>	<u>1,066,733,053</u>
Subtotal	136,731	\$ 6,430,999,445
DROP	<u>0</u>	<u>0</u>
Total	136,731	\$ 6,430,999,445

The table reflects the active membership for whom complete valuation data were submitted. The results of the valuation include an estimated liability for an additional 59 vested inactive members where complete data was not available (with liabilities equal to contribution balances multiplied by a factor of two) and contribution balances for 11,710 non-vested inactive members who have contributed in the last 5 years and 29,349 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**

Valuation Date	Number	Annual Payroll	Annual Average Pay	% Increase in Average Pay
9/30/2016 ¹	136,731	\$ 6,430,999,445	\$ 47,034	1.56%
9/30/2015 ²	135,986	6,297,938,621	46,313	0.77
9/30/2014 ³	135,230	6,214,949,700	45,958	1.48
9/30/2013 ⁴	133,919	6,065,042,345	45,289	2.06
9/30/2012 ⁵	133,791	5,936,831,043	44,374	3.74
9/30/2011 ⁶	135,768	5,807,655,862	42,776	(0.12)

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

² In addition, there are 699 employees with annual compensation of \$52,847,343 who are currently participating in the DROP program. Employers of the Retirement System contribute on this payroll.

³ In addition, there are 1,748 employees with annual compensation of \$120,210,805 who are currently participating in the DROP program. Employers of the Retirement System contribute on this payroll.

⁴ In addition, there are 3,029 employees with annual compensation of \$198,322,151 who are currently participating in the DROP program. Employers of the Retirement System contribute on this payroll.

⁵ In addition, there are 4,436 employees with annual compensation of \$285,484,977 who are currently participating in the DROP program. Employers of the Retirement System contribute on this payroll.

⁶ In addition, there are 5,625 employees with annual compensation of \$351,906,404 who are currently participating in the DROP program. 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 ON THE ROLL
AS OF SEPTEMBER 30, 2016

GROUP	NUMBER*	ANNUAL RETIREMENT ALLOWANCES*
Service Retirements	81,127	\$ 1,916,477,346
Disability Retirements	5,672	64,451,566
Beneficiaries of Deceased Members	<u>4,775</u>	<u>72,833,349</u>
Subtotal	91,574	\$ 2,053,762,261
DROP Participants	<u>0</u>	<u>0</u>
Total	91,574	\$ 2,053,762,261

**In addition, there were 5,001 vested inactive members with estimated deferred annual allowances totaling \$65,824,827 included in the valuation.*

4. Schedule I shows the distribution by age and service of the number and average annual compensation of active members included in the valuation and a distribution by age of the number and benefits of retired members and beneficiaries included in the valuation.



SECTION III - ASSETS

1. The current retirement law provides for the maintenance of six 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, the Life Insurance 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 together with regular interest thereon. When a member retires or when a survivor allowance becomes payable the amount of the member's accumulated contributions are transferred from the Annuity Savings Fund to the Pension Accumulation Fund. The market value of assets credited to the Annuity Savings Fund on September 30, 2016, which represent the accumulated contributions of active members to that date, including interest, amounted to \$5,197,468,948.

- (b) Pension Accumulation Fund

The Pension Accumulation Fund is the fund to which are credited all contributions made by the employer, except those contributions made to the Pre-Retirement Death Benefit Fund, the Life Insurance Fund or the Expense Fund. When a member retires or when a survivor allowance becomes payable, the pension is paid from this fund. In addition, the amount of the member's accumulated contributions is transferred from the Annuity Savings Fund to the Pension Accumulation Fund and the annuity is paid from this fund. On September 30, 2016 the market value of assets credited to this fund amounted to \$17,254,054,154.

- (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, 2016, the market value of assets credited to this Fund amounted to \$307,430,865.

- (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, 2016, the market value of assets credited to this fund amounted to \$51,057,020. These assets are not included in the valuation and the liabilities associated with these death benefits are not included in the valuation.

- (e) Life Insurance Fund

The Life Insurance Fund is the fund to which are credited contributions made by the employer for life insurance benefits which became effective October 1, 1987. On September 30, 2016, the market value of assets credited to this fund amounted to \$13,737,927. These assets are not included in the valuation and the liabilities associated with these life insurance benefits are not included in the valuation.



(f) 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 subsection (g) of Section 16-25-14 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, 2016, the market value of assets credited to this fund amounted to \$9,827,173. These assets are not included in the valuation.

2. As of September 30, 2016 the total market value of assets reported exclusive of the Pre-Retirement Death Benefit Fund, the Life Insurance Fund and the Expense Fund amounted to \$22,758,953,967 as shown in the following table.

TABLE 4
MARKET VALUE OF ASSETS BY FUND
AS OF SEPTEMBER 30, 2016

FUND	MARKET VALUE OF ASSETS
Annuity Savings Fund	\$ 5,197,468,948
Pension Accumulation Fund	17,254,054,154
DROP Fund	<u>307,430,865</u>
Total Market Value of Assets	\$ 22,758,953,967

3. The five-year market related actuarial value of assets as of September 30, 2016 was \$22,645,511,571. Schedule B shows the development of the actuarial value of assets as of September 30, 2016.
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 sheet which shows the present and prospective assets and liabilities of the System as of September 30, 2016.
2. The valuation balance sheet shows that the System has total prospective liabilities of \$37,576,823,051. Of this amount, \$19,257,159,897 is for the prospective benefits payable on account of present retired members, beneficiaries of deceased members, and DROP participants, \$566,647,999 is for the prospective benefits payable on account of present inactive members and \$17,753,015,155 is for the prospective benefits payable on account of present active members. Against these liabilities, the System has total actuarial value of assets, exclusive of the Pre-Retirement Death Benefit Fund, the Life Insurance Fund and the Expense Fund, of \$22,645,511,571 as of September 30, 2016. The difference of \$14,931,311,480 between the total liabilities and the total actuarial value of assets represents the present value of contributions to be made in the future. Of this amount, \$3,470,396,414 is the present value of future contributions expected to be made by members to the Annuity Savings Fund, and the balance of \$11,460,915,066 represents the present value of future contributions payable by the employer.
3. The employer's regular 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 2.20% of payroll for Tier I members and 1.14% of payroll for Tier II members are required to provide the benefits of the System.
4. Prospective normal contributions have a present value of \$962,593,192. When this amount is subtracted from \$11,460,915,066 which is the present value of the total future contributions to be made by the employer, there remains \$10,498,321,874 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 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 as a level percent of payroll over a closed 30–year period from the date it is established.

6. The total UAAL contribution rate is 9.85% of payroll 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 3.125% each year. Schedule G of this report shows a projection of the open Transitional UAAL, the calculation of the closed transitional bases and amortization schedules for all closed bases on September 30, 2016.
7. The following table shows the components of the total unfunded actuarial accrued liability (UAAL) and the derivation of the accrued liability contribution rate in accordance with the funding policy.

**TABLE 5
TOTAL UAAL AND UAAL CONTRIBUTION**

	<u>UAAL</u>	<u>Amortization Period</u>	<u>Amortization Payment</u>
Open Transitional	\$ 6,720,234,104	30	\$430,782,442
Closed Transitional 9/30/2012	667,629,161	26	45,967,602
Closed Transitional 9/30/2013	669,883,380	27	45,227,607
Closed Transitional 9/30/2014	671,328,486	28	44,499,509
Closed Transitional 9/30/2015	672,023,410	29	43,783,117
Closed Transitional 9/30/2016	672,023,410	30	43,078,244
New Incremental 9/30/2013	439,455,639	27	29,670,130
New Incremental 9/30/2014	(171,733,132)	28	(11,383,459)
New Incremental 9/30/2015	(81,169,487)	29	(5,288,288)
New Incremental 9/30/2016	<u>238,646,903</u>	30	<u>15,297,815</u>
Total	\$10,498,321,874		\$681,634,719
Total Amortized Payment Adjusted for Timing			\$656,283,217
Total Estimated Payroll*			\$6,665,745,569
UAAL Contribution Rate			9.85%

**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 Alabama Code Section 36-27B. 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. A contribution of 0.02% is required to meet the cost of the pre-retirement death benefit program this year.
9. The Term Life Insurance fund was established under Alabama Code Section 16-25-33. The liabilities and assets associated with the term life insurance 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. A contribution of 0.01% is required to meet the cost of life insurance premiums.
10. An additional contribution of 0.33% of payroll is required to cover the expenses of administering the System.
11. 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 EMPLOYER

1. The retirement law provides that the employer contributions are to be paid from the same source from which employees' salaries are paid.
2. On the basis of the actuarial valuation prepared as of September 30, 2016 it is recommended that the employer make contributions at the following rates beginning October 1, 2018:

TABLE 6

**EMPLOYER CONTRIBUTION RATES
AS A PERCENTAGE OF MEMBERS' COMPENSATION***

<u>EMPLOYER CONTRIBUTION RATE</u>	<u>FISCAL YEAR ENDING SEPTEMBER 30, 2019</u>	
	<u>Tier I</u>	<u>Tier II</u>
Employer Normal Cost**	2.20%	1.14%
Unfunded Actuarial Accrued Liability	9.85	9.85
Death Benefit	0.02	0.02
Term-Life	0.01	0.01
Administration	<u>0.33</u>	<u>0.33</u>
Total	12.41%	11.35%

* All members initially joining the System on and after January 1, 2013 are Tier II members.

**The total Normal Cost rate is 9.70% for Tier I and 7.14% 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).



3. Contributions at the above rates of payroll are also recommended for payment by the Alabama High School Athletic Association. The following table shows the rates to be paid by special units of the System in addition to the rates shown above and the fiscal year through which these additional rates are required to be paid. These additional rates were determined based on the liabilities for the prior service of members at the time the unit joined the System, amortized over a fixed number of years.

TABLE 7

ADDITIONAL RATES REQUIRED FOR SPECIAL UNITS OF THE SYSTEM


UNIT	ADDITIONAL EMPLOYER RATE	THROUGH FISCAL YEAR ENDING SEPTEMBER 30
Developing Alabama Youth Foundation	2.74	2017
Alabama Congress of Parents and Teachers	2.15	2020



SECTION VI – ANNUAL ACTUARIAL CERTIFICATION

The following is the annual actuarial certification to the Teachers' Retirement System of Alabama required by Act 2000-732.

1. We hereby certify that there has been a change since the previous valuation in the liquidation period used to determine the accrued liability contribution rate from 29.5 years to 29.2 years. The unfunded actuarial accrued liability rate of 9.85% to be paid by employers to the Teachers' Retirement System of Alabama has been determined in accordance with the Funding Policy adopted by the Board and shown in Schedule G of this report.

Signed 

Edward A. Macdonald, ASA, FCA, MAAA
President



SECTION VII – 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. The UAAL increased from \$10,104,562,691 on September 30, 2015 to 10,498,321,874 on September 30, 2016. The most significant item contributing to the increase in the UAAL was the changes in assumptions from the experience study. This increase was offset by gains due to salary increases less than anticipated and by 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. These sources include the expected return on assets, salary increases, retirement, withdrawal, disability and mortality.



**RECONCILIATION OF THE UNFUNDED ACTUARIAL ACCRUED LIABILITY
FOR THE YEAR ENDING SEPTEMBER 30, 2016**

(Dollar amounts in thousands)

(1) UAAL at beginning of year	\$ 10,104,563
(2) Total normal cost at beginning of the year	573,054
(3) Actual contributions	1,204,903
(4) Interest accrual: $[(1) + (2)] - \frac{1}{2} [(3)] \times 0.0802$	808,028
(5) Expected UAAL before changes: $(1) + (2) - (3) + (4)$	10,280,742
(6) Increase from benefit changes	0
(7) Changes from revised actuarial assumptions and methods	602,884
(8) Expected UAAL after changes: $(5) + (6) + (7)$	10,883,626
(9) Actual UAAL at end of year	10,498,322
(10) (Gain)/Loss: (9) - (8)	\$ (385,304)

**DEVELOPMENT OF (GAIN)/LOSS
FROM INVESTMENT RETURN
FOR THE YEAR ENDING SEPTEMBER 30, 2016**

(Dollar amounts in thousands)

(1) Actuarial Value of Assets (BOY)	\$ 21,740,280
(2) Net Cash Flow	(1,009,979)
(3) Expected Return $[(1) + \frac{1}{2} [(2)]] \times 0.0802$	1,703,070
(4) Expected Actuarial Value of Assets $[(1) + (2) + (3)]$	22,433,371
(5) Actual Actuarial Value of Assets (EOY)	22,645,512
(6) (Gain)/Loss: (4) - (5)	\$ (212,141)



**(GAINS)/ LOSSES BY SOURCE
FOR THE YEAR ENDING SEPTEMBER 30, 2016**
(Dollar amounts in thousands)

SOURCE	Total	% of Actuarial Accrued Liability
Age and Service Retirements. Generally, earlier retirements cause losses and later retirements cause gains.	\$ 4,710	0.01%
Withdrawal. More withdrawals than expected usually cause gains and less withdrawals than expected cause losses.	16,443	0.05%
Disability Retirements. More disabilities than expected generally cause losses and less disabilities than expected cause gains.	7,947	0.02%
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.	12,440	0.04%
Salary Increases. If salaries increase more than expected, there is a loss. If salaries increase less than expected, there is a gain.	(258,855)	(0.80)%
New Members/Rehires. Any past service causes losses.	46,118	0.14%
Retiree Mortality. More deaths than expected cause gains, less than expected cause losses.	7,484	0.02%
Investment Return. Investment income greater than expected causes gains while investment income less than expected cause losses.	(212,141)	(0.65)%
Other. Miscellaneous gains and losses resulting from data corrections, timing of financial transactions, unit transfers, changes in valuation software, etc.	(9,450)	(0.03)%
Total (Gain)/Loss	\$ (385,304)	(1.20)%



SECTION VIII - ACCOUNTING INFORMATION

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

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

**NUMBER OF ACTIVE AND RETIRED MEMBERS
AS OF SEPTEMBER 30, 2016**

GROUP	NUMBER
Retirees and beneficiaries currently receiving benefits	91,574
DROP participants	0
Terminated employees entitled to benefits but not yet receiving benefits	16,770
Non-vested inactive members who have not contributed for more than 5 years	29,349
Active members	<u>136,731</u>
Total	274,424

- The schedule of funding progress is shown below.

SCHEDULE OF FUNDING PROGRESS
(Dollar amounts in thousands)

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) Entry Age (b)	Unfunded AAL (UAAL) (b - a)	Funded Ratio (a / b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b - a) / c)
9/30/2011 ¹	\$19,430,135	\$28,776,316	\$9,346,181	67.5%	\$6,159,562	151.7%
9/30/2012 ²	18,786,008	28,251,367	9,465,359	66.5	6,222,316	152.1
9/30/2013	19,629,816	29,665,843	10,036,027	66.2	6,263,364	160.2
9/30/2014	20,809,871	30,837,829	10,027,958	67.5	6,335,161	158.3
9/30/2015	21,740,280	31,844,843	10,104,563	68.3	6,350,786	159.1
9/30/2016 ¹	22,645,512	33,143,834	10,498,322	68.3	6,430,999	163.2

¹Reflects changes in actuarial assumptions and methods.

²Reflects changes in methods.



3. The information presented above was determined as part of the actuarial valuation at September 30, 2016. Additional information as of the latest actuarial valuation follows.

Valuation date	09/30/2016
Actuarial cost method	Entry Age Normal
Amortization method	Level percent closed
Single equivalent remaining amortization period	29.2 years
Asset valuation method	Five-year market related value
Actuarial assumptions:	
Investment Rate of Return*	7.875%
Projected salary increases*	3.375 - 5.125%
Cost-of-living adjustments	None
*Includes price inflation at	2.875%



SCHEDULE A

**VALUATION BALANCE SHEET
SHOWING THE PRESENT AND PROSPECTIVE ASSETS AND LIABILITIES OF
THE TEACHERS' RETIREMENT SYSTEM OF ALABAMA
AS OF SEPTEMBER 30, 2016**

	September 30, 2016
<u>ASSETS</u>	
Actuarial Value of Assets	\$ 22,645,511,571
Present value of future members' contributions to the Annuity Savings Fund	\$ 3,470,396,414
Present value of future employer contributions to the Pension Accumulation Fund	
Normal contributions	\$ 962,593,192
Unfunded actuarial accrued liability contributions	<u>10,498,321,874</u>
Total prospective employer contributions	\$ 11,460,915,066
Total Assets	<u>\$ 37,576,823,051</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	\$ 17,815,902,825
Disability Retirements	558,739,049
Beneficiaries of Deceased Members	575,087,158
DROP Participant Accounts	<u>307,430,865</u>
Total	\$ 19,257,159,897
Inactive Members	\$ 522,093,521
Inactive T-Section Accounts	\$ 44,554,478
Present value of prospective benefits payable on account of present active members:	
Service retirement allowances	\$ 15,946,610,002
Disability retirement allowances	689,686,282
Death Benefits	110,793,912
Termination Benefits	<u>1,005,924,959</u>
Total	\$ 17,753,015,155
Total Liabilities	<u>\$ 37,576,823,051</u>



SCHEDULE A
(continued)

SOLVENCY TEST
(Dollar amounts in thousands)

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)
9/30/2016 ¹	\$5,197,469	\$19,257,160	\$8,689,205	\$22,645,512	100%	91%	0.0%
9/30/2015	4,894,145	18,621,250	8,329,448	21,740,280	100	90	0.0
9/30/2014	4,589,021	18,104,369	8,144,439	20,809,871	100	90	0.0
9/30/2013	4,261,269	17,666,932	7,737,642	19,629,816	100	87	0.0
9/30/2012 ²	3,921,179	17,085,972	7,244,216	18,786,008	100	87	0.0
9/30/2011 ¹	3,620,301	17,245,088	7,910,927	19,430,135	100	92	0.0

¹ Reflects changes in actuarial assumptions and methods.

² Reflects changes in methods.



SCHEDULE B

DEVELOPMENT OF SEPTEMBER 30, 2016 ACTUARIAL VALUE OF ASSETS

(1)	Actuarial Value of Assets on September 30, 2015	\$ 21,740,279,791
(2)	Market Value of Assets on September 30, 2016	22,758,953,967
(3)	Market Value of Assets on September 30, 2015	21,574,652,720
(4)	Net Cash Flow During the Fiscal Year	
	a. Contributions	1,204,902,912
	b. Benefit Payments and DROP Distributions	2,155,931,285
	c. Refunds to Members	54,956,430
	d. Transfer to Expense Fund – Interest Forfeiture	3,994,364
	e. Investment Expenses	13,600,113
	f. Net Cash Flow: (a. - b. - c. - d. - e.)	(1,023,579,280)
(5)	Actual Investment Return ((2) - (3) - (4)f.)	2,207,880,527
(6)	Assumed Rate of Return on Assets	8.00%
(7)	Amount for Immediate Recognition ((3) * (6)) + (((4)a. - (4)b. - (4)c. - (4)d.) * .5 * (6)) + (4)e.	1,699,173,164
(8)	Investment Gain/(Loss) for the Fiscal Year ((5) - (7))	508,707,363
(9)	Phased-In Recognition of Investment Gain/(Loss)	
	a. Current Fiscal Year: (.2 * (8))	101,741,473
	b. Prior Fiscal Year	(296,335,495)
	c. Second Prior Fiscal Year	171,251,071
	d. Third Prior Fiscal Year	252,980,847
	e. Fourth Prior Fiscal Year	0
	f. Total Recognized Investment Gain/(Loss) for Fiscal Year	229,637,896
(10)	Actuarial Value of Assets on September 30, 2016 ((1) + (4)f. + (7) + (9)f.)	\$ 22,645,511,571

<u>Date</u>	<u>Investment Gain/(Loss)</u>	<u>Amount Recognized</u>	<u>Remaining Balance as of September 30, 2016</u>
9/30/2013	\$ 1,264,904,237	\$ 1,011,923,388	\$ 252,980,849
9/30/2014	856,255,357	513,753,213	342,502,144
9/30/2015	(1,481,677,477)	(592,670,990)	(889,006,487)
9/30/2016	508,707,363	101,741,473	406,965,890



SCHEDULE C

**SUMMARY OF RECEIPTS AND DISBURSEMENTS
FOR THE PERIOD ENDING SEPTEMBER 30, 2016**

<u>Receipts for the Period</u>		
Contributions:		
Members	\$ 475,980,267	
Employer	<u>728,922,645</u>	
Total		\$ 1,204,902,912
Investment Income		<u>2,207,134,067*</u>
TOTAL		\$ 3,412,036,979
<u>Disbursements for the Period</u>		
Benefit Payments		\$ 1,960,535,191
Refunds to Members		54,956,430
DROP Distributions		195,396,094
Miscellaneous:		
Transfers from Plant Fund	\$ 0	
Transfers to Expense Fund –Interest Forfeiture	3,994,364	
Transfers to Expense Fund –Investment Expenses	7,731,113	
Transfers to Pre-retirement Death Benefit Fund	<u>5,122,540</u>	
Total		<u>16,848,017</u>
TOTAL		\$ 2,227,735,732
<u>Excess of Receipts over Disbursements</u>		\$ 1,184,301,247
<u>Reconciliation of Asset Balances</u>		
Market Value of Assets as of September 30, 2015		\$ 21,574,652,720
Excess of Receipts over Disbursements		<u>1,184,301,247</u>
Market Value of Assets as of September 30, 2016		<u>\$ 22,758,953,967</u>

*Net of \$5,869,000 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 13, 2016.

INVESTMENT RATE OF RETURN: 7.875% per annum, compounded annually, including price inflation at 2.875%. In subsequent valuations, the assumed investment rate of return will be 7.75%, including price inflation at 2.75%

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

Service	Annual Rate	
	2016 Valuation*	2017 Valuation and later**
0	5.125 %	5.000 %
1-5	4.125	4.000
6-10	3.875	3.750
11-15	3.625	3.500
16 & Over	3.375	3.250

**Includes wage inflation at 3.125% per annum.*

***Includes wage inflation at 3.000% per annum.*



SEPARATIONS BEFORE SERVICE RETIREMENT: Representative values of the assumed annual rates of death, disability, and withdrawal are as follows:

Age	Annual Rate of							
	Death*	Disability**		Withdrawal***				
		Tier I	Tier II	Years of Service				
		Years of Service		5-9	10-19	20+		
	10-24	25+	10+	0-4				
Male								
20	0.0293%	0.0008%		0.0008%	25.00%			
25	0.0319	0.0250		0.0250	14.80	11.00%		
30	0.0376	0.0425		0.0425	13.80	5.40	3.50%	
35	0.0655	0.1300		0.1300	13.50	5.40	2.50	0.50%
40	0.0914	0.1700		0.1700	13.00	5.40	2.25	0.50
45	0.1278	0.2700	0.2000%	0.2700	13.00	5.40	2.25	0.75
50	0.1812	0.6000	0.2000	0.6000	12.00	5.00	2.50	0.80
55	0.2567	0.9000	0.2000	0.9000	11.50	5.00	2.50	0.90
60	0.3815	0.5000	0.5000	1.3000	12.00	4.50	2.50	0.90
65	0.5353	0.5000	0.5000	0.5000	12.00	6.00		
69	0.6326	0.5000	0.5000	0.5000	12.00	6.25		
Female								
20	0.0108%	0.0100%		0.0100%	25.00%			
25	0.0117	0.0275		0.0275	12.75	9.00%		
30	0.0149	0.0425		0.0425	13.50	5.80	4.30%	
35	0.0268	0.1000		0.1000	13.50	5.00	2.60	1.50%
40	0.0399	0.2000		0.2000	11.50	4.75	2.00	1.50
45	0.0635	0.3500	0.2000%	0.3500	10.75	4.10	2.00	0.50
50	0.0947	0.6500	0.2000	0.6500	10.75	3.90	2.20	0.75
55	0.1371	1.0500	0.2000	1.0500	11.00	4.20	2.40	0.80
60	0.1929	0.5000	0.5000	1.4000	12.00	4.50	2.70	1.00
65	0.2743	0.5000	0.5000	0.5000	15.00	6.75		
69	0.3435	0.5000	0.5000	0.5000	15.00	7.25		

*Rates of pre-retirement mortality are according to the sex distinct RP-2000 Employee Mortality Table (with the sex distinct RP-2000 Combined Mortality Table used for ages over 70) projected with Scale BB to 2020 with an adjustment factor of 90% for males and 60% for females.

**No rates of disability are assumed for members with less than 10 years of service.

***No rates of withdrawal are assumed after eligibility for service retirement.



SERVICE RETIREMENT:

The assumed annual rates of service retirement for **Tier I** members are as follows:

For members upon attaining 25 years of service, rates are as follows:

<u>Age Group</u>	<u>Annual Rate</u>	
	<u>Male*</u>	<u>Female**</u>
47 & Under	25.0%	28.0%
48	25.0	20.0
49	20.0	17.0
50	16.5	13.0
51 to 53	16.0	15.0
54	16.0	17.0
55	16.0	18.0
56-57	16.0	19.0
58	16.0	21.0
59	20.0	22.0
60	20.0	30.0
61	20.0	27.5
62	35.0	45.0
63	30.0	35.0
64	23.0	32.0
65	28.0	38.0
66	27.0	40.0
67	22.0	35.0
68	22.0	37.0
69 to 70	22.0	30.0
71-74	20.0	30.0
75	100.0	100.0

**For males, retirement rates are increased by 5% in the year first attaining 25 years of service from age 51 through age 60.*

***For females, retirement rates are increased by 9% in the year first attaining 25 years of service from age 50 through age 59.*



For members first eligible for unreduced benefits before attaining 25 years of service, the rates are as follows:

<u>Age Group</u>	<u>Annual Rate</u>	
	<u>Male</u>	<u>Female</u>
60	12.5%	17.0%
61	11.0	13.5
62	25.0	23.5
63	18.5	18.0
64	15.0	17.0
65	28.0	28.0
66	27.0	28.0
67	22.0	23.0
68	22.0	27.0
69	22.0	22.0
70	22.0	26.0
71 to 74	20.0	24.0
75 & Above	100.0	100.0

The assumed annual rates of service retirement for **Tier II** members are as follows:

<u>Age Group</u>	<u>Annual Rate</u>			
	<u>Male*</u>		<u>Female**</u>	
	<u>Less than 25</u> <u>years of service</u>	<u>25 or more years</u> <u>of service</u>	<u>Less than 25</u> <u>years of service</u>	<u>25 or more years</u> <u>of service</u>
62	50.0%	60.0%	50.0%	70.0%
63	18.5	30.0	18.0	35.0
64	15.0	23.0	17.0	32.0
65	28.0	28.0	28.0	38.0
66	27.0	27.0	28.0	40.0
67	22.0	22.0	23.0	35.0
68	22.0	22.0	27.0	37.0
69	22.0	22.0	22.0	30.0
70	22.0	22.0	26.0	30.0
71 to 74	20.0	20.0	24.0	30.0
75 & above	100.0	100.0	100.0	100.0

* For FLC Tier II members, rates on or after age 60 are the same as those for Tier I, while rates from ages 56 to 59 are equal to 0.20 for service less than 25 years and 0.30 for service greater than or equal to 25 years.

** For FLC Tier II members, rates on or after age 60 are the same as those for Tier I, while rates from ages 56 to 59 are equal to 0.20 for service less than 25 years and 0.40 for service greater than or equal to 25 years.



DEATHS AFTER RETIREMENT: Rates of mortality for the period after service retirement are according to the RP-2000 White Collar Mortality Table projected to 2020 using scale BB and adjusted 115% for all ages for males and 112% for ages 78 and over for females. The rates of disabled mortality were based on the RP-2000 Disabled Mortality Table projected to 2020 using scale BB and adjusted 105% for males and 120% for females. Representative values of assumed mortality are as follows:

Age	Service Retirement		Disability Retirement	
	Male	Female	Male	Female
55	0.3575%	0.2339%	3.5044%	1.7959%
60	0.5579	0.3825	3.8359	2.1434
65	0.9991	0.6795	4.1382	2.6417
70	1.6384	1.1928	4.8570	3.5474
75	2.8589	2.0200	6.3692	4.9231
80	5.0501	3.7900	8.4883	6.8160
85	8.8966	6.5271	10.9897	9.4450
90	16.4327	11.3249	15.4359	13.4706

SPOUSE'S BENEFIT: For those eligible for spouse's benefits, it is assumed that 75% will elect the lump sum death benefit payable from the death benefit fund and 25% will elect the spouse's benefit payable from the pension accumulation fund.

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 or the value of the deferred annuity.

UNUSED SICK LEAVE: 3% load on service retirement liabilities for active members. (No load for Tier II members)

PERCENTAGE MARRIED: 100% of active members are assumed to be married with the husband 3 years older than the wife.

VALUATION METHOD: Individual entry age normal cost method.

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 2.0 for vested members with incomplete data and 1.0 for other 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, under which the present value, at the interest rate assumed to be earned in the future (currently 7.875%), of each member's expected benefit payable at retirement or death is determined, based on his age, service, sex and compensation. The calculations take into account the probability of a member's death or termination of employment prior to becoming eligible for a benefit, as well as the probability of his terminating with a service, disability or survivor's benefit. Future salary increases are also anticipated. The present value of the expected benefits payable on account of the active members is added to the present value of the expected future payments to retired members and beneficiaries to obtain the present value of all expected benefits payable from the System on account of the present group of members and beneficiaries.
2. The employer contributions required to support the benefits of the System are determined following a level funding approach, and consist of a normal contribution and an accrued liability contribution.
3. The normal contribution is determined using the "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 the 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 actuarial accrued liability contributions are determined by subtracting the present value of prospective employer normal contributions and member contributions together with the current assets held from the present value of expected benefits to be paid from the System.



SCHEDULE F

BOARD FUNDING POLICY

The purpose of the funding policy is to state the overall funding objectives for the Teachers' 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 funding policy reflects the Board's long-term strategy for stability in funding of the plan.

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 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**
 - 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.
 - 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 16-25-21.
 - 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, a contribution rate for the term life insurance 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.

- **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, a contribution rate for the term life insurance 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.

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

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

PROJECTION OF THE OPEN TRANSITIONAL UAAL

<u>Valuation Date</u>	<u>Transitional UAAL Beginning of Year (1)</u>	<u>Years (2)</u>	<u>Transitional Closed (3)=(1)/(2)</u>	<u>Transitional Remaining Open (4)=(1)-(3)</u>	<u>7.875% Interest (5)=(4) x .07875*</u>	<u>Amortization Payment (6)</u>	<u>Transitional Open UAAL End of Year (7)=(4)+(5)-(6)</u>
9/30/2012	\$9,465,359,317	15	\$631,023,954	8,834,335,363	\$706,746,829	\$566,618,173	\$8,974,464,019
9/30/2013	8,974,464,019	14	641,033,144	8,333,430,875	666,674,470	534,491,072	8,465,614,273
9/30/2014	8,465,614,273	13	651,201,098	7,814,413,175	625,153,054	501,202,222	7,938,364,007
9/30/2015	7,938,364,007	12	661,530,334	7,276,833,673	582,146,694	466,722,853	7,392,257,515
9/30/2016	7,392,257,515	11	672,023,410	6,720,234,104	529,218,436	430,782,442	6,818,670,097
9/30/2017	6,818,670,097	10	681,867,010	6,136,803,088	483,273,243	393,383,174	6,226,693,157
9/30/2018	6,226,693,157	9	691,854,795	5,534,838,362	435,868,521	354,795,852	5,615,911,031
9/30/2019	5,615,911,031	8	701,988,879	4,913,922,152	386,971,369	314,993,697	4,985,899,824
9/30/2020	4,985,899,824	7	712,271,404	4,273,628,421	336,548,238	273,949,398	4,336,227,261
9/30/2021	4,336,227,261	6	722,704,544	3,613,522,717	284,564,914	231,635,106	3,666,452,525
9/30/2022	3,666,452,525	5	733,290,505	2,933,162,020	230,986,509	188,022,423	2,976,126,106
9/30/2023	2,976,126,106	4	744,031,527	2,232,094,580	175,777,448	143,082,390	2,264,789,638
9/30/2024	2,264,789,638	3	754,929,880	1,509,859,759	118,901,456	96,785,479	1,531,975,736
9/30/2025	1,531,975,736	2	765,987,868	765,987,869	60,321,545	49,101,582	777,207,831
9/30/2026	777,207,831	1	777,207,831	0	0	0	0

*8.00% prior to September 30, 2016.



SCHEDULE G
(continued)

**AMORTIZATION SCHEDULE FOR BASE CLOSED
ON SEPTEMBER 30, 2012***

Valuation Date	Balance of Transitional Closed 9/30/2012	Annual Amortization Payment
9/30/2012	\$631,023,954	\$40,472,727
9/30/2013	641,033,144	41,788,090
9/30/2014	650,527,705	43,146,203
9/30/2015	659,423,718	44,548,455
9/30/2016	667,629,161	45,967,602
9/30/2017	674,237,356	47,404,089
9/30/2018	679,929,458	48,885,467
9/30/2019	684,588,436	50,413,138
9/30/2020	688,086,637	51,988,548
9/30/2021	690,284,912	53,613,191
9/30/2022	691,031,658	55,288,603
9/30/2023	690,161,798	57,016,372
9/30/2024	687,495,668	58,798,133
9/30/2025	682,837,819	60,635,575
9/30/2026	675,975,722	62,530,437
9/30/2027	666,678,373	64,484,513
9/30/2028	654,694,783	66,499,654
9/30/2029	639,752,343	68,577,768
9/30/2030	621,555,072	70,720,823
9/30/2031	599,781,711	72,930,849
9/30/2032	574,083,671	75,209,938
9/30/2033	544,082,823	77,560,249
9/30/2034	509,369,096	79,984,006
9/30/2035	469,497,906	82,483,507
9/30/2036	423,987,360	85,061,116
9/30/2037	372,315,248	87,719,276
9/30/2038	313,915,798	90,460,503
9/30/2039	248,176,164	93,287,394
9/30/2040	174,432,643	96,202,625
9/30/2041	91,966,588	99,208,957
9/30/2042	0	0

**Reflects change in interest rate and payroll growth assumption beginning with September 30, 2016 valuation*



SCHEDULE G
(continued)

AMORTIZATION SCHEDULE FOR BASES CLOSED
ON SEPTEMBER 30, 2013*

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	\$641,033,144	\$41,114,698	\$420,529,361	\$26,971,987
9/30/2014	651,201,098	42,450,925	427,199,723	27,848,577
9/30/2015	660,846,260	43,830,581	433,527,124	28,753,655
9/30/2016	669,883,380	45,227,607	439,455,639	29,670,130
9/30/2017	677,409,090	46,640,969	444,392,641	30,597,321
9/30/2018	684,114,086	48,098,500	448,791,240	31,553,488
9/30/2019	689,889,571	49,601,578	452,580,063	32,539,534
9/30/2020	694,616,797	51,151,627	455,681,208	33,556,394
9/30/2021	698,166,243	52,750,115	458,009,709	34,605,032
9/30/2022	700,396,719	54,398,557	459,472,942	35,686,439
9/30/2023	701,154,404	56,098,511	459,969,997	36,801,640
9/30/2024	700,271,802	57,851,590	459,390,994	37,951,692
9/30/2025	697,566,616	59,659,452	457,616,343	39,137,682
9/30/2026	692,840,535	61,523,810	454,515,949	40,360,734
9/30/2027	685,877,917	63,446,429	449,948,345	41,622,007
9/30/2028	676,444,374	65,429,130	443,759,770	42,922,695
9/30/2029	664,285,239	67,473,790	435,783,157	44,264,029
9/30/2030	649,123,911	69,582,346	425,837,051	45,647,280
9/30/2031	630,660,073	71,756,794	413,724,439	47,073,758
9/30/2032	608,567,760	73,999,194	399,231,480	48,544,813
9/30/2033	582,493,276	76,311,669	382,126,147	50,061,838
9/30/2034	552,052,953	78,696,409	362,156,743	51,626,271
9/30/2035	516,830,714	81,155,672	339,050,316	53,239,591
9/30/2036	476,375,461	83,691,786	312,510,937	54,903,329
9/30/2037	430,198,242	86,307,155	282,217,844	56,619,058
9/30/2038	377,769,199	89,004,253	247,823,442	58,388,403
9/30/2039	318,514,270	91,785,636	208,951,134	60,213,041
9/30/2040	251,811,633	94,653,937	165,192,995	62,094,698
9/30/2041	176,987,862	97,611,873	116,107,245	64,035,158
9/30/2042	93,313,783	100,662,244	61,215,533	66,036,256
9/30/2043	0	0	0	0

*Reflects change in interest rate and payroll growth assumption beginning with September 30, 2016 valuation



SCHEDULE G
(continued)

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

<u>Valuation Date</u>	<u>Balance of Transitional Closed 9/30/2014</u>	<u>Annual Amortization Payment</u>	<u>Balance of New Incremental UAAL 9/30/2014</u>	<u>Annual Amortization Payment</u>
9/30/2014	\$651,201,098	\$41,766,852	\$(166,584,327)	\$(10,684,415)
9/30/2015	661,530,334	43,124,275	(169,226,658)	(11,031,659)
9/30/2016	671,328,486	44,499,509	(171,733,132)	(11,383,459)
9/30/2017	679,696,096	45,890,118	(173,873,657)	(11,739,192)
9/30/2018	687,332,045	47,324,185	(175,827,016)	(12,106,041)
9/30/2019	694,135,259	48,803,065	(177,567,352)	(12,484,355)
9/30/2020	699,995,345	50,328,161	(179,066,426)	(12,874,491)
9/30/2021	704,791,817	51,900,916	(180,293,416)	(13,276,819)
9/30/2022	708,393,256	53,522,820	(181,214,703)	(13,691,720)
9/30/2023	710,656,406	55,195,408	(181,793,642)	(14,119,586)
9/30/2024	711,425,189	56,920,264	(181,990,305)	(14,560,823)
9/30/2025	710,529,659	58,699,023	(181,761,218)	(15,015,849)
9/30/2026	707,784,847	60,533,367	(181,059,066)	(15,485,094)
9/30/2027	702,989,536	62,425,035	(179,832,373)	(15,969,003)
9/30/2028	695,924,927	64,375,817	(178,025,169)	(16,468,035)
9/30/2029	686,353,198	66,387,562	(175,576,617)	(16,982,661)
9/30/2030	674,015,951	68,462,173	(172,420,615)	(17,513,369)
9/30/2031	658,632,534	70,601,616	(168,485,369)	(18,060,662)
9/30/2032	639,898,230	72,807,916	(163,692,930)	(18,625,057)
9/30/2033	617,482,300	75,083,164	(157,958,691)	(19,207,090)
9/30/2034	591,025,867	77,429,512	(151,190,848)	(19,807,312)
9/30/2035	560,139,642	79,849,185	(143,289,816)	(20,426,290)
9/30/2036	524,401,454	82,344,472	(134,147,598)	(21,064,612)
9/30/2037	483,353,596	84,917,737	(123,647,110)	(21,722,881)
9/30/2038	436,499,955	87,571,416	(111,661,438)	(22,401,721)
9/30/2039	383,302,911	90,308,023	(98,053,056)	(23,101,775)
9/30/2040	323,179,993	93,130,148	(82,672,959)	(23,823,705)
9/30/2041	255,500,269	96,040,465	(65,359,749)	(24,568,196)
9/30/2042	179,580,450	99,041,730	(45,938,633)	(25,335,952)
9/30/2043	94,680,680	102,136,784	(24,220,348)	(26,127,701)
9/30/2044	0	0	0	0

*Reflects change in interest rate and payroll growth assumption beginning with September 30, 2016 valuation



SCHEDULE G
(continued)

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

<u>Valuation Date</u>	<u>Balance of Transitional Closed 9/30/2015</u>	<u>Annual Amortization Payment</u>	<u>Balance of New Incremental UAAL 9/30/2015</u>	<u>Annual Amortization Payment</u>
9/30/2015	\$661,530,334	\$42,429,350	\$(79,902,094)	\$(5,124,775)
9/30/2016	672,023,410	43,783,117	(81,169,487)	(5,288,288)
9/30/2017	681,162,137	45,151,340	(82,273,296)	(5,453,547)
9/30/2018	689,652,315	46,562,319	(83,298,772)	(5,623,970)
9/30/2019	697,400,116	48,017,391	(84,234,580)	(5,799,719)
9/30/2020	704,302,984	49,517,935	(85,068,334)	(5,980,960)
9/30/2021	710,248,909	51,065,370	(85,786,505)	(6,167,865)
9/30/2022	715,115,640	52,661,163	(86,374,327)	(6,360,611)
9/30/2023	718,769,834	54,306,825	(86,815,694)	(6,559,380)
9/30/2024	721,066,133	56,003,913	(87,093,049)	(6,764,361)
9/30/2025	721,846,179	57,754,035	(87,187,266)	(6,975,747)
9/30/2026	720,937,530	59,558,849	(87,077,516)	(7,193,739)
9/30/2027	718,152,512	61,420,063	(86,741,131)	(7,418,544)
9/30/2028	713,286,959	63,339,440	(86,153,452)	(7,650,373)
9/30/2029	706,118,868	65,318,797	(85,287,663)	(7,889,447)
9/30/2030	696,406,931	67,360,010	(84,114,619)	(8,135,992)
9/30/2031	683,888,967	69,465,010	(82,602,653)	(8,390,242)
9/30/2032	668,280,214	71,635,791	(80,717,370)	(8,652,437)
9/30/2033	649,271,489	73,874,410	(78,421,425)	(8,922,826)
9/30/2034	626,527,209	76,182,985	(75,674,286)	(9,201,664)
9/30/2035	599,683,241	78,563,704	(72,431,972)	(9,489,216)
9/30/2036	568,344,593	81,018,819	(68,646,774)	(9,785,754)
9/30/2037	532,082,910	83,550,657	(64,266,953)	(10,091,559)
9/30/2038	490,433,782	86,161,615	(59,236,416)	(10,406,920)
9/30/2039	442,893,827	88,854,166	(53,494,364)	(10,732,137)
9/30/2040	388,917,550	91,630,859	(46,974,908)	(11,067,516)
9/30/2041	327,913,948	94,494,323	(39,606,666)	(11,413,376)
9/30/2042	259,242,849	97,447,271	(31,312,315)	(11,770,044)
9/30/2043	182,210,953	100,492,498	(22,008,117)	(12,137,858)
9/30/2044	96,067,567	103,632,888	(11,603,398)	(12,517,166)
9/30/2045	0	0	0	0

*Reflects change in interest rate and payroll growth assumption beginning with September 30, 2016 valuation



SCHEDULE G
(continued)

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

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	\$672,023,410	\$43,078,244	\$238,646,903	\$15,297,815
9/30/2017	681,867,009	44,424,439	242,142,532	15,775,871
9/30/2018	691,139,597	45,812,703	245,435,385	16,268,867
9/30/2019	699,754,137	47,244,350	248,494,554	16,777,269
9/30/2020	707,615,426	48,720,736	251,286,231	17,301,559
9/30/2021	714,619,404	50,243,259	253,773,463	17,842,233
9/30/2022	720,652,424	51,813,361	255,915,890	18,399,803
9/30/2023	725,590,441	53,432,528	257,669,464	18,974,796
9/30/2024	729,298,160	55,102,295	258,986,138	19,567,759
9/30/2025	731,628,096	56,824,242	259,813,537	20,179,251
9/30/2026	732,419,567	58,599,999	260,094,602	20,809,853
9/30/2027	731,497,608	60,431,249	259,767,199	21,460,161
9/30/2028	728,671,796	62,319,726	258,763,705	22,130,791
9/30/2029	723,734,974	64,267,217	257,010,556	22,822,378
9/30/2030	716,461,887	66,275,568	254,427,759	23,535,577
9/30/2031	706,607,693	68,346,679	250,928,368	24,271,064
9/30/2032	693,906,370	70,482,513	246,417,913	25,029,535
9/30/2033	678,068,983	72,685,091	240,793,789	25,811,708
9/30/2034	658,781,825	74,956,500	233,944,592	26,618,324
9/30/2035	635,704,393	77,298,891	225,749,404	27,450,146
9/30/2036	608,467,223	79,714,481	216,077,024	28,307,963
9/30/2037	576,669,535	82,205,559	204,785,126	29,192,587
9/30/2038	539,876,702	84,774,483	191,719,367	30,104,856
9/30/2039	497,617,510	87,423,685	176,712,412	31,045,632
9/30/2040	449,381,204	90,155,675	159,582,882	32,015,808
9/30/2041	394,614,298	92,973,040	140,134,226	33,016,302
9/30/2042	332,717,134	95,878,448	118,153,494	34,048,062
9/30/2043	263,040,161	98,874,649	93,410,019	35,112,064
9/30/2044	184,879,924	101,964,482	65,653,995	36,209,316
9/30/2045	97,474,737	105,150,872	34,614,931	37,340,857
9/30/2046	0	0	0	0



SCHEDULE H

SUMMARY OF MAIN PLAN PROVISIONS AS INTERPRETED FOR VALUATION PURPOSES

The Teachers' Retirement System of Alabama was established on September 15, 1939 and went into effect September 30, 1941. The valuation took into account amendments to the System 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. 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 I – the 3 highest years in the last 10 years of Creditable Service

Tier II – 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 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 employer contributions.

Retirement Allowance – the sum of the annuity and pension.

2 - BENEFITS

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 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 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.
Both	The member may elect to receive a reduced retirement allowance in order to provide an allowance to a designated beneficiary after the member's death (see "Special Privileges at Retirement" below).

Disability Retirement Allowance

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

Tier I	On 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 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.
Both	The member may elect to receive a reduced retirement allowance in order to provide an allowance to a designated beneficiary after the member's death (see "Special Privileges at Retirement" below).



Benefits Payable on
Separation from Service

Any member who withdraws from service is entitled to receive his or her 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 defined below under "Special Privileges at Retirement" or (2) to receive a return of member contributions and total earned interest 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 scholastic year (July 1-June 30).*

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

In the event of a job-related death of a member with less than one 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 of death.*

In the event of the death of a member with less than one year of service that is not job-related, the designated beneficiary shall receive the return of member contributions and total earned interest plus a matching death benefit which is limited to a \$5,000 maximum.

*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.



Special Privileges at Retirement

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 annuity payments have equaled the present value of the annuity at the date of retirement, the balance is paid to a designated beneficiary or to his 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 such other person as the member shall designate 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.

Deferred Retirement Option Plan (DROP)

Prior to March 25, 2011, 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 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 will withdraw from active service and receive the retirement benefit calculated 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.

Term Life Insurance

Upon the death of a contributing member there is paid a term life insurance benefit of \$15,000 (pro-rated for part-time members)



Member Contributions

Tier I	<p>Prior to October 1, 2011, regular members contributed 5.0% of salary and 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.</p> <p>Beginning October 1, 2011, the contribution rates were increased to 7.25% for regular members and 8.25% for police officers, firefighters and correctional officers.</p> <p>Beginning October 1, 2012, the contribution rates were increased to 7.50% for regular members and 8.50% for police officers, firefighters and correctional officers.</p>
Tier II	<p>Regular members contribute 6% of salary and full-time certified firefighters, police officers and correctional officers contribute 7% of salary</p>
Both	<p>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.</p> <p>“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 16-25-14-(g)(1)).</p>



SCHEDULE I
SCHEDULE OF MEMBERSHIP DATA
AS OF SEPTEMBER 30, 2016
NUMBER OF ACTIVE MEMBERS AND THEIR AVERAGE COMPENSATION
BY AGE AND YEARS OF SERVICE

Attained Age	Years of Service										Total
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	≥ 40	
Under 25	1,120	1,331	4								2,455
Avg. Pay	31,537	29,377	27,456								30,360
25 to 29	1,417	7,997	1,501	11							10,926
Avg. Pay	32,686	35,294	42,885	39,388							36,003
30 to 34	1,082	5,404	5,541	1,947	14						13,988
Avg. Pay	35,569	39,017	46,663	49,289	41,731						43,211
35 to 39	1,113	4,616	3,688	6,336	1,365	8					17,126
Avg. Pay	37,029	40,150	48,441	51,673	55,189	41,225					47,195
40 to 44	741	3,923	3,301	4,234	5,168	1,150	6				18,523
Avg. Pay	33,684	38,901	47,983	51,874	56,886	58,696	42,385				49,524
45 to 49	625	3,490	3,280	4,060	4,073	4,658	868	15			21,069
Avg. Pay	34,119	37,575	45,381	47,864	54,856	60,645	60,146	42,930			50,045
50 to 54	468	2,554	2,596	3,627	3,495	3,012	2,385	412	12		18,561
Avg. Pay	35,235	36,230	43,258	43,991	49,611	56,780	61,708	60,900	56,688		48,394
55 to 59	330	2,013	2,134	3,013	3,329	3,055	1,904	1,023	388	5	17,194
Avg. Pay	32,657	36,627	44,091	42,969	46,569	52,808	59,415	63,928	61,002	46,930	48,089
60 to 64	195	1,707	1,468	1,882	1,940	1,960	1,380	366	220	25	11,143
Avg. Pay	39,467	50,096	44,068	43,223	47,784	50,822	59,364	66,770	66,999	52,324	49,714
65 to 69	77	693	840	756	542	532	385	101	31	15	3,972
Avg. Pay	40,780	51,582	52,561	44,856	50,741	51,089	71,006	67,395	91,343	68,165	52,776
70 & up	30	287	407	384	254	185	147	41	18	21	1,774
Avg. Pay	32,511	51,153	54,141	34,705	47,309	52,818	72,664	72,574	77,106	101,579	50,724
Total	7,198	34,015	24,760	26,250	20,180	14,560	7,075	1,958	669	66	136,731
Avg. Pay	34,273	38,321	46,292	47,824	52,229	56,266	61,159	64,021	64,736	71,187	47,034

Average Age: 45.56

Average Service: 10.99



SCHEDULE I
(continued)

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

Age	Number of Members	Total Annual Benefits	Average Annual Benefits
Under 50	287	\$ 8,597,057	\$ 29,955
50 – 54	1,849	55,602,607	30,072
55 – 59	4,808	147,255,941	30,627
60 – 64	14,719	385,578,814	26,196
65 – 69	20,618	488,291,934	23,683
70 – 74	15,755	357,705,187	22,704
75 – 79	10,315	226,320,965	21,941
80 – 84	6,708	135,891,688	20,258
85 – 89	4,003	76,231,769	19,044
90 – 94	1,536	26,740,494	17,409
95 & Over	529	8,260,890	15,616
Total	81,127	\$ 1,916,477,346	\$ 23,623

Average Age: 70.3

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

Age	Number of Members	Total Annual Benefits	Average Annual Benefits
Under 50	345	\$ 3,915,590	\$ 11,350
50 – 54	174	1,926,225	11,070
55 – 59	272	3,225,277	11,858
60 – 64	421	6,374,064	15,140
65 – 69	595	9,353,166	15,720
70 – 74	719	12,231,447	17,012
75 – 79	697	11,946,755	17,140
80 – 84	658	10,831,403	16,461
85 – 89	523	8,168,052	15,618
90 – 94	289	3,893,796	13,473
95 & Over	82	967,574	11,800
Total	4,775	\$ 72,833,349	\$ 15,253

Average Age: 72.0



SCHEDULE I
(continued)

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

Age	Number of Members	Total Annual Benefits	Average Annual Benefits
Under 50	372	\$ 4,389,360	\$ 11,799
50 – 54	552	6,647,592	12,043
55 – 59	935	10,992,215	11,756
60 – 64	1,346	15,560,427	11,560
65 – 69	1,145	12,420,702	10,848
70 – 74	742	8,014,287	10,801
75 – 79	347	3,947,201	11,375
80 – 84	142	1,533,729	10,801
85 – 89	71	720,327	10,145
90 – 94	17	180,848	10,638
95 & Over	3	44,878	14,959
Total	5,672	\$ 64,451,566	\$ 11,363

Average Age: 63.3