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GASB STATEMENT NO. 67 REPORT

FOR THE

PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF MISSISSIPPI

PREPARED AS OF JUNE 30, 2017

Cavanaugh Macdonald

CONSULTING, LLC

The experience and dedication you deserve

November 7, 2017

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

Ladies and Gentlemen:

Presented in this report is information to assist the Public Employees' Retirement System of Mississippi in meeting the requirements of the Governmental Accounting Standards Board (GASB) Statement No. 67. The information is presented for the period ending June 30, 2017.

The annual actuarial valuation used as a basis for much of the information presented in this report was performed as of June 30, 2017. The valuation was based on data, provided by the Retirement System staff for active, inactive and retired members along with pertinent financial information.

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, individually and in the aggregate, internally consistent and reasonably based on the actual experience of the System. In addition, the calculations were completed in compliance with the laws governing the System and, in our opinion, meet the requirements of GASB 67. The undersigned are members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

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.

Respectfully submitted,

Edward A. Macdonald, ASA, FCA, MAAA
President

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EAM/EJK/JTC:mjn

TABLE OF CONTENTS

REPORT OF THE ANNUAL GASB STATEMENT NO. 67
REQUIRED INFORMATION FOR THE
PUBLIC EMPLOYEES' RETIREMENT SYSTEM OF MISSISSIPPI
PREPARED AS OF JUNE 30, 2017

SECTION I – INTRODUCTION

The Governmental Accounting Standards Board issued Statement No. 67 (GASB 67), "*Financial Reporting For Pension Plans*", in June 2012. This report, prepared as of June 30, 2017 (the Measurement Date), presents information to assist the Public Employees' Retirement System of Mississippi (System) in meeting the requirements of GASB 67. Much of the material provided in this report is based on the data, assumptions and results of the annual actuarial valuation of the Public Employees' Retirement System of Mississippi as of June 30, 2017. The results of that valuation were detailed in a report dated October 19, 2017.

GASB 67 requires a measurement of the Total Pension Liability (TPL) utilizing the Entry Age Normal actuarial funding method. The Net Pension Liability (NPL) is set equal to the TPL minus the System's Fiduciary Net Position (FNP) (basically the market values of assets) as of the Measurement Date. The benefit provisions recognized in the calculation of the TPL are summarized in Schedule B.

Among the assumptions needed for the liability calculation is a Single Equivalent Interest Rate (SEIR). To determine the SEIR, the FNP must be projected into the future for as long as there are anticipated benefits payable under the plan's provision applicable to the membership and beneficiaries of the System on the Measurement Date. Future contributions were projected to be made in accordance with the Funding Policy adopted by the Board. The Funding Policy is shown in Schedule D of this report. If the FNP is not projected to be depleted at any point in the future, as the results currently indicate, the long term expected rate of return on plan investments expected to be used to finance the benefit payments may be used as the SEIR.

If, however, at a future measurement date the FNP is projected to be depleted, the SEIR is determined as the single rate that will generate a present value of benefit payments equal to the sum of the present value determined by discounting all projected benefit payments through the date of depletion by the long term expected rate of return, and the present value determined by discounting those benefits after the date of depletion by a 20-year tax-exempt municipal bond (rating AA/Aa or higher) rate. The rate used, if necessary, for this purpose is the monthly average of the Bond Buyers General Obligation 20-year Municipal Bond Index Rate (formerly published monthly by the Board of Governors of the Federal Reserve System). We have determined that the FNP is projected to not be depleted during the projection period and a discount rate of 7.75% as of June 30, 2017 will meet the requirements of GASB 67. The SEIR cross-over test is shown in Schedule E of this report.

The sections that follow provide the results of all the necessary calculations, presented in the order laid out in GASB 67 for note disclosure and Required Supplementary Information (RSI).

SECTION II – FINANCIAL STATEMENT NOTES

The actuarial related information presented herein will follow the order presented in GASB 67. There are other, non-actuarial items required which are not included in this report. Paragraph numbers are provided for ease of reference.

Paragraph 30(a) (4): The data required regarding the membership of the Public Employees' Retirement System of Mississippi were furnished by the System office. The following table summarizes the membership of the System as of the June 30, 2017 actuarial valuation date.

Membership

	Number
Inactive Members Or Their Beneficiaries Currently Receiving Benefits	102,260
Inactive Members Entitled To But Not Yet Receiving Benefits	66,852
Active Members	152,382
Total	321,494

Paragraphs 30(a) (5)-(6) and Paragraphs 30 (b)-(f): The information required is to be supplied by the System.

Paragraphs 31(a) (1)-(4): As stated above, the NPL is equal to the TPL minus the FNP. That result as of June 30, 2017 is presented in the following table ($ thousands).

	Fiscal Year Ending June 30, 2017
Total Pension Liability	$43,166,491
Fiduciary Net Position	26,543,097
Net Pension Liability	$16,623,394
Ratio of Fiduciary Net Position to Total Pension Liability	61.49%

Paragraph 31(b) (1)(a)-(f): This paragraph requires information regarding the actuarial assumptions used to measure the TPL. The actuarial assumptions utilized in developing the TPL comply with the Actuarial Standards Board and are outlined in Schedule C. The total pension liability was determined by an actuarial valuation as of June 30, 2017, using the following actuarial assumptions, applied to all periods included in the measurement:

Price Inflation	3.00 percent
Salary increases	3.25 – 18.50 percent, including inflation
Investment rate of return	7.75 percent, net of pension plan investment expense, including inflation

Mortality rates were based on the RP-2014 Healthy Annuitant Blue Collar Mortality Table projected with Scale BB to 2022 with rates set forward one year for males with adjustments.

The actuarial assumptions used in the June 30, 2017 valuation were based on the results of an actuarial experience study for the period July 1, 2012 to June 30, 2016. The experience report is dated April 18, 2017.

The long-term expected rate of return on pension plan investments was determined using a log-normal distribution analysis in which best-estimate ranges of expected future real rates of return (expected nominal returns, net of pension plan investment expense and the assumed rate of inflation) are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation. The target asset allocation and best estimates of arithmetic real rates of return for each major asset class are summarized in the following table:

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return
U.S. Broad	27.00%	4.60%
International Equity	18.00	4.50
Emerging Markets Equity	4.00	4.75
Global	12.00	4.75
Fixed Income	18.00	0.75
Real Estate	10.00	3.50
Private Equity	8.00	5.10
Emerging Debt	2.00	2.25
Cash	1.00	0.00
Total	100.00%	

Discount rate. The discount rate used to measure the total pension liability was 7.75 percent. The projection of cash flows used to determine the discount rate assumed that plan member contributions will be made at the current contribution rate of 9.00 percent and that Employer contributions will be made at the rate set in the Board's Funding Policy. Based on those assumptions, the pension plan's fiduciary net position was projected to be available to make all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the Total Pension Liability.

Paragraph 31(b) (1) (g): This paragraph requires disclosure of the sensitivity of NPL to changes in the discount rate. The following presents the NPL of the System, calculated using the discount rate of 7.75 percent, as well as what the System's NPL would be if it were calculated using a discount rate that is 1-percentage-point lower (6.75 percent) or 1-percentage-point higher (8.75 percent) than the current rate ($ thousands):

	1% Decrease (6.75%)	Current Discount Rate (7.75%)	1% Increase (8.75%)
System's Net Pension Liability	$21,802,691	$16,623,394	$12,323,452

Paragraph 31(c): June 30, 2017 is the actuarial valuation date upon which the TPL is based. An expected TPL is determined as of June 30, 2017 using standard roll forward techniques. The roll forward calculation adds the annual normal cost (also called service cost), subtracts the actual benefit payments and refunds for the plan year and then applies the expected investment rate of return using the SEIR as of June 30, 2016. We compare this amount to the actual TPL as of June 30, 2017 using old methods and assumptions to reflect the experience gain or loss for the year. The difference in the actual TPL between the value based on old assumptions and the value based on new assumptions represents the assumption change. These procedures are shown in the following table.

TPL Roll-forward ($ in thousands)		
(a)	Interest Rate (SEIR) as of June 30, 2016	7.75 %
(b)	TPL as of June 30, 2016	$41,997,513
(c)	Entry Age Normal Cost for the period July 1, 2016 - June 30, 2017	754,552
(d)	Actual Benefit Payments and Refunds for the period July 1, 2016 - June 30, 2017	2,591,621
(e)	Expected TPL as of June 30, 2017 = [(b) x 1.0775] + (c) - [(d) x 1.03875]	$43,314,826
(f)	Actual TPL as of June 30, 2017 - Old Assumptions	$43,142,350
(g)	Experience (Gain)/Loss = (f) – (e)	(172,476)
(h)	Actual TPL as of June 30, 2017 - New Assumptions	$43,166,491
(i)	Assumption Change = (h) – (f)	24,141

SECTION III – REQUIRED SUPPLEMENTARY INFORMATION

There are several tables of Required Supplementary Information (RSI) that need to be included in the System's financial statements:

Paragraphs 32(a)-(c): The required tables are provided in Schedule A.

Paragraph 34: In addition the following should be noted regarding the RSI:

Changes of assumptions.

- 2017
  - The expectation of retired life mortality was changed to the RP-2014 Healthy Annuitant Blue Collar Mortality Table projected with Scale BB to 2022 rather than projected with Scale BB to 2016, which was used prior to 2017. Small adjustments were also made to the Mortality Table for disabled lives.
  - The wage inflation assumption was reduced from 3.75% to 3.25%.
  - Withdrawal rates, pre-retirement mortality rates, disability rates and service retirement rates were also adjusted to more closely reflect actual experience.
  - The percentage of active member disabilities assumed to be in the line of duty was increased from 6% to 7%.
- 2016
  - The assumed rate of interest credited to employee contributions was changed from 3.50% to 2.00%.
- 2015
  - The expectation of retired life mortality was changed to the RP-2014 Healthy Annuitant Blue Collar Table projected to 2016 using Scale BB rather than the RP-2000 Mortality Table, which was used prior to 2015.
  - The expectation of disabled mortality was changed to the RP-2014 Disabled Retiree Table, rather than the RP-2000 Disabled Mortality Table, which was used prior to 2015.
  - Withdrawal rates, pre-retirement mortality rates, disability rates and service retirement rates were also adjusted to more closely reflect actual experience.
  - Assumed rates of salary increase were adjusted to more closely reflect actual and anticipated experience.
  - The price inflation and investment rate of return assumptions were changed from 3.50% to 3.00% and 8.00% to 7.75%, respectively.

Changes in benefit provisions

- *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.

Method and assumptions used in calculations of actuarially determined contributions. The actuarially determined contribution rates in the schedule of employer contributions are calculated as of June 30, two years prior to the end of the fiscal year in which contributions are reported (June 30, 2015 valuation for the June 30, 2017 fiscal year end). The following actuarial methods and assumptions were used to determine the most recent contribution rate reported in that schedule:

Actuarial cost method	Entry age
Amortization method	Level percentage of payroll, open
Remaining amortization period	33.9 years
Asset valuation method	5-year smoothed market
Price Inflation	3.00 percent
Salary increase	3.75 percent to 19.00 percent, including inflation
Investment rate of return	7.75 percent, net of pension plan investment expense, including inflation

SCHEDULE A
REQUIRED SUPPLEMENTARY INFORMATION

SCHEDULE OF CHANGES IN THE NET PENSION LIABILITY
GASB 67 Paragraph 32(a)
($ in Thousands)

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Total pension liability										
Service Cost	$681,778	$673,626	$734,545	$754,552						
Interest	2,754,573	2,867,679	3,032,131	3,154,382						
Benefit changes	0	0	0	0						
Difference between expected and actual experience	257,464	325,351	413,494	(172,476)						
Changes of assumptions	0	1,821,236	(66,606)	24,141						
Benefit payments	(2,099,843)	(2,219,240)	(2,367,709)	(2,477,914)						
Refunds of contributions	(121,532)	(119,356)	(112,926)	(113,707)						
Net change in total pension liability	1,472,440	3,349,296	1,632,929	1,168,978						
Total pension liability - beginning	35,542,848	37,015,288	40,364,584	41,997,513						
Total pension liability - ending (a)	$37,015,288	$40,364,584	$41,997,513	$43,166,491						
Plan net position										
Contributions - employer	$969,674	$996,478	$1,021,261	$1,019,084						
Contributions - member	549,528	557,909	572,574	570,066						
Net investment income	3,905,728	827,666	130,900	3,436,144						
Benefit payments	(2,099,843)	(2,219,240)	(2,367,709)	(2,477,914)						
Administrative expense	(12,837)	(13,523)	(15,166)	(17,056)						
Refunds of contributions	(121,532)	(119,356)	(112,926)	(113,707)						
Other	(510)	(497)	(474)	(8,536)						
Net change in plan net position	3,190,208	29,437	(771,540)	2,408,081						
Plan net position - beginning	21,686,911	24,877,119	24,906,556	24,135,016						
Plan net position - ending (b)	$24,877,119	$24,906,556	$24,135,016	$26,543,097						
Net pension liability - ending (a) - (b)	$12,138,169	$15,458,028	$17,862,497	$16,623,394						

SCHEDULE OF THE NET PENSION LIABILITY
GASB 67 Paragraph 32(b)
($ in Thousands)

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Total pension liability	$37,015,288	$40,364,584	$41,997,513	$43,166,491						
Plan net position	24,877,119	24,906,556	24,135,016	26,543,097						
Net pension liability	$12,138,169	$15,458,028	$17,862,497	$16,623,394						
Ratio of plan net position to total pension liability	67.21%	61.70%	57.47%	61.49%						
Covered payroll	$5,834,687	$5,904,827	$6,022,533	$6,038,229						
Net pension liability as a percentage of covered payroll	208.03%	261.79%	296.59%	275.30%						

SCHEDULE OF EMPLOYER CONTRIBUTIONS
GASB 67 Paragraph 32(c)
($ in Thousands)

	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008
Actuarially determined employer contribution	$951,021	$948,549	$930,010	$921,872	$835,321	$735,022	$687,016	$699,824	$657,048	$636,546
Actual employer contributions	1,019,084	1,021,261	996,478	969,674	881,847	768,914	723,836	731,544	713,569	683,189
Annual contribution deficiency (excess)	($68,063)	($72,712)	($66,468)	($47,802)	($46,526)	($33,892)	($36,820)	($31,720)	($56,521)	($46,643)
Covered payroll	$6,038,229	$6,022,533	$5,904,827	$5,834,687	$5,823,578	$5,857,789	$5,684,624	$5,763,556	$5,831,864	$5,544,705
Actual contributions as a percentage of covered payroll	16.88%	16.96%	16.88%	16.62%	15.14%	13.13%	12.73%	12.69%	12.24%	12.32%

SCHEDULE B

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

Average Compensation — Average annual covered earnings of an employee during the four highest years of service. To determine your four highest years, PERS considers these scenarios:

- Four highest fiscal years of earned compensation;
- Four highest calendar years of earned compensation;
- Combination of four highest fiscal and calendar years of earned compensation that do not overlap; or
- Final 48 months of earned compensation prior to termination of employment.

Covered Earnings — Gross salary not in excess of the maximum amount on which contributions were required.

Fiscal Year — Year commencing on July 1 and ending June 30.

Credited Service — Service while a contributing member plus additional service as described below.

Unused Sick and Vacation Leave — 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 of leave may be used in the Average Compensation definition.

Additional Service — 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:

Age at Disability	Duration
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 C

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:

	Annual Rates of					
	Withdrawal and Vesting*		Death		Disability	
Age	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

	Annual Rates of Service Retirements			
	Male		Female	
Age	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 1st year of employment and 23.5% for 2nd 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 assume 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: Market value of assets.

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 D

FUNDING POLICY OF THE PERS BOARD OF TRUSTEES

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.

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 E

SEIR CROSS-OVER TEST
Projection of Contributions

	Projected Covered Employee Payroll			Projected Contributions							
Plan Year Beginning June 30	Payroll for Current Employees (a)	Payroll for Future Employees (b)	Total Employee Payroll (c)	Employee Contribution Rate (d)	Employer Normal Cost Contribution Rate (e)	Employer UAAL Contribution Rate (f)	Contributions from Current Employees (g) = (a) x (d)	Employer Contributions for Current Employees (h) = (a) x [(e) + (f)]	Contributions Related to Payroll of Future Employees (i) = (b) x (f)	Total Contributions (j) = (g) + (h) + (i)	Plan Year Ending June 30
2017	$6,367,451,196	$0	$6,367,451,196	9.00%	1.47%	14.28%	$573,070,608	$1,002,873,563	$0	$1,575,944,171	2018
2018	5,854,843,203	719,550,157	6,574,393,360	9.00	1.47	14.28	526,935,888	922,137,804	102,751,762	1,551,825,454	2019
2019	5,448,446,600	1,339,614,544	6,788,061,144	9.00	1.47	14.28	490,360,194	858,130,340	191,296,957	1,539,787,491	2020
2020	5,076,799,800	1,931,873,331	7,008,673,131	9.00	1.47	14.28	456,911,982	799,595,969	275,871,512	1,532,379,463	2021
2021	4,723,657,667	2,512,797,341	7,236,455,008	9.00	1.47	14.28	425,129,190	743,976,083	358,827,460	1,527,932,733	2022
2022	4,387,191,213	3,084,448,583	7,471,639,796	9.00	1.47	14.28	394,847,209	690,982,616	440,459,258	1,526,289,083	2023
2023	4,064,188,367	3,650,279,722	7,714,468,089	9.00	1.47	14.28	365,776,953	640,109,668	521,259,944	1,527,146,565	2024
2024	3,754,545,422	4,210,642,880	7,965,188,302	9.00	1.47	14.28	337,909,088	591,340,904	601,279,803	1,530,529,795	2025
2025	3,454,754,718	4,769,302,204	8,224,056,922	9.00	1.47	14.28	310,927,925	544,123,868	681,056,355	1,536,108,148	2026
2026	3,172,861,968	5,318,476,804	8,491,338,772	9.00	1.47	14.28	285,557,577	499,725,760	759,478,488	1,544,761,825	2027
2031	1,999,963,626	7,963,870,055	9,963,833,681	9.00	1.47	14.28	179,996,726	314,994,271	1,137,240,644	1,632,231,641	2032
2036	1,135,082,205	10,556,593,782	11,691,675,987	9.00	1.47	14.28	102,157,398	178,775,447	1,507,481,592	1,788,414,437	2037
2041	609,737,489	13,109,408,351	13,719,145,840	9.00	1.47	14.28	54,876,374	96,033,655	1,872,023,512	2,022,933,541	2042
2046	267,485,899	15,830,716,170	16,098,202,069	9.00	1.47	14.28	24,073,731	42,129,029	2,260,626,269	2,326,829,029	2047
2051	70,404,702	18,819,409,058	18,889,813,760	9.00	1.47	14.28	6,336,423	11,088,741	2,687,411,614	2,704,836,778	2052
2056	13,787,939	22,151,734,793	22,165,522,732	9.00	1.47	0.00	1,240,915	202,683	0	1,443,598	2057
2061	2,244,621	26,007,032,347	26,009,276,968	9.00	1.47	0.00	202,016	32,996	0	235,012	2062
2066	258,762	30,519,323,229	30,519,581,991	9.00	1.47	0.00	23,289	3,804	0	27,093	2067
2071	4,521	35,812,020,783	35,812,025,304	9.00	1.47	0.00	407	66	0	473	2072
2076	0	42,022,238,600	42,022,238,600	9.00	1.47	0.00	0	0	0	0	2077
2081	0	49,309,373,651	49,309,373,651	9.00	1.47	0.00	0	0	0	0	2082
2086	0	57,860,180,964	57,860,180,964	9.00	1.47	0.00	0	0	0	0	2087
2091	0	67,893,795,708	67,893,795,708	9.00	1.47	0.00	0	0	0	0	2092
2096	0	79,667,353,589	79,667,353,589	9.00	1.47	0.00	0	0	0	0	2097
2101	0	93,482,580,577	93,482,580,577	9.00	1.47	0.00	0	0	0	0	2102

Projection of Fiduciary Net Position (FNP)

Plan Year Beginning June 30	Projected Beginning FNP (a)	Projected Total Contributions (b)	Projected Benefit Payments (c)	Projected Administrative Expenses (d)	Projected Investment Earnings (e)	Projected Ending FNP (f) = (a) + (b) – (c) – (d) + (e)	Plan Year Ending June 30
2017	$26,543,097,000	$1,575,944,171	$2,745,952,061	$14,645,138	$2,012,041,247	$27,370,485,219	2018
2018	27,370,485,219	1,551,825,454	2,865,287,975	13,466,139	2,070,753,522	28,114,310,081	2019
2019	28,114,310,081	1,539,787,491	2,988,351,359	12,531,427	2,123,297,998	28,776,512,784	2020
2020	28,776,512,784	1,532,379,463	3,111,516,973	11,676,640	2,169,685,891	29,355,384,525	2021
2021	29,355,384,525	1,527,932,733	3,234,507,598	10,864,413	2,209,733,281	29,847,678,528	2022
2022	29,847,678,528	1,526,289,083	3,348,832,383	10,090,540	2,243,505,565	30,258,550,253	2023
2023	30,258,550,253	1,527,146,565	3,462,232,255	9,347,633	2,271,096,728	30,585,213,658	2024
2024	30,585,213,658	1,530,529,795	3,473,888,242	8,635,454	2,296,125,636	30,929,345,393	2025
2025	30,929,345,393	1,536,108,148	3,588,819,250	7,945,936	2,318,663,715	31,187,352,070	2026
2026	31,187,352,070	1,544,761,825	3,701,942,337	7,297,583	2,334,711,232	31,357,585,207	2027
2031	31,193,179,395	1,632,231,641	4,187,066,617	4,599,916	2,320,143,837	30,953,888,340	2032
2036	29,350,125,601	1,788,414,437	4,475,084,438	2,610,689	2,172,369,526	28,833,214,437	2037
2041	26,727,748,497	2,022,933,541	4,444,840,392	1,402,396	1,979,249,389	26,283,688,639	2042
2046	25,348,817,181	2,326,829,029	4,156,677,081	615,218	1,894,926,351	25,413,280,262	2047
2051	27,546,165,915	2,704,836,778	3,661,140,726	161,931	2,098,456,355	28,688,156,391	2052
2056	33,438,884,052	1,443,598	3,009,158,083	31,712	2,477,138,026	32,908,275,881	2057
2061	31,930,147,685	235,012	2,298,414,174	5,163	2,387,193,449	32,019,156,809	2062
2066	34,008,427,771	27,093	1,614,865,509	595	2,574,245,710	34,967,834,470	2067
2071	41,005,842,164	473	1,015,146,664	10	3,139,349,829	43,130,045,792	2072
2076	54,521,879,553	0	549,425,787	0	4,204,552,665	58,177,006,431	2077
2081	76,619,545,495	0	243,435,994	0	5,928,757,642	82,304,867,143	2082
2086	110,225,979,141	0	82,921,302	0	8,539,360,137	118,682,417,976	2087
2091	159,762,609,910	0	20,428,104	0	12,380,825,449	172,123,007,255	2092
2096	231,964,743,593	0	3,707,561	0	17,977,126,641	249,938,162,673	2097
2101	336,892,607,428	0	646,018	0	26,109,152,510	363,001,113,920	2102