Cavanaugh Macdonald
CONSULTING, LLC

The experience and dedication you deserve

Report of the Actuary on the Annual Valuation of the Shelby County Retirement System

Prepared as of June 30, 2019

www.CavMacConsulting.com

November 27, 2019

Board of Commissioners
Shelby County Retirement System
160 North Main Street, Suite 950
Memphis, TN 38103

Members of the Board:

We are pleased to submit the results of the actuarial valuation of the Shelby County Retirement System prepared as of June 30, 2019. The purpose of this report is to provide a summary of the funded status of the System as of June 30, 2019 and to recommend rates of Actuarially Determined Employer Contribution (ADEC) rates for the fiscal year ending June 30, 2021. The information needed for the County under the Governmental Accounting Standards Board Statements No. 67 and 68 (GASB 67 and 68) will be provided in separate reports. However, for informational purposes, we have also provided several accounting tables in Section VI.

On the basis of the valuation, it is recommended that employer contributions to the System be set at a rate of 22.10% of payroll for the fiscal year ending June 30, 2021. This is an increase of 0.27% of payroll in the contribution rate recommended in the prior valuation of 21.83% of payroll. The promised benefits of the System are included in the calculated contribution rate which is developed using the Entry Age Normal (EAN) cost method. A ten-year smoothed market value of plan assets method is used to calculate the actuarial value of assets.

Gains and losses are reflected in the unfunded accrued liability that is being amortized by regular annual contributions. The initial obligation for Plan C is being amortized by annual contributions within a 7.0-year period as of the valuation date. The Transitional Unfunded Accrued Liability as of June 30, 2018 is being amortized within a 21.0-year period as of the valuation date. Future gains and losses in subsequent years are amortized within a closed 20 year period from the valuation it is established. The blended amortization period for all of these components of the unfunded accrued liability is 19.3 years.

Since the previous valuation, no changes were made to the assumptions, methods, or plan provisions.

This is to certify that the independent consulting actuary is a Member of the American Academy of Actuaries and has experience in performing valuations for public retirement systems, that the valuation was prepared in accordance with principles of practice prescribed by the Actuarial Standards Board, and that the actuarial calculations were performed by qualified actuaries in accordance with accepted actuarial procedures, based on the current provisions of the System and on actuarial assumptions that are internally consistent and reasonably based on the actual experience of the System. While not verifying the data at source, the actuary performed tests for consistency and reasonability.

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.

We trust that the report will meet the approval of the Board and will furnish the desired information concerning the financial condition of the System.

Respectfully submitted,

Edward J. Koebel

Ben Mobley

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

Ben Mobley, ASA, FCA, MAAA
Senior Actuary

Table of Contents

Section I – Summary of Principal Results

1. For convenience of reference, the principal results of the current and preceding valuations are summarized below.

Valuation Date	June 30, 2019	June 30, 2018
Active members:		
Number	5,053	5,046
Annualized compensation	$ 263,235,112	$ 254,181,677
County to City Transfers:		
Number	158	174
Annualized compensation	$ 10,360,424	$ 10,543,592
Retired members and beneficiaries:		
Number	4,040	3,905
Annual allowances	$ 91,689,401	$ 84,842,799
Number of participants with deferred benefits	210	206
Assets:		
Market Value	$ 1,224,240,111	$ 1,191,573,647
Actuarial Value	1,302,528,448	1,239,548,144
Unfunded actuarial accrued liability	$ 493,532,958	$ 480,914,261
Weighted Amortization Period	19.3 years	20.2 years
Funded Ratio		
Market Value	68.2%	69.3%
Actuarial Value	72.5%	72.0%
Fiscal Year Ending	**June 30, 2021**	**June 30, 2020**
Actuarially determined employer contribution rate (ADEC):		
Normal Cost	4.79%	4.75%
Accrued liability	17.31	17.08
Total	22.10%	21.83%

2. The major benefit and contribution provisions of the Plan as reflected in the valuation are summarized in Schedule E. There have been no changes since the previous valuation.
3. Schedule D of this report outlines the full set of actuarial assumptions and methods used in the valuation. There have been no changes since the previous valuation.
4. Schedule B shows the development of the actuarial value of assets. The assumed investment rate of return is 7.00%.
5. Comments on the valuation results as of June 30, 2019 are given in Section IV and further discussion of the contributions is set out in Section V.
6. As shown in the Summary of Principal Results, the funded ratio is the ratio of assets to the accrued liability and is 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 toward payment of the unfunded 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 County. The valuation included 5,053 active members with annualized compensation totaling $263,235,112. In addition, there are 158 County to City Transfers with total annual base earnings of $10,360,424. Below we show the active members by Plan.

THE NUMBER AND ANNUAL BASE EARNINGS OF ACTIVE MEMBERS AS OF JUNE 30, 2019

PLAN	NUMBER	TOTAL ANNUAL BASE EARNINGS
Plan B	3	$ 310,599
Plan A	1,151	61,660,258
Plan C	1,735	98,713,576
Plan D	2,164	102,550,679
Total	5,053	$ 263,235,112

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

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

TYPE OF RETIREMENT	PLAN B	PLAN A	PLAN C	PLAN D	TOTAL
Service:					
Number	599	1,653	1,119	1	3,372
Annual Benefits	$16,413,332	$30,571,085	$33,621,662	$14,976	$80,621,055
Disability:					
Number	19	22	0	0	41
Annual Benefits	$257,948	$561,213	$0	$0	$819,161
Survivors:					
Number	231	332	63	1	627
Annual Benefits	$4,486,962	$4,417,856	$1,332,102	$12,265	$10,249,185
Total:					
Number	849	2,007	1,182	2	4,040
Annual Benefits	$21,158,242	$35,550,154	$34,953,764	$27,241	$91,689,401

*In addition, there are 210 participants entitled to deferred annual benefits totaling $5,202,431.

3. Table 1 of Schedule F shows a reconciliation of the membership from June 30, 2018 to June 30, 2019. Tables 2, 3, and 4 of Schedule F show the distribution by age and years of membership service of the number of active members included in the valuation by plan, while Tables 5, 6 and 7 show the number and annual benefits of retired members and beneficiaries included in the valuation by plan, distributed by age.

Section III – Assets

1. As of June 30, 2019, the total market value of assets amounted to $1,224,240,111, as reported by the auditor. The estimated investment return on a market value basis for the plan year was 4.35%. Schedule C shows the receipts and disbursements of the System for the year preceding the valuation date and a reconciliation of the System balances at market value.

2. The market related actuarial value of assets using a 10-year smoothing technique of investment gains and losses is $1,302,528,448. The estimated investment return for the plan year ending June 30, 2019 on an actuarial value of assets basis was 6.65%, which can be compared to the investment return assumed for the period of 7.00%. Schedule B shows the development of the actuarial value of assets as of June 30, 2019.

Section IV – Comments on Valuation

1. Schedule A of this report outlines the results of the actuarial valuation. The valuation was prepared in accordance with the actuarial assumptions and the actuarial cost method, which are described in Schedule D.
2. The valuation shows that the total actuarial accrued liability of the System amounts to $1,796,061,406. Against these liabilities, the System has present assets for valuation purposes of $1,302,528,448. When this amount is deducted from the actuarial accrued liability of $1,796,061,406, there remains $493,532,958 as the Unfunded Actuarial Accrued Liability (UAAL).
3. The employer's contributions to the System consist of normal cost contributions and accrued liability contributions. The normal cost rate is equal to the actuarial present value of benefits accruing during the current year divided by the annual active members' payroll. Estimated budgeted administrative expenses are included in the normal cost rate. The administrative expenses for the fiscal year ending June 30, 2021 are estimated to be 0.55% of payroll. Therefore, the employer normal cost rate is determined to be 4.79% of payroll.
4. The initial obligation for Plan C is being amortized as a level dollar amount with a remaining amortization period of 7.0 years. The UAAL as of June 30, 2018 (Transitional UAL) will be amortized as a level dollar amount over a closed 22-year period from that date. There are 21.0 years remaining on the amortization of the Transitional UAAL. 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 dollar amount over a closed 20-year period from the date it is established.

5. The following table shows the components of the total UAAL and the derivation of the UAAL contribution rate:

TOTAL UAAL AND UAAL CONTRIBUTION RATE

	Remaining Balance UAAL	Remaining Amortization Period (years)	Amortization Payment
Plan C Obligation	$19,450,973	7.0	$3,609,191
Transitional 6/30/2018	449,989,055	21.0	41,529,041
New Incremental 6/30/2019	24,092,930	20.0	2,274,202
Total UAAL	$493,532,958		$47,412,434
Blended Amortization Period (years)			19.3
Estimated Payroll			$273,861,697
UAAL Contribution Rate			17.31%

6. Therefore, when the total normal contribution rate including administrative expenses of 4.79% is added to the UAAL contribution rate of 17.31%, the total contribution rate required for the fiscal year ending June 30, 2021 is 22.10% of payroll.

7. The unfunded actuarial accrued liability (UAAL) increased approximately $12.6 million for the plan year ending June 30, 2019 but yet the funding ratio increased from 72.0% to 72.5%. The increase in the UAAL was primarily due to a loss from higher salary increases than expected and a loss from the investment return on an actuarial value basis for the year being less than expected (6.65% vs. 7.00%). See Schedule G for a complete breakdown of the experience of the System.

Section V – Contributions Payable

The following table summarizes the employer contributions which were determined by the June 30, 2019 valuation and are recommended for use in the fiscal year ending June 30, 2021.

COUNTY ACTUARIALLY DETERMINED EMPLOYER CONTRIBUTIONS (ADEC)
FOR FISCAL YEAR ENDING JUNE 30, 2021

CONTRIBUTION	PERCENTAGE OF ACTIVE MEMBERS' COMPENSATION	ESTIMATED DOLLARS BASED ON CURRENT PAYROLL
Normal Cost	4.79%	$ 12,608,962
Accrued Liability	17.31	45,565,998
Total	22.10%	$ 58,174,960

Section VI – Accounting Information

Governmental Accounting Standards Board Statements (GASB) has issued Statements No. 67 and 68 which replaced Statement No. 25 and 27 for plan years beginning after June 15, 2013. The information required under the new GASB Statements will be issued in separate reports. The following information is provided for informational purposes only.

1. The following is a distribution of the number of employees by type of membership, as follows:

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

GROUP	PLAN B	PLAN A	PLAN C	PLAN D	TOTAL
Retired participants and beneficiaries currently receiving benefits	849	2,007	1,182	2	4,040
Terminated participants and beneficiaries entitled to benefits but not yet receiving benefits	0	149	58	3	210
Terminated participants entitled to a refund of contributions	0	31	86	285	402
County to City Transfers	0	147	10	1	158
Active Participants	3	1,151	1,735	2,164	5,053
Total	852	3,485	3,071	2,455	9,863

2. Another such item is the schedule of funding progress as shown below.

SCHEDULE OF FUNDING PROGRESS
Dollar Amounts in Thousands

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) PUC (b)	Unfunded AAL (UAAL) (b – a)	Funded Ratio (a / b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b – a) / c)
6/30/2014	$1,155,350	$1,398,658	$243,308	82.6%	$240,466	101.2%
6/30/2015#	1,192,702	1,509,224	316,522	79.0	243,655	129.9
6/30/2016#	1,206,907	1,648,669	441,762	73.2	244,818	180.4
6/30/2017	1,209,053	1,699,338	490,285	71.1	245,415	199.8
6/30/2018#	1,239,548	1,720,462	480,914	72.0	254,182	189.2
6/30/2019	1,302,528	1,796,061	493,533	72.5	263,235	187.5

Reflects changes in assumptions.

3. Another such item is the schedule of employer contributions as shown below.

SCHEDULE OF EMPLOYER CONTRIBUTIONS

FISCAL YEAR ENDING	ESTIMATED ANNUAL REQUIRED CONTRIBUTION	PERCENT CONTRIBUTED
6/30/2014	$32,982,757	100%
6/30/2015	33,220,088	100
6/30/2016	32,113,026	100
6/30/2017	38,667,995	100
6/30/2018	51,289,266	100
6/30/2019	55,831,986	100
6/30/2020	55,487,860	N/A

4. Additional information as of June 30, 2019 follows:

Valuation date	6/30/2019
Actuarial cost method	Entry Age Normal
Amortization period	Level dollar, closed
Remaining amortization period	19.3 years
Asset valuation method	Ten-year smoothed market value
Actuarial assumptions:	
Investment rate of return (includes inflation)	7.00%
Projected salary increases	2.75% - 5.25%
Cost-of-living adjustments (payable January 1 of each year)	CPI-U up to 1% for Plan B; CPI-U up to 4% for Plan A and Plan C; CPI-U up to 2% for Plan D;

Section VII – Experience

Actual experience will never (except by coincidence) coincide exactly with assumed experience. It is assumed that gains and losses will be in balance over a period of years, but sizable year to year fluctuations are common. Detail on the derivation of the experience gain/(loss) for the year ended June 30, 2019 is shown below.

			$ Thousands
(1)	UAAL* as of June 30, 2018	$	480,914.3
(2)	Expected accrued liability contribution		45,138.2
(3)	Expected UAAL before changes: [(1) * 1.07] – (2)	$	469,440.1
(4)	Change due to plan amendments		0.0
(5)	Change due to actuarial assumptions or methods		0.0
(6)	Expected UAAL after changes: (3) + (4) + (5)	$	469,440.1
(7)	Actual UAAL as of June 30, 2019	$	493,533.0
(8)	Gain/(loss): (6) – (7)	$	(24,092.9)
(12)	Gain/(loss) as percent of actuarial accrued liabilities for prior year ($1,720,462.4)		(1.4)%

*Unfunded actuarial accrued liability.

Valuation Date June 30	Actuarial Gain/(Loss) as a % of Beginning Accrued Liabilities
2015	(1.3)%
2016	(2.5)%
2017	(2.9)%
2018	(2.8)%
2019	(1.4)%

Section VIII – Risk Assessment

Overview

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

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

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

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

Section VIII – Risk Assessment

Investment Risk

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

($ in thousands)

Valuation	Market Value of Assets	Covered Payroll	Asset Volatility Ratio
2012	$915,991	$247,987	3.69
2013	$1,008,049	$250,367	4.03
2014	$1,137,626	$240,466	4.73
2015	$1,115,134	$243,655	4.58
2016	$1,052,137	$244,818	4.30
2017	$1,140,289	$245,415	4.65
2018	$1,191,574	$254,182	4.69
2019	$1,224,240	$263,235	4.65

The asset volatility ratio is especially useful to compare across plans or through time. It is also frequently useful to consider how the AVR translates into changes in the Required Contribution Rate (actuarially determined employer contribution rate). For example, the following table demonstrates that with an AVR of 5.00, if the market value return is 10% below assumed, or -3.00% for the System, there will be an increase in the Required Contribution Rate of 0.78% payroll in the first year. Without asset smoothing or without returns above the expected return in the next four years, the impact on the Required Contribution Rate would be 3.90%. A higher AVR would produce more volatility in the Required Contribution Rate.

AVR	Unsmoothed Amortization	Smoothed Amortization
3.0	2.34%	0.47%
4.0	3.12%	0.62%
5.0	3.90%	0.78%
6.0	4.67%	0.93%

Section VIII – Risk Assessment

Sensitivity Measures

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

The following tables contains the key measures for the System using the valuation assumption for investment return of 7.00%, along with the results if the assumption were 6.00% or 8.00%. In this analysis, only the investment return assumption is changed. Consequently, there may be inconsistencies between the investment return and other economic assumptions such as inflation or payroll increases. In addition, simply because the valuation results under alternative assumptions are shown here, it should not be implied that CMC believes that either assumption (6.00% or 8.00%) would comply with actuarial standards of practice.

($ in thousands)

As of June 30, 2019	Current Discount Rate (7.0%)	-1% Discount Rate (6.0%)	+1% Discount Rate (8.0%)
Accrued Liability	$1,796,061	$2,014,961	$1,612,676
Unfunded Liability	$493,533	$712,432	$310,147
Funded Ratio (AVA)	72.5%	64.6%	80.8%
ADEC Rate	22.10%	30.68%	14.46%

Section VIII – Risk Assessment

Mortality Risk

The mortality assumption is a significant assumption for valuation results, second only to the investment assumption in most situations. The System's mortality assumption utilizes a mortality table (with separate rates for males and females, as well as different rates by status) and a projection scale for how the mortality table is expected to improve through time. This approach is the current state of the art in retirement actuarial practice, made possible by the increase in computational power over the past 20 years.

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

Contribution Risk

The System is primarily funded by member and employer contributions to the trust fund, together with the earnings on those accumulated contributions. Each year in the valuation, the Required Contribution Rate is determined, based on the System's funding policy. This rate is the sum of the rates for the normal cost for the plan, the amortization of the UAAL, and the administrative expenses. Since the System is obligated to make 100% of the Required Contribution Rate by statute, there is no contribution.

VALUATION RESULTS
AS OF JUNE 30, 2019

(1)	Actuarial Accrued Liability:			
	(a)	Plan B		
		(i)	Actives and Transfers	$ 2,557,550
		(ii)	Retired, Beneficiaries, Disabled, Terminated	178,902,487
		(iii)	Total = (i) + (ii)	$ 181,460,037
	(b)	Plan A		
		(i)	Actives and Transfers	$ 285,959,886
		(ii)	Retired, Beneficiaries, Disabled, Terminated	394,518,954
		(iii)	Total = (i) + (ii)	$ 680,478,840
	(c)	Plan C		
		(i)	Actives and Transfers	$ 433,347,277
		(ii)	Retired, Beneficiaries, Disabled, Terminated	456,194,747
		(iii)	Total = (i) + (ii)	$ 889,542,024
	(d)	Plan D		
		(i)	Actives and Transfers	$ 42,303,448
		(ii)	Retired, Beneficiaries, Disabled, Terminated	2,277,057
		(iii)	Total = (i) + (ii)	$ 44,580,505
	(e)	Total = (a)iii + (b)iii + (c)iii + (d)iii		$ 1,796,061,406
(2)	Actuarial Value of Assets			$ 1,302,528,448
(3)	Unfunded Actuarial Accrued Liability: (1(e) – 2)			$ 493,532,958

Schedule B – Development of the Actuarial Value of Assets

(1)	Actuarial Value of Assets as of June 30, 2018		$ 1,239,548,144
(2)	Market Value of Assets as of June 30, 2019		$ 1,224,240,111
(3)	Market Value of Assets as of June 30, 2018		$ 1,191,573,647
(4)	Net Cash Flow During Plan Year		
	(a)	Contributions	$ 78,003,562
	(b)	Benefit Payments and Refunds	(95,839,193)
	(c)	Administration Expenses	(952,470)
	(d)	Net Cash Flow: (a) + (b) + (c)	$ (18,788,101)
(5)	Investment Income		
	(a)	Market Total: (2) – (3) – (4)d	$ 51,454,565
	(b)	Assumed Rate	7.00%
	(c)	Amount for Immediate Recognition	$ 82,763,693
	(d)	Amount for Phased-In Recognition: (5)a – (5)c	$ (31,309,128)
(6)	Recognized Amounts for Plan Year		
	(a)	Current Year: 0.10 x (5)d	$ (3,130,913)
	(b)	First Prior Year	(648,242)
	(c)	Second Prior Year	4,548,463
	(d)	Third Prior Year	(11,328,646)
	(e)	Fourth Prior Year	(8,343,352)
	(f)	Fifth Prior Year	7,712,483
	(g)	Sixth Prior Year	4,391,650
	(h)	Seventh Prior Year	(11,572,814)
	(i)	Eighth Prior Year	12,045,965
	(j)	Ninth Prior Year	5,330,118
	(k)	Total Recognized Investment Gain/(Loss)	$ (995,288)
(7)	Actuarial Value of Assets as of June 30, 2019 (1) + (4)d + (5)c + (6)k		$ 1,302,528,448
(8)	Rate of Return on Actuarial Value		6.65%

Schedule C – Asset Information

Receipts		
(1) Employee Contributions		$ 17,288,718
(2) Employer Contributions		60,714,844
(3) Investment Income		51,454,565
(4) Total Receipts		$ 129,458,127
Disbursements		
(5) Retirement	$ 89,207,406	
(6) Refunds and Cashouts	6,631,787	
(7) Administrative Expenses	952,470	
(8) Total Disbursements		$ 96,791,663
(9) Excess of Receipts Over Disbursements: (4) - (8)		$ 32,666,464
Reconciliation of Asset Balances		
(10)Market Value at June 30, 2018		$1,191,573,647
(11)Excess of Receipts Over Disbursements		32,666,464
(12)Market Value at June 30, 2019		$1,224,240,111
(13)Estimated Rate of Return on Market Value of Assets		4.35%

Schedule D – Outline of Actuarial Assumptions and Methods

Actuarial assumptions and methods adopted by the Board October 2, 2018.

INVESTMENT RATE OF RETURN: 7.00% per year (net of investment expenses only), including price inflation at 2.50% per annum.

SALARY INCREASES:

Service	Increase per year
Less than 5	5.25%
5-9	4.25
10-14	3.75
15-19	3.50
20-24	3.25
25 or more	2.75

EXPENSES: Estimated budgeted administrative expenses of 0.55% of payroll are added to the normal cost rate.

COST-OF-LIVING ADJUSTMENT: 1.00% per year, compounded for Plan B. 2.75% per year, compounded for Plan A and Plan C. 2.00% per year, compounded for Plan D. COLA is payable January 1 of each year.

DEATH ASSUMPTION: 90% of active member deaths are assumed to occur as a result of non-hazardous duty and 10% of active member deaths are assumed to occur as a result of hazardous duty.

PERCENT MARRIED: 65% of male active members and 40% of female active members are assumed to be married with the male three years older than his spouse.

ASSETS: Actuarial value, as developed in Schedule C. The actuarial value of assets recognizes a portion of the difference between the market value of assets and the expected market value of assets, based on the assumed valuation rate of return. The amount recognized each year is 10% of the difference between market value and expected market value.

VALUATION METHOD: Entry Age Normal actuarial cost method.

Schedule D – Outline of Actuarial Assumptions and Methods

RATES OF WITHDRAWAL AND DISABILITY: Representative values of the assumed rates of withdrawal and disability are as follows:

Age	Annual Rate of			
	Withdrawal			Disability
	Less than 4 years of service	4 to 7 years of service	8 or more years of service	
20	15.0%	15.0%	10.0%	0.12%
25	15.0	15.0	10.0	0.12
30	13.0	10.0	10.0	0.12
35	12.0	8.5	6.0	0.12
40	11.0	7.0	5.0	0.17
45	10.0	5.0	4.0	0.22
50	9.0	4.5	3.5	0.27
55	8.0	4.5	3.5	0.32
60	8.0	4.5	3.5	0.37
65	8.0	4.5	3.5	0.42

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

Plan B

Age	Non-Public Safety	Public Safety
60	20.00%	100.0%
61	5.00	100.0
62	7.50	100.0
63	5.00	100.0
64	5.00	100.0
65	100.00	100.0

Schedule D – Outline of Actuarial Assumptions and Methods

Plan A

Age	0 – 7 years of service	8 or more years of service
55		7.5%
56		6.5
57		6.0
58		6.5
59		7.0
60		7.5
61		8.5
62		12.5
63		11.0
64		14.0
65	22.0%	22.0
66	20.0	20.0
67	20.0	20.0
68	20.0	20.0
69	20.0	20.0
70	100.0	100.0

Plan C

	Non-Public Safety			Public Safety		
Age	0 – 7 years of service	8 – 24 years of service	25 or more years of service	0 – 7 years of service	8 – 24 years of service	25 or more years of service
50			18.0%			16.0%
55		7.0%	18.0		7.0%	16.0
56		6.0	18.0		6.0	16.0
60		7.5	18.0		10.0	20.0
61		10.0	18.0		11.0	20.0
62		11.0	18.0		11.0	20.0
63		11.0	18.0		11.0	20.0
64		11.0	21.5		11.0	20.0
65	15.0%	15.0	25.0	100.0%	100.0	100.0
66	12.0	12.0	25.0	100.0	100.0	100.0
70	100.0	100.0	100.0	100.0	100.0	100.0

Plan D

	Non-Public Safety	Public Safety	
Age		Less than 20 years of service	20 or more years of service
50			7.0%
51			6.0
55		10.0%	16.0
56		11.0	16.0
60		11.0	20.0
62	11.0%	11.0	20.0
65	15.0	100.0	100.0
66	12.0	100.0	100.0
67	40.0	100.0	100.0
70	100.0	100.0	100.0

RATES OF DEATHS BEFORE RETIREMENT: The RP-2014 Mortality Table with Blue Collar Adjustment and projected to 2020 with projection scale MP-2017 is used for both males and females while in active service. Representative values of the assumed rates of death while in active service are as follows:

Age	Male	Female
20	0.0486%	0.0186%
25	0.0630	0.0208
30	0.0653	0.0262
35	0.0788	0.0371
40	0.0908	0.0510
45	0.1280	0.0752
50	0.2137	0.1204
55	0.3590	0.1969
60	0.6311	0.3027
65	1.1325	0.4355

Schedule D – Outline of Actuarial Assumptions and Methods

RATES OF DEATH AFTER RETIREMENT: The RP-2014 Mortality Table with Blue Collar Adjustment and projected to 2020 with projection scale MP-2017, set forward two years for males and set forward three years for females, with rates at ages 70 and below adjusted by 125% for both males and females and rates at ages above 70 adjusted by 85% for females only is used for the period after retirement and for dependent beneficiaries. The RP-2014 Disabled Mortality Table projected to 2020 with projection scale MP-2017 is used for the period after disability retirement. There is a margin for future mortality improvement in the tables used by the System. Based on the results of the most recent experience study adopted by the Board on October 2, 2018, the numbers of expected future deaths are 7-11% less than the actual number of deaths that occurred during the study period for service retirements and beneficiaries. Representative values of the assumed rates of death after service and disability retirement are as follows:

	Annual Rate of Death After			
	Service Retirement		Disability Retirement	
Age	Male	Female	Male	Female
50	0.5843%	0.4434%	1.9977%	1.1596%
55	0.8686	0.6783	2.3252	1.5198
60	1.2970	0.9881	2.7672	1.8787
65	1.9648	1.4628	3.3502	2.1917
70	3.0106	2.3581	4.1376	2.8342
75	3.9060	2.7112	5.5115	4.1428
80	6.5624	4.7309	7.8620	6.3510
85	11.1563	8.3054	11.7706	9.7144

Schedule E – Summary of Main System Provisions – Plan B

Eligibility	All salaried employees hired prior to December 1, 1978 were eligible at date of employment and had to apply for membership as a condition of such employment. "Employee" means any person employed on a regular full-time basis, excluding officials or employees of the Board of Education of Shelby County. Entry in the System was optional for individuals employed on a per diem basis. Employees not able to complete the required number of years of service prior to mandatory retirement age could not join the plan.
Final Average Earnings	If a participant had 10 years of credited service on October 1, 1977, the greater of: 1) Average monthly earnings for the five consecutive years of County Service during which earnings was the highest or, 2) Average monthly earnings for the 12 months preceding the date of retirement. If the participant did not have 10 years of service on October 1, 1977, the average monthly earnings for the 36 consecutive months during which the employee received his highest earnings.
Normal Retirement Benefit	
Eligibility	25 years of credited service or age 60 (age 55 if Deputy Sheriff) and 10 years of credited service.
Benefit	2.7% of final average earnings multiplied by years of credited service not in excess of 25 plus 1% of final average earnings multiplied by years of credited service greater than 25 but less than 35. The maximum benefit is 77.5% of final average earnings. The minimum monthly benefit is $300 ($150 monthly if jointly employed by the City and County).
Disability Retirement	
Eligibility	After January 1, 2007, only participants who are disabled in the line-of-duty are eligible to receive a disability pension.
Benefit	The greater of: 1) The Normal Retirement Benefit (if participant is then eligible for a Normal Retirement Benefit) or, 2) 50% of Final Average Earnings.
Termination of Employment	If employment is terminated prior to the completion of 10 years of credited service, a refund of the participant's contributions, without interest, is payable.

If employment is terminated after completion of 10 years of credited service, a deferred vested benefit equal to the participant's accrued benefit at date of termination is paid commencing at age 60. Benefits are payable to the surviving spouse after age 60 of the participant. The participant may elect to withdraw his contributions, without interest, instead of receiving the deferred monthly benefit at age 60.

Death Benefit

If a participant dies before completing 10 years of credited service and does not die in line-of-duty, his beneficiary will receive a refund of the participant's contributions, without interest.

If a participant dies after completing 10 years of credited service or after retirement the member's eligible spouse will receive the participant's accrued benefit until death.

If death occurs in line-of-duty, a benefit of 50% of the participant's final average earnings will be paid to the spouse until death.

Contributions

Each year the County contributes an amount determined actuarially to sustain the plan on an actuarially determined funding basis. Employees contribute 8% of earnings to the retirement plan for the first 35 years. After 35 years, employees contribute 8% of any increases in pay.

Cost of Living Adjustment

A maximum of 1% annual adjustment payable January 1 of each year based on CPI changes for the following:

1) Retired participants who have attained age 65, completed 25 years of credited service prior to termination, have been retired and receiving benefits for 5 years, and have a monthly pension for the first month in which they are eligible for the COLA less than $3,000.
2) Disability retired participants who have a monthly pension for the first month in which they are eligible for the COLA less than $3,000.
3) Surviving Spouses who have attained age 65, where the original participant completed 25 years of credited service prior to termination or whose death was a line of duty death or whose pension had been a disability pension, where the original participant’s termination was at least 5 years prior to receiving the COLA, and who have a monthly pension for the first month in which they are eligible for the COLA less than $3,000.
4) Surviving children where the original participant completed 25 years of credited service prior to termination or whose death was a line of duty death or whose pension had been a disability pension, where the participant’s termination was at least 5 years prior to receiving the COLA, and who have a monthly pension for the first month in which they are eligible for the COLA less than $3,000.

In no event, however, will the Plan B benefits exceed 100% of final average pay.

Schedule E – Summary of Main System Provisions – Plan A

Eligibility	All employees hired after December 1, 1978 and prior to March 1, 2005 including all full-time, part-time and elected employees, and members of Plan B electing to transfer to Plan A and employees of all joint City/County agencies administered by Shelby County participate. CETA employees, Board of Education employees, employees electing Social Security coverage, and Joint City/County agencies not administered by Shelby County cannot participate.
Public Safety Employees	Public Safety Employees, hired prior to March 1, 2005, who did not elect to transfer to Plan C, effective September 1, 2005, are no longer eligible to retire under the 25 year-and-out program and no longer contribute to Plan A.
Final Average Earnings	The average over the three highest consecutive years of earnings.

Normal Retirement Benefit

Eligibility	Age 65 regardless of amount of credited service.
Benefit	Final average earnings multiplied by a percentage from Table A, which is included in the appendix to the plan. Listed below is a summary of Table A:

Years of Service	Benefit Accrual Per Year
1 – 7	1.5%
8 – 13	2.0
14 – 20	2.5
21 – 25	3.0
26 – 30	3.0
31 – 35	2.5
36 – 38	2.5
39 and above	0.0

Early Retirement Benefit

Eligibility	Age 55 and completion of 7.5 years of credited service.
Benefit	The Normal Retirement Benefit reduced 2.5% for each year less than age 65.

Disability Retirement

Eligibility	After January 1, 2002, no disability benefits are provided by the Plan. Upon reaching age 65, a disabled participant will have any disability benefit recomputed as a normal retirement benefit payable by the Plan.

Schedule E – Summary of Main System Provisions – Plan A

Benefit	The Normal Retirement Benefit calculated with credited service including time while disabled.
Termination of Employment	If employment is terminated prior to the completion of 7.5 years of credited service, no benefit is payable. If employment is terminated after completion of 7.5 years of credited service, a deferred vested benefit equal to the participant's accrued benefit at date of termination is paid commencing at age 65. Alternatively, the participant may elect a vested early benefit payable beginning at age 55 which is actuarially equivalent.
Death Benefit	If a participant dies, the participant's eligible spouse shall receive 45% of final average earnings for two years after the participant's death. If death occurs in line-of-duty, or, if not line-of-duty, the participant before death was age 55 and completed 15 years of credited service, the participant's eligible spouse shall receive 75% of the participant's pension calculated as if the participant had retired immediately before death. This benefit shall be payable when the spouse reaches age 65. The participant's final average earnings is adjusted by the COLA from the participant's death until the spouse reaches age 65.
Contributions	Employees contribute 0.5% of earnings in 2011, 1.0% of earnings in 2012, 1.5% of earnings in 2013 and 2.0% of earnings in 2014 and thereafter.
Cost of Living Adjustment	A maximum of 4% annual adjustment payable January 1 of each year based on CPI changes applies to the following benefits: 1) Retired participants after age 65 2) Disabled participants 3) Survivor benefits for dependent children 4) Survivor benefits for spouses under age 65 receiving the two year temporary benefit 5) Survivor benefits for spouses age 65 and over. In no event, however, will the Plan A benefits exceed 100% of final average pay except as follows for an employee who retires with 40 or more years of service:

Final Average Earnings	Maximum Benefit
Less than $1,200	124%
$1,200 to $2,800	115%
More than $2,800	106%

Schedule E – Summary of Main System Provisions – Plan C

Eligibility	All employees participate who are hired on or after March 1, 2005 but before July 1, 2011, including all full-time, part-time and elected employees, and employees of all joint City/County agencies administered by Shelby County, and members of Plan A electing to transfer to Plan C. CETA employees, Board of Education employees, employees electing Social Security coverage, and Joint City/County agencies not administered by Shelby County cannot participate.
Final Average Earnings	The average over the three highest consecutive years of earnings.
Alternate Benefit Accrual Account	Participants contribute 6% of earnings prior to 2011, 6.5% of earnings in 2011, 7.0% of earnings in 2012, 7.5% of earnings in 2013 and 8.0% of earnings in 2014 and thereafter to fund the Plan. Participants are always fully vested in these contributions. Prior to January 1, 2011, the employer matches 50% of each contribution the participant makes to the plan. Effective January 1, 2011, employer matching contributions are frozen at 3%. The participant becomes fully vested in the employer contributions upon reaching 7.5 years of credited service. The total of these two contribution amounts will comprise the participant's Alternate Benefit Accrual Account. The investment return on these contributions and match is 2% per annum.
Normal Retirement Benefit	
Eligibility	Age 65 or upon completion of 25 years of credited service.
Benefit	The greater of: 1) 2.35% of final average earnings multiplied by credited service (up to 35 years) or, 2) The life annuity equivalent of the participant's Alternate Benefit Accrual Account.
Early Retirement Benefit	
Eligibility	Age 55 and completion of 7.5 years of credited service.
Benefit	The greater of: 1) Final average earnings multiplied by credited service (up to 35 years) and a percentage from Table ERP, which is included as part of the plan, or 2) The life annuity equivalent of the participant's Alternate Benefit Accrual Account.

Schedule E – Summary of Main System Provisions – Plan C

Disability Retirement

Eligibility	No disability benefits are provided by the Plan except for transfers. Upon reaching age 65, a disabled participant will have any disability benefit recomputed as a normal retirement benefit payable by the Plan.
Benefit	The Normal Retirement Benefit calculated with credited service including time while disabled.

Termination of Employment

If employment is terminated prior to the completion of 7.5 years of credited service, the participant is entitled to receive the vested portion of the participant's alternate benefit accrual account as a lump sum payment.

If employment is terminated after completion of 7.5 years of credited service, a deferred vested benefit equal to the participant's accrued benefit at date of termination is paid commencing at age 65. Alternatively, the participant may elect a vested early benefit payable beginning at age 55 which is actuarially equivalent.

Death Benefit

If a participant dies before completion of 15 years of credited service and the death occurs in line-of-duty, or, if not line of duty, the participant had completed 7.5 years of credited service before death, the participant's eligible beneficiary shall receive the vested portion of the participant's alternate benefit accrual account as a lump sum payment.

If a participant dies after completion of 15 years of credited service the participant's eligible spouse shall receive 75% of the participant's pension calculated as if the participant had retired immediately before death. This benefit shall be payable when the spouse reaches age 65. The participant's final average earnings is adjusted by the COLA from the participant's death until the spouse reaches age 65.

Contributions: See Alternate Benefit Accrual Account.

Cost of Living Adjustment: A maximum of 4% annual adjustment payable January 1 of each year based on CPI changes applies to the following benefits:

1) Retired participants after age 65
2) Disabled participants
3) Survivor benefits for dependent children
4) Survivor benefits for spouses age 65 and over.

In no event, however, will the Plan C benefits exceed 100% of final average pay.

Schedule E – Summary of Main System Provisions – Plan D

Eligibility	All employees participate who are hired on or after July 1, 2011, including all full-time, part-time and elected employees, and employees of all joint City/County agencies administered by Shelby County. CETA employees, Board of Education employees, employees electing Social Security coverage, and Joint City/County agencies not administered by Shelby County cannot participate.
Final Average Earnings	The average over the 5 highest consecutive years of earnings.
Normal Retirement Benefit	
Eligibility	Age 67 with at least 7.5 years of credited service for general employees and age 55 with at least 7.5 years of credited service for public safety employees.
Benefit	Final average earnings multiplied by credited service multiplied by 2.175%.
Early Retirement Benefit	
Eligibility	Age 62 with at least 7.5 years of credited service for general employees and age 50 with the last 20 years of credited service being in a public safety classification for public safety employees.
Benefit	Final average earnings multiplied by credited service and a percentage from Table ERP-S and Table ERP-PS, which is included as part of the plan.
Disability Retirement	
Eligibility	No disability benefits are provided by the Plan except for transfers. Upon reaching age 65, a disabled participant will have any disability benefit recomputed as a normal retirement benefit payable by the Plan.
Benefit	The Normal Retirement Benefit calculated with credited service including time while disabled.
Termination of Employment	If employment is terminated prior to the completion of 7.5 years of credited service, the participant is entitled to receive the vested portion of the participant's alternate benefit accrual account as a lump sum payment. For general employees, if employment is terminated after completion of 7.5 years of credited service, a deferred vested benefit equal to the participant's accrued benefit at date of termination is paid commencing at age 67. Alternatively, the participant may elect a vested early benefit payable beginning at age 62 which is actuarially equivalent.

Schedule E – Summary of Main System Provisions – Plan D

	For public safety employees, if employment is terminated after completion of 7.5 years of credited service, a deferred vested benefit equal to the participant's accrued benefit at date of termination is paid commencing at age 55. Alternatively, the participant may elect a vested early benefit payable beginning at age 50 which is actuarially equivalent.
Death Benefit	If a participant dies before completion of 15 years of credited service and the death occurs in line-of-duty, or, if not line of duty, the participant had completed 7.5 years of credited service before death, the participant's eligible beneficiary shall receive the amount of the participant contribution account. If a participant dies after completion of 15 years of credited service the participant's eligible spouse shall receive 75% of the participant's pension calculated as if the participant had retired immediately before death. This benefit shall be payable when the spouse reaches age 67. The participant's final average earnings is adjusted by the COLA from the participant's death until the spouse reaches age 67.
Contributions	Employees contribute 8.0% of earnings.
Cost of Living Adjustment	A maximum of 2% annual adjustment payable January 1 of each year based on CPI changes applies to the following benefits: 1) Retired participants after age 65 2) Disabled participants 3) Survivor benefits for dependent children 4) Survivor benefits for spouses age 65 and over. In no event, however, will the Plan D benefits exceed 100% of final average pay.

Schedule F – Tables of Membership Data

TABLE 1

RECONCILIATION OF DATA

		Actives	County to City Transfers	Retirees	Disabled	Beneficiaries	Vested Terms	Total
1.	Headcounts as of June 30, 2018	5,046	174	3,254	48	603	206	9,331
2.	Change in status during the year:							
	a. Death	(9)	(2)	(103)		(29)	(5)	(148)
	c. Disabled							
	d. Retired	(186)	(5)	216	(7)		(18)	
	e. Terminated Vested	(25)	(1)				26	
	f. Terminated Not Vested	(283)	(8)					(291)
	g. Benefits Expired/Refund					(3)	(3)	(6)
	h. Transfer to/from City							
3.	New member due to:							
	a. New Hires	483						483
	b. Rehires	27	(2)	(3)			(2)	20
	c. Death of Participant					56		56
	d. Adjustments		2	8			6	16
4.	Headcounts as of June 30, 2019	5,053	158	3,372	41	627	210	9,461

In addition, there are 402 terminated participants entitled to a refund of contributions.

Schedule F – Tables of Membership Data

TABLE 2

PLAN A

SCHEDULE OF ACTIVE MEMBERS BY AGE AND SERVICE
AS OF JUNE 30, 2019

Attained Age	Completed 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	No.	Payroll
Under 25												
25 to 29												
30 to 34												
35 to 39				1	2						3	103,798
40 to 44				2	61	13					76	3,890,930
45 to 49				4	106	79	9				198	10,724,497
50 to 54				4	103	78	43	10			238	12,588,042
55 to 59				2	95	84	52	33	4	1	271	14,196,889
60 to 64					45	63	34	28	13	6	189	10,194,321
65 to 69				1	34	36	27	18	7	4	127	6,979,198
70 & up					9	12	12	13	1	2	49	2,982,584
Total				14	455	365	177	102	25	13	1,151	61,660,258

Average Age 55.9 Average Service 22.1

Schedule F – Tables of Membership Data

TABLE 3

PLAN C

SCHEDULE OF ACTIVE MEMBERS BY AGE AND SERVICE
AS OF JUNE 30, 2019

Attained Age	Completed 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	No.	Payroll
Under 25												
25 to 29		1	1								2	125,314
30 to 34			20	18							38	1,869,800
35 to 39			32	94	13	2					141	7,610,436
40 to 44		1	27	108	70	37					243	13,664,435
45 to 49		1	30	111	85	92	23	1			343	19,566,739
50 to 54			17	90	59	92	81	29	1		369	20,983,066
55 to 59		1	14	74	26	56	59	63	8	1	302	17,113,633
60 to 64			20	55	12	21	22	31	14	7	182	10,250,306
65 to 69			9	36	12	17	2	6	9		91	6,000,243
70 & up			3	9	2	3	5		1	1	24	1,529,603
Total		4	173	595	279	320	192	130	33	9	1,735	98,713,576

Average Age 51.0

Average Service 18.0

TABLE 4

PLAN D

SCHEDULE OF ACTIVE MEMBERS BY AGE AND SERVICE
AS OF JUNE 30, 2019

Attained Age	Completed 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	No.	Payroll
Under 25	20	64									84	3,209,895
25 to 29	62	293	52								407	16,773,381
30 to 34	41	260	145								446	20,446,673
35 to 39	29	176	101								306	14,829,268
40 to 44	13	136	67								216	10,599,682
45 to 49	29	126	60								215	10,585,159
50 to 54	20	104	64								188	9,787,150
55 to 59	20	76	53								149	7,721,588
60 to 64	12	48	33								93	4,874,599
65 to 69	5	23	14								42	2,482,743
70 & up	1	6	11								18	1,240,542
Total	252	1,312	600								2,164	102,550,679

Average Age 39.7 Average Service 3.0

TABLE 5

PLAN B

SCHEDULE OF RETIRED MEMBERS AND BENEFICIARIES
AS OF JUNE 30, 2019

Attained Age	Number of Members	Total Annual Benefits	Average Annual Benefit
Under 50	-	$ -	$ -
50 – 54	2	21,781	10,890
55 – 59	6	123,467	20,578
60 – 64	44	1,313,095	29,843
65 – 69	109	3,473,197	31,864
70 – 74	179	5,083,857	28,401
75 – 79	169	4,437,830	26,259
80 – 84	125	2,989,884	23,919
85 – 89	109	2,085,961	19,137
90 & Over	106	1,629,170	15,370
Total	849	$ 21,158,242	$ 24,921

Schedule F – Tables of Membership Data

TABLE 6

PLAN A

SCHEDULE OF RETIRED MEMBERS AND BENEFICIARIES
AS OF JUNE 30, 2019

Attained Age	Number of Members	Total Annual Benefits	Average Annual Benefit
Under 50	29	$ 580,591	$ 20,020
50 – 54	15	147,722	9,848
55 – 59	72	1,161,279	16,129
60 – 64	247	3,795,991	15,368
65 – 69	500	9,151,700	18,303
70 – 74	469	9,339,216	19,913
75 – 79	336	6,026,822	17,937
80 – 84	192	3,053,697	15,905
85 – 89	100	1,622,313	16,223
90 & Over	47	670,824	14,273
Total	2,007	$ 35,550,155	$ 17,713

In addition, there are 149 participants entitled to deferred annual benefits totaling $3,374,893.

Schedule F – Tables of Membership Data

TABLE 7

PLAN C

SCHEDULE OF RETIRED MEMBERS AND BENEFICIARIES
AS OF JUNE 30, 2019

Attained Age	Number of Members	Total Annual Benefits	Average Annual Benefit
Under 50	16	$ 407,615	$ 25,476
50 – 54	92	2,744,921	29,836
55 – 59	260	7,453,634	28,668
60 – 64	330	10,244,890	31,045
65 – 69	303	9,166,509	30,253
70 – 74	141	4,182,474	29,663
75 – 79	31	584,916	18,868
80 – 84	8	160,243	20,030
85 – 89	1	8,561	8,561
90 & Over	-	-	-
Total	1,182	$ 34,953,763	$ 29,572

In addition, there are 58 participants entitled to deferred annual benefits totaling $1,752,958.

Schedule G – Analysis of Financial Experience

Gains & Losses in Accrued Liabilities
Resulting from Difference Between
Assumed Experience & Actual Experience
($ Thousands)

Type of Activity	$ Gain (or Loss) For Year Ending 6/30/2019	$ Gain (or Loss) For Year Ending 6/30/2018
Age & Service Retirements. If members retire at older ages, there is a gain. If younger ages, a loss.	$ (1,626.4)	$ 1,051.1
Disability Retirements. If disability claims are less than assumed, there is a gain. If more claims, a loss.	(306.5)	(1,115.2)
Death-in-Service Benefits. If survivor claims are less than assumed, there is a gain. If more claims, there is a loss.	505.6	546.0
Withdrawal From Employment. If more liabilities are released by withdrawals than assumed, there is a gain. If smaller releases, a loss.	(1,396.6)	(1,890.7)
Pay Increases. If there are smaller pay increases than assumed, there is a gain. If greater increases, a loss.	(9,425.9)	(4,524.2)
New Members. Additional unfunded accrued liability will produce a loss.	(2,161.9)	(1,134.9)
Investment Income. If there is a greater investment income than assumed, there is a gain. If less income, a loss.	(4,353.5)	(32,085.3)
Death After Retirement. If retirants live longer than assumed, there is a loss. If not as long, a gain.	(760.9)	(1,722.1)
Other. Miscellaneous gains and losses resulting from changes in valuation software, data adjustments, timing of financial transactions, etc.	(4,566.8)	(5,951.3)
Gain (or Loss) During Year From Financial Experience	$ (24,092.9)	$ (46,826.6)
Non-Recurring Items. Adjustments for plan amendments, assumption changes, or method changes.	0.0	47,234.9
Composite Gain (or Loss) During Year	$ (24,092.9)	$ 408.3

Schedule H – 10-Year Projection of Funded Ratio and Employer Contribution Rates

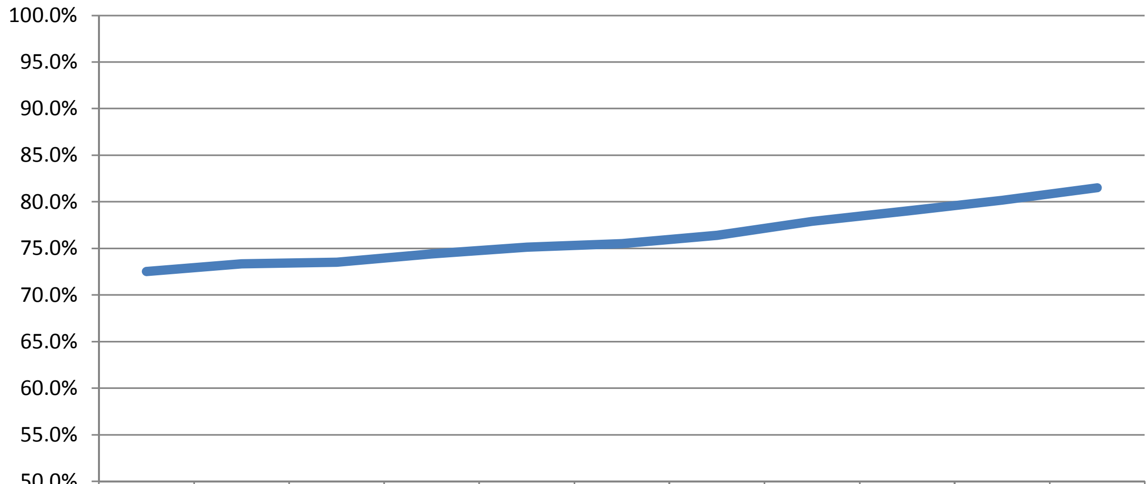
The results of actuarial valuations are a "snapshot" of the financial position on the valuation date, based on the assumed number of active employees and current beneficiaries. Projections simulate future actuarial valuation results over a forecast period (ten years in this case) by "creating" future new hires and performing valuations using the projected membership. The following items are assumed for the projected results provided on the following page.

- Active Employee Growth Rate: 0%
- Valuation Discount Rate: 7.00%
- Investment Rate of Return: 7.00% each year
- Actuarial Value of Assets: 10 year smoothing, No Corridor
- Amortization Method: Level Dollar, Closed
- June 30, 2019 Amortization Period: Weighted 19.3-year period
- Future Contributions: Based on Expected Actuarially Determined Contributions

All other demographic and economic changes are assumed to occur in accordance with the actuarial assumptions used for the actuarial valuation.

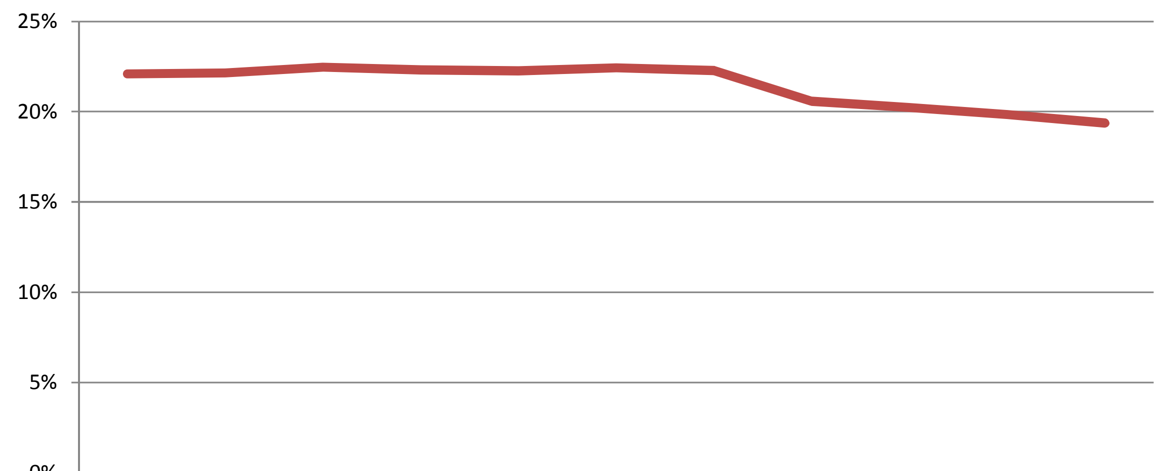
Schedule H – 10-Year Projection of Funded Ratio and Employer Contribution Rates

10-Year Projection of Funded Ratio



	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Funded Ratio	72.5%	73.3%	73.5%	74.4%	75.1%	75.5%	76.4%	77.9%	79.0%	80.2%	81.5%

10-Year Projection of Employer Contribution Rates



	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
ER Rate	22.10%	22.14%	22.45%	22.31%	22.26%	22.43%	22.27%	20.59%	20.23%	19.84%	19.38%