



**Cavanaugh Macdonald**  
CONSULTING, LLC

*The experience and dedication you deserve*



**PERS**  
*of MISSISSIPPI*

**Report on the Annual Valuation of the  
Public Employees' Retirement System of  
Mississippi**

**Prepared as of June 30, 2016**





# Cavanaugh Macdonald

CONSULTING, LLC

*The experience and dedication you deserve*

October 21, 2016

Board of Trustees  
Public Employees' Retirement System of Mississippi  
429 Mississippi Street  
Jackson, MS 39201-1005

Ladies and Gentlemen:

Presented in this report are the results of the annual actuarial valuation of the Public Employees' Retirement System of Mississippi. The purpose of the valuation was to measure the System's funding progress and to determine the unfunded actuarial accrued liability amortization period beginning July 1, 2016. The results may not be applicable for other purposes.

The date of the valuation was June 30, 2016.

The valuation was based upon data, furnished by the Executive Director and the PERS staff, concerning active, inactive and retired members along with pertinent financial information. While not verifying data at the source, the actuary performed tests for consistency and reasonableness. The complete cooperation of the PERS staff in furnishing materials requested is hereby acknowledged with appreciation.

Your attention is directed particularly to the presentation of the results on page 1 and the comments on page 8.

To the best of our knowledge, this report is complete and accurate. The valuation was performed by, and under the supervision of, independent actuaries who are members of the American Academy of Actuaries with experience in performing valuations for public retirement systems. The undersigned meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

The valuation was prepared in accordance with the principles of practice prescribed by the Actuarial Standards Board. We have reviewed the actuarial methods, including the asset valuation method, and continue to believe they are appropriate for the purpose of determining employer contribution levels.

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.

3550 Busbee Pkwy, Suite 250, Kennesaw, GA 30144

Phone (678) 388-1700 • Fax (678) 388-1730

[www.CavMacConsulting.com](http://www.CavMacConsulting.com)

Offices in Englewood, CO • Kennesaw, GA • Bellevue, NE



Board of Trustees  
October 21, 2016  
Page 2

This actuarial valuation was performed to determine the adequacy of statutory contributions to fund the plan. The asset values used to determine unfunded liabilities and funded ratios are not market values but less volatile market related values. A smoothing technique is applied to market values to determine the market related values. The unfunded liability amounts and funded ratios using the market value of assets would be different. The interest rate used for determining liabilities is based on the expected return on assets. Therefore, liability amounts in this report cannot be used to assess a settlement of the obligation.

The actuarial calculations were performed by qualified actuaries according to generally accepted actuarial procedures and methods. The calculations are based on the current provisions of the system, and on actuarial assumptions that are, in the aggregate, internally consistent and reasonably based on the actual experience of the system.

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 'Edward J. Koebel'.

Edward J. Koebel, EA, FCA, MAAA  
Principal and Consulting Actuary

A handwritten signature in blue ink, appearing to read 'Jonathan T. Craven'.

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

EAM/EJK/JTC:mjn



## **TABLE OF CONTENTS**

<b><u>Section</u></b>	<b><u>Item</u></b>	<b><u>Page No.</u></b>
I	Summary of Principal Results	1
II	Membership Data	4
III	Valuation Balance Sheet	5
IV	Comments on Valuation	8
V	Derivation of Experience Gains and Losses	9
VI	Required Contribution Rates	10
VII	Cash Flow Projection	12
VIII	Supplemental Disclosure Information	15
 <b><u>Schedule</u></b>		
A	Development of Actuarial Value of Assets	23
B	Statement of Actuarial Assumptions and Methods	25
C	Summary of Main Benefit and Contribution Provisions	28
D	Detailed Tabulations of the Data	35
E	Analysis of Financial Experience	40
F	Glossary	41



**REPORT ON THE ANNUAL VALUATION OF THE  
PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF MISSISSIPPI  
PREPARED AS OF JUNE 30, 2016**

**SECTION I – SUMMARY OF PRINCIPAL RESULTS**

1. This report, prepared as of June 30, 2016, presents the results of the annual actuarial valuation of the System. For convenience of reference, the principal results of the valuation and a comparison with the preceding year's results are summarized below. The current valuation and reported benefit amounts reflect any benefit increases granted to retirees as of July 1, 2016. Based on the funding policy adopted by the Board in 2012, the employer contribution rate is to be set at 15.75% of annual compensation and the amortization period calculated on an open basis.

**SUMMARY OF PRINCIPAL RESULTS**

VALUATION DATE	June 30, 2016	June 30, 2015
Active members included in valuation		
Number	154,104	157,215
Annual compensation	\$ 6,022,532,933	\$ 5,904,827,181
Retirees		
Number	99,483	96,338
Annual allowances	\$ 2,249,044,704	\$ 2,116,322,652
Assets		
Market related actuarial value	\$ 25,185,078,000	\$ 24,387,161,000
Market value	\$ 24,135,016,000	\$ 24,838,857,000
Unfunded actuarial accrued liability	\$ 16,812,434,711	\$ 15,977,422,522
Funded Ratio	60.0%	60.4%
<b>Fiscal Year End</b>	<b>June 30, 2018</b>	<b>June 30, 2017</b>
Employer contribution rate		
Normal Cost*	2.20%	2.13%
Accrued liability	<u>13.55</u>	<u>13.62</u>
Total	15.75%	15.75%
Anticipated accrued liability payment period	36.6 years	33.9 years
Unfunded actuarial accrued liability based on market value of assets	\$ 17,862,496,711	\$ 15,525,726,522
Funded Ratio	57.5%	61.5%
Payment Period	42.0 years	32.1 years

\* Includes load for administrative expenses. See page 10 for more contribution rate detail.



2. The valuation balance sheet showing the results of the valuation is provided in Section III.
3. Comments on the valuation results are given in Section IV, comments on the experience and actuarial gains and losses during the valuation year are provided in Section V and the rates of contribution payable by employers are provided in Section VI.
4. Schedule A of this report presents the development of the actuarial value of assets. Schedule B details the actuarial assumptions and methods employed. Since the previous valuation, the assumed rate of interest credited to employee contributions has been changed from 3.50% to 2.00%.
5. Schedule C gives a summary of the benefit and contribution provisions of the plan. Effective July 1, 2016, the interest rate on employee contributions shall be calculated based on the money market rate as published by the Wall Street Journal on December 31 of each preceding year with a minimum rate of one percent and a maximum rate of five percent. The rate for the fiscal year 2016 will be one percent.
6. The table on the following page provides a ten-year history of some pertinent figures.
7. GASB 67 has replaced GASB 25 for accounting results and a separate GASB 67 report will be prepared for the Board. For continuity and informational purposes, we have included GASB 25 disclosure information in Section VIII.



**Public Employees' Retirement System of Mississippi**  
**Comparative Schedule**

Valuation Date June 30	Active Members				Retired Lives				Valuation Results (\$ millions)		
	Number	Payroll (\$ millions)	Average Salary	% increase from previous year	Number	Active/ Retired Ratio	Annual Benefits (\$ millions)	Benefits as % of Payroll	Accrued Liability	Valuation Assets	UAAL
2007	162,804	\$ 5,196	\$ 31,917	1.5%	70,756	2.3%	\$ 1,214.4	23.4%	\$ 26,863	\$ 19,792	\$ 7,071
2008	165,733	5,545	33,456	4.8	73,540	2.3	1,305.9	23.6	28,535	20,815	7,720
2009	167,122	5,832	34,896	4.3	76,143	2.2	1,395.9	23.9	30,595	20,598	9,997
2010	164,896	5,764	34,953	0.2	79,168	2.1	1,498.7	26.0	31,400	20,143	11,257
2011	161,676	5,685	35,161	0.6	83,115	1.9	1,627.8	28.6	32,654	20,315	12,339
2012	162,311	5,858	36,090	2.6	86,829	1.9	1,752.6	29.9	34,493	19,993	14,500
2013	161,744	5,824	36,005	(0.2)	90,214	1.8	1,874.7	32.2	35,543	20,491	15,052
2014	161,360	5,835	36,159	0.4	93,504	1.7	1,998.3	34.2	37,015	22,570	14,445
2015	157,215	5,905	37,559	3.9	96,338	1.6	2,116.3	35.8	40,364	24,387	15,977
2016	154,104	6,023	39,081	4.1	99,483	1.5	2,249.0	37.3	41,997	25,185	16,812



**SECTION II – MEMBERSHIP DATA**

Data regarding the membership of the System for use as a basis for the valuation were furnished by the System’s office. The following tables summarize the membership of the System as of June 30, 2016 upon which the valuation was based. Detailed tabulations of the data are given in Schedule D.

**Active Members**

Employers	Number of Employers	Number	Payroll	Group Averages		
				Salary	Age	Service
State Agencies	112	29,203	\$1,099,584,186	\$37,653	44.8	10.7
State Universities	9	17,938	965,647,659	53,833	43.5	9.7
Public Schools	143	61,945	2,281,800,861	36,836	44.3	10.5
Community/Junior Colleges	15	6,099	295,021,260	48,372	46.8	11.7
Counties	82	13,561	462,827,688	34,129	47.3	9.6
Municipalities	241	16,383	570,531,026	34,825	44.3	10.1
Other Political Subdivisions	260	8,975	347,120,253	38,676	44.2	8.4
<b>Total in PERS</b>	<b>862</b>	<b>154,104</b>	<b>\$6,022,532,933</b>	<b>\$39,081</b>	<b>44.6</b>	<b>10.3</b>

The total number of active members includes 82,370 vested members and 71,734 non-vested members.

**Retired Lives**

Type of Benefit Payment	No.	Annual Benefits	Group Averages	
			Benefit	Age
Retirement	82,145	\$1,955,027,192	\$23,800	70.4
Disability	6,430	117,175,090	18,223	62.1
Survivor	10,908	176,842,422	16,212	67.6
<b>Total in PERS</b>	<b>99,483</b>	<b>\$2,249,044,704</b>	<b>\$22,607</b>	<b>69.6</b>





### Deferred Vested/Inactive Lives

Type of Member	No.	Deferred Benefits	Outstanding Refunds
Deferred Vested - Benefit Provided	16,118	\$ 103,055,517	N/A
Deferred Vested – Missing Benefit	3,282	N/A	\$ 155,213,117
Inactive	123,235	N/A	216,162,257
Total in PERS	142,635	\$ 103,055,517	\$ 371,375,374

### SECTION III – VALUATION BALANCE SHEET

The following valuation balance sheet shows the assets and liabilities of the retirement system as of the current valuation date of June 30, 2016 and, for comparison purposes, as of the immediately preceding valuation date of June 30, 2015. The items shown in the balance sheet are present values actuarially determined as of the relevant valuation date. The development of the actuarial value of assets is presented in Schedule A.



**VALUATION BALANCE SHEET  
SHOWING THE ASSETS AND LIABILITIES OF THE  
PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF MISSISSIPPI**

	JUNE 30, 2016	June 30, 2015
<b>ASSETS</b>		
Current actuarial value of assets:		
Annuity Savings Account	\$ 5,468,858,779	\$ 5,379,226,373
Annuity Reserve	5,264,225,481	4,841,772,660
Employers' Accumulation Account	<u>14,451,993,740</u>	<u>14,166,161,967</u>
Total current assets	\$ 25,185,078,000	\$ 24,387,161,000
Future member contributions to Annuity Savings Account	\$ 3,840,681,635	\$ 3,743,507,077
Prospective contributions to Employer's Accumulation Account		
Normal contributions	\$ 840,682,536	\$ 790,295,939
Unfunded actuarial accrued liability contributions	<u>16,812,434,711</u>	<u>15,977,422,522</u>
Total prospective contributions	\$ 17,653,117,247	\$ 16,767,718,461
Total assets	<u>\$ 46,678,876,882</u>	<u>\$ 44,898,386,538</u>
<b>LIABILITIES</b>		
Present value of benefits payable on account of present retired members and beneficiaries	\$ 25,390,774,484	\$ 24,012,624,465
Present value of benefits payable on account of active members	19,461,937,445	19,397,775,674
Present value of benefits payable on account of inactive members for service rendered before the valuation date	<u>1,826,164,953</u>	<u>1,487,986,399</u>
Total liabilities	<u>\$ 46,678,876,882</u>	<u>\$ 44,898,386,538</u>



**BREAKDOWN OF TOTAL AND ACCRUED LIABILITIES  
AS OF JUNE 30, 2016**

	Total Liability	Accrued Liability
Active Members		
Retirement	\$ 16,329,072,227	\$ 13,709,030,712
Death	146,670,074	95,481,307
Disability	530,504,010	304,125,347
Termination	2,455,691,134	671,935,908
Total	\$ 19,461,937,445	\$ 14,780,573,274
Retirees		
Retirement	\$ 22,587,827,010	\$ 22,587,827,010
Survivor	1,618,599,951	1,618,599,951
Disability	1,184,347,523	1,184,347,523
Total	\$ 25,390,774,484	\$ 25,390,774,484
Deferred Vested Members	1,393,840,438	1,393,840,438
Inactive Members	432,324,515	432,324,515
Total Actuarial Values	\$ 46,678,876,882	\$ 41,997,512,711
Actuarial Value of Assets		25,185,078,000
Unfunded Actuarial Accrued Liability		\$ 16,812,434,711



#### **SECTION IV – COMMENTS ON VALUATION**

The valuation balance sheet gives the following information with respect to the funds of the System as of June 30, 2016.

##### Total Assets

The Annuity Savings Account is the fund to which are credited contributions made by members together with interest thereon. When a member retires, the amount of his or her accumulated contributions is transferred from the Annuity Savings Account to the Annuity Reserve. The Employer's Accumulation Account is the fund to which are credited employer contributions and investment income, and from which are paid all employer-provided benefits under the plan. The assets credited to the Annuity Savings Account as of the valuation date, which represent the accumulated contributions of members to that date, amounted to \$5,468,858,779. The assets credited to the Annuity Reserve were \$5,264,225,481 and the assets credited to the Employer's Accumulation Account totaled \$14,451,993,740. Current actuarial assets as of the valuation date equaled the sum of these three funds, \$25,185,078,000. Future member contributions to the Annuity Savings Account were valued to be \$3,840,681,635. Prospective contributions to the Employer's Accumulation Account were calculated to be \$17,653,117,247 of which \$840,682,536 is attributable to service rendered after the valuation date (normal contributions) and \$16,812,434,711 is attributable to service rendered before the valuation date (unfunded actuarial accrued liability contributions).

Therefore, the balance sheet shows the present value of current and future assets of the System to be \$46,678,876,882 as of June 30, 2016.

##### Total Liabilities

The present value of benefits payable on account of presently retired members and beneficiaries totaled \$25,390,774,484 as of the valuation date. The present value of future benefit payments on behalf of active members amounted to \$19,461,937,445. In addition, the present value of benefits for inactive members, due to service rendered before the valuation date, was calculated to be \$1,826,164,953.

Therefore, the balance sheet shows the present value for all prospective benefit payments under the System to be \$46,678,876,882 as of June 30, 2016.

Section 25-11-123(a)(1) of State law requires that active members contribute 9.00% of annual compensation to the System.

Section 25-11-123(c) requires that the State contribute a certain percentage of the annual compensation of members to cover the normal contributions and a certain percentage to cover the accrued liability contributions of the System. These individual contribution percentages are established in accordance with an actuarial valuation. Based on the funding policy adopted by the Board in October, 2012, the employer rate is set at 15.75% of annual compensation and the amortization period calculated on an open basis. Therefore, the amortization period for the June 30, 2016 valuation is 36.6 years, compared to 33.9 years for the last valuation.

The primary reasons for the increase in the amortization period are experience losses on assets and liabilities offset by the decrease in liabilities due to the assumption change in the employee interest crediting assumptions. See Schedule E for a complete analysis of the Financial Experience.



**SECTION V – DERIVATION OF EXPERIENCE GAINS AND LOSSES**

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, 2016 is shown below.

		<u>\$ millions</u>
(1)	UAAL* as of June 30, 2015	\$ 15,977.4
(2)	Total Normal cost from last valuation	681.7
(3)	Total Employee and Employer Contributions	1,593.8
(4)	Interest accrual: $[(1) + (2)] \times .0775 - [(3) \times .03875]$	<u>1,229.3</u>
(5)	Expected UAAL before changes: (1) + (2) – (3) + (4)	16,294.6
(6)	Change due to plan amendments	0.0
(7)	Change due to new actuarial assumptions or methods	<u>(66.6)</u>
(8)	Expected UAAL after changes: (5) + (6) + (7)	\$ 16,228.0
(9)	Actual UAAL as of June 30, 2016	\$ 16,812.4
(10)	Gain/(loss): (8) – (9)	\$ (584.4)
(11)	Gain/(loss) as percent of actuarial accrued liabilities at start of year (\$40,364.6)	(1.4)%

\*Unfunded actuarial accrued liability.

Valuation Date June 30	Actuarial Gain/(Loss) as a % of Beginning Accrued Liabilities
2011	(3.4)%
2012	(5.7)
2013	(1.2)
2014	2.6
2015	1.4
2016	(1.4)



### **SECTION VI – REQUIRED CONTRIBUTION RATES**

The valuation balance sheet gives the basis for determining the percentage rates for contributions to be made by employers to the Retirement System. The following table shows the rates of contribution payable by employers as determined from the present valuation for the 2017/2018 fiscal year and a comparison to the previous valuation results.

Contribution for	2017/2018 Fiscal Year	2016/2017 Fiscal Year
Normal Cost:		
Service retirement benefits	9.60%	9.29%
Disability benefits	0.49	0.47
Survivor benefits	<u>0.11</u>	<u>0.11</u>
Total	10.20%	9.87%
Member Contributions:	9.00%	9.00%
Less future refunds	<u>(0.77)</u>	<u>(1.03)</u>
Available for benefits	8.23%	7.97%
Employer Normal Cost	1.97%	1.90%
Administrative Expense Load	0.23%	0.23%
Unfunded Actuarial Accrued Liabilities (36.6 year level % of payroll amortization*)	13.55%	13.62%
Total Computed Employer Contribution Rate	15.75%	15.75%

\*Amortization period a year ago was 33.9 years.



The components of the change in the computed unfunded actuarial accrued liability amortization period from 33.9 years to 36.6 years are as follows:

Previously Reported Period	33.9 years
Change due to:	
Normal amortization	(1.0)
Actuarial experience	3.9
Assumption/Method changes	(0.1)
Plan amendments	0.0
Contribution experience	(0.1)
Computed Period	36.6 years



## **SECTION VII – CASH FLOW PROJECTION**

Regular actuarial valuations measure the Retirement System's present financial position and contributions adequacy by calculating and financing the liabilities created by the present benefit program. This process involves discounting to present values the future benefit payments on behalf of present active and retired members and their survivors. However, valuations do not produce information regarding future changes in the makeup of the covered group or the amounts of benefits to be paid or investment income to be received – actuarial projections do.

Whereas valuations provide a snapshot of the Retirement System as of a given date, projections provide a moving picture. Projected active and retired groups are developed from year to year by the application of assumptions regarding pre-retirement withdrawal from service, retirements, deaths, disabilities, and the addition of new members. Projected information regarding the retired life group leads to assumed future benefit payout. Combining future benefit payments with assumed contributions and expected investment earnings produces the net cash flow of the System each year, and thus end of year asset levels.

Projections are used for many purposes. Among them are (i) developing cash flow patterns for investment policy and asset mix consideration, (ii) exploring the effect of alternative assumptions about future experience, (iii) analyzing the impact on system funding progress of changes in the workforce, and (iv) examining the potential effect of changes in benefits on system financial activity.

Projection results are useful in demonstrating changing relationships among key elements affecting system financial activity. For example: how benefits payable and system assets will grow in future decades. Projections are not predictions of specific future events and do not provide numeric precision in absolute terms. For instance, cash flow projected to occur 10 years in the future will not be exact (except by coincidence), but understanding the changed relationship between future benefit payout and future investment income can be very useful.

The following projections assume an 7.75% investment return and salary increases of 3.75% each year in the future. Due to the funding policy, all future contribution rates are assumed to remain at 15.75% of payroll.



**Public Employees' Retirement System of Mississippi**  
**Twenty-five Year Cash Flow Projection**



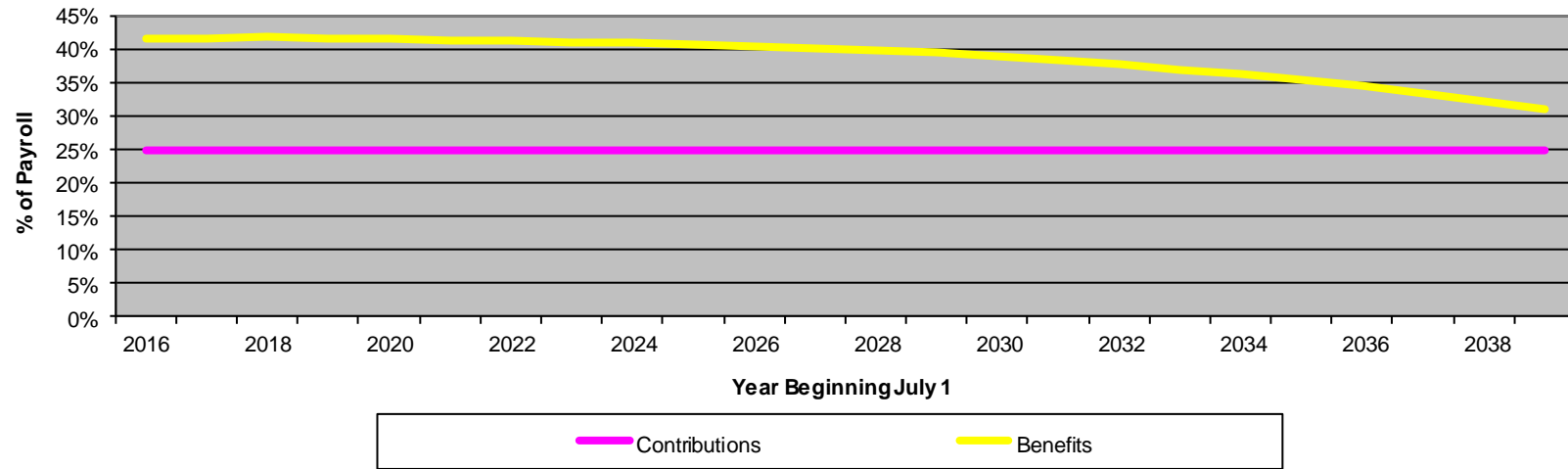
Year Beginning July 1	Valuation Payroll	Market Value of Assets Balance July 1	Contributions	Projected Benefit Payments*	Expected Investment Return	Cash Flow	Market Value of Assets Balance June 30	Year Ending June 30
2016	6,383,595,927	24,135,016,000	1,579,939,992	2,647,838,648	1,829,854,785	761,956,129	24,896,972,129	2017
2017	6,622,980,774	24,896,972,129	1,639,187,742	2,754,756,970	1,887,093,617	771,524,390	25,668,496,518	2018
2018	6,871,342,553	25,668,496,518	1,700,657,282	2,867,622,977	1,944,932,305	777,966,610	26,446,463,128	2019
2019	7,129,017,899	26,446,463,128	1,764,431,930	2,968,467,768	2,003,815,052	799,779,215	27,246,242,343	2020
2020	7,396,356,070	27,246,242,343	1,830,598,127	3,068,636,701	2,064,504,920	826,466,346	28,072,708,689	2021
2021	7,673,719,423	28,072,708,689	1,899,245,557	3,165,790,084	2,127,472,067	860,927,540	28,933,636,230	2022
2022	7,961,483,901	28,933,636,230	1,970,467,265	3,270,717,512	2,192,912,225	892,661,978	29,826,298,208	2023
2023	8,260,039,547	29,826,298,208	2,044,359,788	3,374,432,446	2,260,959,472	930,886,814	30,757,185,022	2024
2024	8,569,791,030	30,757,185,022	2,121,023,280	3,495,857,202	2,331,401,065	956,567,143	31,713,752,164	2025
2025	8,891,158,194	31,713,752,164	2,200,561,653	3,615,714,210	2,404,001,822	988,849,265	32,702,601,429	2026
2026	9,224,576,626	32,702,601,429	2,283,082,715	3,732,320,096	2,479,341,498	1,030,104,117	33,732,705,546	2027
2027	9,570,498,249	33,732,705,546	2,368,698,317	3,845,117,370	2,558,140,930	1,081,721,877	34,814,427,423	2028
2028	9,929,391,933	34,814,427,423	2,457,524,503	3,952,798,547	2,641,257,377	1,145,983,333	35,960,410,756	2029
2029	10,301,744,130	35,960,410,756	2,549,681,672	4,056,449,941	2,729,633,995	1,222,865,726	37,183,276,482	2030
2030	10,688,059,535	37,183,276,482	2,645,294,735	4,154,514,225	2,824,312,876	1,315,093,387	38,498,369,868	2031
2031	11,088,861,768	38,498,369,868	2,744,493,288	4,246,038,785	2,926,524,432	1,424,978,935	39,923,348,803	2032
2032	11,504,694,084	39,923,348,803	2,847,411,786	4,331,048,602	3,037,641,313	1,554,004,497	41,477,353,300	2033
2033	11,936,120,112	41,477,353,300	2,954,189,728	4,408,238,624	3,159,201,800	1,705,152,904	43,182,506,204	2034
2034	12,383,724,616	43,182,506,204	3,064,971,842	4,476,295,253	3,292,975,871	1,881,652,460	45,064,158,664	2035
2035	12,848,114,289	45,064,158,664	3,179,908,287	4,533,356,991	3,441,004,737	2,087,556,033	47,151,714,696	2036
2036	13,329,918,575	47,151,714,696	3,299,154,847	4,579,641,647	3,605,564,850	2,325,078,050	49,476,792,746	2037
2037	13,829,790,522	49,476,792,746	3,422,873,154	4,613,129,248	3,789,189,600	2,598,933,505	52,075,726,251	2038
2038	14,348,407,667	52,075,726,251	3,551,230,898	4,629,869,814	3,994,851,410	2,916,212,494	54,991,938,746	2039
2039	14,886,472,955	54,991,938,746	3,684,402,056	4,631,696,725	4,225,852,502	3,278,557,833	58,270,496,579	2040
2040	15,444,715,691	58,270,496,579	3,822,567,134	4,619,660,585	4,485,652,432	3,688,558,982	61,959,055,561	2041

\* Includes expected administrative expenses.

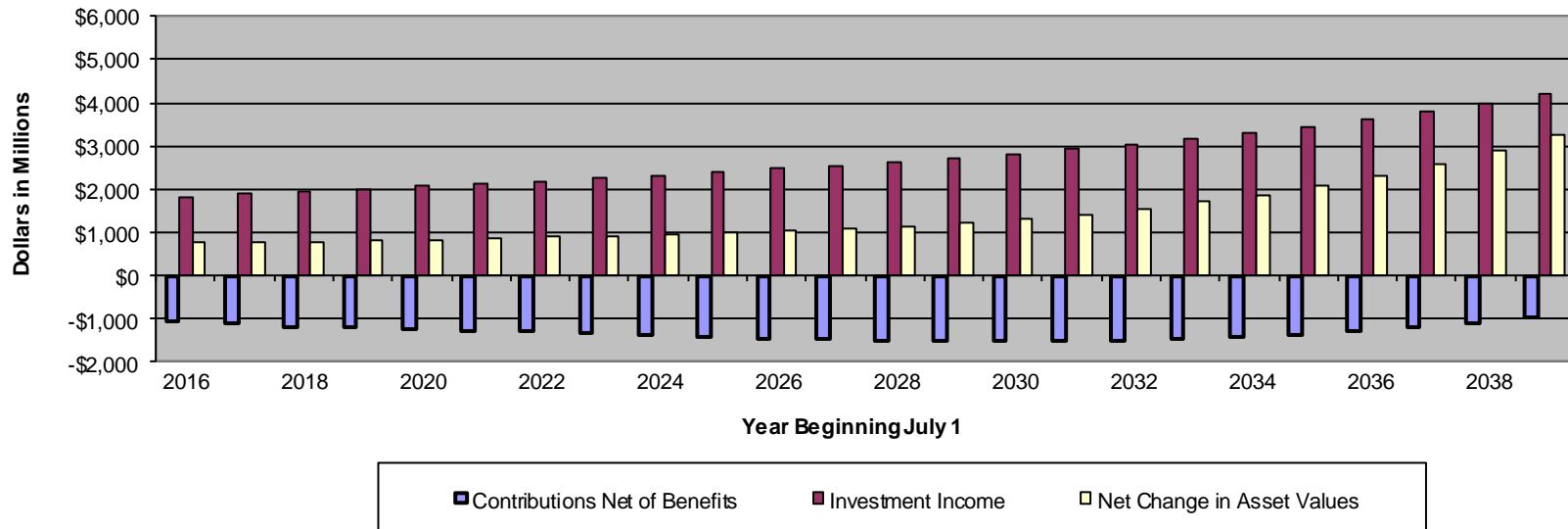


# Public Employees' Retirement System of Mississippi 25 Year Cash Flow Projection Based on Valuation Assumptions

## Projected Contributions and Benefits Expressed as Percents of Active Member Payroll



## Net Change in Asset Values





**SECTION VIII – SUPPLEMENTAL DISCLOSURE INFORMATION**

1. Governmental Accounting Standards Board (GASB) Statements No. 67 and 68 replaced Statements 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 supplemental disclosure information is provided for informational purposes only. One such item is a distribution of the number of employees by type of membership, as follows:

**NUMBER OF ACTIVE AND RETIRED PARTICIPANTS  
AS OF JUNE 30, 2016**

<b>GROUP</b>	<b>NUMBER</b>
Retired participants and beneficiaries currently receiving benefits	99,483
Terminated participants and beneficiaries entitled to benefits but not yet receiving benefits	142,635
Active Participants	<u>154,104</u>
Total	396,222



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

**SCHEDULE OF FUNDING PROGRESS**  
**(\$ Thousands)**

Plan Year Ended	(1) Actuarial Value of Assets	(2) Actuarial Accrued Liability (AAL) Entry Age	(3) Percent Funded (1)/(2)	(4) Unfunded AAL (2) – (1)	(5) Annual Covered Payroll	(6) Unfunded AAL as a Percentage of Covered Payroll (4)/(5)
06/30/07#	19,791,564	26,862,636	73.7	7,071,072	5,196,295	136.1
06/30/08*	20,814,720	28,534,694	72.9	7,719,974	5,544,705	139.2
06/30/09*#	20,597,581	30,594,546	67.3	9,996,965	5,831,864	171.4
06/30/10*	20,143,426	31,399,988	64.2	11,256,562	5,763,556	195.3
06/30/11#	20,315,165	32,654,465	62.2	12,339,300	5,684,624	217.1
06/30/12	19,992,797	34,492,873	58.0	14,500,076	5,857,789	247.5
06/30/13#	20,490,555	35,542,848	57.7	15,052,293	5,823,578	258.5
06/30/14	22,569,940	37,015,288	61.0	14,445,348	5,834,687	247.6
06/30/15#	24,387,161	40,364,584	60.4	15,977,423	5,904,827	270.6
06/30/16*#	25,185,078	41,997,513	60.0	16,812,435	6,022,533	279.2

\* After change in benefit provisions.  
 # After change in actuarial assumptions.

3. Under GASB 25/27, the determination of the employer contribution as a percentage of payroll was referred to as the annual required contribution (ARC) and was the basis of the prior funding policy. In the calculation of the ARC, the accrued liability rate was based on the amortization of the unfunded actuarial accrued liability over a fixed 30 year period from the valuation date. The calculation of the ARC for the past two valuations is shown below.

Annual Required Contribution (ARC)		
Valuation Date June 30	2016	2015
Employer contribution rate		
Normal Cost*	2.20%	2.13%
Accrued liability	<u>14.96</u>	<u>14.52</u>
Total	17.16%	16.65%
Anticipated accrued liability payment period	30.0 years	30.0 years

\*Estimated budgeted administrative expenses are included in the normal cost rate



4. Additional information as of June 30, 2016 as follows.

Valuation date	6/30/2016
Actuarial cost method	Entry age
Amortization method	Level percent open
Remaining amortization period	30.0 years
Asset valuation method	5-year smoothed market
Actuarial assumptions:	
Investment rate of return*	7.75%
Projected salary increases#	3.75% – 19.00%
*Includes price inflation at	3.00%
#Includes wage inflation at	3.75%
Cost of living adjustments	3.00%



**Solvency Tests  
(\$ in Thousands)**

Valuation Date	Actuarial Accrued Liabilities for				Portions of Accrued Liabilities Covered by Assets		
	(1) Accumulated Employee Contributions Including Allocated Investment Earnings	(2) Retirees and Beneficiaries Currently Receiving Benefits	(3) Active and Inactive Members Employer Financed Portion	Net Assets Available for Benefits	(1)	(2)	(3)
6/30/07	\$3,788,781	\$13,342,531	\$9,731,324	\$19,791,564	100.0%	100.0%	27.3%
6/30/08	3,991,804	14,306,528	10,236,362	20,814,720	100.0	100.0	24.6
6/30/09	4,235,466	15,665,712	10,693,368	20,597,581	100.0	100.0	6.5
6/30/10	4,266,621	16,763,455	10,369,912	20,143,426	100.0	94.7	0.0
6/30/11	4,356,556	18,001,718	10,296,191	20,315,165	100.0	88.7	0.0
6/30/12	4,463,252	19,547,367	10,482,254	19,992,797	100.0	79.4	0.0
6/30/13	5,053,888	20,789,551	9,699,409	20,490,555	100.0	74.3	0.0
6/30/14	5,277,944	22,033,588	9,703,756	22,569,940	100.0	78.5	0.0
6/30/15	5,379,226	24,012,624	10,972,734	24,387,161	100.0	79.2	0.0
6/30/16	5,468,859	25,390,774	11,137,880	25,185,078	100.0	77.7	0.0



**Schedule of Active Member Valuation Data**

Valuation Date	Number of Employers	Active Members			
		Number	Annual Payroll	Annual Average Pay	% Increase in Average Pay
2007	861	162,804	\$5,196,294,899	\$31,917	1.5%
2008	863	165,733	5,544,704,937	33,456	4.8
2009	866	167,122	5,831,863,534	34,896	4.3
2010	868	164,896	5,763,556,195	34,953	0.2
2011	872	161,676	5,684,624,214	35,161	0.6
2012	870	162,311	5,857,789,376	36,090	2.6
2013	873	161,744	5,823,577,978	36,005	(0.2)
2014	871	161,360	5,834,686,655	36,159	0.4
2015	868	157,215	5,904,827,181	37,559	3.9
2016	862	154,104	6,022,532,933	39,081	4.1

**Schedule of Retirants Added to and Removed From Rolls  
Last Ten Fiscal Years**

Item	Fiscal Year Ended June 30									
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Beginning of Year	66,757	70,756	73,540	76,143	79,168	83,115	86,829	90,214	93,504	96,338
Added	6,218	5,335	4,965	5,747	6,566	6,569	6,276	6,159	5,907	6,548
Removed	(2,219)	(2,551)	(2,362)	(2,722)	(2,619)	(2,855)	(2,891)	(2,869)	(3,073)	(3,403)
End of Year	70,756	73,540	76,143	79,168	83,115	86,829	90,214	93,504	96,338	99,483



**Schedule of Annual Benefit Payments Added to and Removed From Rolls  
Last Seven Fiscal Years**

Year Ending	2010	2011	2012	2013	2014	2015	2016
Beginning of Year	\$1,395,939,879	\$1,498,662,976	\$1,627,813,430	\$1,752,606,759	\$1,874,720,385	\$1,998,322,954	\$2,116,322,652
Added	103,950,841	127,035,815	125,378,708	120,592,399	120,190,296	117,113,206	132,970,248
Removed	(40,358,965)	(39,518,227)	(45,787,704)	(47,237,330)	(48,955,768)	(55,158,128)	(59,603,335)
Benefit increase due to annual COLA	39,131,221	41,632,866	45,202,325	48,758,557	52,368,041	56,044,620	59,355,139
Benefit increase due to plan amendments	0	0	0	0	0	0	0
End of Year	\$1,498,662,976	\$1,627,813,430	\$1,752,606,759	\$1,874,720,385	\$1,998,322,954	\$2,116,322,652	\$2,249,044,704





Schedule of Average Benefit Payments

	Years of Credited Service								
	0-4	5-9	10-14	15-19	20-24	25	26-29	30	31+
July 1, 2015 to June 30, 2016									
Average Monthly Benefit	\$595.87	\$497.05	\$701.11	\$1,053.82	\$1,638.19	\$1,878.66	\$2,117.88	\$2,400.11	\$3,196.32
Average Final Salary	\$24,538	\$33,066	\$34,459	\$39,422	\$45,571	\$46,533	\$50,536	\$52,472	\$59,306
Number of Active Retirants	114	637	997	874	1,048	402	1,204	234	1,038
July 1, 2014 to June 30, 2015									
Average Monthly Benefit	\$395.98	\$466.12	\$688.17	\$977.30	\$1,346.27	\$1,833.91	\$1,989.13	\$2,217.36	\$2,898.93
Average Final Salary	\$26,731	\$30,165	\$33,585	\$37,938	\$40,770	\$46,461	\$48,614	\$50,908	\$57,019
Number of Active Retirants	67	532	898	774	693	494	1,072	230	1,147
July 1, 2013 to June 30, 2014									
Average Monthly Benefit	\$582.94	\$448.56	\$712.04	\$998.80	\$1,383.89	\$1,871.16	\$1,992.51	\$2,283.20	\$2,954.14
Average Final Salary	\$31,286	\$31,009	\$35,356	\$37,962	\$40,947	\$47,490	\$48,732	\$51,456	\$57,022
Number of Active Retirants	94	657	945	815	663	505	1,146	232	1,102
July 1, 2012 to June 30, 2013									
Average Monthly Benefit	\$430.24	\$443.74	\$694.71	\$963.61	\$1,421.74	\$1,924.91	\$2,016.94	\$2,187.80	\$2,931.36
Average Final Salary	\$28,954	\$30,707	\$34,404	\$36,876	\$41,550	\$47,768	\$48,862	\$49,470	\$56,341
Number of Active Retirants	115	800	901	740	758	496	1,121	224	1,121
July 1, 2011 to June 30, 2012									
Average Monthly Benefit	\$503.45	\$425.55	\$655.76	\$984.40	\$1,325.25	\$1,823.47	\$1,956.67	\$2,283.30	\$2,938.26
Average Final Salary	\$27,325	\$29,424	\$32,872	\$37,561	\$40,246	\$46,050	\$47,965	\$51,720	\$56,263
Number of Active Retirants	146	861	867	779	736	501	1,138	260	1,281



Schedule of Average Benefit Payments

	Years of Credited Service								
	0-4	5-9	10-14	15-19	20-24	25	26-29	30	31+
July 1, 2010 to June 30, 2011									
Average Monthly Benefit	\$490.21	\$444.82	\$637.24	\$974.84	\$1,347.49	\$1,791.74	\$1,996.32	\$2,176.08	\$2,910.64
Average Final Salary	\$26,297	\$29,798	\$31,063	\$36,095	\$39,613	\$45,296	\$48,620	\$49,084	\$55,608
Number of Active Retirants	247	837	808	741	743	456	1,050	245	1,439
July 1, 2009 to June 30, 2010									
Average Monthly Benefit	\$320.17	\$386.23	\$620.46	\$905.46	\$1,239.55	\$1,717.84	\$1,897.84	\$2,174.78	\$2,833.34
Average Final Salary	\$23,675	\$27,192	\$30,890	\$33,781	\$37,426	\$43,924	\$46,537	\$49,426	\$54,049
Number of Active Retirants	220	765	773	641	627	428	867	237	1,189
July 1, 2008 to June 30, 2009									
Average Monthly Benefit	\$395.82	\$373.84	\$581.94	\$874.55	\$1,314.05	\$1,672.61	\$1,865.25	\$2,115.68	\$2,821.82
Average Final Salary	\$26,414	\$26,280	\$29,481	\$32,707	\$37,865	\$42,352	\$45,058	\$47,003	\$53,867
Number of Active Retirants	192	703	669	572	535	378	732	223	961
July 1, 2007 to June 30, 2008									
Average Monthly Benefit	\$400.20	\$382.62	\$586.58	\$900.09	\$1,221.01	\$1,738.22	\$1,844.70	\$2,070.82	\$2,726.23
Average Final Salary	\$25,527	\$25,618	\$28,649	\$33,139	\$36,537	\$44,534	\$45,142	\$48,053	\$53,245
Number of Active Retirants	201	690	703	614	586	386	855	226	1,074
July 1, 2006 to June 30, 2007									
Average Monthly Benefit	\$411.52	\$369.97	\$536.43	\$817.54	\$1,113.79	\$1,671.02	\$1,761.30	\$2,127.34	\$2,615.87
Average Final Salary	\$22,554	\$24,146	\$27,269	\$30,518	\$34,644	\$42,366	\$43,541	\$47,398	\$51,466
Number of Active Retirants	340	986	827	747	684	381	917	251	1,085



**SCHEDULE A**

**Development of Actuarial Value of Assets  
(\$ thousands)**

Valuation Date June 30:	2015	2016	2017	2018	2019	2020
A. Actuarial Value Beginning of Year	\$22,569,940	\$24,387,161				
B. Market Value End of Year	24,838,857	24,135,016				
C. Market Value Beginning of Year	24,877,119	24,906,556*				
D. Cash Flow						
D1. Contributions	1,554,387	1,593,835				
D2. Other Revenue	0	0				
D3. Benefit Payments	(2,338,596)	(2,480,635)				
D4. Administrative Expenses	(13,523)	(15,166)				
D5. Investment Expenses	<u>(87,089)</u>	<u>(87,355)</u>				
D6. Net	(884,821)	(989,321)				
E. Investment Income						
E1. Market Total: B.-C.-D6.	846,559	217,781				
E2. Assumed Rate	8.00%	7.75%				
E3. Amount for Immediate Recognition	2,045,349	1,982,662				
E4. Amount for Phased-In Recognition	(1,198,790)	(1,764,881)				
F. Phased-In Recognition of Investment Income						
F1. Current Year: 0.20*E4.	(239,758)	(352,976)				
F2. First Prior Year	439,773	(239,758)	(352,976)			
F3. Second Prior Year	201,569	439,773	(239,758)	(352,976)		
F4. Third Prior Year	(311,731)	201,569	439,773	(239,758)	(352,976)	
F5. Fourth Prior Year	<u>566,840</u>	<u>(311,731)</u>	<u>201,569</u>	<u>439,773</u>	<u>(239,758)</u>	<u>(352,975)</u>
F6. Total Recognized Investment Gain	656,693	(263,123)	48,608	(152,961)	(592,734)	(352,975)
G. Adjustment:	0	67,699				
H. Actuarial Value End of Year:						
A.+D6.+E3.+F6.+G.	\$24,387,161	\$25,185,078				
I. Difference Between Market & Actuarial Values	\$(451,696)	\$1,050,062	\$1,098,670	\$945,709	\$352,975	\$0

The Actuarial Valuation of Assets recognizes assumed investment income (line E3) fully each year. Differences between actual and assumed investment income (line E4) are phased in over a closed 5 year period. During periods when investment performance exceeds the assumed rate, Actuarial Value of Assets will tend to be less than market value. During periods when investment performance is less than the assumed rate, Actuarial Value of Assets will tend to be greater than market value. If assumed rates are exactly realized for 4 consecutive years, actuarial value will become equal to market value.

\*Adjusted from prior year due to revised assets.



Asset Summary June 30, 2016 (\$ in Thousands)			
	Market Value	Book Value	Actuarial Value
1. Assets at June 30, 2015	\$24,906,556*	\$20,613,111*	\$24,387,161
2. Contributions and Misc. Revenue	1,593,835	1,593,835	1,593,835
3. Investment Increment	217,781	1,040,080	1,719,539
4. Benefit Payments	(2,480,635)	(2,480,635)	(2,480,635)
5. Expenses	(102,521)	(102,521)	(102,521)
6. Adjustment	0	0	67,699
7. Assets at June 30, 2016 (1) + (2) + (3) + (4) + (5) + (6)	\$24,135,016	\$20,663,870	\$25,185,078
8. Investment Increment/Mean Assets**	0.89%	5.17%	7.19%

\*Adjusted from prior year due to revised assets.

\*\*Based on the approximation formula:  $I/[.5 \times (A + B - I)]$ , where

I = Investment increment  
A = Beginning of year asset value  
B = End of year asset value



**SCHEDULE B**

**STATEMENT OF ACTUARIAL ASSUMPTIONS AND METHODS**

INTEREST RATE: 7.75% per annum, compounded annually (net of investment expense only).

SEPARATIONS FROM ACTIVE SERVICE: Representative values of the assumed rates of separation from active service are as follows:

Age	Annual Rates of					
	Withdrawal and Vesting*		Death**		Disability**	
	Male	Female	Male	Female	Male	Female
20	23.00%	28.00%	0.0159%	0.0054%	0.012%	0.011%
25	16.00	16.50	0.0346	0.0058	0.017	0.014
30	10.00	10.50	0.0318	0.0073	0.020	0.018
35	7.50	8.00	0.0337	0.0096	0.044	0.022
40	6.25	6.50	0.0390	0.0132	0.120	0.090
45	5.75	5.50	0.0513	0.0220	0.240	0.160
50	5.75	5.50	0.1859	0.0369	0.320	0.230
55	5.75	5.50	0.1466	0.0557	0.520	0.400
60	5.75	5.50	0.2391	0.0805	0.520	0.400
65	5.75	5.50	0.4076	0.1214	0.200	0.150
70	5.75	5.50	0.6921	0.2043	0.200	0.150
74	5.75	5.50	1.0147	0.3098	0.200	0.150

Age	Annual Rates of Service Retirements			
	Male		Female	
	Under 25 Years of Service***	25 Years of Service and Over***	Under 25 Years of Service***	25 Years of Service and Over***
45		19.0%		16.0%
50		14.0		12.0
55		18.0		18.0
60	10.0%	20.0	12.5%	22.0
62	20.0	33.0	18.0	36.0
65	23.0	30.0	27.5	42.0
70	19.0	25.0	23.0	23.0
75	100.0	100.0	100.0	100.0

\* For all ages, rates of 32% for 1<sup>st</sup> year of employment and 23% for 2<sup>nd</sup> year.

\*\* 94% are presumed to be non-duty related, and 6% are assumed to be duty related.

\*\*\* For Tier 4 members, 30 years of service.



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

Service	Merit & Seniority	Annual Rates of Base (Economy)	Increase Next Year
0	15.25%	3.75%	19.00%
1	5.25	3.75	9.00
2	2.75	3.75	6.50
3	1.75	3.75	5.50
4	1.25	3.75	5.00
5-7	0.75	3.75	4.50
8-27	0.25	3.75	4.00
28 and Over	0.00	3.75	3.75

PAYROLL GROWTH: 3.75% per annum, compounded annually.

ADMINISTRATIVE EXPENSES: 0.23% of payroll.

TIMING OF DECREMENTS AND PAY INCREASES: Middle of Year.

DEATH AFTER RETIREMENT: The mortality table, for post-retirement mortality, used in evaluating allowances to be paid is the RP-2014 Healthy Annuitant Blue Collar Table projected with Scale BB to 2016 with males rates set forward one year. The RP-2014 Disabled Retiree Table set forward 5 years for males and 4 years for females was used for the period after disability retirement. This assumption is used to measure the probabilities of each benefit payment being made after retirement. Mortality improvement is anticipated under this assumption as recent mortality experience shows actual deaths 9.3% greater than expected under the selected table for non-disability mortality and 6.3% greater than expected under the selected table for disability mortality.

MARRIAGE ASSUMPTION: 85% married with the husband three years older than his wife.

UNUSED SICK LEAVE: 0.50 years at retirement.

MILITARY SERVICE: 0.25 years at retirement.

DEFERRED VESTEDS: 40% of vested participants will forfeit their accrued benefit and receive their employee contributions with interest.

ASSUMED INTEREST RATE ON EMPLOYEE CONTRIBUTIONS: 2.00%



VALUATION METHOD: The valuation is prepared on the projected benefit basis, which is used to determine the present value of each member's expected benefit payable at retirement, disability or death. The calculations are based on the member's age, years of service, sex, compensation, expected future salary increases, and an assumed future interest earnings rate (currently 7.75%). The calculations consider the probability of a member's death or termination of employment prior to becoming eligible for a benefit and the probability of the member terminating with a service, disability, or survivor's benefit. The present value of the expected benefits payable to active members is added to the present value of the expected future payments to current benefit recipients to obtain the present value of all expected benefits payable to the present group of members and survivors.

The employer contributions required to support the benefits of PERS are determined following a level funding approach, and consist of a normal contribution and an accrued liability contribution.

The normal contribution is determined using the "entry age normal" method. Under this method, a calculation is made for pension benefits to determine the uniform and constant percentage rate of employer contribution which, if applied to the compensation of the average new member during the entire period of his anticipated covered service, would be required in addition to the contributions of the member to meet the cost of all benefits payable on his behalf.

The unfunded actuarial accrued liability is determined by subtracting the current assets and the present value of prospective employer normal contributions and member contributions from the present value of expected benefits to be paid from the PERS. The accrued liability contribution amortizes the balance of the unfunded actuarial accrued liability over a period of years from the valuation date.

ASSET VALUATION METHOD: Actuarial value, as developed in Schedule A. 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 20% of the difference between market value and expected market value.



**SCHEDULE C**

**SUMMARY OF MAIN BENEFIT AND CONTRIBUTION PROVISIONS**

The following summary presents the main benefit and contribution provisions of the System in effect July 1, 2016, as interpreted in preparing the actuarial valuation.

**DEFINITIONS**

<b>Average Compensation</b>	Average annual covered earnings of an employee during the four highest years of service.
<b>Covered Earnings</b>	Gross salary not in excess of the maximum amount on which contributions were required.
<b>Fiscal Year</b>	Year commencing on July 1 and ending June 30.
<b>Credited Service</b>	Service while a contributing member plus additional service as described below.
<b>Unused Sick and Vacation Leave</b>	Service credit is provided at no charge to members for unused sick and vacation time that has accrued at the time of retirement.
<b>Additional Service</b>	Additional service credit may be granted for service prior to February 1, 1953, active duty military service, out-of-state service, professional leave and non-covered and retroactive service





The maximum covered earnings for employers and employees over the years are as follows:

**EMPLOYER AND EMPLOYEE RATES OF CONTRIBUTION  
AND MAXIMUM COVERED EARNINGS**

Fiscal Date From	Fiscal Date To	Employer Rate	Maximum Covered Earnings	Employee Rate	Maximum Covered Earnings
2/1/53	6/30/58	2.50%	\$6,000	4.00%	\$4,800*
7/1/58	6/30/60	2.50	9,000	4.00	7,800*
7/1/60	6/30/66	2.50	15,000	4.00	13,800*
7/1/66	6/30/68	3.00	15,000	4.50	13,800*
7/1/68	3/31/71	4.50	15,000	4.50	15,000
4/1/71	6/30/73	4.50	35,000	4.50	35,000
7/1/73	6/30/76	5.85	35,000	5.00	35,000
7/1/76	6/30/77	7.00	35,000	5.00	35,000
7/1/77	6/30/78	7.50	35,000	5.50	35,000
7/1/78	6/30/80	8.00	35,000	5.50	35,000
7/1/80	6/30/81	8.00	53,000	5.50	53,000
7/1/81	12/31/83	8.75	53,000	6.00	53,000
1/1/84	6/30/88	8.75	63,000	6.00	63,000
7/1/88	6/30/89	8.75	75,600	6.00	75,600
7/1/89	12/31/89	8.75	75,600	6.50	75,600
1/1/90	6/30/91	9.75	75,600	6.50	75,600
7/1/91	6/30/92	9.75	75,600	7.25	75,600
7/1/92	6/30/02	9.75	125,000	7.25	125,000
7/1/02	6/30/05	9.75	150,000	7.25	150,000
7/1/05	6/30/06	10.75	150,000	7.25	150,000
7/1/06	6/30/07	11.30	150,000	7.25	150,000
7/1/07	6/30/08	11.85	150,000	7.25	150,000
7/1/08	6/30/09	11.85	230,000	7.25	230,000
7/1/09	6/30/10	12.00	245,000	7.25	245,000
7/1/10	6/30/11	12.00	245,000	9.00	245,000
7/1/11	12/31/11	12.00	245,000	9.00	245,000
1/1/12	6/30/12	12.93	245,000	9.00	245,000
7/1/12	6/30/13	14.26	250,000	9.00	250,000
7/1/13	6/30/14	15.75	255,000	9.00	255,000
7/1/14	6/30/15	15.75	260,000	9.00	260,000
7/1/15	6/30/17	15.75	265,000	9.00	265,000

\*From February 1, 1953 through June 30, 1968 the first \$100 in monthly earnings or \$1,200 in annual earnings were not covered earnings for the employee.



## BENEFITS

### Superannuation Retirement

#### Condition for Retirement

- (a) A retirement allowance is paid upon the request of any member who retires and has attained age 60 and completed at least eight years\* of membership service. A retirement allowance may also be paid upon the completion of 25 years of creditable service for members hired prior to July 1, 2011 or upon the completion of 30 years of creditable service for members hired on or after July 1, 2011.
- (b) Any member who withdraws from service prior to his or her attainment of age 60 and who has completed at least eight years\* of membership service is entitled to receive, in lieu of a refund of his or her accumulated contributions, a retirement allowance commencing at age 60.

#### Amount of Allowance

The annual retirement allowance payable to a member who retires under condition (a) above is equal to:

1. A member's annuity which is the actuarial equivalent of the member's accumulated contributions at the time of his or her retirement, plus
2. For a member hired prior to July 1, 2011, an employer's annuity which, together with the member's annuity, is equal to 2% of his or her average compensation for each of the first 25 years of creditable service plus 2-1/2% for each year of creditable service over 25 years.
3. For a member hired on or after July 1, 2011, an employer's annuity which, together with the member's annuity, is equal to 2% of his or her average compensation for each of the first 30 years of creditable service plus 2-1/2% for each year of creditable service over 30 years. There will be an actuarial reduction for each year of creditable service below 30 or for each year of age below age 65, whichever is less.

For members hired prior to July 1, 2011, the minimum allowance is \$120 for each year of creditable service.

### Disability Retirement

#### Condition for Retirement

A retirement allowance is paid to a member who is totally and permanently disabled, as determined by the Board of Trustees, and has accumulated eight or more years\* of membership service.

\* four years for those who entered the system before July 1, 2007



Amount of Allowance

For those who were active members prior to July 1, 1992, and did not elect the benefit structure outlined below, the annual disability retirement allowance payable is equal to a superannuation retirement allowance if the member has attained age 60, otherwise it is equal to a superannuation retirement allowance calculated as follows:

1. A member's annuity equal to the actuarial equivalent of his or her accumulated contributions at the time of retirement, plus
2. An employer's annuity equal to the amount that would have been payable had the member continued in service to age 60.

For those who become active members after June 30, 1992, and for those who were active members prior to July 1, 1992, who so elected, the following benefits are payable:

1. A temporary allowance equal to the greater of (a) 40% of average compensation plus 10% for each dependent child up to a maximum of 2, or (b) the member's accrued allowance. This temporary allowance is paid for a period of time based on the member's age at disability, as follows:

<u>Age at Disability</u>	<u>Duration</u>
60 and earlier	to age 65
61	to age 66
62	to age 66
63	to age 67
64	to age 67
65	to age 68
66	to age 68
67	to age 69
68	to age 70
69 and later	one year

For members hired prior to July 1, 2011, the minimum allowance is \$120 per year of creditable service.

2. A deferred allowance commencing when the temporary allowance ceases equal to the greater of (a) the allowance the member would have received based on service to the termination age of the temporary allowance, but not more than 40% of average compensation, or (b) the member's accrued allowance.

For members hired prior to July 1, 2011, the minimum allowance is \$120 per year of creditable service.

Effective July 1, 2004, a temporary benefit can be paid out of a member's accumulated contribution balance while the member is awaiting a determination for eligibility for disability benefits. Future disability payments, if any, would be offset by advanced payments made from the member's accumulated contributions.



### **Accidental Disability Retirement**

Condition for Retirement

A retirement allowance is paid to a member who is totally and permanently disabled in the line of performance of duty.

Amount of Allowance

The annual accidental disability retirement allowance is equal to the allowance payable on disability retirement but not less than 50% of average compensation. There is no minimum benefit.

### **Accidental Death Benefit**

Condition for Benefit

A retirement allowance is paid to a spouse and/or dependent children upon the death of an active member in the line of performance of duty.

Amount of Allowance

The annual retirement allowance is equal to 50% of average compensation payable to the spouse and 25% of average compensation payable to one dependent child or 50% to two or more children until age 19 (23 if a full time student). There is no minimum benefit.

### **Ordinary Death Benefit**

Condition for Benefit

Upon the death of a member who has completed at least eight years\* of membership service, a benefit is payable, in lieu of a refund of the member's accumulated contributions, to his or her spouse, if said spouse has been married to the member for not less than one year.

\*four years for those who entered the system before July 1, 2007.

Amount of Allowance

The annual retirement allowance payable to the lawful spouse of a vested member who dies is equal to the greater of (i) the allowance that would have been payable had the member retired and elected Option 2, reduced by an actuarially determined factor based on the number of years the member lacked in qualifying for unreduced retirement benefits, or (ii) a lifetime benefit equal to 20% of the deceased member's average compensation, but not less than \$50 per month.

In addition, a benefit is payable to dependent children until age 19 (23 if a full time student). The benefit is equal to the greater of 10% of average compensation or \$50 per month for each dependent child up to 3.

### **Return of Contributions**

Upon the withdrawal of a member without a retirement benefit, his or her contributions are returned to him or her, together with accumulated regular interest thereon.

Upon the death of a member before retirement, his or her contributions, together with the full accumulated regular interest thereon, are paid to his or her designated beneficiary, if any, otherwise, to his or her estate provided no other survivor benefits are payable.

Effective July 1, 2016, the interest rate on employee contributions shall be calculated based on the money market rate as published by the Wall Street Journal on December 31 of each preceding year with a minimum rate of one percent and a maximum rate of five percent.



## **Normal Form of Benefit**

The normal form of benefit (modified cash refund) is an allowance payable during the life of the member with the provision that upon his or her death the excess of his or her total contributions at the time of retirement over the total retirement annuity paid to him or her will be paid to his or her designated beneficiary.

## **Optional Benefits**

A member upon retirement may elect to receive his or her allowance in one of the following forms which are computed to be actuarially equivalent to the applicable retirement allowance.

Option 1. Reduced allowance with the provision that if the pensioner dies before he receives the value of the member's annuity as it was at the time of retirement, the balance shall be paid to his or her beneficiary.

Option 2. Upon his or her death, his or her reduced retirement allowance shall be continued throughout the life of, and paid to, his or her beneficiary.

Option 3. Upon his or her death, 50% of his or her reduced retirement allowance shall be continued throughout the life of, and paid to, a designated beneficiary and the other 50% of his or her reduced retirement allowance to some other designated beneficiary.

Option 4. Upon his or her death, 75% of his or her reduced retirement allowance shall be continued throughout the life of, and paid to, a designated beneficiary.

Option 4A. Upon his or her death, 50% of his or her reduced retirement allowance shall be continued throughout the life of, and paid to, a designated beneficiary.

Option 4B. A reduced retirement allowance shall be continued throughout the life of the pensioner, but with the further guarantee of payment to the pensioner or his or her beneficiary for a specified number of years certain.

Option 4C. A member may elect any option with the added provision that the member shall receive, so far as possible, the same total amount annually (considering both PERS and Social Security benefits) before and after the earliest age at which the member becomes eligible for a Social Security benefit. This option was only available to those who retired prior to July 1, 2004.

A member who elects Option 2, Option 4, or Option 4A at retirement may revert to the normal form of benefit if the designated beneficiary predeceases the retired member or if the retired member divorces the designated beneficiary. A member who elects the normal form of benefit or Option 1 at retirement may select Option 2, Option 4, or Option 4A to provide beneficiary protection to a new spouse if married after retirement.



A member hired prior to July 1, 2011 and who has at least 28 years of creditable service\* or a member hired on or after July 1, 2011 who has at least 33 years of creditable service can select a partial lump-sum option at retirement. Under this option, the retiree has the option of taking a partial lump-sum distribution equal to 12, 24, or 36 times the base maximum monthly benefit. With each lump-sum amount, the base maximum monthly benefit will be actuarially reduced. A member selecting the partial lump-sum option may also select any of the regular options except Option 1, the prorated single-life annuity, and Option 4-C, the Social Security leveling provision. The benefit is then calculated using the new reduced maximum benefit as a starting point in applying the appropriate option factors for the reduction.

\* or at least age 63 with four years of membership service for those who entered the system before July 1, 2007.

### **Post-Retirement Adjustments In Allowances**

The allowances of retired members are adjusted annually by an amount equal to (a) 3% of the annual retirement allowance for each full fiscal year of retirement prior to the year in which the member reaches age 55\*, plus (b) 3% compounded for each year thereafter beginning with the fiscal year in which the member turns age 55\*.

\*Age 60 for members hired on or after July 1, 2011

A prorated portion of the annual adjustment will be paid to the member, beneficiary, or estate of any member or beneficiary who is receiving the annual adjustment in a lump sum, but whose benefits are terminated between July 1 and December 1.



**SCHEDULE D**

**DETAILED TABULATIONS OF THE DATA**

**Retirants & Beneficiaries as of June 30, 2016  
Tabulated by Year of Retirement**

Year of Retirement Ending June 30	No.	Total Annual Benefits, excluding COLA	COLA	Total Annual Benefits	Average Monthly Total Benefit
2016	5,359	\$113,978,161	\$22,840	\$114,001,001	\$1,773
2015	5,272	106,024,622	1,144,324	107,168,946	1,694
2014	5,735	113,899,224	4,743,235	118,642,459	1,724
2013	5,507	108,353,040	8,005,165	116,358,205	1,761
2012	5,772	113,839,509	11,902,745	125,742,254	1,815
2011	5,683	113,902,323	15,840,643	129,742,966	1,903
2010	4,881	91,797,332	15,689,648	107,486,980	1,835
2009	4,095	75,735,814	15,621,661	91,357,475	1,859
2008	4,456	82,214,023	19,687,219	101,901,242	1,906
2007	4,139	74,581,476	20,495,395	95,076,871	1,914
2006	4,124	70,127,142	21,871,516	91,998,658	1,859
2005	3,812	66,691,234	23,326,053	90,017,287	1,968
2004	3,986	67,966,132	26,576,780	94,542,912	1,977
2003	3,593	61,044,574	26,317,405	87,361,979	2,026
2002	3,608	57,827,647	27,338,290	85,165,937	1,967
2001	3,445	56,573,127	29,297,729	85,870,856	2,077
2000	2,737	43,355,669	24,536,925	67,892,594	2,067
1999	2,347	35,200,751	21,533,068	56,733,819	2,014
1998	2,388	34,363,404	22,687,904	57,051,308	1,991
1997	2,301	31,806,718	22,610,045	54,416,763	1,971
1996	2,275	32,085,611	24,393,241	56,478,852	2,069
1995	1,815	23,189,906	18,768,040	41,957,946	1,926
1994	1,719	20,902,577	17,982,154	38,884,731	1,885
1993	1,797	23,203,374	21,358,263	44,561,637	2,066
1992	1,924	24,370,355	23,881,944	48,252,299	2,090
1991	1,149	13,394,021	14,056,570	27,450,591	1,991
1990	1,185	12,286,448	13,572,227	25,858,675	1,818
1989	464	4,009,264	4,612,570	8,621,834	1,548
1988	627	5,828,213	7,105,738	12,933,951	1,719
1987	870	8,754,042	11,672,772	20,426,814	1,957
1986	569	5,496,863	7,489,627	12,986,490	1,902
1985	355	3,197,756	4,545,028	7,742,784	1,818
1984	294	2,143,542	3,160,944	5,304,486	1,504
1983	223	1,594,335	2,492,898	4,087,233	1,527
1982	210	1,350,413	2,210,437	3,560,850	1,413
1981 & Prior	767	3,903,018	7,502,001	11,405,019	1,239
<b>Totals</b>	<b>99,483</b>	<b>\$1,704,991,660</b>	<b>\$544,053,044</b>	<b>\$2,249,044,704</b>	<b>\$1,884</b>



**Schedule of Retired Members by Type of Benefit**

**Benefits Payable June 30, 2016**

Amount of Monthly Benefit**	Number of Rets.	Ret. Type 1*	Ret. Type 2*	Ret. Type 3*
\$1-\$100	2,182	1,722	9	451
101-200	5,078	3,882	94	1,102
201-300	5,338	3,934	230	1,174
301-400	5,242	3,814	329	1,099
401-500	4,953	3,596	375	982
501-600	4,446	3,256	406	784
601-700	4,090	2,985	439	666
701-800	3,907	2,889	465	553
801-900	3,864	2,945	447	472
901-1,000	3,720	2,859	418	443
Over 1,000	56,663	50,263	3,218	3,182
Totals	99,483	82,145	6,430	10,908

\*Type of Retirement

1 – Retirement for Age & Service

2 – Disability Retirement

3 – Survivor Payment

\*\*Reflects reduced benefit





**Schedule of Retired Members by Option**

**Benefits Payable June 30, 2016**

Amount of Monthly Benefit**	Number of Rets.	Life	Option 1	Option 2	Option 3	Option 4	Option 4A	Option 4B	Option 4C*	Option 5	PLSO 1 Year*	PLSO 2 Years*	PLSO 3 Years*
\$1-\$100	2,182	1,619	68	278	10	4	30	168	4	5	53	36	400
101-200	5,078	3,715	184	632	37	19	81	389	22	21	109	98	516
201-300	5,338	3,988	187	584	30	32	93	396	35	28	130	108	489
301-400	5,242	3,813	196	622	28	23	122	417	52	21	124	126	430
401-500	4,953	3,570	160	627	29	32	153	370	70	12	140	97	391
501-600	4,446	3,195	133	583	31	19	125	345	96	15	152	101	388
601-700	4,090	2,927	141	517	27	23	149	294	147	12	138	108	305
701-800	3,907	2,729	148	523	21	28	192	238	158	28	132	99	322
801-900	3,864	2,610	147	545	25	33	214	274	197	16	145	98	376
901-1,000	3,720	2,532	123	520	27	39	191	255	211	33	136	75	365
Over 1,000	56,663	34,526	1,753	9,599	404	777	4,841	4,548	1,717	215	3,063	2,637	10,770
Totals	99,483	65,224	3,240	15,030	669	1,029	6,191	7,694	2,709	406	4,322	3,583	14,752

Option Selected

- Life - Return of Contributions
- Opt. 1 - Return of Member's Annuity
- Opt. 2 - 100% Survivorship
- Opt. 3 - 50%/50% Dual Survivorship
- Opt. 4 - 75% Survivorship
- Opt. 4A - 50% Survivorship
- Opt. 4B - Years Certain & Life
- Opt. 4C - Social Security Leveling \*
- Opt. 5 - Pop-Up
- PLSO - Partial Lump Sum Option\*

\*Included in other options

\*\* Reflects reduced benefit



**Public Employees' Retirement System of Mississippi**

**Retirant and Beneficiary Information June 30, 2016  
Tabulated by Attained Ages**

Attained Age	Service Retirement		Disability Retirement		Survivors and Beneficiaries		Total	
	No.	Annual Benefits	No.	Annual Benefits	No.	Annual Benefits	No.	Annual Benefits
Under 20					476	\$2,147,383	476	\$2,147,383
20 – 24					159	926,635	159	926,635
25 – 29					74	739,442	74	739,442
30 – 34			13	173,912	117	1,263,793	130	1,437,705
35 – 39			62	941,382	184	1,878,179	246	2,819,561
40 – 44	11	269,739	188	3,237,511	235	2,276,727	434	5,783,977
45 – 49	515	12,651,775	384	7,740,629	365	4,178,362	1,264	24,570,766
50 – 54	2,492	68,497,905	783	15,518,726	475	5,691,851	3,750	89,708,482
55 – 59	5,737	170,327,992	1,163	22,892,647	772	10,646,399	7,672	203,867,038
60 – 64	14,139	357,344,854	1,415	26,106,209	993	15,723,804	16,547	399,174,867
65 – 69	20,970	495,575,159	1,203	20,801,663	1,323	22,857,484	23,496	539,234,306
70 – 74	15,158	350,426,317	649	11,396,102	1,338	23,376,640	17,145	385,199,059
75 – 79	10,535	235,559,199	339	5,203,216	1,460	28,159,886	12,334	268,922,301
80 – 84	6,652	143,702,254	168	2,286,869	1,315	25,860,760	8,135	171,849,883
85 – 89	3,969	83,110,450	45	645,817	1,038	19,713,630	5,052	103,469,897
90 – 94	1,508	29,567,140	13	168,347	469	9,413,094	1,990	39,148,581
95	146	3,049,329	4	48,270	39	681,130	189	3,778,729
96	100	1,436,943	1	13,790	31	662,162	132	2,112,895
97	55	905,691			15	261,407	70	1,167,098
98	48	829,081			14	160,553	62	989,634
99	39	594,157			6	66,898	45	661,055
100 & Over	71	1,179,207			10	156,203	81	1,335,410
<b>Totals</b>	<b>82,145</b>	<b>\$1,955,027,192</b>	<b>6,430</b>	<b>\$117,175,090</b>	<b>10,908</b>	<b>\$176,842,422</b>	<b>99,483</b>	<b>\$2,249,044,704</b>

Average Age: 69.6 years  
Average Age at Retirement: 59.2 years  
Average Age at Death: 79.9 years  
Average Years Since Retirement: 11.3 years



**Public Employees' Retirement System of Mississippi**

**Total Active Members as of June 30, 2016  
Tabulated by Attained Ages and Years of Service**

Attained	Years of Service to Valuation Date							Totals	
	0 – 4	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29	30+	No.	Valuation Payroll
Under 20	234							234	\$3,837,657
20 – 24	5,952	51						6,003	157,635,735
25 – 29	12,072	2,773	57					14,902	485,722,550
30 – 34	8,082	6,960	2,398	58				17,498	646,102,938
35 – 39	6,704	5,035	5,748	1,971	33			19,491	780,565,245
40 – 44	5,633	4,277	3,998	4,592	1,617	38		20,155	843,679,117
45 – 49	4,999	3,814	3,643	3,584	3,800	1,206	25	21,071	880,084,481
50 – 54	4,356	3,297	3,262	3,175	2,888	2,239	662	19,879	811,358,886
55 – 59	3,554	3,021	2,873	3,002	2,691	1,865	1,271	18,277	734,024,817
60	592	533	549	438	448	340	258	3,158	127,539,952
61	448	466	449	424	386	285	261	2,719	111,562,567
62	400	362	355	332	282	212	186	2,129	89,542,971
63	317	335	283	268	248	189	170	1,810	76,985,423
64	257	288	289	225	194	133	147	1,533	63,154,353
65	178	251	195	157	113	87	103	1,084	45,298,965
66	148	168	172	105	73	66	66	798	33,442,208
67	127	148	101	95	76	52	56	655	27,279,512
68	109	117	107	81	61	32	60	567	23,700,032
69	105	90	89	77	43	34	54	492	20,320,444
70 & Over	335	300	308	249	154	107	196	1,649	60,695,080
<b>Totals</b>	<b>54,602</b>	<b>32,286</b>	<b>24,876</b>	<b>18,833</b>	<b>13,107</b>	<b>6,885</b>	<b>3,515</b>	<b>154,104</b>	<b>\$6,022,532,933</b>

While not used in the financial computations, the following group averages are computed and shown because of their general interest.

Age: 44.6 years  
 Service: 10.3 years  
 Entry Age: 34 years  
 Annual Pay: \$39,081



**SCHEDULE E**

**MISSISSIPPI PERS  
ANALYSIS OF FINANCIAL EXPERIENCE**

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

Type of Activity	\$ Gain (or Loss) For Year Ending 6/30/16	\$ Gain (or Loss) For Year Ending 6/30/15
<b>Age &amp; Service Retirements.</b> If members retire at older ages, there is a gain. If younger ages, a loss.	\$ (167.5)	\$ 14.6
<b>Disability Retirements.</b> If disability claims are less than assumed, there is a gain. If more claims, a loss.	(17.0)	(17.2)
<b>Death-in Service Benefits.</b> If survivor claims are less than assumed, there is a gain. If more claims, there is a loss.	(0.6)	(3.2)
<b>Withdrawal From Employment.</b> If more liabilities are released by withdrawals than assumed, there is a gain. If smaller releases, a loss.	(83.8)	(65.6)
<b>Pay Increases.</b> If there are smaller pay increases than assumed, there is a gain. If greater increases, a loss.	26.5	2.6
<b>New Members.</b> Additional unfunded accrued liability will produce a loss.	(80.6)	(34.9)
<b>Investment Income.</b> If there is a greater investment income than assumed, there is a gain. If less income, a loss.	(155.2)	841.3
<b>Death After Retirement.</b> If retirants live longer than assumed, there is a loss. If not as long, a gain.	8.6	(18.9)
<b>Other.</b> Miscellaneous gains and losses resulting from data adjustments, timing of financial transactions, etc.	<u>(114.8)</u>	<u>(217.0)</u>
<b>Gain (or Loss) During Year From Financial Experience</b>	\$ (584.4)	\$ 501.7
<b>Non-Recurring Items.</b> Adjustments for plan amendments, software changes, assumption changes, or method changes.	<u>66.6</u>	<u>(1,821.2)</u>
<b>Composite Gain (or Loss) During Year</b>	\$ (517.8)	\$ (1,319.5)



## SCHEDULE F GLOSSARY

Actuarial Accrued Liability. The difference between (i) the actuarial present value of future plan benefits, and (ii) the actuarial present value of future normal cost. Sometimes referred to as “accrued liability” or “past service liability”.

Accrued Service. The service credited under the plan which was rendered before the date of the actuarial valuation.

Actuarial Assumptions. Estimates of future plan experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income and salary increases. Decrement assumptions (rates of mortality, disability, turnover and retirement) are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (salary increases and investment income) consist of an underlying rate in an inflation-free environment plus a provision for a long-term average rate of inflation.

Actuarial Cost Method. A mathematical budgeting procedure for allocating the dollar amount of the “actuarial present value of future plan benefits” between the actuarial present value of future normal cost and the actuarial accrued liability. Sometimes referred to as the “actuarial funding method”.

Actuarial Equivalent. A series of payments is called an actuarial equivalent of another series of payments if the two series have the same actuarial present value.

Actuarial Present Value. The amount of funds presently required to provide a payment or series of payments in the future. It is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Amortization. Paying off an interest-bearing liability by means of periodic payments of interest and principal, as opposed to paying it off with a lump sum payment.

Experience Gain (Loss). A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions during the period between two actuarial valuation dates, in accordance with the actuarial cost method being used.

Normal Cost. The annual cost assigned, under the actuarial funding method, to current and subsequent plan years. Sometimes referred to as “current service cost”. Any payment toward the unfunded actuarial accrued liability is not part of the normal cost.

Reserve Account. An account used to indicate that funds have been set aside for a specific purpose and are not generally available for other uses.

Unfunded Actuarial Accrued Liability. The difference between the actuarial accrued liability and valuation assets.

Valuation Assets. The value of current plan assets recognized for valuation purposes. Generally based on book value plus a portion of unrealized appreciation or depreciation.