



**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, 2017**





# Cavanaugh Macdonald

CONSULTING, LLC

*The experience and dedication you deserve*

October 19, 2017

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, 2017. The results may not be applicable for other purposes.

The date of the valuation was June 30, 2017.

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.

Since the previous valuation, various economic and demographic assumptions have been revised to reflect the results of the experience investigation for the four-year period ending June 30, 2016. These revised changes were adopted by the Board on April 25, 2017 and are discussed on page 2 of the report. The valuation takes into account the effect of membership to the System enacted through the most recent Session of the Legislature.

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.

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Board of Trustees  
October 19, 2017  
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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  
Consulting Actuary

EAM/EJK/JTC:mjn



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**REPORT ON THE ANNUAL VALUATION OF THE  
PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF MISSISSIPPI  
PREPARED AS OF JUNE 30, 2017**

**SECTION I – SUMMARY OF PRINCIPAL RESULTS**

1. This report, prepared as of June 30, 2017, 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, 2017. 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.

VALUATION DATE	June 30, 2017	June 30, 2016
Active members included in valuation		
Number	152,382	154,104
Annual compensation	\$ 6,038,228,708	\$ 6,022,532,933
Retirees		
Number	102,260	99,483
Annual allowances	\$ 2,374,747,017	\$ 2,249,044,704
Assets		
Market related actuarial value	\$ 26,364,446,000	\$ 25,185,078,000
Market value	\$ 26,543,097,000	\$ 24,135,016,000
Unfunded actuarial accrued liability	\$ 16,802,044,997	\$ 16,812,434,711
Funded Ratio	61.1%	60.0%
Employer contribution rate		
Normal Cost*	1.47%	2.20%
Accrued liability	<u>14.28</u>	<u>13.55</u>
Total	15.75%	15.75%
Anticipated accrued liability payment period	38.4 years	36.6 years
Unfunded actuarial accrued liability based on market value of assets	\$ 16,623,393,997	\$ 17,862,496,711
Funded Ratio	61.5%	57.5%
Payment Period	37.4 years	42.0 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, various economic and demographic assumptions have been revised to reflect the results of experience study for the four-year period ending on June 30, 2016. The changes adopted by the Board on April 25, 2017 are summarized as follows:
  - The wage inflation assumption has been reduced from 3.75% to 3.25%.
  - The rates of retirement were increased at younger ages once a member reaches 25 years of service.
  - Lowered the disability rates for most ages except between the ages of 60 and 64.
  - Increased the withdrawal rates at all ages, especially the younger ages and during the select period (below 2 years of service).
  - The percentage of active member disabilities assumed to be in the line of duty has been increased from 6% to 7%.
  - A small adjustment was made to the Mortality Table for both healthy and disabled lives.
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 is 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 2017 is one percent.
6. The table on the following page provides a ten-year history of some pertinent figures.
7. The funding policy for the System was changed in 2012. Under the prior funding policy, the amortization payment for the UAAL was calculated based on a fixed employer contribution rate using a floating amortization period no greater than 30 years. For continuity and informational purposes, we have provided this calculation in Section VII.



**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
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
2017	152,382	6,038	39,626	1.4	102,260	1.5	2,374.7	39.3	43,166	26,364	16,802



## **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, 2017 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	111	28,434	\$1,094,365,643	\$38,488	45.0	10.6
State Universities	9	17,636	963,343,669	54,624	43.5	9.7
Public Schools	143	61,509	2,264,501,603	36,816	44.4	10.6
Community/Junior Colleges	15	6,100	296,503,962	48,607	46.8	11.7
Counties	82	13,630	480,693,802	35,267	47.3	9.6
Municipalities	241	16,163	583,092,494	36,076	44.1	10.2
Other Political Subdivisions	260	8,910	355,727,535	39,925	44.3	8.5
<b>Total in PERS</b>	<b>861</b>	<b>152,382</b>	<b>\$6,038,228,708</b>	<b>\$39,626</b>	<b>44.7</b>	<b>10.3</b>

The total number of active members includes 81,151 vested members and 71,231 non-vested members.

### **Retired Lives**

Type of Benefit Payment	No.	Annual Benefits	Group Averages	
			Benefit	Age
Retirement	84,825	\$2,067,744,276	\$24,377	70.6
Disability	6,485	121,173,360	18,685	62.6
Survivor	10,950	185,829,381	16,971	68.6
<b>Total in PERS</b>	<b>102,260</b>	<b>\$2,374,747,017</b>	<b>\$23,223</b>	<b>69.9</b>





**Deferred Vested/Inactive Lives**

Type of Member	No.	Deferred Benefits	Outstanding Refunds
Deferred Vested - Benefit Provided	14,755	\$ 108,979,706	N/A
Deferred Vested – Missing Benefit	695	N/A	\$ 21,278,572
Vested – Pending Retirements	1,232	35,672,407	N/A
Inactive	50,170	N/A	221,467,166
<b>Total in PERS</b>	<b>66,852</b>	<b>\$ 144,652,113</b>	<b>\$ 242,745,738</b>

For the liability in this valuation, deferred vested participants with benefits provided are valued assuming a retirement age of 60 for Tiers 1, 2, and 3 and 65 for Tier 4. There are 1,232 records determined to be possible “pending retirements” based on the provided member status; these records are valued by assuming immediate benefit commencement. Deferred vested participants with missing benefits and inactive members are valued by multiplying account balances by 2.0 to estimate liabilities and interest in the future.

**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, 2017 and, for comparison purposes, as of the immediately preceding valuation date of June 30, 2016. 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, 2017	June 30, 2016
<b>ASSETS</b>		
Current actuarial value of assets:		
Annuity Savings Account	\$ 5,534,402,571	\$ 5,468,858,779
Annuity Reserve	5,633,635,871	5,264,225,481
Employers' Accumulation Account	<u>15,196,407,558</u>	<u>14,451,993,740</u>
Total current assets	\$ 26,364,446,000	\$ 25,185,078,000
Future member contributions to Annuity Savings Account	\$ 3,574,185,383	\$ 3,840,681,635
Prospective contributions to Employer's Accumulation Account		
Normal contributions	\$ 492,443,319	\$ 840,682,536
Unfunded actuarial accrued liability contributions	<u>16,802,044,997</u>	<u>16,812,434,711</u>
Total prospective contributions	\$ 17,294,488,316	\$ 17,653,117,247
Total assets	<u>\$ 47,233,119,699</u>	<u>\$ 46,678,876,882</u>
<b>LIABILITIES</b>		
Present value of benefits payable on account of present retired members and beneficiaries	\$ 26,686,957,952	\$ 25,390,774,484
Present value of benefits payable on account of active members	18,755,519,024	19,461,937,445
Present value of benefits payable on account of inactive members for service rendered before the valuation date	<u>1,790,642,723</u>	<u>1,826,164,953</u>
Total liabilities	<u>\$ 47,233,119,699</u>	<u>\$ 46,678,876,882</u>



**BREAKDOWN OF TOTAL AND ACCRUED LIABILITIES  
AS OF JUNE 30, 2017**

	Total Liability	Accrued Liability
<b>Active Members</b>		
Retirement	\$ 15,555,126,384	\$ 13,470,049,310
Death	172,835,209	118,360,599
Disability	479,606,185	296,169,951
Termination	<u>2,547,951,246</u>	<u>804,310,462</u>
Total	\$ 18,755,519,024	\$ 14,688,890,322
<b>Retirees</b>		
Retirement	\$ 23,718,085,076	\$ 23,718,085,076
Survivor	1,723,900,742	1,723,900,742
Disability	<u>1,244,972,134</u>	<u>1,244,972,134</u>
Total	\$ 26,686,957,952	\$ 26,686,957,952
Deferred Vested Members	1,347,708,392	1,347,708,392
Inactive Members	<u>442,934,331</u>	<u>442,934,331</u>
Total Actuarial Values	\$ 47,233,119,699	\$ 43,166,490,997
Actuarial Value of Assets		<u>26,364,446,000</u>
Unfunded Actuarial Accrued Liability		\$ 16,802,044,997

The total liability is the present value of future benefits for all current members as of the valuation date. The accrued liability is the present value of benefits that have been accrued as of the valuation date. Since all inactive members and retirees have accrued their full benefits, the total liability and accrued liability are the same. For actives, the difference between the total liability and the accrued liability is the present value of all future accruals.



#### **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, 2017.

##### 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 \$5,534,402,571. The assets credited to the Annuity Reserve were \$5,633,635,871 and the assets credited to the Employer's Accumulation Account totaled \$15,196,407,558. Current actuarial assets as of the valuation date equaled the sum of these three funds, \$26,364,446,000. Future member contributions to the Annuity Savings Account were valued to be \$3,574,185,383. Prospective contributions to the Employer's Accumulation Account were calculated to be \$17,294,488,316 of which \$492,443,319 is attributable to service rendered after the valuation date (normal contributions) and \$16,802,044,997 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 \$47,233,119,699 as of June 30, 2017.

##### Total Liabilities

The present value of benefits payable on account of presently retired members and beneficiaries totaled \$26,686,957,952 as of the valuation date. The present value of future benefit payments on behalf of active members amounted to \$18,755,519,024. In addition, the present value of benefits for inactive members, due to service rendered before the valuation date, was calculated to be \$1,790,642,723.

Therefore, the balance sheet shows the present value for all prospective benefit payments under the System to be \$47,233,119,699 as of June 30, 2017.

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, 2017 valuation is 38.4 years, compared to 36.6 years for the last valuation.

The primary reasons for the increase in the amortization period was the assumption change to lower the wage inflation from 3.75% to 3.25%. When using the level percent of payroll amortization method, if payroll is assumed to grow at a slower rate it will take a longer period to pay off the unfunded accrued liability. There were losses in liabilities due to withdrawal experience. However, those losses were offset by investment earnings on an actuarial value of assets basis that was better than expected (9.31% vs. 7.75%) and salary increases that were less than expected. 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, 2017 and for the previous valuation is shown below.

	<u>2017 Results</u>	<u>2016 Results</u>
	<u>\$ millions</u>	<u>\$ millions</u>
(1) UAAL* as of beginning of year	\$ 16,812.4	\$ 15,977.4
(2) Total Normal cost from last valuation	700.3	681.7
(3) Total Employee and Employer Contributions	1,589.2	1,593.8
(4) Interest accrual: $[(1) + (2)] \times .0775 - [(3) \times .03875]$	<u>1,295.7</u>	<u>1,229.3</u>
(5) Expected UAAL before changes: (1) + (2) – (3) + (4)	17,219.2	16,294.6
(6) Change due to plan amendments	0.0	0.0
(7) Change due to new actuarial assumptions or methods	<u>24.1</u>	<u>(66.6)</u>
(8) Expected UAAL after changes: (5) + (6) + (7)	\$ 17,243.3	\$ 16,228.0
(9) Actual UAAL as of end of year	\$ 16,802.0	\$ 16,812.4
(10) Gain/(loss): (8) – (9)	\$ 441.3	\$ (584.4)
(11) Gain/(loss) as percent of actuarial accrued liabilities at start of year	1.1%	(1.4%)

\*Unfunded actuarial accrued liability.

Valuation Date June 30	Actuarial Gain/(Loss) as a % of Beginning Accrued Liabilities
2012	(5.7)%
2013	(1.2)
2014	2.6
2015	1.4
2016	(1.4)
2017	1.1



**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 2018/2019 fiscal year and a comparison to the previous valuation results.

Contribution for	2018/2019 Fiscal Year	2017/2018 Fiscal Year
Normal Cost:		
Service retirement benefits	8.75%	9.60%
Disability benefits	0.42	0.49
Survivor benefits	<u>0.13</u>	<u>0.11</u>
Total	9.30%	10.20%
Member Contributions:	9.00%	9.00%
Less future refunds	<u>(0.94)</u>	<u>(0.77)</u>
Available for benefits	8.06%	8.23%
Employer Normal Cost	1.24%	1.97%
Administrative Expense Load	0.23%	0.23%
Unfunded Actuarial Accrued Liabilities (38.4 year level % of payroll amortization*)	14.28%	13.55%
Total Computed Employer Contribution Rate	15.75%	15.75%

\*Amortization period a year ago was 36.6 years.

The current funding policy has set the employer contribution rate to 15.75% of payroll and set the amortization period to open-ended. Thirty-year projections are completed after the valuation to determine if an increase or decrease in the employer contribution rate is warranted according to the triggers set forth in the funding policy. Please see Schedule F for the current funding policy.



The components of the change in the computed unfunded actuarial accrued liability amortization period from 36.6 years to 38.4 years are as follows:

Previously Reported Period	36.6 years
Change due to:	
Normal amortization	(1.0)
Actuarial experience	(0.4)
Assumption/Method changes	2.5
Plan amendments	0.0
Contribution experience	0.7
Computed Period	38.4 years



**SECTION VIII – SUPPLEMENTAL DISCLOSURE INFORMATION**

1. 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, 2017**

GROUP	NUMBER
Retired participants and beneficiaries currently receiving benefits	102,260
Terminated participants and beneficiaries entitled to benefits but not yet receiving benefits	66,852
Active Participants	<u>152,382</u>
Total	321,494





2. Another such item is the schedule of funding progress as shown below. As can be seen in column 3 of the table above, the funded ratio decreased from 2008 to 2013. Since then the funded ratio increased significantly in 2014, remained level since then, and has increased this year due to the investment return and other gains. In addition, the unfunded actuarial accrued liability as a percentage of payroll, shown in column 6, decreased for the 2017 valuation after increasing for much of the last 10-year period.

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

Plan Year Ended	(1) Actuarial Value of Assets	(2) Actuarial Accrued Liability (AAL) Entry Age	(3) Funded Ratio (1)/(2)	(4) Unfunded AAL (2) – (1)	(5) Annual Covered Payroll	(6) Unfunded AAL as a Percentage of Covered Payroll (4)/(5)
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
06/30/17#	26,364,446	43,166,491	61.1	16,802,045	6,038,229	278.3

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

3. Under the prior funding policy, the accrued liability rate was based on the amortization of the unfunded actuarial accrued liability using a fixed employer contribution rate and a floating amortization period no greater than 30 years. The calculation of this amount on the same basis for the past two valuations is shown below:

Prior Funding Period		
Valuation Date June 30	2017	2016
Employer contribution rate		
Normal Cost*	1.47%	2.20%
Accrued liability	<u>15.93</u>	<u>14.96</u>
Total	17.40%	17.16%
Anticipated accrued liability payment period	30.0 years	30.0 years

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



**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)
6/30/08	\$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
6/30/17	5,534,403	26,686,958	10,945,130	26,364,446	100.0	78.1	0.0

As can be seen from the table above, the PERS plan assets currently covers 100% of the active member contribution account balances as of the valuation date but only covers about 78% of the retiree liability. There remains zero assets to cover any employer financed active liabilities.



**Schedule of Active Member Valuation Data**

Valuation Date	Number of Employers	Active Members			
		Number	Annual Payroll	Annual Average Pay	% Increase in Average Pay
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
2017	862	152,382	6,038,228,708	39,626	1.4

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

Item	Fiscal Year Ended June 30									
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Beginning of Year	70,756	73,540	76,143	79,168	83,115	86,829	90,214	93,504	96,338	99,483
Added	5,335	4,965	5,747	6,566	6,569	6,276	6,159	5,907	6,548	6,219
Removed	(2,551)	(2,362)	(2,722)	(2,619)	(2,855)	(2,891)	(2,869)	(3,073)	(3,403)	(3,442)
End of Year	73,540	76,143	79,168	83,115	86,829	90,214	93,504	96,338	99,483	102,260

\*See Schedule D for a breakdown by type of retirement.



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

Year Ending	2011	2012	2013	2014	2015	2016	2017
Beginning 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
Added	127,035,815	125,378,708	120,592,399	120,190,296	117,113,206	132,970,248	123,938,697
Removed	(39,518,227)	(45,787,704)	(47,237,330)	(48,955,768)	(55,158,128)	(59,603,335)	(62,470,173)
Benefit increase due to annual COLA	41,632,866	45,202,325	48,758,557	52,368,041	56,044,620	59,355,139	64,233,789
Benefit increase due to plan amendments	0	0	0	0	0	0	0
End of Year	\$1,627,813,430	\$1,752,606,759	\$1,874,720,385	\$1,998,322,954	\$2,116,322,652	\$2,249,044,704	\$2,374,747,017



Schedule of Average Benefit Payments

	Years of Credited Service								TOTAL
	0-9	10-14	15-19	20-24	25	26-29	30	31+	
July 1, 2016 to June 30, 2017									
Average Monthly Benefit	\$475.88	\$727.37	\$1,013.30	\$1,655.71	\$1,947.82	\$2,105.82	\$2,446.29	\$3,092.75	\$1,632.44
Average Final Salary	\$31,990	\$37,033	\$39,332	\$47,400	\$49,568	\$50,461	\$55,156	\$59,849	\$45,739
Number of Active Retirants	732	938	859	1,014	369	1,174	190	943	6,219
July 1, 2015 to June 30, 2016									
Average Monthly Benefit	\$512.05	\$701.11	\$1,053.82	\$1,638.19	\$1,878.66	\$2,117.88	\$2,400.11	\$3,196.32	\$1,665.54
Average Final Salary	\$31,771	\$34,459	\$39,422	\$45,571	\$46,533	\$50,536	\$52,472	\$59,306	\$44,872
Number of Active Retirants	751	997	874	1,048	402	1,204	234	1,038	6,548
July 1, 2014 to June 30, 2015									
Average Monthly Benefit	\$458.27	\$688.17	\$977.30	\$1,346.27	\$1,833.91	\$1,989.13	\$2,217.36	\$2,898.93	\$1,600.68
Average Final Salary	\$29,781	\$33,585	\$37,938	\$40,770	\$46,461	\$48,614	\$50,908	\$57,019	\$43,642
Number of Active Retirants	599	898	774	693	494	1,072	230	1,147	5,907
July 1, 2013 to June 30, 2014									
Average Monthly Benefit	\$465.38	\$712.04	\$998.80	\$1,383.89	\$1,871.16	\$1,992.51	\$2,283.20	\$2,954.14	\$1,585.88
Average Final Salary	\$31,044	\$35,356	\$37,962	\$40,947	\$47,490	\$48,732	\$51,456	\$57,022	\$43,744
Number of Active Retirants	751	945	815	663	505	1,146	232	1,102	6,159
July 1, 2012 to June 30, 2013									
Average Monthly Benefit	\$442.04	\$694.71	\$963.61	\$1,421.74	\$1,924.91	\$2,016.94	\$2,187.80	\$2,931.36	\$1,563.58
Average Final Salary	\$30,487	\$34,404	\$36,876	\$41,550	\$47,768	\$48,862	\$49,470	\$56,341	\$43,082
Number of Active Retirants	915	901	740	758	496	1,121	224	1,121	6,276



Schedule of Average Benefit Payments

	Years of Credited Service								TOTAL
	0-9	10-14	15-19	20-24	25	26-29	30	31+	
July 1, 2011 to June 30, 2012									
Average Monthly Benefit	\$436.84	\$655.76	\$984.40	\$1,325.25	\$1,823.47	\$1,956.67	\$2,283.30	\$2,938.26	\$1,560.13
Average Final Salary	\$29,120	\$32,872	\$37,561	\$40,246	\$46,050	\$47,965	\$51,720	\$56,263	\$42,606
Number of Active Retirants	1,007	867	779	736	501	1,138	260	1,281	6,569
July 1, 2010 to June 30, 2011									
Average Monthly Benefit	\$455.16	\$637.24	\$974.84	\$1,347.49	\$1,791.74	\$1,996.32	\$2,176.08	\$2,910.64	\$1,578.82
Average Final Salary	\$29,000	\$31,063	\$36,095	\$39,613	\$45,296	\$48,620	\$49,084	\$55,608	\$42,106
Number of Active Retirants	1,084	808	741	743	456	1,050	245	1,439	6,566
July 1, 2009 to June 30, 2010									
Average Monthly Benefit	\$371.48	\$620.46	\$905.46	\$1,239.55	\$1,717.84	\$1,897.84	\$2,174.78	\$2,833.34	\$1,473.47
Average Final Salary	\$26,406	\$30,890	\$33,781	\$37,426	\$43,924	\$46,537	\$49,426	\$54,049	\$40,044
Number of Active Retirants	985	773	641	627	428	867	237	1,189	5,747
July 1, 2008 to June 30, 2009									
Average Monthly Benefit	\$378.56	\$581.94	\$874.55	\$1,314.05	\$1,672.61	\$1,865.25	\$2,115.68	\$2,821.82	\$1,432.54
Average Final Salary	\$26,309	\$29,481	\$32,707	\$37,865	\$42,352	\$45,058	\$47,003	\$53,867	\$38,968
Number of Active Retirants	895	669	572	535	378	732	223	961	4,965
July 1, 2007 to June 30, 2008									
Average Monthly Benefit	\$386.59	\$586.58	\$900.09	\$1,221.01	\$1,738.22	\$1,844.70	\$2,070.82	\$2,726.23	\$1,437.51
Average Final Salary	\$25,597	\$28,649	\$33,139	\$36,537	\$44,534	\$45,142	\$48,053	\$53,245	\$39,089
Number of Active Retirants	891	703	614	586	386	855	226	1,074	5,335



**SCHEDULE A**

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

Valuation Date June 30:	2016	2017	2018	2019	2020	2021
A. Actuarial Value Beginning of Year	\$24,387,161	\$25,185,078				
B. Market Value End of Year	24,135,016	26,543,097				
C. Market Value Beginning of Year	24,906,556	24,135,016				
D. Cash Flow						
D1. Contributions	1,593,835	1,589,150				
D2. Other Revenue	0	0				
D3. Benefit Payments	(2,367,709)	(2,477,914)				
D4. Refunds	(112,926)	(113,707)				
D5. Administrative Expenses	(15,166)	(17,056)				
D6. Investment Expenses	<u>(87,355)</u>	<u>(94,072)</u>				
D7. Net	(989,321)	(1,113,599)				
E. Investment Income						
E1. Market Total: B.-C.-D7.	217,781	3,521,680				
E2. Assumed Rate	7.75%	7.75%				
E3. Amount for Immediate Recognition	1,982,662	1,925,029				
E4. Amount for Phased-In Recognition	(1,764,881)	1,596,651				
F. Phased-In Recognition of Investment Income						
F1. Current Year: 0.20*E4.	(352,976)	319,330				
F2. First Prior Year	(239,758)	(352,976)	319,330			
F3. Second Prior Year	439,773	(239,758)	(352,976)	319,330		
F4. Third Prior Year	201,569	439,773	(239,758)	(352,976)	319,330	
F5. Fourth Prior Year	<u>(311,731)</u>	<u>201,569</u>	<u>439,773</u>	<u>(239,758)</u>	<u>(352,976)</u>	<u>319,332</u>
F6. Total Recognized Investment Gain	(263,123)	367,938	166,369	(273,404)	(33,646)	319,332
G. Adjustment:	67,699	0				
H. Actuarial Value End of Year:						
A.+D7.+E3.+F6.+G.	\$25,185,078	\$26,364,446				
I. Difference Between Market & Actuarial Values	\$1,050,062	\$(178,651)	\$(12,282)	\$(285,686)	\$(319,332)	\$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.



Asset Summary June 30, 2017 (\$ in Thousands)			
	Market Value	Book Value	Actuarial Value
1. Assets at June 30, 2016	\$24,135,016	\$20,663,870	\$25,185,078
2. Contributions and Misc. Revenue	1,589,150	1,589,150	1,589,150
3. Investment Increment	3,521,680	1,653,361	2,292,967
4. Benefit Payments	(2,477,914)	(2,477,914)	(2,477,914)
5. Refunds	(113,707)	(113,707)	(113,707)
6. Expenses	(111,128)	(111,128)	(111,128)
7. Assets at June 30, 2017 (1) + (2) + (3) + (4) + (5) + (6)	\$26,543,097	\$21,203,632	\$26,364,446
8. Investment Return	14.96%	8.22%	9.31%





**SCHEDULE B**

**STATEMENT OF ACTUARIAL ASSUMPTIONS AND METHODS**

INTEREST RATE: 7.75% per annum, compounded annually (net of investment expense only). The expected return on assets consists of 3.00% price inflation and 4.75% real rate of return.

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	25.00%	30.00%	0.0256%	0.0080%	0.010%	0.009%
25	18.00	18.25	0.0306	0.0085	0.012	0.011
30	11.50	12.00	0.0286	0.0107	0.017	0.014
35	8.50	8.75	0.0330	0.0141	0.036	0.017
40	6.75	7.00	0.0397	0.0195	0.110	0.070
45	6.25	6.00	0.0615	0.0324	0.230	0.140
50	6.25	6.00	0.1065	0.0543	0.290	0.220
55	6.25	6.00	0.1761	0.0811	0.500	0.380
60	6.25	6.00	0.2868	0.1137	0.530	0.410
65	6.25	6.00	0.4862	0.1694	0.200	0.150
70	6.25	6.00	0.7656	0.2850	0.200	0.150
74	6.25	6.00	1.1226	0.4322	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		21.75%		17.50%
50		14.50		12.50
55		18.25		19.00
60	10.25%	19.50	13.00%	22.25
62	20.25	32.00	18.75	37.50
65	24.00	29.50	28.75	42.50
70	20.00	25.00	24.00	25.50
75	100.00	100.00	100.00	100.00

\* For all ages, rates of 32.5% for 1<sup>st</sup> year of employment and 23.5% for 2<sup>nd</sup> year.

\*\* 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%	3.25%	18.50%
1	5.25	3.25	8.50
2	2.75	3.25	6.00
3	1.75	3.25	5.00
4	1.25	3.25	4.50
5-7	0.75	3.25	4.00
8-27	0.25	3.25	3.50
28 and Over	0.00	3.25	3.25

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 2022 with male rates set forward one year and adjusted by 106% for males at all ages and as follows for females: 90% for ages less than 76, 95% for age 76, 105% for age 78 and 1.10% for ages 79 and greater. The RP-2014 Disabled Retiree Table set forward 4 years for males and 3 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 11.2% greater than expected under the selected table for non-disability mortality and 10.5% greater than expected under the selected table for disability mortality.

PAYROLL GROWTH: 3.25% per annum, compounded annually.

ADMINISTRATIVE EXPENSES: 0.23% of payroll.

TIMING OF DECREMENTS AND PAY INCREASES: Middle of Year.

ACTIVE MEMBER DISABILITY ASSUMPTION: 7% of active member disabilities are assumed to be in the line of duty and 93% of active member disabilities are assumed to not be in the line of duty.

ACTIVE MEMBER DEATH ASSUMPTION: 6% of active deaths are assumed to be in the line of duty and 94% of active member deaths are assumed to not be in the line of duty.

ACTIVE MEMBER WITHDRAWAL ASSUMPTION: 60% of vested participants who terminate before retirement elect to receive a deferred benefit upon attaining the eligibility requirements for retirement. They are assumed to commence their benefit at age 60 for Tiers 1, 2 and 3 and age 62 for Tier 4. The remaining 40% elect to withdraw their contributions.

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

UNUSED SICK LEAVE: Assumed 0.50 years at retirement.



MILITARY SERVICE: For those who don't have a military service included in the data, we have assumed 0.20 years at retirement.

MAXIMUM COVERED EARNINGS ASSUMPTION GROWTH: 3.25%

AGE-LIMITED DISABILITY DECREMENTS: Assumed to turn off at age 60.

DEFERRED VESTEDS: Deferred vested benefits are assumed to commence at age 60 for Tiers 1, 2 and 3 and at age 65 for Tier 4.

ASSUMED INTEREST RATE ON EMPLOYEE CONTRIBUTIONS: 2.00%.

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.

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.



## **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, 2017, 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. To determine your four highest years, PERS considers these scenarios: <ul style="list-style-type: none"><li>• Four highest fiscal years of earned compensation;</li><li>• Four highest calendar years of earned compensation;</li><li>• Combination of four highest fiscal and calendar years of earned compensation that do not overlap; or</li><li>• Final 48 months of earned compensation prior to termination of employment.</li></ul>
<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. A payment of up to 240 hours pf leave may be used in the Average Compensation definition.
<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
7/1/17	6/30/18	15.75	270,000	9.00	270,000

\*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 retirement allowance is paid upon the request of any member who retires and has attained age 60 and completed at least eight years (4 years if hired prior to July 1, 2011) 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.

#### Amount of Allowance

The annual retirement allowance payable to a member who retires 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.

### Early Retirement

#### Condition for Retirement

For members hired on or after July 1, 2011, an actuarially reduced retirement allowance is paid upon the request of any member who retires with less than 30 years of creditable service.

#### Amount of Allowance

The annual actuarially reduced retirement allowance is equal to the benefit in the section above reduced for each year of creditable service below 30 or for each year in age below age 65, whichever is less.



## Deferred Vested

### Condition for Termination

Any member who withdraws from service prior to his or her attainment of age 60 and who has completed at least eight years (4 years if hired prior to July 1, 2007) of membership service is entitled to receive, in lieu of a refund of his or her accumulated contributions, a retirement allowance.

### Amount of Allowance

The annual retirement allowance payable to a member who terminates as a deferred vested payable at age 60 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.
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\*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.
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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**

**RECONCILIATION OF DATA RECEIVED FROM PERS**

Reconciliation of Data received from PERS	Active File			Pensioner File			Total
	Active	Inactive NonVested	Inactive Vested	Retirees	Disableds	Survivors	
From PERS	156,083	48,001	15,092	84,747	6,478	11,044	321,445
Return to Active Status	2			(2)			
Deceased		(1)	(14)		(1)	(2)	(18)
Certain Period Ended						(92)	(92)
Added Back		207	79	80	8		374
Pay less than \$100	(1,587)	1,499	80				(8)
Not Contributing	(2,116)	1,662	376				(78)
Balance = 0		(1,208)					(1,208)
Status Change		10	(10)				
In Retiree Status			(210)				(210)
In Disabled Status			(16)				(16)
Pending Retirees			1,232				1,232
Suspended Beneficiaries			73				73
For Valuation	152,382	50,170	16,682	84,825	6,485	10,950	321,494



**SCHEDULE D**

**STATUS RECONCILIATION FROM 2016 TO 2017**

Reconciliation of Data from Last Year to This Year	Actives	Retirees	Disableds	Survivors	Inactives		Total
					Vested	Non-Vested	
As of June 30, 2016	154,104	82,145	6,430	10,908	19,400	123,235	396,222
Retirement	(3,171)	5,028	(1)		(1,855)	(1)	
Disabled	(171)	(2)	286		(110)	(3)	
Death with Survivor	(77)	(526)	(49)	846	(36)		158
Terminated Vested	(3,386)			(63)	3,469	(20)	
Terminated Non-Vested	(8,226)					8,226	
Return to Active Service	3,275	(48)	(2)		(878)	(2,347)	
Refunded	(5,398)				(439)	(2,863)	(8,700)
Death No Survivor	(59)	(1,785)	(183)	(463)	(17)	(170)	(2,677)
Benefit Ended				(87)	(78)		(165)
Removed/Cleanup	(76)			(236)	(2,836)	(75,887)	(79,035)
New	15,567						15,567
Rehires/Pickups		13	4	45	62		124
As of June 30, 2017	152,382	84,825	6,485	10,950	16,682	50,170	321,494



**SCHEDULE D**

**Retirants & Beneficiaries as of June 30, 2017  
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
2017	5,185	\$107,268,915	\$9,309	\$107,278,224	\$1,724
2016	5,590	116,909,352	1,171,214	118,080,566	1,760
2015	5,196	104,662,194	4,290,160	108,952,354	1,747
2014	5,674	112,978,608	8,172,882	121,151,490	1,779
2013	5,432	107,592,069	11,364,024	118,956,093	1,825
2012	5,697	113,097,761	15,511,481	128,609,242	1,881
2011	5,630	113,035,022	19,489,036	132,524,058	1,962
2010	4,817	91,210,755	18,650,887	109,861,642	1,901
2009	4,043	75,251,958	18,139,331	93,391,289	1,925
2008	4,368	81,394,332	22,411,219	103,805,551	1,980
2007	4,061	73,604,084	22,948,232	96,552,316	1,981
2006	4,047	69,393,511	24,235,838	93,629,349	1,928
2005	3,750	66,031,588	25,637,639	91,669,227	2,037
2004	3,915	67,138,355	28,959,743	96,098,098	2,046
2003	3,497	59,927,202	28,326,738	88,253,940	2,103
2002	3,516	56,744,655	29,322,382	86,067,037	2,040
2001	3,355	55,468,628	31,209,116	86,677,744	2,153
2000	2,646	42,255,993	25,795,530	68,051,523	2,143
1999	2,276	34,263,729	22,482,012	56,745,741	2,078
1998	2,288	33,181,727	23,337,588	56,519,315	2,059
1997	2,211	30,811,281	23,402,618	54,213,899	2,043
1996	2,188	30,994,753	25,166,708	56,161,461	2,139
1995	1,731	22,242,495	19,219,290	41,461,785	1,996
1994	1,630	19,961,529	18,299,778	38,261,307	1,956
1993	1,690	21,968,702	21,552,705	43,521,407	2,146
1992	1,827	23,296,408	24,148,426	47,444,834	2,164
1991	1,037	12,370,446	13,729,003	26,099,449	2,097
1990	1,088	11,236,422	13,097,414	24,333,836	1,864
1989	411	3,554,361	4,358,666	7,913,027	1,604
1988	559	5,337,985	6,818,704	12,156,689	1,812
1987	767	7,894,660	11,116,362	19,011,022	2,066
1986	516	5,003,762	7,237,142	12,240,904	1,977
1985	322	2,916,439	4,344,292	7,260,731	1,879
1984	255	1,879,546	2,907,136	4,786,682	1,564
1983	193	1,364,253	2,235,437	3,599,690	1,554
1982 & Prior	852	4,568,831	8,836,664	13,405,495	1,311
<b>Totals</b>	<b>102,260</b>	<b>\$1,786,812,311</b>	<b>\$587,934,706</b>	<b>\$2,374,747,017</b>	<b>\$1,935</b>



**SCHEDULE D**

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

**Benefits Payable June 30, 2017**

Amount of Monthly Benefit**	Number of Rets.	Ret. Type 1*	Ret. Type 2*	Ret. Type 3*
\$1-\$500	22,435	16,823	1,001	4,611
501-1,000	20,522	15,374	2,171	2,977
1,001-1,500	18,208	15,075	1,579	1,554
1,501-2,000	14,816	13,149	887	780
2,001-2,500	10,618	9,731	438	449
2,501-3,000	6,288	5,859	214	215
3,001-3,500	3,898	3,653	90	155
3,501-4,000	2,099	1,967	53	79
4,001-4,500	1,280	1,203	31	46
4,501-5,000	680	642	10	28
Over 5,000	1,416	1,349	11	56
Totals	102,260	84,825	6,485	10,950

\*Type of Retirement

- 1 – Retirement for Age & Service
- 2 – Disability Retirement
- 3 – Survivor Payment

\*\*Reflects reduced benefit



**SCHEDULE D**

**Schedule of Retired Members by Option**

**Benefits Payable June 30, 2017**

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-\$500	22,435	16,369	759	2,718	152	123	476	1,770	174	68	583	483	2,266
501-1,000	20,522	14,339	681	2,746	151	160	899	1,453	800	93	752	525	1,879
1,001-1,500	18,208	11,526	693	2,982	184	221	1,149	1,351	1,006	102	691	642	2,636
1,501-2,000	14,816	9,198	462	2,426	106	241	1,114	1,228	441	41	602	686	3,118
2,001-2,500	10,618	6,395	274	1,796	65	151	1,030	884	125	23	653	574	2,517
2,501-3,000	6,288	3,753	150	1,043	34	117	599	573	53	19	474	392	1,385
3,001-3,500	3,898	2,297	90	656	22	86	413	327	20	7	376	255	759
3,501-4,000	2,099	1,244	50	382	11	34	223	155	9	0	211	133	355
4,001-4,500	1,280	717	21	232	6	30	176	97	3	1	122	83	243
4,501-5,000	680	382	9	133	2	11	96	47	2	0	58	32	128
Over 5,000	1,416	679	17	342	6	47	208	117	3	0	120	63	216
Totals	102,260	66,899	3,206	15,456	739	1,221	6,383	8,002	2,636	354	4,642	3,868	15,502

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





**SCHEDULE D**

**Retirant and Beneficiary Information June 30, 2017  
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					303	\$1,511,519	303	\$1,511,519
20 – 24					152	909,615	152	909,615
25 – 29					71	663,811	71	663,811
30 – 34			12	173,159	122	1,335,024	134	1,508,183
35 – 39			61	972,368	185	1,945,452	246	2,917,820
40 – 44	11	262,557	179	3,149,360	238	2,330,967	428	5,742,884
45 – 49	552	14,130,485	385	7,780,844	372	4,520,747	1,309	26,432,076
50 – 54	2,471	68,086,079	710	14,448,360	464	5,348,154	3,645	87,882,593
55 – 59	5,721	171,573,492	1,154	22,914,512	786	11,129,019	7,661	205,617,023
60 – 64	14,017	358,439,255	1,424	27,266,550	997	15,512,137	16,438	401,217,942
65 – 69	20,738	499,881,637	1,205	21,459,030	1,316	23,668,954	23,259	545,009,621
70 – 74	17,052	407,976,559	737	13,602,751	1,497	27,452,015	19,286	449,031,325
75 – 79	11,208	259,180,531	357	5,659,482	1,428	27,859,227	12,993	292,699,240
80 – 84	6,892	156,004,347	190	2,739,375	1,347	28,024,389	8,429	186,768,111
85 – 89	4,041	89,763,416	52	712,589	1,044	20,648,230	5,137	111,124,235
90 – 94	1,642	33,534,221	14	232,933	491	10,500,079	2,147	44,267,233
95	121	2,311,776	2	29,687	50	1,004,743	173	3,346,206
96	118	2,553,422	3	32,360	30	435,494	151	3,021,276
97	84	1,302,375			28	620,508	112	1,922,883
98	39	722,985			8	110,001	47	832,986
99	37	666,416			10	125,147	47	791,563
100 & Over	81	1,354,723			11	174,149	92	1,528,872
<b>Totals</b>	<b>84,825</b>	<b>\$2,067,744,276</b>	<b>6,485</b>	<b>\$121,173,360</b>	<b>10,950</b>	<b>\$185,829,381</b>	<b>102,260</b>	<b>\$2,374,747,017</b>

Average Age: 69.9 years  
Average Age at Retirement: 59.2 years  
Average Age at Death: 79.4 years  
Average Years Since Retirement: 11.5 years



**SCHEDULE D**

**Total Active Members as of June 30, 2017  
Tabulated by Attained Ages and Years of Service**

Attained Age	Completed Years of Service							Total
	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	>= 30	
20 & under	265							265
Total Pay	4,578,971							4,578,971
Avg. Pay	17,279							17,279
21 to 24	5,710	45	1					5,756
Total Pay	152,302,195	1,276,313	35,909					153,614,417
Avg. Pay	26,673	28,363	35,909					26,688
25 to 29	11,771	2,771	52					14,594
Total Pay	371,846,102	105,604,691	1,925,651					479,376,444
Avg. Pay	31,590	38,111	37,032					32,848
30 to 34	7,835	6,651	2,418	42				16,946
Total Pay	250,747,090	275,615,694	106,687,384	1,686,527				634,736,695
Avg. Pay	32,003	41,440	44,122	40,155				37,456
35 to 39	6,661	4,747	5,966	2,067	40			19,481
Total Pay	209,435,594	196,404,932	278,873,354	102,324,187	1,620,612			788,658,679
Avg. Pay	31,442	41,375	46,744	49,504	40,515			40,483
40 to 44	5,552	4,019	4,015	4,638	1,564	23		19,811
Total Pay	174,492,806	159,712,466	178,951,414	242,332,800	83,238,954	1,198,036		839,926,476
Avg. Pay	31,429	39,739	44,571	52,249	53,222	52,089		42,397
45 to 49	4,997	3,712	3,644	3,699	4,023	1,235	24	21,334
Total Pay	154,471,571	139,905,023	152,592,987	175,870,779	220,853,550	69,430,877	1,232,530	914,357,317
Avg. Pay	30,913	37,690	41,875	47,545	54,898	56,219	51,355	42,859
50 to 54	4,237	3,158	3,163	3,150	2,831	2,106	621	19,266
Total Pay	132,860,800	115,081,389	122,843,438	136,791,514	138,574,856	117,078,331	35,637,681	798,868,009
Avg. Pay	31,357	36,441	38,838	43,426	48,949	55,593	57,388	41,465
55 to 59	3,556	2,873	2,923	3,050	2,704	1,749	1,279	18,134
Total Pay	108,868,438	99,420,866	110,397,083	128,249,229	121,933,786	89,528,295	73,491,538	731,889,235
Avg. Pay	30,615	34,605	37,768	42,049	45,094	51,188	57,460	40,360
60 to 64	2,041	1,974	1,952	1,740	1,517	1,166	1,000	11,390
Total Pay	62,197,255	68,565,668	75,023,475	73,002,325	69,639,285	59,176,591	63,877,018	471,481,617
Avg. Pay	30,474	34,734	38,434	41,955	45,906	50,752	63,877	41,394
65 to 69	697	767	700	514	363	276	350	3,667
Total Pay	19,286,105	25,392,301	27,602,233	22,679,366	18,606,621	16,094,297	24,887,548	154,548,471
Avg. Pay	27,670	33,106	39,432	44,123	51,258	58,313	71,107	42,146
70 & over	351	314	330	254	178	103	208	1,738
Total Pay	7,752,305	8,565,916	11,180,902	9,302,624	8,338,526	5,295,590	15,756,514	66,192,377
Avg. Pay	22,086	27,280	33,882	36,625	46,846	51,413	75,752	38,085
Total	53,672	31,031	25,165	19,154	13,220	6,658	3,482	152,382
Total Pay	1,648,839,232	1,195,545,259	1,066,113,830	892,239,351	662,806,190	357,802,017	214,882,829	6,038,228,708
Avg. Pay	30,720	38,527	42,365	46,582	50,137	53,740	61,712	39,626

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

Age: 44.7 years  
 Service: 10.3 years  
 Entry Age: 35 years  
 Annual Pay: \$39,626



**SCHEDULE E**

**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 6/30/17	\$ Gain (or Loss) For Year Ending 6/30/16
<b>Age &amp; Service Retirements.</b> If members retire at older ages, there is a gain. If younger ages, a loss.	\$ 47.8	\$ (167.5)
<b>Disability Retirements.</b> If disability claims are less than assumed, there is a gain. If more claims, a loss.	0.0	(17.0)
<b>Death-in Service Benefits.</b> If survivor claims are less than assumed, there is a gain. If more claims, there is a loss.	(1.3)	(0.6)
<b>Withdrawal From Employment.</b> If more liabilities are released by withdrawals than assumed, there is a gain. If smaller releases, a loss.	(137.3)	(83.8)
<b>Pay Increases.</b> If there are smaller pay increases than assumed, there is a gain. If greater increases, a loss.	239.1	26.5
<b>New Members.</b> Additional unfunded accrued liability will produce a loss.	(91.4)	(80.6)
<b>Investment Income.</b> If there is a greater investment income than assumed, there is a gain. If less income, a loss.	286.6	(155.2)
<b>Death After Retirement.</b> If retirants live longer than assumed, there is a loss. If not as long, a gain.	97.0	8.6
<b>Other.</b> Miscellaneous gains and losses resulting from data adjustments, timing of financial transactions, etc.	<u>0.8</u>	<u>(114.8)</u>
<b>Gain (or Loss) During Year From Financial Experience</b>	\$ 441.3	\$ (584.4)
<b>Non-Recurring Items.</b> Adjustments for plan amendments, software changes, assumption changes, or method changes.	<u>(24.1)</u>	<u>66.6</u>
<b>Composite Gain (or Loss) During Year</b>	\$ 417.2	\$ (517.8)



## SCHEDULE F

### **FUNDING POLICY OF THE PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF MISSISSIPPI**

The purpose of the funding policy is to state the overall funding goals for the Public Employees' Retirement System of Mississippi (referred to as "System" in this policy), the benchmarks that will be used to measure progress in achieving those goals, and the methods and assumptions that will be employed to develop the benchmarks.

The policy refers to pension benefits and does not address retiree healthcare benefits that may be provided under statute in the future. In addition to periodic reviews of this policy, the Board will amend the policy if retiree healthcare benefits become payable.

#### **I. Funding Goals**

The objective in requiring employer and member contributions to the System is to accumulate sufficient assets during a member's employment to fully finance the benefits the member receives throughout retirement. In meeting this objective, the System will strive to meet the following funding goals:

- To maintain an increasing ratio of system assets to accrued liabilities and reach an 80 percent minimum funded ratio in 2042;
- To maintain adequate asset levels to finance the benefits promised to members;
- To develop a pattern of stable contribution rates when expressed as a percentage of member payroll as measured by valuations prepared in accordance with the principles of practice prescribed by the Actuarial Standards Board, with a minimum employer contribution equal to the normal cost determined under the Entry Age Normal funding method;
- To provide intergenerational equity for taxpayers with respect to System costs; and
- To fund benefit improvements through increases in contribution rates in accordance with Article 14, § 272A, of the Mississippi Constitution.

#### **II. Benchmarks**

To track progress in achieving the previously outlined funding goals, the following benchmarks will be measured annually as of the actuarial valuation date (with due recognition that a single year's results may not be indicative of long-term trends):

- **Funded ratio** - The funded ratio, defined as the actuarial value of System assets divided by the System's actuarial accrued liability, should be increasing over time, before adjustments for changes in benefits, actuarial methods, and/or actuarial assumptions, with a target of at least 80 percent in 2042. If the projected funded ratio is less than 60 percent in 2042 or if the projected funded ratio is projected to be less than 75 percent in 2042 following two consecutive annual projection reports, a contribution rate increase will be determined that is sufficient to generate a funded ratio of 85 percent in 2042. If a funded ratio of 100 percent or more is attained, and is projected to remain above 100 percent for the ensuing 30 years following two consecutive annual projection reports, a reduced contribution pattern will be established provided the projected funded ratio remains at or above 100 percent in every future year.
- **Contribution rate history** - Employer and member contribution rates should be level from year to year when expressed as a percent of active member payroll unless the projected funded ratio reaches a level that triggers a change in contribution rates. The initial employer contribution rates for the Public Employees' Retirement System of Mississippi (PERS) set under this policy as revised October 23, 2012, will be 15.75 percent of active member payroll effective July 1, 2013.
- **Unfunded Actuarial Accrued Liability (UAAL) amortization period** - The amortization period for the System's UAAL should be declining over time.



## **SCHEDULE F**

### **III. Methods and Assumptions**

The actuarial funding method used to develop the benchmarks will be entry age normal. The method used to develop the actuarial value of assets will recognize the underlying market value of the assets by spreading each year's unanticipated investment income (gains and losses) over a five-year smoothing period (20 percent per year) as adopted by the Board.

The actuarial assumptions used will be those last adopted by the Board based upon the advice and recommendation of the System's actuary. The actuary shall conduct an investigation into the system's experience at least every two years on a rolling four year basis, and utilize the results of the investigation to form the basis for those recommendations.

The Board will have an audit of the System's actuarial valuation results conducted by an independent actuary at least every six years. The purpose of such a review is to provide a critique of the reasonableness of the actuarial methods and assumptions in use and the resulting actuarially computed liabilities and contribution rates.

### **IV. Funding Policy Review**

The funding policy components and triggers will be reviewed annually following the annual actuarial valuation and in conjunction with the annual projection report and will be amended as necessary following each experience investigation conducted by the Board.



## SCHEDULE G 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.